

was used. Healthy participants completed two sessions (sham and stimulation) in a randomised order. We applied a novel tDCS montage in order to maximise the focality of the anodal stimulation over the right posterior cerebellum while concurrently measuring brain activity using fMRI (Figure 1).

Preliminary results showed differences due to stimulation mostly in temporal areas, suggesting that remote effects were more prominent than local effects. These differences in brain activation did not affect all conditions equally, having the smallest effects in the non-social conditions.

Further, a more exhaustive analysis (including simulations of the induced electric field, resting state connectivity and scores in autism questionnaires) will be performed in order to further unravel the specifics of this interaction between stimulation and different types of sequences.

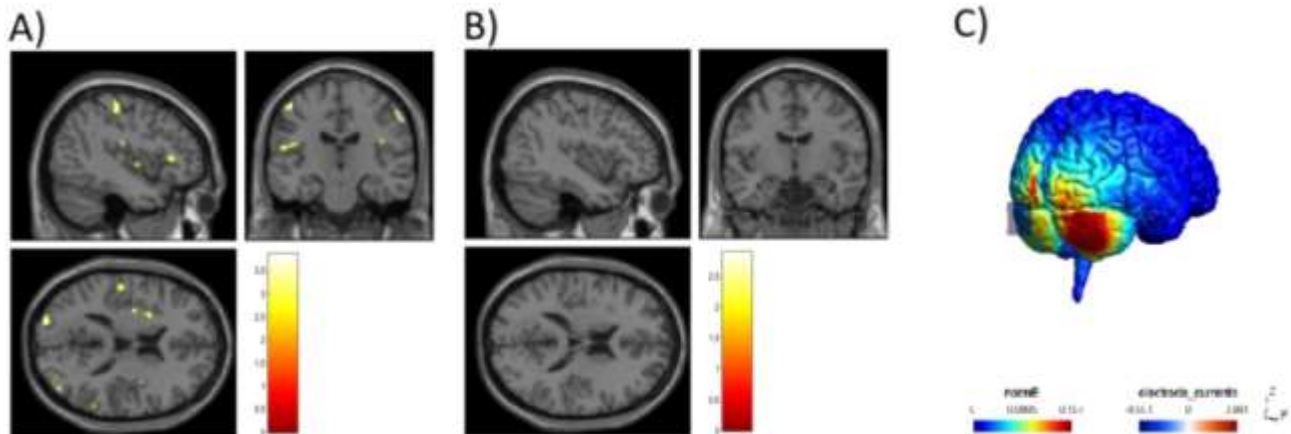


Figure 1. A) t-test of all social conditions averaged stimulation<sham. B) t-test of social conditions averaged sham<stimulation. C) simulation of the electrode montage

References:

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2. Olivito G, Lupo M, Laghi F, Clausi S, Baiocco R, Cercignani M, Bozzali M, Leggio M: *Lobular patterns of cerebellar resting-state connectivity in adults with Autism Spectrum Disorder. European Journal of Neuroscience* 2018; 47:729-35

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TRANSCRANIAL DIRECT CURRENT (tDCS) NEUROSTIMULATION FOR OLD AGE PEOPLE WITH DEPRESSION LIVING IN RESIDENTIAL CARE HOME: THE LIMONADE PROJECT

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In France, the prevalence of depression in the elderly living at home varies from 3.1 to 13.4%. In institutions, it increases considerably, from 22% in residential care home to 40% in long-term care units. Indeed, institutionalization is an important risk factor for APD, as is female gender, social isolation, bereavement, sleep disorders, disability, somatic illness or a history of depression.

Late-life depression is associated with a major functional impact, an alteration in quality of life and a significant risk of suicide. Often not identified, it can be insufficiently treated when it is diagnosed.

The reference treatments are essentially based on psychological and drug treatments, in cases of moderate to severe intensity. However, they are often poorly tolerated and iatrogenic. Neurostimulation treatments such as electroconvulsive therapy are reserved for resistant or very severe forms, with a vital risk (suicidal or somatic).

tDCS is a particularly suitable treatment for the geriatric population because of its excellent tolerance, even at a very advanced age in patients with high multimorbidity, compared with psychotropic drugs. The response rate increases in elderly patients with a higher current intensity (2 mA) and a greater number of tDCS sessions (30 treatments over 6 weeks). Therefore, the application of higher stimulation doses and a greater number of treatments may be important for the efficacy of tDCS in the elderly depressed patient. Thus, these potential antidepressant effects and cognitive improvement and the absence of major side effects make tDCS a promising treatment option for depression in geriatric populations.

The LIMONADE project aims to evaluate the feasibility of using tDCS in patients with depression living in residential care home. Indeed, it is a real strategy of care offer with: diagnosis, deployment of treatment by tDCS at the patient's bed, evaluation/coordination by a psychiatry team and articulation of care with geriatrics.

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EFFECT OF GENOTYPE ON RESPONSE TO tDCS-INDUCED BEHAVIOURAL PLASTICITY

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Introduction: A common single nucleotide polymorphism (Val66Met) in the gene that codes for brain derived neurotrophic factor (BDNF) is associated with reduced motor learning, retention, and plastic response to tDCS. Since one third of Caucasians carry the met allele, this may be a significant source of variability in response to tDCS. We have previously observed that anodal tDCS enhanced retention of prism adaption, a form of motor learning used in stroke therapy, but only in individuals with the dominant val66val allele. Here we aimed to replicate this val/val effect and determine the met allele effect in an adequately powered sample.

Method: Twenty participants were recruited, informed by a power calculation. To avoid the known variability in motor learning and brain chemistry associated with the menstrual cycle, only men were recruited. We used a double-blind, repeated measures design, in which participants performed prism adaptation combined with motor cortex tDCS (anodal versus sham, counterbalanced order). Subsequent retention of the prism after effect was measured 10 minutes and 24 hours later. Participants provided saliva samples for genotyping.

Results: Data collection is currently in progress (n=15 complete to date, 5 more to complete). Results for the full sample will be reported at the conference. Analyses will test the following pre-registered predictions:

- Val/Val homozygotes will show greater retention of the prism adaptation after effect with anodal stimulation versus sham;
- Carriers of the Val66Met polymorphism will show smaller and/or more variable responses to tDCS, resulting in no significant difference in retention between anodal and sham tDCS.

Discussion: Given the prevalence of the Val66Met polymorphism, the implication of previous work is that this should account for significant variability in stimulation response. If confirmed, this would have significant implications for the use of tDCS both in basic research and clinical indications in neurology and psychiatry.

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