given treatment is usually evaluated by comparing the effect of the active treatment versus the placebo on human health and/or behaviour. However, this approach neglects the individual's subjective experience of the type of treatment s/he received in establishing treatment efficacy. Here, we show that individual differences in subjective treatment—the thought of receiving the active or placebo condition during an intervention—can explain variability in outcomes better than the actual treatment. Specifically, we analysed three independent datasets (N=323 participants), including clinical patients (i.e., depression: Experiment 1 & 2) and healthy adults (Experiment 3) from different age groups (young and old adults: Experiment 1; old adults: Experiment 2; young adults: Experiment 3), exposed to different neurostimulation treatments (transcranial magnetic stimulation: Experiment 1 & 2; transcranial direct current stimulation: Experiment 3). Our findings consistently show that the inclusion of subjective treatment provides better model fit than objective treatment alone - the condition to which participants are assigned in the experiment. These results, demonstrate the significant contribution of subjective experience in explaining the variability of clinical, cognitive and behavioural outcomes. Based on these findings, we advocate for universal implementation of accounting for participants' subjective experiences when assessing the efficacy of treatments in basic and translational science.

Research Category and Technology and Methods
Basic Research: 26. Other Methods
Keywords: TMS, tDCS, Blinding, Psychiatric disorders

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Abstract key: PL- Plenary talks; S- Regular symposia oral; FS- Fast-Track symposia oral; OS- On-demand symposia oral; P- Posters

P3.041

AN IMPROVED SYSTEM FOR SIMULTANEOUS TRANSCRANIAL MAGNETIC STIMULATION AND SINGLE-UNIT RECORDINGS IN NON-HUMAN PRIMATES

Raveena Kothare, Rena Hamdan, Stefan Goetz, Angel Peterchev, Marc Sommer. *Duke University, Durham, NC, USA*

Abstract
Transcranial magnetic stimulation (TMS) is an FDA-cleared, non-invasive form of neuromodulation. While its effects in the human brain have been assessed at the macroscopic level, there is a lack of understanding of finer-scale responses on the neuronal circuit level, and this limits the rational design of therapeutic TMS protocols. We aim to quantify the direct and indirect neuronal effects of TMS through single-unit recordings in the target region of stimulation in awake macaques. Our recent work refined the instrumentation used for the neural studies and developed a data-driven model for interpreting dose-response curves calculated from the recordings.
One of the main challenges of simultaneous recording during TMS is the presence of large, electromagnetically induced artifacts that hinder the isolation of small neuronal signals. We previously developed an electrophysiology system capable of resolving action potentials shortly after TMS pulses (Mueller et al. 2014). To improve on that system, which required manual tuning of artifact cancellation and used components that are now obsolete, we developed an updated amplifier system that is more robust, automatic, and offers short recovery times after a pulse. We added electrostatic shielding to the TMS coil to reduce its capacitive coupling with the recording electronics and we developed a low-inductance input connection that mitigates the inductive TMS artifact. Additionally, we assessed the performance of three electrode materials — tungsten, platinum-tungsten, and platinum-iridium — with our system. Here, we present a new system capable of resolving neural signals within ~0.5 ms of the start of the TMS pulse.

Research Category and Technology and Methods
Translational Research: 10. Transcranial Magnetic Stimulation (TMS)
Keywords: TMS, Electrophysiology, Primate

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P3.042

REHABILITATION OF HEMINEGLECT IN STROKE: APPLICATION OF TRANSCRANIAL DIRECT CURRENT STIMULATION ADJUVANTLY TO CONVENTIONAL NEUROPSYCHOLOGICAL REHABILITATION: A CASE REPORT

Begoña González Rodríguez [1,2], David De Noreña Martínez [1,2], Francisco José Sánchez Cuesta [3], Aída Arroyo Ferrer [4], Yeray González Zamorano [5], Marcos Ríos Lago [1,6], Juan Pablo Romero Muñoz [1,4], Elena Muñoz Marrón [7]. [1] *Beata María Ana Hospital, Brain Damage Unit, Madrid, Spain, Spain;* [2] *Researcher in training. International doctoral school. PhD program in Psychology. Universidad Nacional de Educación a Distancia, Spain;* [3] *Francisco de Vitoria University, International Doctoral School. Experimental Sciences, Pozuelo De Alarcón, Spain, Spain;* [4] *Faculty of Experimental Sciences. Universidad Francisco de Vitoria. Madrid, Spain, Spain;* [5] *International Doctoral School, Department of Physical Therapy, Occupational Therapy, Rehabilitation and Physical Medicine, Universidad Rey Juan Carlos, Alcorcón, Spain, Spain;* [6] *Universidad Nacional a Distancia (UNED). Madrid. Spain., Spain;* [7] *Cognitive NeuroLab, Faculty of Health Sciences, Universitat Oberta de Catalunya. Madrid, Spain., Spain*

Abstract
The study aimed 1) to demonstrate that non-invasive neuromodulation, by means of transcranial direct current stimulation (tDCS) enhances the results of cognitive rehabilitation of hemispatial negelct, 2) to analyze the changes after the application of stimulation in the short (after the intervention) and long term (12 months), and 3) to determine the clinical and neurophysiological factors that best predict the efficacy of a combined treatment (neuromodulation and cognitive intervention).
A single-case, triple-blind study was conducted. Woman, 49-year-old, right-handed, with hemispatial neglect syndrome caused by right middle cerebral artery stroke, 5 month since the stroke. The intervention consisted of a two-week intervention (10 sessions, 45 min, Monday to Friday) of tDCS and cognitive rehabilitation applied concurrently through the neuro-rehabilitation platform (NeuronUp) for 30 minutes. In each session, 20 min of multisite tDCS (Starstim device; Neuroelectrics), at 2 mA of intensity, was applied over P3 (cathodal) with return electrodes placed in C3, CP5, CP1, Pz, PO3, PO7, P7 starting after 5 min of NeuronUp training. Neuropsychological, functional, and brain activity assessments (EEG) was conducted at three time points: before intervention, after the end of intervention, and 12 months after the intervention.
Significant improvements were observed in neglect specific tests (Bells test, Star cancellation test, motor-free visual perception test, in other attentional tests (Brief Test of Attention, backward digits test), and in functional assessment (Barthel Index, Catherine Bergego Scale-CBS) after the intervention. After 12 months, improvements are present in some cognitive and functional tests (Drawing copy test, lines bisection, faces test, direct and backward digits test, and in Barthel index and CBS.
tDCS is a safe and non-invasive neuromodulation technique with enough scientific literature supporting its effectiveness and safety in neurological and psychiatric pathologies. This study show the efficacy of the combined intervention based on neuromodulation and cognitive rehabilitation in neglect.

Research Category and Technology and Methods
Clinical Research: 9. Transcranial Direct Current Stimulation (tDCS)
Keywords: Neglect, non-invasive brain stimulation, stroke, transcranial electric stimulation, transcranial direct current stimulation

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P3.043

THE EFFECTS OF 4 MA CEREBELLAR TRANSCRANIAL DIRECT CURRENT STIMULATION ON GAIT AND CEREBRAL GLUCOSE UPTAKE IN PEOPLE WITH MULTIPLE SCLEROSIS

Alexandra C. Fietsam, Justin R. Deters, Laura L. Boles Ponto, Thorsten Rudroff. *The University of Iowa, Iowa City, IA, USA*