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## **MIND-MATTER INTERACTIONS AND THE FRONTAL LOBES OF THE BRAIN**

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**Background:** Our project builds upon our work in patients with frontal lobe brain damage and applies a novel neurobiological model to study psi. This model is based upon the concept that the frontal lobes inhibit psi, suggesting that humans have innate psi abilities that are suppressed by the frontal lobes. In support of this concept, we reported significant mind-matter interactions in two participants with frontal lobe damage. The experimental task was to influence output of a Random Event Generator translated into movement of an arrow on a computer screen to the right or left. Compared to a well-designed control condition, the participants showed a significant effect in moving the arrow to the right but not to the left. Analyses of lesion overlap in the participants suggest that left medial middle frontal region damage involving Brodmann areas 9, 10, and 32 may have enhanced performance on the mind-matter interaction task involving movement of the arrow to the right, i.e., opposite to the side of lesion overlap.

**Aim:** We shall determine whether the left medial middle frontal region acts as a filter to inhibit psi. We are using repetitive transcranial magnetic stimulation (rTMS) in healthy participants to induce reversible lesions in the medial frontal area. If this region acts as a filter to inhibit psi then rTMS induced lesions in this area should enhance mind-matter interactions.

**Methods:** Participants are being randomly assigned to one of 3 experimental groups (n=36 per group): left medial middle frontal rTMS lesion; right medial middle frontal rTMS lesion; sham rTMS. We are using the same mind-matter interaction task as in our previous studies.

**Pilot Data:** We report pilot data in 2 cases with left medial frontal rTMS induced virtual lesions and one with sham rTMS. For intention to move the arrow to the right, effects sizes were in direction of intention following rTMS (.059 and .106) as hypothesized. Sham stimulation showed an effect size of .032 opposite to the direction of intention. For intention to move the arrow to the left, effect sizes were 0.02 and 0.079 after rTMS and 0.044 for sham, all in the direction of intention. The pilot data will not be combined with data being collected as part of the formal study.

**Significance:** Pilot data support our planned hypothesis that rTMS induced left medial frontal lesions enhance mind-matter interactions, as well as the concept that humans have innate psi abilities that are inhibited by the frontal lobes.

**Key Words:** Frontal lobes, Mind-Matter Interactions, Repetitive Transcranial Magnetic Stimulation (rTMS), Psi-Inhibitory Brain Filter

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