Motor cortex excitability during processing of handwritten and typed non-action-related text

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Abstract: Motor cortex has been found to play a crucial role in processing the semantics of spoken and written action-related language as well as in early speech perception. One possibility is that the motor system is always involved in perception and cognition, picking up any available motor information in the environment. If this is true we should see increased corticospinal excitability when subjects are looking at anything that affords motor behaviors or possible simulation of motor behaviors. We used Transcranial Magnetic Stimulation and electromyography to investigate corticospinal excitability while participants read handwritten or typed words and non-words from a computer screen. Results show that for typed words, there is an increase in excitability for words compared to non-words, while the reverse is true for handwritten words. We discuss implications for the possible role of the motor system in early language perception in different contexts.