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Sign language study reveals key finding about short-term memory

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For decades, researchers have misunderstood a key aspect of short-term memory because of shortcomings in the way they compare the memory capacity of deaf people who use American Sign Language (ASL) and hearing people, according to a new study by a psychology professor at the University of California, Santa Cruz.

Previous studies suggested that ASL users have smaller short-term memory capacity than hearing people. But Margaret Wilson, assistant professor of psychology at UCSC, found that short-term memory is equal when laboratory conditions are carefully matched for the two languages.

Her findings appear in the August issue of the journal Psychological Science in an article entitled “Comparing Sign Language and Speech Reveals a Universal Limit on Short-Term Memory Capacity,” coauthored with Karen Emmorey, professor of speech, language, and hearing sciences at San Diego State University.

Previous studies compared common English words and ASL signs, without controlling for the amount of time it takes to articulate the different stimuli. A more recent study overcame that shortcoming by comparing signed letters to spoken numbers with equivalent articulation times, but it overlooked the fact that numbers have a unique superiority in short-term memory and are problematic in comparative laboratory experiments.

Wilson and Emmorey were careful to make sure subjects were exposed to precisely matched sets of ASL and spoken stimuli because many factors affect short-term memory, including duration, similarity, and familiarity. They compared recall of spoken letters to ASL letters that take the same amount of time to articulate. Controlling for those elements revealed no differences in short-term memory capacity between the two groups. “Our data show that short-term memory is in fact equal for English and ASL,” she said. “The time it takes to articulate the to-be-remembered material is a universal constraint on short-term memory.”

Wilson's findings are significant because they suggest that universal principles govern the way short-term memory works. “Short-term memory isn't a single dedicated mechanism, it's a principle, and it works the same whether it's the mouth or the hand that's moving,” said Wilson.

Researchers studying short-term memory have long believed that spoken language is unique, but Wilson's work since the early 1990s has eroded that notion by replicating speech-based studies with ASL and demonstrating that the same principles hold. “There does not appear to be a dedicated mechanism for verbal speech,” she said.

Wilson's latest work further debunks the notion that “speech is special” and opens the door to new approaches and different laboratory protocols.

Source: University of California, Santa Cruz