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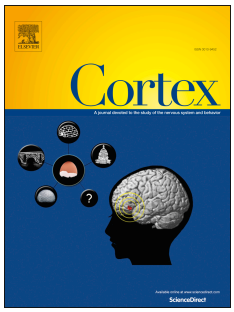

Transcranial direct current stimulation (tDCS) reveals a dissociation between SNARC and MARC effects: implication for the polarity correspondence account

Elisa Di Rosa, Lara Bardi, Carlo Umiltà, Fabio Masina, Margherita Forgione, Daniela Mapelli

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Abstract

The concept of stimulus response compatibility (SRC) refers to the existence of a privileged association between a specific stimulus feature and a specific response feature. Two examples of SRC are the Spatial Numerical Association of Response Codes (SNARC) and the Markedness Association of Response Codes (MARC) effects. According to the polarity correspondence principle, these two SRC effects occur because of a match between the most salient dimensions of stimulus and response. Specifically, the SNARC effect would be caused by a match between right-sided responses and large numbers, while a match between right-sided responses and even numbers would give rise to the MARC effect. The aim of the present study was to test the validity of the polarity correspondence principle in explaining these two SRC effects. To this end, we applied transcranial direct current stimulation (tDCS) over left and right posterior parietal cortex (PPC), which is thought to be the neural basis of salience processing, during a parity judgment task. Results showed that cathodal tDCS over the PPC significantly reduced the MARC effect but did not affect the SNARC effect, suggesting a dissociation between the two effects. That is, the MARC would rely on a salience processing mechanism, whereas the SNARC would not. Despite this interpretation is in need of further experimental confirmations (i.e. testing different tasks or using different tDCS montages), our results suggest that the polarity correspondence principle can be a plausible explanation only for the MARC effect but not for the SNARC effect.

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