(temporal—2, frontal—7, parietal—3, insular areas—1). Depending on the localization of lesions, selected from the following functions were tested: naming, speech understanding, spontaneous speech, repetition, verbal fluency, writing and reading. Each language was examined separately, always starting with the patient's native language.

Results: In all evaluated patients, intraoperative brain stimulation allowed for the localization of the areas responsible for language. In 69% (n=9) cases, we identified partly common and partly separate brain representations of different languages, while in 31% (n=4) cases, the areas related with different languages completely overlapped.

Conclusion: In multilingual people, each language may have a specific cortical and/or subcortical representation. Therefore, it is extremely important for multilingual people with lesions in the eloquent brain area to perform awake surgery with brain stimulation and to examine each language that the patient knows separately, to locate the key areas for each and preserve them.

Research Category and Technology and Methods
Clinical Research: 23. Neuropsychology
Keywords: intraoperative brain stimulation, aphasia, awake craniotomy

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

P2.145

STIMULATING A HUB OF THE DOMAIN-GENERAL MULTIPLE-DEMAND NETWORK TO MODULATE SEMANTIC COGNITION IN HEALTHY OLDER ADULTS

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Abstract
Semantic cognition is central to communication and our understanding of the world. It is usually well preserved in healthy aging. However, semantic control processes, which guide semantic access and retrieval, decline with age. On the neural level, the network of semantic control is multidimensional, consisting of domain-specific control, such as the retrieval of less salient conceptual features, and domain-general control, which supports general selection and inhibition mechanisms. The present neuroimaging study explored the potential of intermittent theta-burst stimulation (iTBS) to enhance semantic cognition in a group of healthy middle-aged to older adults (n = 30; mean age: 61.6, SD: 7.64, range: 45—74 years). We applied effective and sham iTBS to the pre-supplementary motor area (pre-SMA), an area of semantic but also domain-general control, and assessed the effect of stimulation using a semantic judgement and a tone judgement task as control task during functional magnetic resonance imaging. Results showed stronger activation after effective relative to sham stimulation only for the semantic task. We found increased activation in bilateral visual networks, right middle temporal gyrus, and left superior parietal and temporal lobes, but no changes at the stimulation site. Surprisingly, increased activation was indicative of poorer semantic performance. Using generalized psychophysiological interaction analysis, we explored functional connectivity between the stimulation site and upregulated clusters. Stronger connectivity between the pre-SMA and a cluster in the dorsal attention network after effective iTBS was associated with faster performance in the most demanding semantic condition. Overall, our findings indicate differential effects of iTBS on activation and connectivity. Further, we show that iTBS modulates networks in a task-dependent manner and generates effects at regions distal to the stimulation site. Finally, stimulating the pre-SMA was associated with more efficient but not better performance, which was reflected in connectivity increases, confirming its role in semantic control processes.

Research Category and Technology and Methods
Translational Research: 10. Transcranial Magnetic Stimulation (TMS)
Keywords: Aging, Theta-Burst Stimulation, Functional magnetic resonance imaging, Semantics

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

P2.146

TEST-RETEST RELIABILITY OF MOTOR-EVOKED POTENTIALS AT 20% AND 60% OF MAXIMUM ISOMETRIC VOLUNTARY CONTRACTION IN RECTUS FEMORIS MUSCLE

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Abstract
Transcranial Magnetic Stimulation (TMS) has been widely used in the literature to measure changes in motor-evoked potentials (MEPs), inferring cortico-spinal tract excitability, during brief contraction intensities. However, reliability of such measures has not been assessed. Thus, the aim of this study is to determine the test-retest reliability of MEPs in rectus femoris muscle during isometric knee extension contractions.

Healthy males and females (n=26) of different ages (22-80y) participated in 3 different sessions: one familiarization and 2 test sessions, that were separated by 14 days. Femoral nerve stimulation elicited a maximal compound action potential (M-max). Active Motor Threshold (aMT) was assessed at 10% of the MVC. Transcranial Magnetic Stimulation (TMS) was adjusted to 120%, 140% and 160% aMT when brief (~5 s) isometric contractions were performed at 20% and 60% of the maximal isometric voluntary contraction (MVC). Ten stimuli were delivered at each contraction and stimulation intensity in a randomized ordered. Data was analysed using intra-class correlation coefficient (ICC), standard error of the measure (SEM) and minimum detectable change (MDC), normalized to M-max. Paired t-test revealed no significant differences between sessions (p=0.185-0.934) for any contraction and stimulation intensity. The best reliability was observed for 140% and 160% aMT during 20% MVC trials (ICC=0.876 and 0.865, SEM=4.685 and 5.292, MDC=12.987 and 14.669, respectively). The reliability was reduced during 60% MVC trials (ICC=0.699 and 0.748, SEM=11.249 and 9.790, MDC=31.180 and 27.136, for 140% and 160% aMT respectively). Reliability was similar at 120% aMT regardless of contraction intensity (ICC=0.664 and 0.799, SEM=8.562 and 7.553, MDC=23.731 and 20.935, for 20% and 60% MVC respectively).

Moderate-to-strong reliability was observed in the present study. However, MDC suggests that large changes are needed, e.g. during intervention studies, for adaptations to be considered as meaningful. These results may help to explain null findings of previous intervention studies

Research Category and Technology and Methods
Basic Research: 10. Transcranial Magnetic Stimulation (TMS)
Keywords: Cortico-spinal excitability, Transcranial Magnetic Stimulation, force production, Lower limbs

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

P2.147

INCREASING RELIABILITY OF COMPUTER SIMULATION FOR DEEP BRAIN STIMULATION BY USING IMPEDANCE SPECTROSCOPY

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