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Technological Shaping of Verbal Working Memory: A Difference between Chinese Phonology-Based and Orthography-Based Typing

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Abstract: Typing Chinese words on a computer can be carried out with a phonology-based or an orthography-based method. Phonological typing constantly engages typists' verbal working memory (VWM), while orthographic typing engages their visual-spatial working memory (VSWM). Accordingly, habitual phonological typists would develop a better VWM capacity, while habitual orthographic typists would have a better VSWM capacity. Five VWM tests and five VSWM tests were administered to 24 phonological typists and 23 orthographic typists. The results showed that the phonological typists scored higher than the orthographic typists on the VWM tests, but no significant differences on the VSWM scores were observed. The latter result is attributed to the notoriously abundance of homophones in Chinese, which forces the phonological typists to keep attending to the orthographic forms of the characters being typed. Our findings suggest that individual cognitive systems develop and adapt flexibly, subject to shaping by technology within a life's time.