

Impact of transcranial direct current stimulation on the speech of fluent participants

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Background: The left inferior frontal gyrus (IFG) is associated with the production of speech. There is little work on the effects of stimulating this area with transcranial Direct Current Stimulation (tDCS) during fluent speech production.

Objective: Two studies investigated whether tDCS to the left IFG affected speech production in fluent participants.

Methods: Study one (articulation) tested 24 fluent participants on time to repeat tongue-twisters under anodal, cathodal or sham left IFG tDCS stimulation. In study two, 30 fluent participants named pictures that had either been preceded by a congruent (primed to facilitate planning) or incongruent word (did not facilitate planning) under anodal or sham left IFG tDCS stimulation.

Results: Study one showed that anodal stimulation led to quicker times to repeat tongue-twisters whereas cathodal stimulation had no effect relative to sham. Study two showed that anodal tDCS significantly improved reaction times on incongruent trials but not congruent ones whereas sham tDCS did not.

Conclusions: Anodal tDCS to the left IFG affects articulation (study one) and planning (study two). The implications for using IFG-stimulation in interventions for speech production disorders are discussed.