Connectivity in the visuo-motor network during Smooth Pursuit

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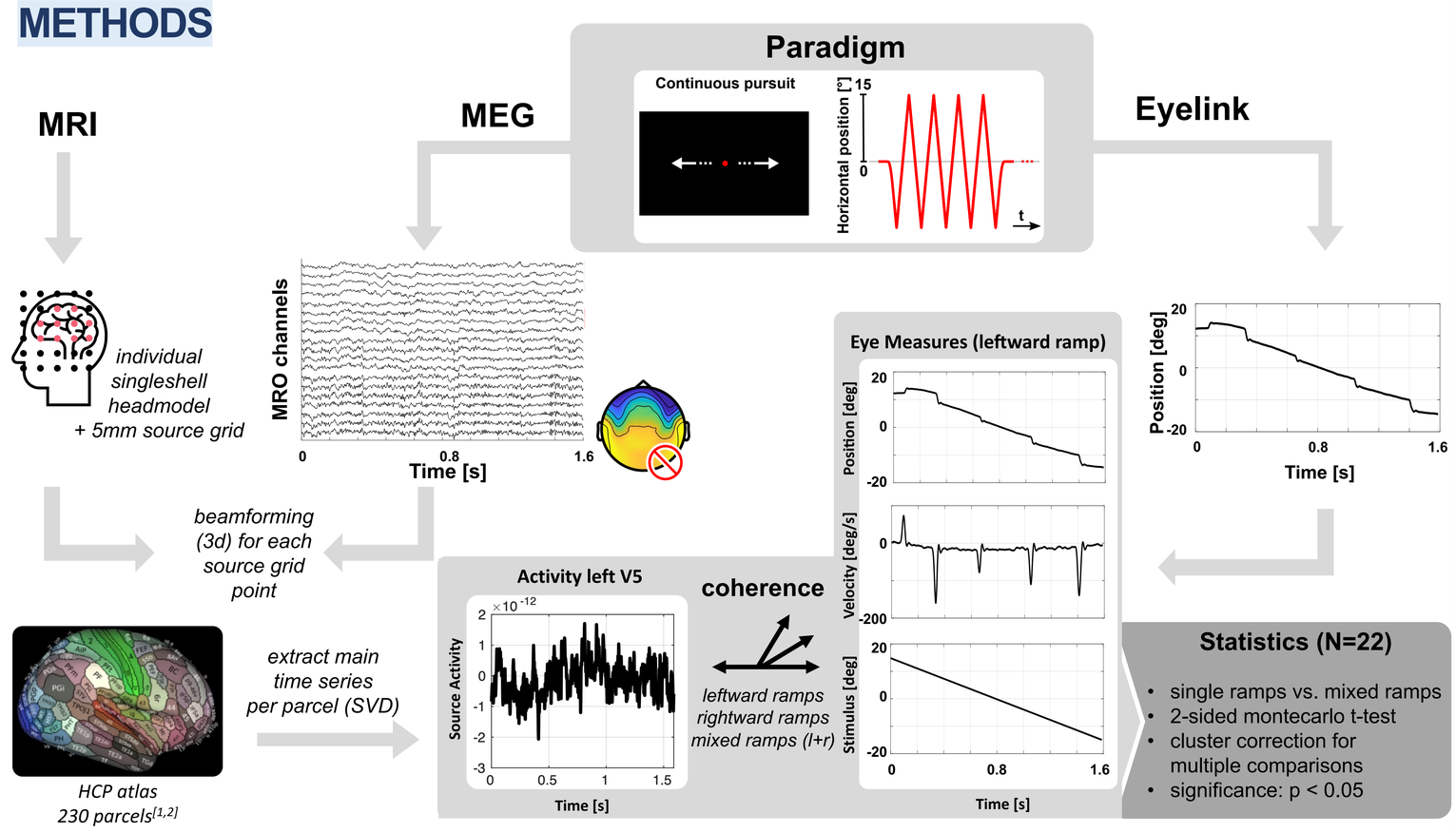
MOTIVATION

Background

- visuo-motor network enables smooth pursuit eye movements, but function is limited in many patients suffering from psychotic disorders
- limited temporal information on temporal dynamics of smooth pursuit eye movements
- MEG offers sufficient temporal resolution for exploration of temporal dynamics
- possibly involvement of internal forward model

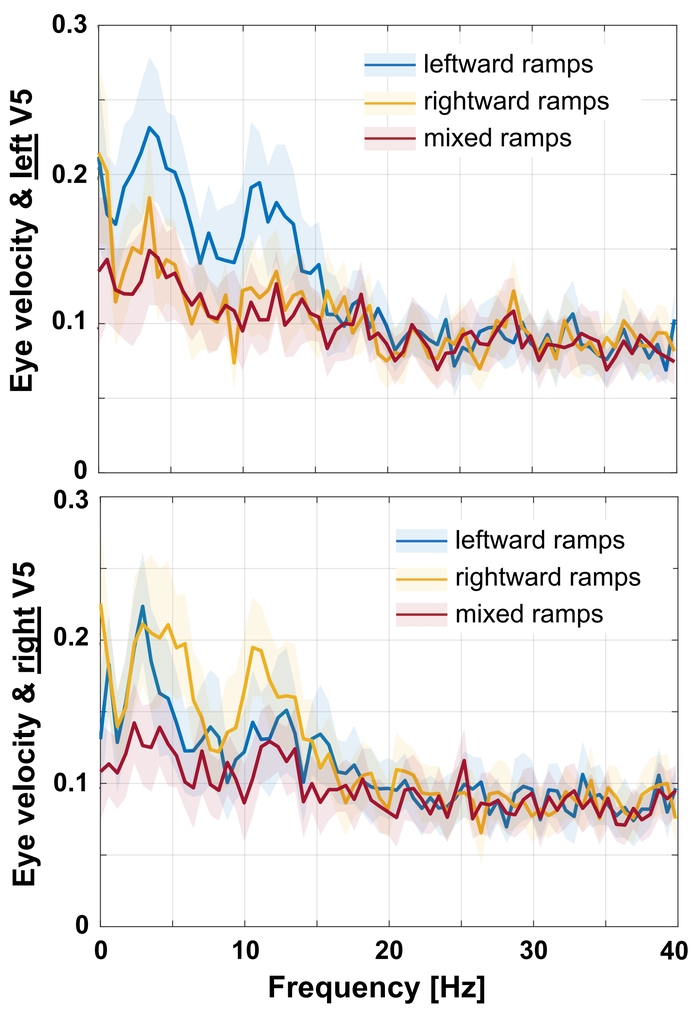
How are eye measures temporally connected to brain activity during continuous predictive smooth pursuit?

METHODS

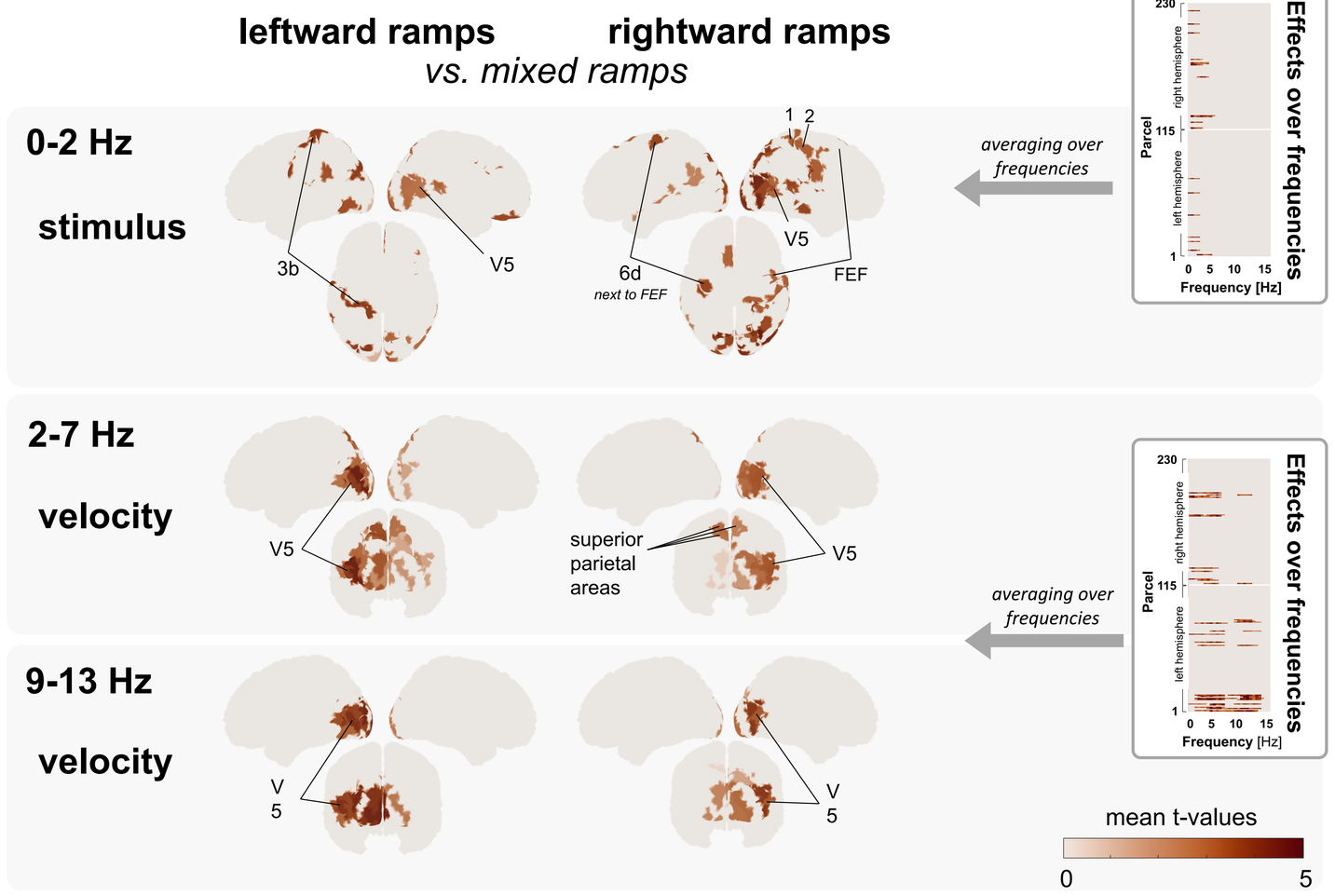


RESULTS

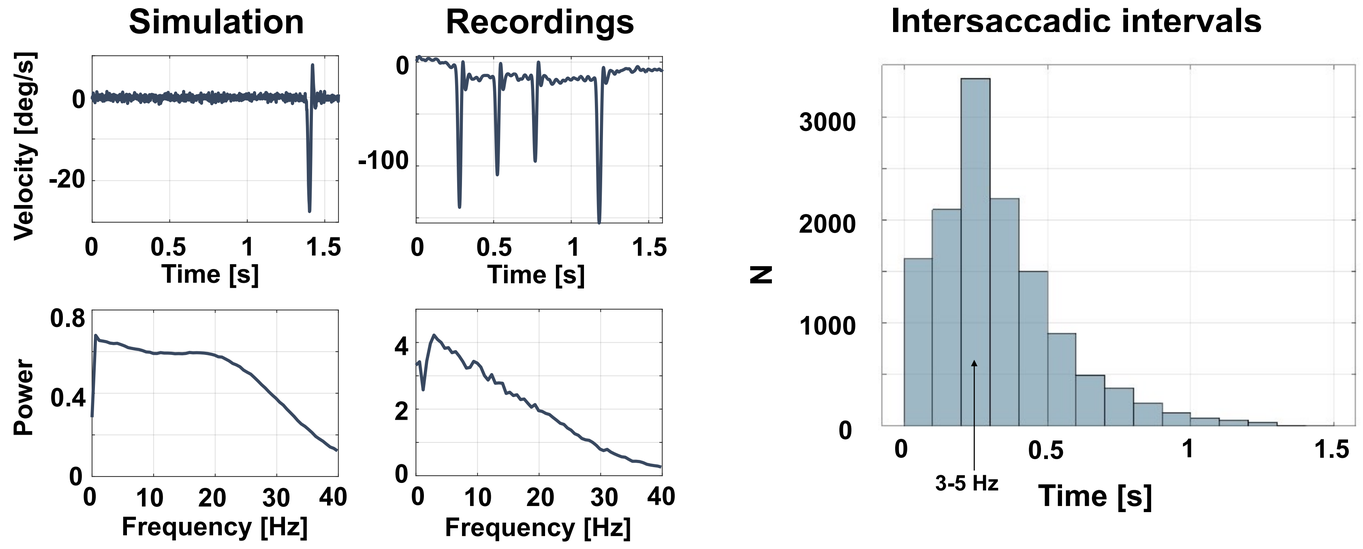
Coherence Spectra



Statistical Analysis



Saccade Analysis



CONCLUSION

single ramps > mixed ramps

Single ramps show significantly higher coherence than mixed ramps, even brain activity shows similar coherence in leftward and rightward ramps.

rhythmicity in saccade occurrence

Effects in delta band (2-7 Hz) seem to be connected to rhythmicity of saccade occurrence. This suggests the involvement of an internal forward model, increasing the probability of a corrective eye movement (here: saccades) after a certain amount of time.

visual, parietal & motor areas

Most effects are in visual and parietal areas but for the stimulus coherence, also motor areas (incl. FEF), are active. Some more areas show effects and need to be analyzed further. Many effects are lateralized.

Many areas in accordance with literature[3].

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