Cerebral dominance for self information in handwritten shapes-An ERP study

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Abstract: Previous researchers have shown that perception of bodily self (e.g. face, body part and voice) is related to brain activity in the right hemisphere. Like a voice, handwriting is produced by human motor-movement. We investigated the neural basis for the processing of the self information in handwriting. Symmetric patterns served as stimuli. The participants drew these patterns with a graphic tablet while not able to see them. To investigate the link between self perception and trajectory patterns, we inverted their handwritten shapes both horizontally and vertically. We measured event related potentials (ERPs) during observation of self and non-self (self inversion and others handwriting). Two weeks after writing, they observed self and non-self handwriting. Right-lateralized ERPs were recorded only to self handwriting but not to inverted stimuli or others handwriting. These results showed that self processing of products of motor-movement also involves brain activity in the right hemisphere.