

A man with a shaved head, wearing a red V-neck sweater over a collared shirt and tie, is smiling and pointing with a green marker at the Arabic calligraphy 'التعلم باليد' (Learning by hand) written on a whiteboard. The calligraphy is in a green, elegant script.

التعلم باليد

## learning by hand

Learning a new language seems like a matter of the mind, but the body matters more than you think.

That's what Assistant Professor Robert Wiley – director of the Cognitive and Neural Science of Learning Lab – discovered during a recent study he conducted. He gathered 42 people between the ages of 18 and 35 and asked them to learn 20 Arabic letters over the course of several weeks. None of them knew Arabic before they started the study.

He then split the group into three categories. The first learned Arabic characters by looking at them on a screen and hearing the letters pronounced. The second did the same as the first group but matched the letters they saw on their screens with characters on a keyboard – basically typing the letters. The last cohort had to write out the letters onto paper. The group that did the best?

"The overall pattern showed that the writing group clearly wins," says Wiley.

Subjects were tested on identifying and writing letters, spelling words, and reading words out loud. In every instance, the group that learned by handwriting outperformed the others.

"The more ways you can learn something the better. Handwriting makes the letter richer because you're involving your body in another way," Wiley says. "The basic idea is that the way we think about things is tied to our body, to our senses. We're not just minds floating in space. It's about making connections across modalities – motor with visual, what you're hearing, what you're speaking. Letters are all of those things."

Part of the reason why Wiley picked Arabic for his study is because of his own history with the language. He completed his bachelor's and master's degrees in Arabic and went on to teach French and Arabic in the years after college. What he learned from teaching students impacted how he conducts his studies.

"I would find that ten percent of students every year would make wild mistakes," Wiley explains. "So when I started looking at psychology for my higher education degrees, I was very much motivated by trying to understand how people learn languages."

His findings were published in the flagship journal for the Association for Psychological Science last July. The study was conducted at Johns Hopkins University, where Wiley completed his doctorate and a Distinguished Science of Learning Fellowship. "A lot of my work there was part of a multisite NIH study on post-stroke aphasia and how strokes cause spelling deficits."

Wiley next hopes to look at whether the way people write letters impacts their retention.

"How people write letters varies," he says. "We have all this evidence that handwriting matters – maybe how you write also matters."

Wiley says these findings may indicate the way many adults learn new languages is flawed. With the proliferation of apps like Duolingo and even Rosetta Stone, handwriting is lost and that can mean taking longer to learn a new language, he says.

"For adults, if you're trying to learn a new language, you should really incorporate handwriting."

by Sayaka Matsuoka • learn more at [go.uncg.edu/r-wiley](https://go.uncg.edu/r-wiley)