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Anodal tDCS targeting the left temporo-parietal junction disrupts verbal source-monitoring

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Abstract

Using transcranial direct current stimulation (tDCS) we aimed to investigate the causal role of the left temporo-parietal and prefrontal regions in source-monitoring. Forty-two healthy participants received tDCS while performing a verbal reality-monitoring task (requiring discrimination between heard and said words) and a verbal internal source-monitoring task (requiring discrimination between imagined and said words). In 2 randomized crossover studies, 21 participants received active and sham anodal tDCS applied over the left temporo-parietal junction (TPJ) and 21 participants received active and sham cathodal tDCS applied over the left prefrontal cortex (PFC). The reference electrode was placed over the right occipital region in both experiments. Active tDCS over the left TPJ decreased reality-monitoring performance but did not modulate source-monitoring performance. Participants were more likely to misattribute self-generated events to externally perceived events (externalisation bias). Active tDCS over the left PFC did not modulate performance of participants in both tasks. In summary, anodal tDCS applied over the left TPJ, assumed to enhance cortical excitability, can alter reality-monitoring processes in healthy subjects. Such abnormal reality-monitoring performances have been

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