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How does working memory predict errors in Human-AI Interaction?

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Abstract

Interlingual Respeaking (IR) is a new technique that enables real-time subtitling in a different language. This cognitively demanding technique involves collaboration between a language professional and automatic speech recognition software (ASR), creating a human-AI interaction (HAI) environment. Integrating technological tools with an individual's internal cognitive resources establishes an extended cognitive system. However, different types of errors are observed in terms of output accuracy. Our ESRC-funded research found that working memory (WM) (backward span) has a negative relationship with omissions, where content is dropped out (e.g., to save time). Nevertheless, additions, where the human adds content (e.g., to clarify meaning) and correctness, where form-related issues arise (such as grammar mistakes), had an inverse relationship with the N-back Task (the simultaneous maintenance, updating, and processing of WM). These findings suggest that the IR errors involve diverse types of WM resources.