Die Verwante Woord Project: Learning Afrikaans Using HD-tDCS

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Bilinguals process and acquire language differently than their monolingual counterparts and have been shown to do better on tasks that involve cognitive control. High-definition transcranial direct current stimulation (HD-tDCS) is a non-invasive brain stimulation technique that is used to influence certain parts or processes of the brain by administering low voltage electrical currents. The purpose of this project was to investigate the impact that HD-tDCS has on language acquisition and processing of a novel language (i.e., Afrikaans) in adults. It is hypothesized that HD-tDCS improves response time and response accuracy of word knowledge for adults learning a novel language. Eight participants were exposed to 30 Afrikaans words using cognates and non-cognates accompanied by pictures, audio, and text. Four participants learned these words while being stimulated by HD-tDCS and four participants did not receive stimulation. Accuracy of word learning was statistically significant according to t-tests; participants stimulated with HD-tDCS were more accurate than those who were not. Statistical significance was not observed for response time. Although statistical significance was not observed between the response time of the stimulated and control participants, statistical significance was observed when comparing cognate and non-cognate response times, suggesting that people learn cognates faster than non-cognates. This preliminary data suggests that HD-tDCS has a positive impact on language learning. This study will be continued over the next year to include up to 60 participants with both words and phrases. This study will be expanded to include participants who have had a stroke and exhibit aphasia (i.e., language impairment).

Awards Won:
American Psychological Association: Complimentary student affiliate memberships
American Psychological Association: Third Award of $500