

*What is difficult for you can be easy for me* Effects of increasing individual task demand on prefrontal lateralization: a tDCS study

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***What is difficult for you can be easy for me. Effects of increasing individual task demand on prefrontal lateralization: a tDCS study.***

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**Abstract**

Neuroimaging studies suggest that increment of the cognitive load associated with a specific task may induce the recruitment of a more bilateral brain network. In most studies, however, task **demand** has been manipulated in a static and pre-specified way, regardless of individual cognitive resources.

Here we implemented a new paradigm based on a pre-experimental assessment to set up **subject-specific** levels of task demand and applied tDCS (transcranial direct current stimulation) to assess each hemisphere involvement in task performance.

24 young participants performed a digit span backward (DSB, complex cognitive function) and a paced finger tapping task (pFT, basic motor function) at 3 levels of **subject-specific task demand** ("low" 5/5 correct answers, "medium" 3/5, "high" 1/5). Anodal tDCS (20 min, 1.5 mA) was delivered through a target electrode (5x5cm) positioned to stimulate both the inferior frontal gyrus and the primary motor area over left and right hemisphere and in sham condition in three different days.

A 3 (left, right, sham) x 3 (low, medium, high) mixed-model with random intercepts for subjects was run with R software.

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