CHALLENGE

Foreign language professionals and language learners frequently encounter language that is ambiguous. This makes the text difficult to process, leading to slower translation and possible errors in interpretation.

To help resolve language ambiguity and comprehension issues more efficiently, CASL researchers are working to find ways to strengthen language professionals' working memory, the mental workspace that aids in these tasks.

Working memory training, which appears to improve concentration and processing efficiency and effectiveness, promises to reduce interpretation errors, thereby improving the performance of language professionals and making language learning easier and less error prone.

FINDINGS

CASL research has made advances in understanding the kinds of errors that plague language professionals and language learners. Through fMRI brain mapping techniques, researchers have linked these errors to brain activity patterns and have identified regions implicated in working memory and cognitive control. In an additional EEG experiment, CASL researchers examined how working memory performance predicted brain activity while processing ambiguous sentences.

CASL studies indicate the benefits of working memory training. In an fMRI experiment, brain areas related to working memory processes showed increased efficiency after training. Another study using eye tracking showed that cognitive control training improved the speed and accuracy of ambiguous sentence resolution.

CASL research also shows that lifetime multilingual activity is correlated with overall better cognitive control. Fluent bilinguals demonstrated better cognitive control and superior performance on a difficult reading task compared to those who are only fluent in a single language.

More at www.casl.umd.edu/workingmemory

REAL-WORLD APPLICATIONS

CASL is conducting large-scale validations of working memory training at various government language centers. These studies will allow researchers to examine the effects of the training on the workforce and to determine the optimal ways to use it to improve language learning and job performance.

In addition, computational models recently developed at CASL help predict human performance in working memory training, including who stands to benefit most from the training.