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**UNIVERSITY
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CORTICOSPINAL EXCITABILITY IN ACTION PREPARATION

INFORMATION FOR PARTICIPANTS

You expressed your interest to participate in a research project on how individuals make fast decisions. The neural mechanisms supporting rapid goal-directed movements and decision-making is part of a set of higher cognitive functions that enable successful adaptation to the ever-changing demands of the environment. The purpose of this project is to investigate behavioral and neural measures relating to rapid action implementation.

The study involves a computer-based task, which will be performed while neural activity is measured using transcranial magnetic stimulation (TMS), electromyography (EMG) and electroencephalography (EEG). The TMS will be delivered to specific areas of the brain while EMG is used to record activity in finger muscles and the EEG will be used to record the electrical activity of the brain.

Prior to the experiment, we will ask you some health related questions to assess your eligibility. This information is kept separate from the experimental data, and is not going to be shared with anyone.

We will also collect some basic demographic information about you, such as age, gender, and handedness. Your responses to these questions will be stored connected to your participant ID, not your name.

The experimental tasks will be performed while seated, and take approximately 1.5 hours to complete, including breaks. With preparation time included, the experiment will take 2.5 hours to complete.

The following pages explain the study procedure and methods in detail. Please read this information carefully before deciding whether to participate in the study. Should anything remain unclear, please do not hesitate to ask the investigators.

1. Confidentiality of Documents

If you decide to participate in the study, you will need to sign a consent form. All information will be kept strictly confidential. All information that is collected in the context of this study will be disclosed only in anonymous form, i.e., without a name and address. All our staff is subject to professional secrecy and data protection compliance. If the results of the study are published, the privacy of the participants' data and contribution is guaranteed in its entirety.

2. Withdrawal of Consent

Participation in the study is voluntary. You can withdraw your consent to participate in the study at any time without providing any reason, and without incurring any penalty. You can no longer withdraw your consent for the storage of the data after completing your participation. This is because it is not possible to delete data specific to you when the data is stored anonymously.

3. Description of the methods and potential risks

a. TMS – Transcranial Magnetic Stimulation

TMS is a non-invasive brain stimulation technique that uses magnetic fields to stimulate nerve cells in the brain. It is commonly used in research to study brain function in healthy participants, as well as clinically to treat certain neurological and psychiatric disorders.

During the experiment, a figure-8 shaped coil will be used to stimulate the left motor area of your brain. The coil will briefly generate a magnetic field that will pass through your scalp and skull to reach the brain. This magnetic field causes a small electrical current flow in the brain, which stimulates nerve cells in the targeted area.

TMS is considered a safe method and the level of stimulation used in the experiment is well within established safety limits. During the TMS session, you will hear a clicking sound and feel a tapping or twitching sensation on your scalp. This is normal and does not indicate any problems.

However, some potential side effects are associated with TMS. These include headaches, mild discomfort, pain at the site of stimulation and a light-headed feeling during the TMS sessions. It is important to note that TMS is not recommended for individuals with certain medical conditions, such as a history of seizures or brain injury, or for individuals with metal implants in the head or body.

b. EEG – Electroencephalography

EEG measures changes in electrical potentials on the surface of the head, which are caused by the accumulated activity of a large number of neurons. Thus, EEG allows us to draw conclusions about cognitive processes. EEG is considered a safe method and is one of the standard tools of clinical diagnostics and brain research.

EEG recordings are carried out as follows: first, a cap with electrodes is put on your head. The skin underneath the electrodes is carefully cleaned with a q-tip and a hypoallergenic electrode gel is used to make contact between your skin and the electrodes, thereby transferring electrical brain activity from the scalp to the electrodes for recording. EEG recordings do not hurt and are not dangerous. After the recording, you will have the opportunity to wash and dry your hair.

The following points should be noted:

- During scalp preparation for the EEG, the gel and cotton swabs used to clean the skin may lead to slight local skin irritations. These usually disappear within a few hours. The use of a skin cream may further support recovery.

c. EMG – Electromyography

EMG measures the changes in electrical potentials on the skin caused by the activity of the muscles underneath, and in this experiment the effect of TMS. It works by the same principles as the EEG; in fact, even similar equipment is used. Here, however, electrodes will be attached to five positions on the right hand. The electrode rings are attached to cleaned skin and are then filled with a hypoallergenic electrode paste. EMG recordings are painless and safe; the same considerations as for EEG apply.

If you have any concerns or questions about any of the methods used in the research, please do not hesitate to ask the researchers. They will be happy to provide you with more information and address any concerns you may have.

4. Payment

Participants receive a universal gift card worth 300 NOK to compensate for potential expenditures.

6. Further questions?

For questions, please contact Prof. René Huster (Department of Psychology, Tel.: +47-228-46152, Email: rene.huster@psykologi.uio.no)

We thank you for your interest and support!