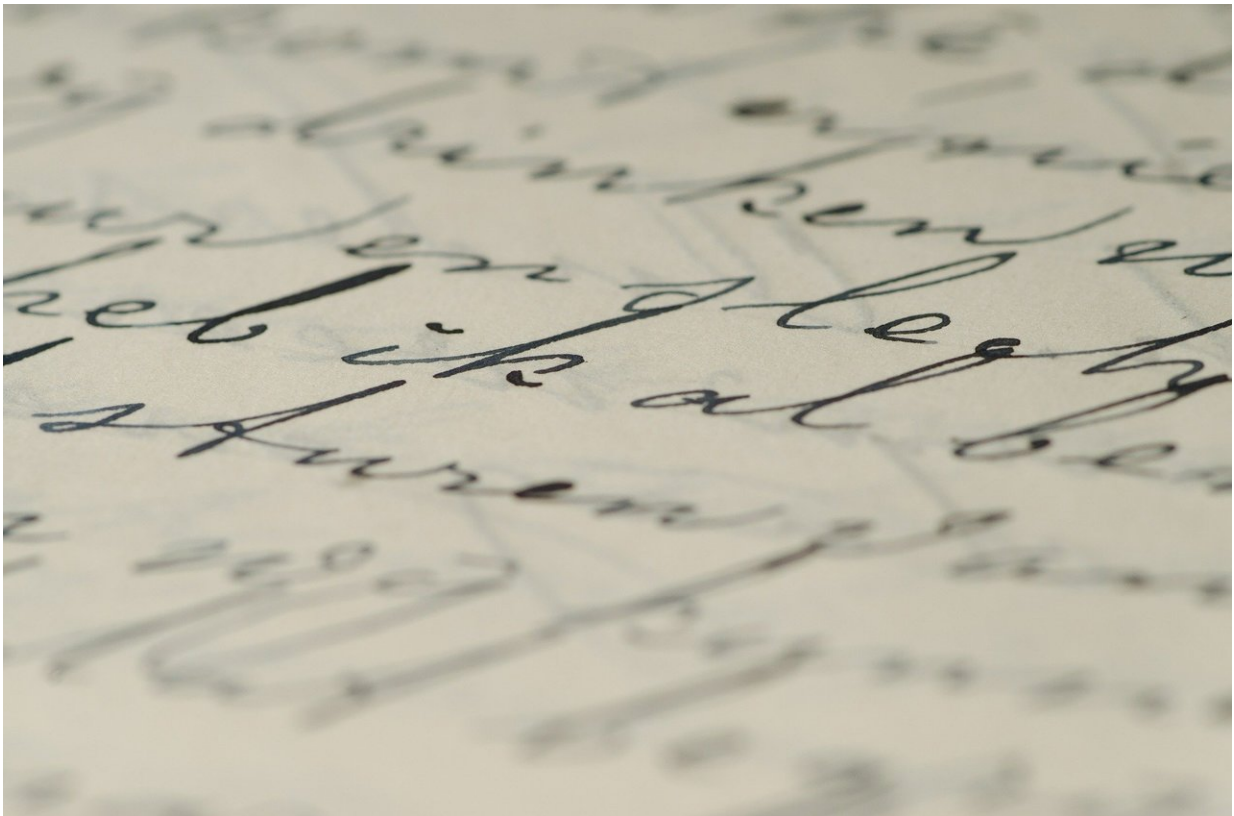# People have poor self-awareness for highly-practiced motor skill, scientists say

July 27 2021, by Zhang Nannan

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How neat is your handwriting? The accuracy of the answer to this question relies on metacognition, the introspective evaluation of the success of cognitive processing. Despite extensive investigation of the

brain architectures supporting metacognition for perception and memory, little is known about neural basis of metacognitive capacity for a practiced motor function such as handwriting.

To fill this gap, Dr. Bi Hongyan from the Institute of Psychology of the Chinese Academy of Sciences and his colleagues conducted a study to examine the brain substrates underlying self-awareness of Chinese handwriting skill in 51 adults using magnetic resonance imaging (MRI).

According to Dr. Bi, adult writers generally overestimated their handwriting quality, and such overestimation is more pronounced in men than in women.

Furthermore, individual variations in self-awareness of handwriting quality were positively correlated with gray matter volume in the left fusiform gyrus, right middle frontal gyrus and right precuneus. The left fusiform gyrus and right middle frontal gyrus are thought to represent domain-specific brain mechanisms for handwriting self-awareness, while the right precuneus that has been reported in other domains likely represents a domain-general brain mechanism for metacognition.

These findings suggest that people have poor self-awareness even for a highly-practiced motor skill, which relies on both domain-general and domain-specific brain systems.

This study introduces the factor of metacognition into the research domain of handwriting, enriching the cognitive model of handwriting and extending our understanding of the neural basis of human metacognition.

The study, titled "Neuroanatomical correlates of self-awareness of highly practiced visuomotor skills," was published in *Brain Structure and Function* on July 6.

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