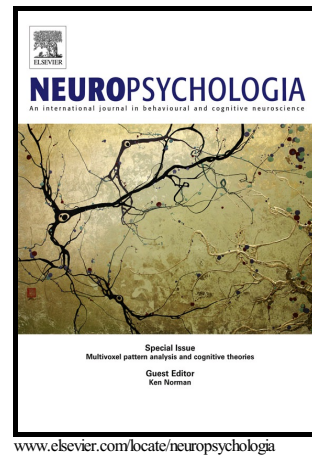


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Cathodal tDCS of the Bilateral Anterior Temporal Lobes Facilitates

Semantically-Driven Verbal Fluency

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Abstract

In a verbal fluency task, a person is required to produce as many exemplars of a given category (e.g., ‘animals’, or words starting with ‘f’) as possible within a fixed duration. Successful verbal fluency performance relies both on the depth of search within semantic/phonological neighborhoods (‘clustering’) and the ability to flexibly disengage between exhausted clusters (‘switching’). Convergent evidence from functional imaging and neuropsychology suggests that cluster-switch behaviors engage dissociable brain regions. Switching has been linked to a frontoparietal network dedicated to executive functioning and controlled lexical retrieval, whereas clustering is more commonly associated with temporal lobe regions dedicated to semantic and phonological processing. Here we attempted to modulate cluster-switch dynamics among neurotypical adults (N=24) using transcranial direct current stimulation (tDCS) delivered at three sites: a) anterior temporal cortex; b) frontal cortex; and c) temporoparietal cortex. Participants completed letter-guided and semantic category verbal fluency tasks pre/post

¹ The authors wish it to be known that the first 2 authors should be regarded as joint first authors.

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