

21st World Congress on

Neurology and Therapeutics

March 15-17, 2018 | London, UK

Effect of transcranial direct current stimulation on aphasia recovery

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Aphasia is a language disorder that impedes the ability to understand or to express speech. Aphasia results from brain damage that typically occurs after a stroke or other neurological changes. This disorder can be treated through intensive language therapy which has been shown to improve the daily lives of aphasia patients; however, a possible new treatment method has emerged called Transcranial Direct Current Stimulation (tDCS) that could enhance speech and language therapy. tDCS has been shown to improve motor functioning, and recent research indicates that tDCS may benefit aphasia recovery as well, although many questions remain regarding the amount, location, and frequency of stimulation needed for maximum recovery. The main objective of this study is to understand the effects of tDCS treatment on aphasia outcome. tDCS treatment is administered to University of Michigan Aphasia Program (UMAP) patients undergoing intensive aphasia therapy. Electrodes are placed on specific locations on the scalp so that the current most accurately targets Broca's Area, the region of the brain that controls speech production. Each volunteer underwent stimulation for 20 to 30 minutes each day for up to 30 sessions total. Participants also undergo language therapy during the tDCS treatment. The effects of this treatment are evaluated by changes to language performance as measured by the Western Aphasia Battery (WAB) and the Boston Naming Test. Results for the first subject show significant improvement in language fluency; however, results on the overall benefit of tDCS on other aspects of aphasia recovery are inconclusive. This research has the potential to improve the lives of aphasia patients and significantly impact future aphasia treatment.

Biography

Rishi Barad is currently an undergraduate student at the University of Michigan College of Literature, Science, and the Arts. He is in his third year at the university and is in the process of completing his Bachelor's degree in Neuroscience. He has been conducting research with Dr. Carol Persad in the University Center for Language and Literacy for two years. He has presented on this topic in an Undergraduate Research Symposium in May 2017, and has continued this research since then.

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