



National Institute
of Mental Health

The physiological correlates of conscious and unconscious visual and auditory processing: An MEG and eye-tracking study

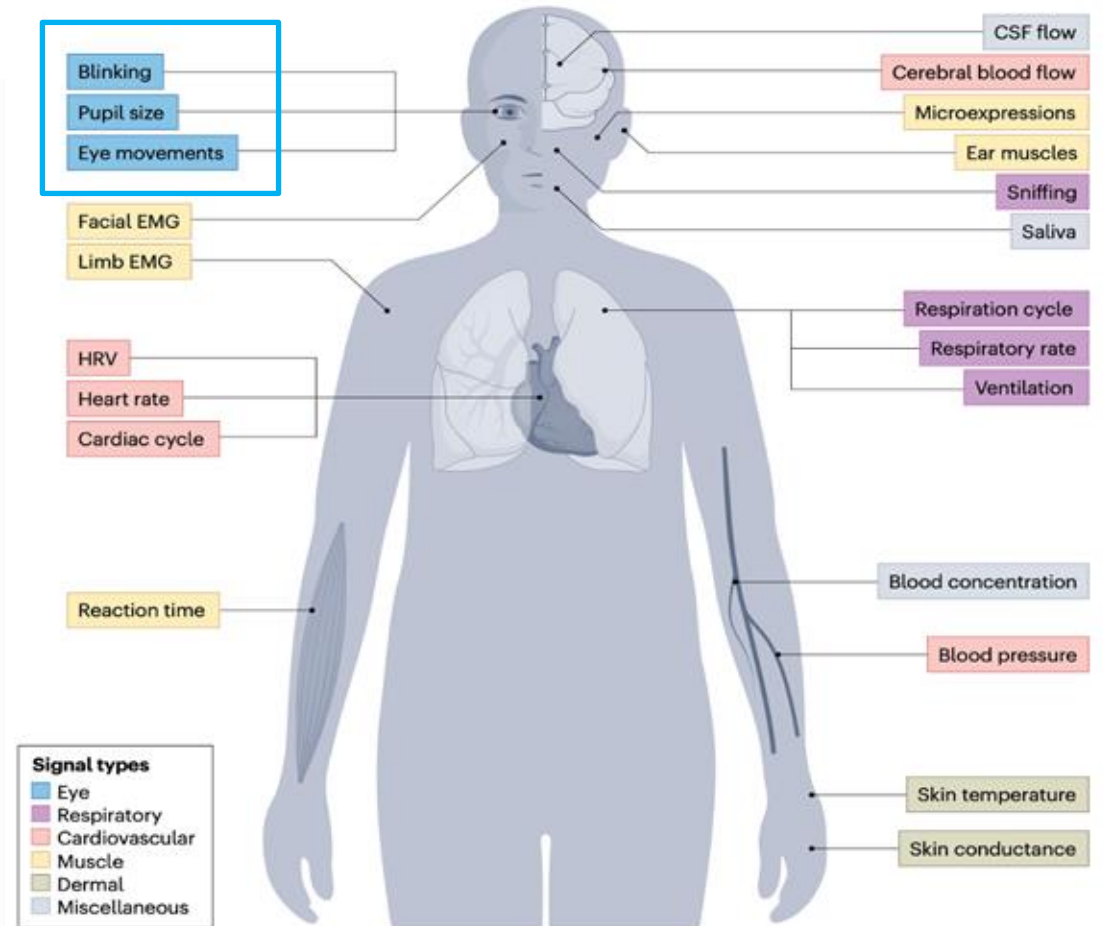
Plyfaa Suwanamalik-Murphy

Section on Functional Imaging Methods (SFIM)
Laboratory of Brain & Cognition (LBC)

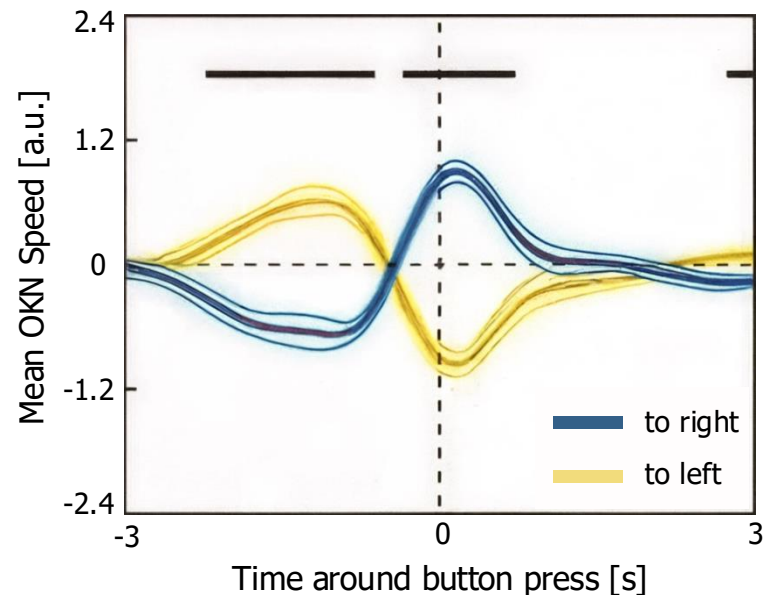
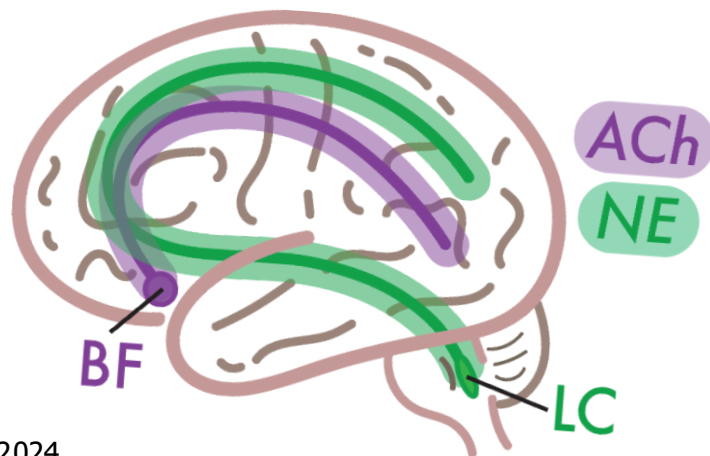
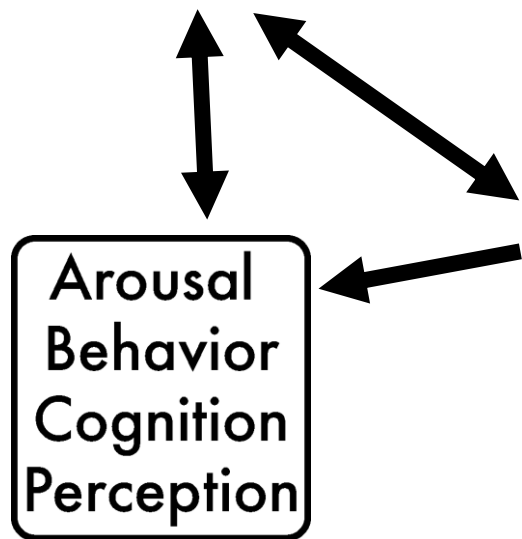
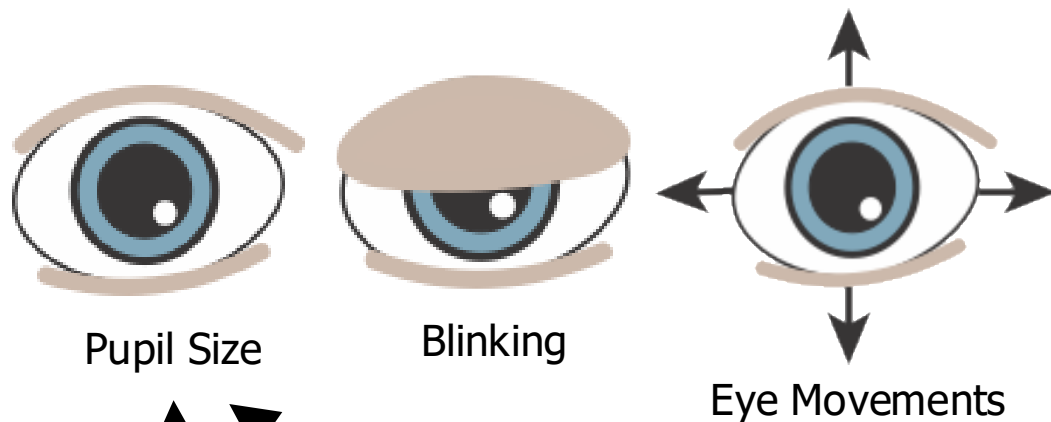


Talk Session: **Eye Movements: Neural dynamics, perceptual changes**
Date/Time: **Saturday, May 16, 2026, 8:15 am**
Location: **Talk Room 1**

Background pt. 1 (covert measures of consciousness)



Background pt. 2 (eye metrics as biomarkers)



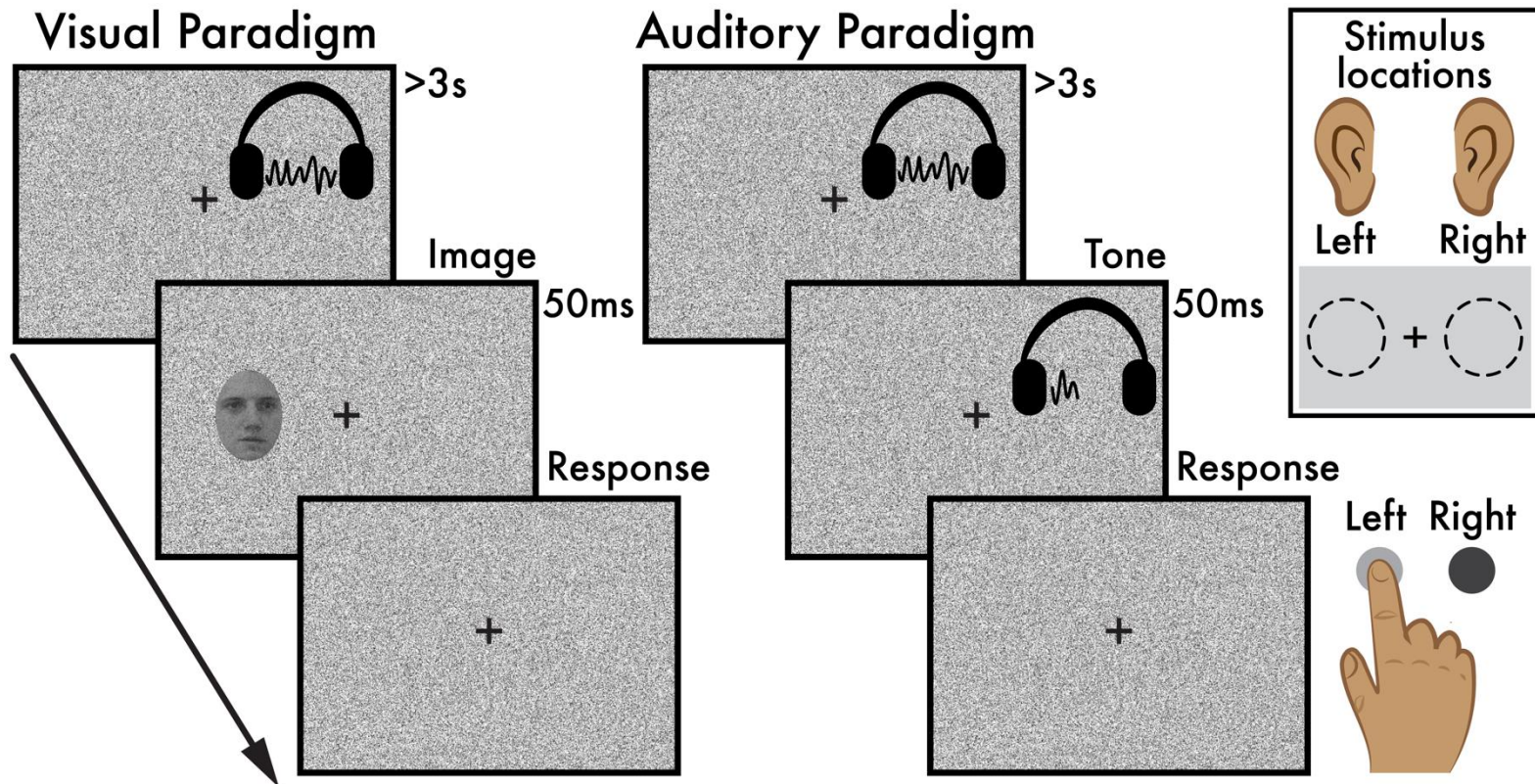
Main research question

- (1) How do eye metrics relate to neural activity underlying conscious vs unconscious sensory processing?

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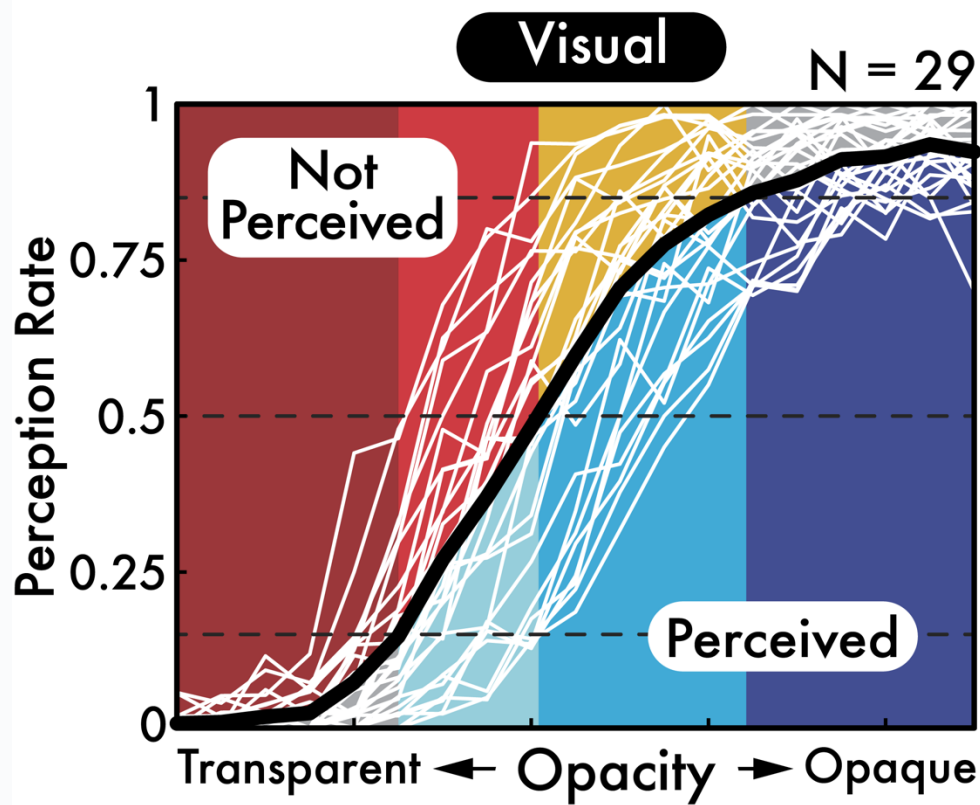
- (1) How do eye metrics relate to neural activity underlying conscious vs unconscious sensory processing?
- (2) Can these metrics be leveraged as a tool to modulate these networks and therefore impact perception?

Methods

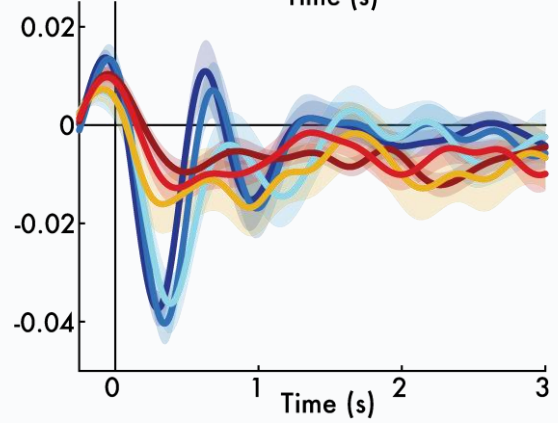
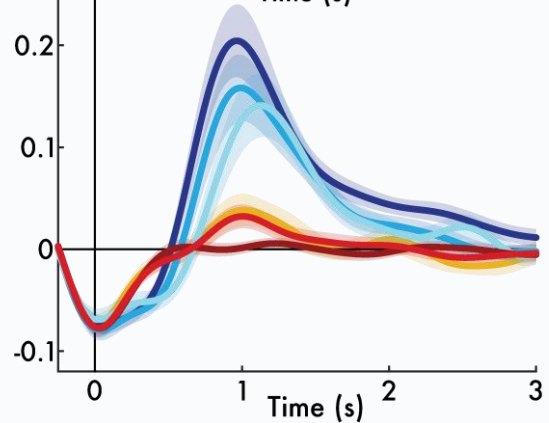
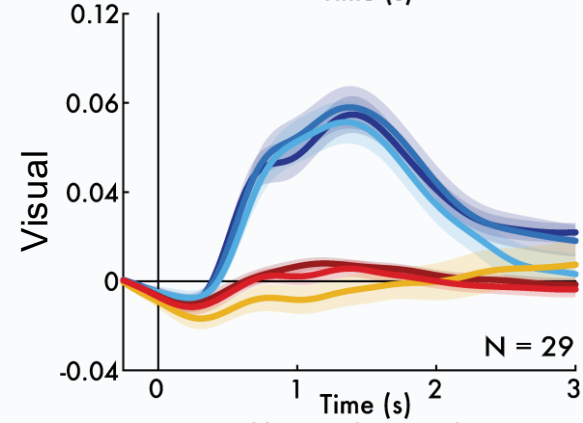
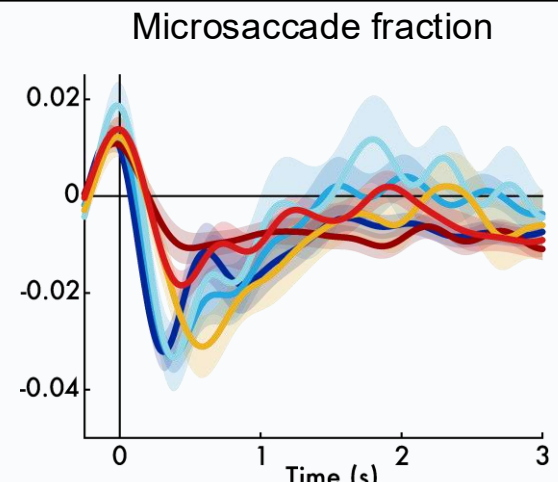
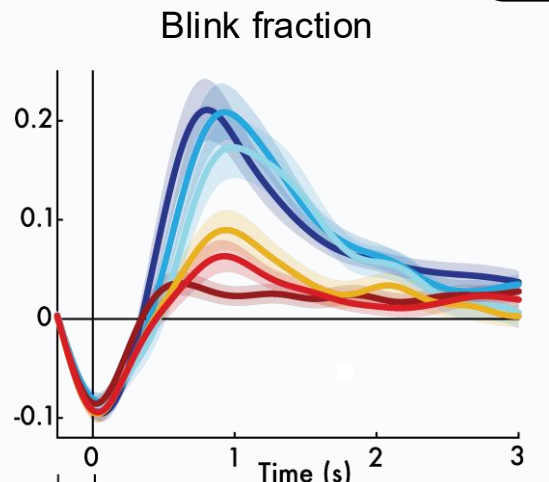
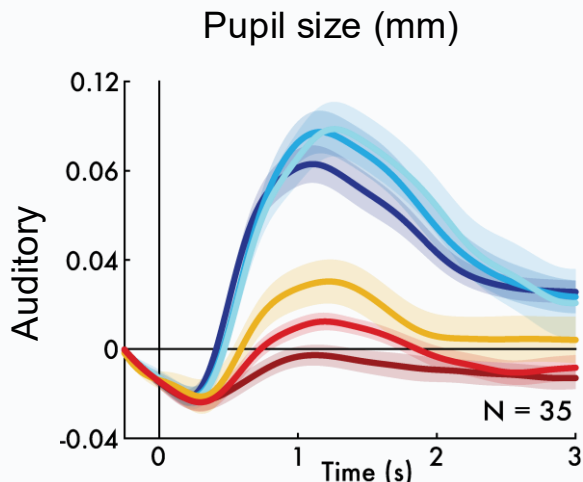
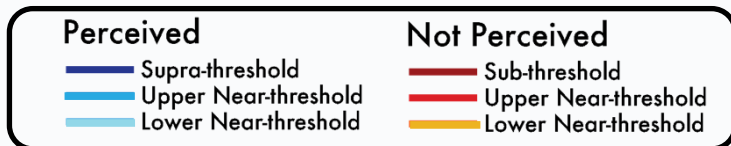


Eye-tracking + MEG recording

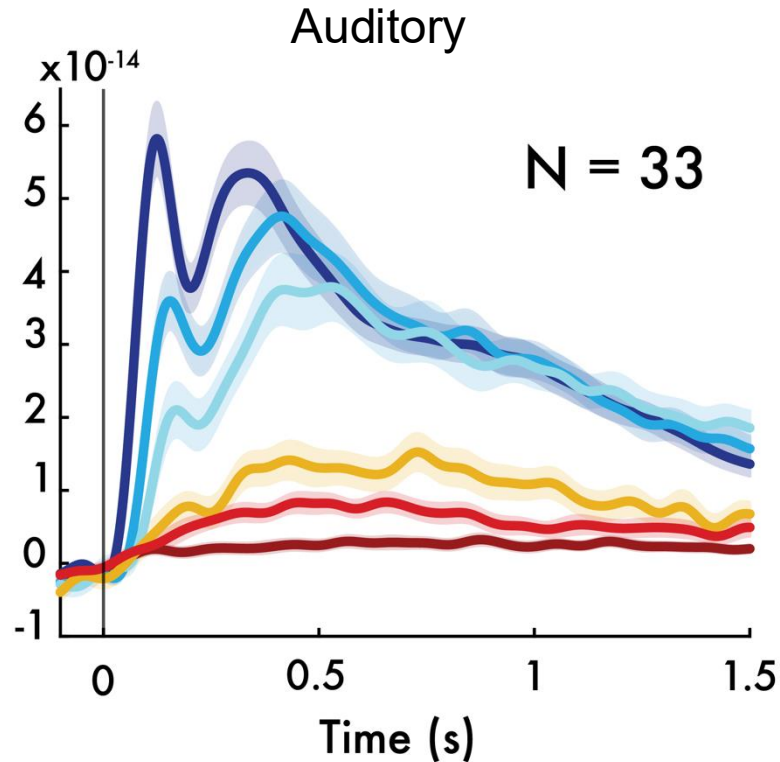
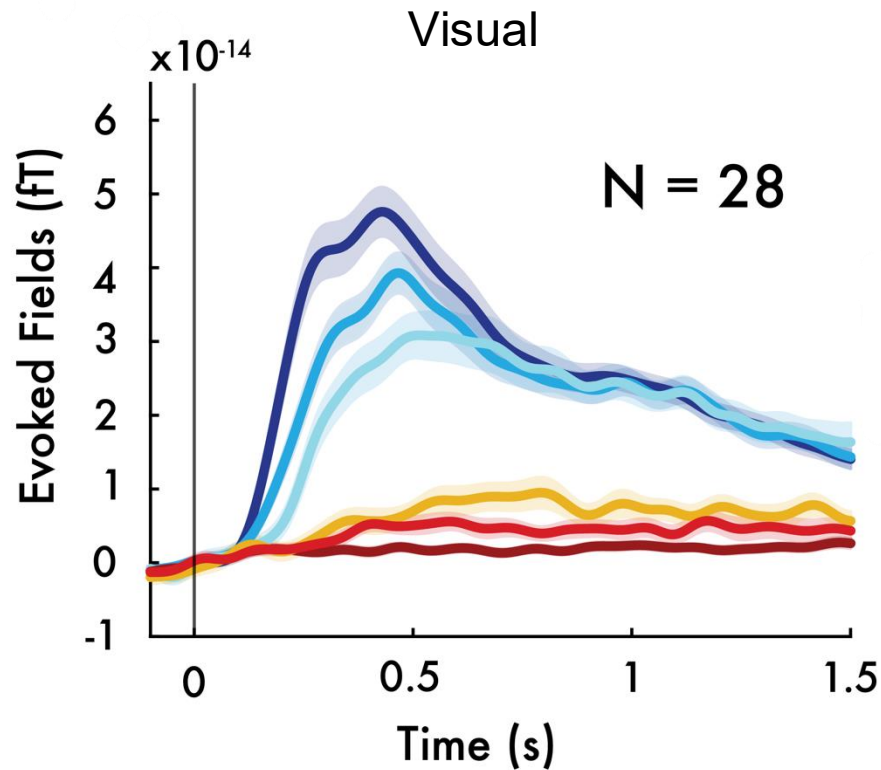
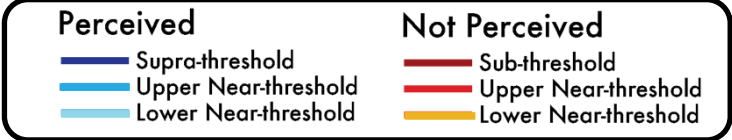
Behavioral Results



Eye-Tracking Results



MEG Results: Eye metrics reflect neural activity



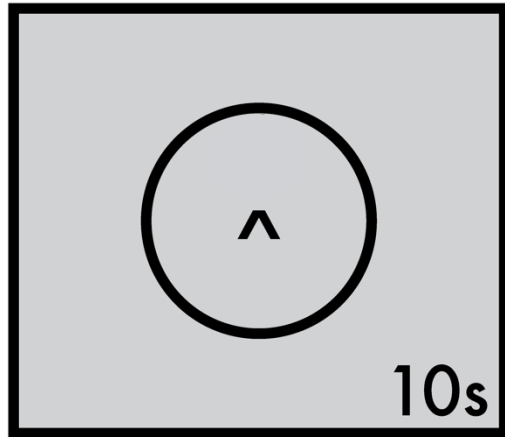
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(1) How do eye metrics relate to neural activity underlying conscious vs unconscious sensory processing

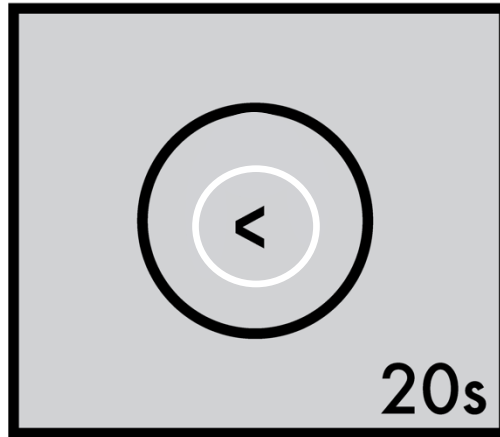
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Biofeedback Methods

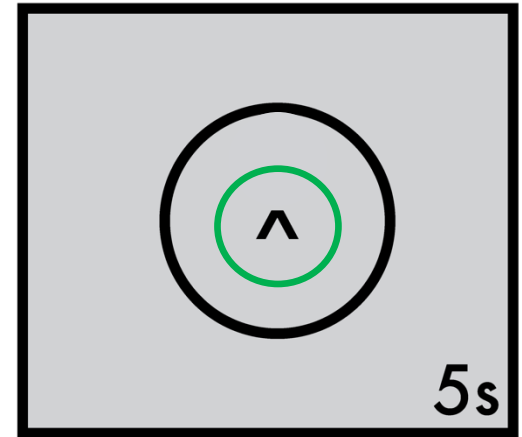
Rest Period



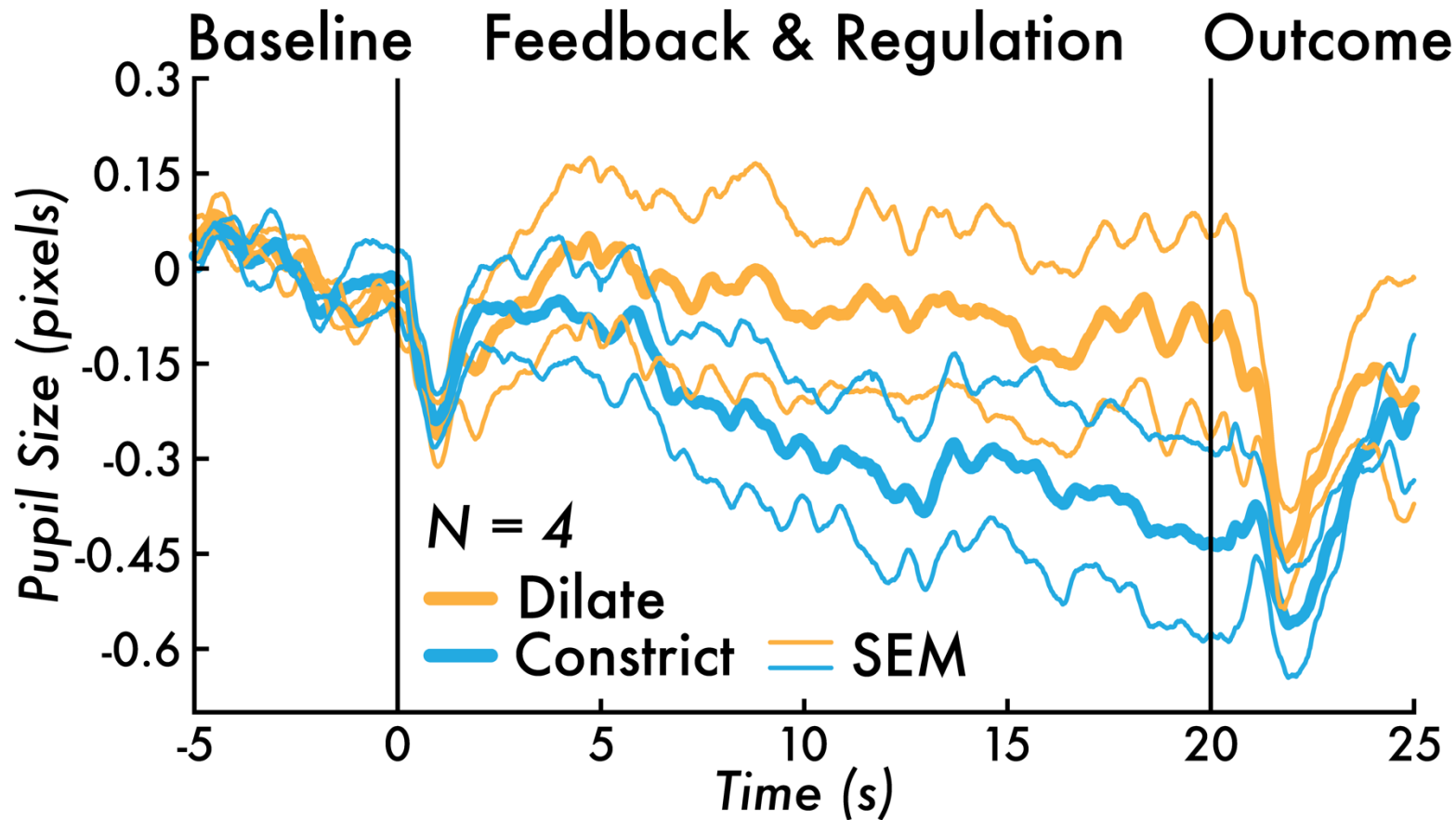
Task Period



Outcome Period

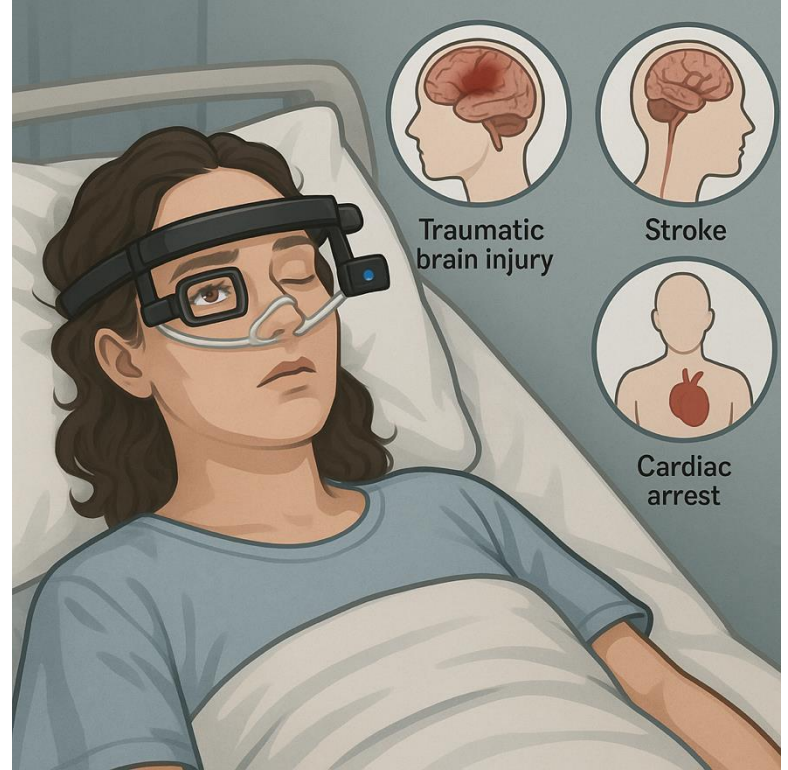


Biofeedback Results: Biomarkers as a tool for neuromodulation



Summary

1. Eye-tracking is a fraction of what neuroimaging costs & offers neural-level analysis.
2. Portable & bed-side ready.
3. Path toward accessible consciousness assessment.





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Thank you!

SFIM, LBC, and MEG Core Facility

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