

Die Verwante Woord Project: Learning Complex Grammatical Structures Using HD-tDCS

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Bilinguals acquire and process language differently than their monolingual counterparts. High definition transcranial direct current stimulation (HD-tDCS) is a non-invasive brain stimulation technique that affects brain processing by administering low voltage electrical currents. The purpose of this project is to investigate the impact that HD-tDCS has on learning complex language in new language learners. It is hypothesized that HD-tDCS stimulation will improve bilingual language acquisition and processing by increasing accuracy and reducing response time for those learning a new language compared to those who do not receive stimulation. 50-60 participants will be recruited who are over the age of 18, have no previous or current traumatic brain injuries, and have had no previous interaction with, or exposure to, Afrikaans. Participants are randomly assigned to the HD-tDCS stimulation condition or a sham condition. English and Afrikaans verbs, nouns, and pronouns are accompanied by pictures, audio, and text. Participants learn complex linguistic structures of Afrikaans through exposure to cognates and non-cognates. After the learning phase, participants are tested on their knowledge of Afrikaans using a Syntactic Acceptability Judgement task, which requires participants to indicate whether or not sentences are grammatically correct. Data collection is ongoing. Preliminary results strongly suggest that HD-tDCS has a positive impact on singular noun learning; however, preliminary data is inconclusive about the impact on complex language acquisition and processing. HD-tDCS has the potential to improve language acquisition and processing for people learning new languages and may have the potential to improve language function for stroke and brain injury survivors.

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