

The role of white matter in neuromodulation effects

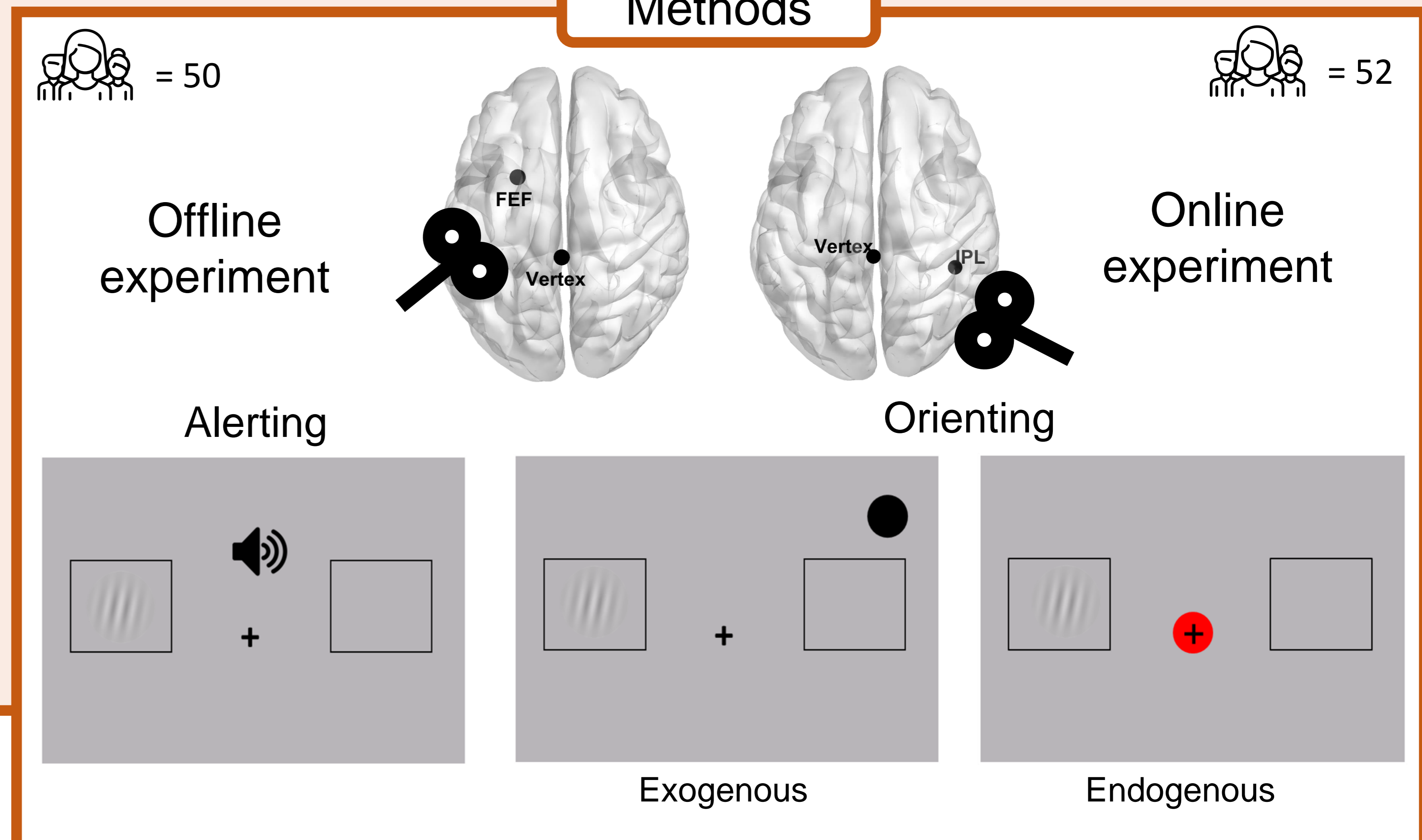
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Introduction

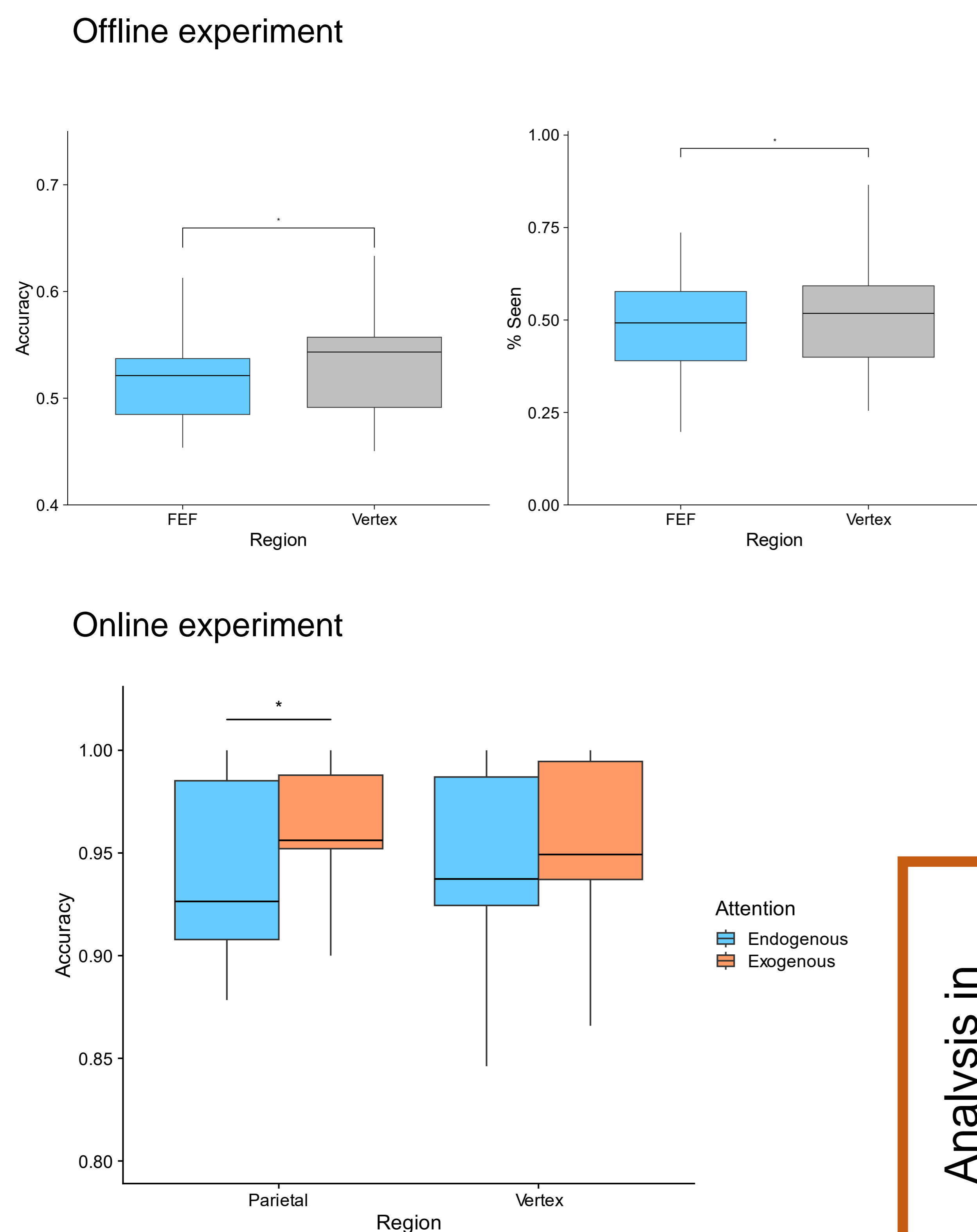
- Attention improves conscious perception¹.
- Attentional processes are implemented in a **fronto-parietal network**, anatomically connected through **white matter tracts**².
- Causal interference over attentional brain hubs alters the perceptual benefits of attention³.
- The aim of these studies is to explore how **individual variability in the microstructural properties of white matter** can explain **neuromodulations effects**.
- We hypothesise larger neuromodulation effects in participants with low integrity of tracts such as the **Superior Longitudinal Fasciculus (SLF)**^{4, 5}.

Methods

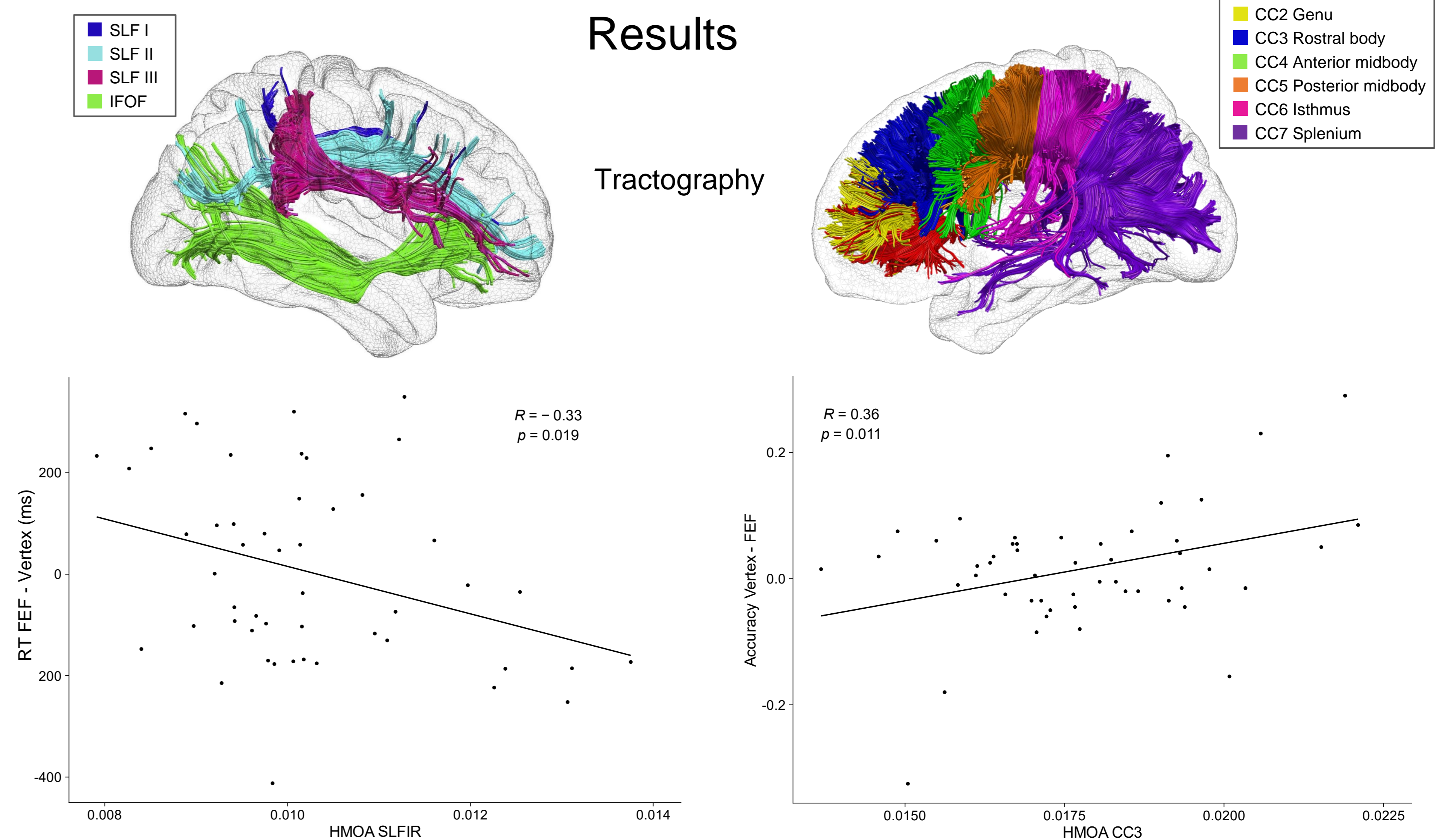


Analyses and Results

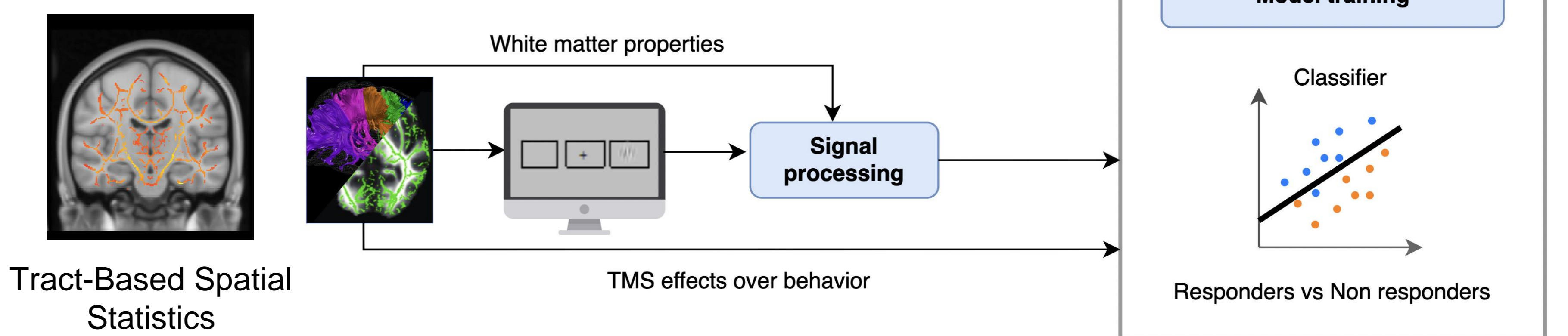
Behavioural Results



White matter Results



Analysis in progress



Conclusions

- FEF-TMS (compared to vertex) impaired conscious detection and accuracy, confirming the role of this pre-frontal region in conscious perception³.
- IPL-TMS (compared to vertex) impaired accuracy when attention was endogenously oriented. This might be related to the working memory load associated to endogenous but not exogenous cues.
- Individual variability in the microstructural characteristics of the **dorsal branch of the right SLF** significantly correlates with RT neuromodulation effects as predicted: participants with decreased HMOA had larger RT interference after FEF-TMS stimulation (compared to vertex).
- Contrary to our predictions, increased HMOA in the **body of the corpus callosum** was associated with larger neuromodulation effects in accuracy. This result might be explained by inter-hemispheric inhibition.
- These results will add valuable evidence to the rising literature exploring **individual differences in neuromodulation in the healthy brain**.