

Bonn Melbourne Seminar in Decision Making and Computational Psychiatry

Brain stimulation of right dorso-lateral prefrontal cortex increases cognitive reflection performance

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Abstract

Transcranial direct current stimulation (tDCS) was used to investigate whether stimulating the left or right dorso-lateral pre-frontal cortex (DLPFC) compared to a sham group modulated performance on a number of judgment and thinking tasks. There were three tasks: vignettes measuring heuristic thinking, logic syllogisms, and the cognitive reflection test (CRT). Fifty-four participants were recruited. Results showed that anodal tDCS to the right DLPFC was associated with an increase in cognitive reflection performance (Type 2 processing) as compared to left DLPFC and to sham. Logic thinking was reduced following anodal tDCS to the left DLPFC. A second experiment generally confirmed these results for the right DLPFC, with repeated (two sessions) stimulation also increasing performance in the CRT. These findings are broadly consistent with a dual process framework, and cannot be explained by individual differences in cognitive ability and thinking style. The results demonstrate the involvement of the right DLPFC in cognitive reflection and suggest the possibility of improving cognitive reflection performance through tDCS.

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<https://uni-bonn.zoom.us/j/99726851020?pwd=ZHRpaDQrZ2YzYnFmUE51eitkMjZiZz09>

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