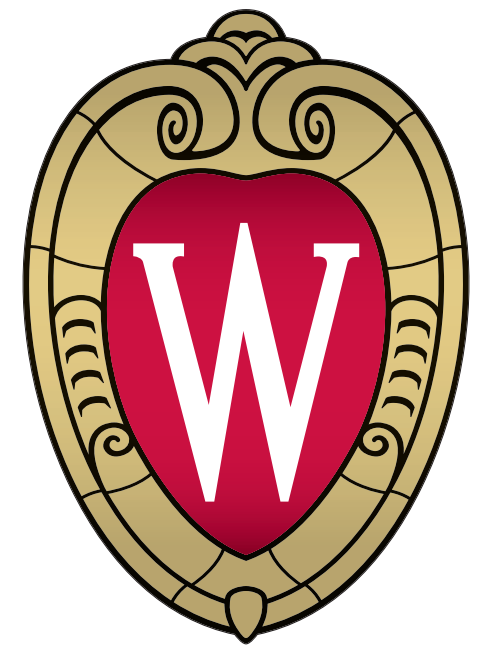


# The Effect of Temporal Attention on Neural Oscillations, Discrimination Accuracy, and Subjective Visibility



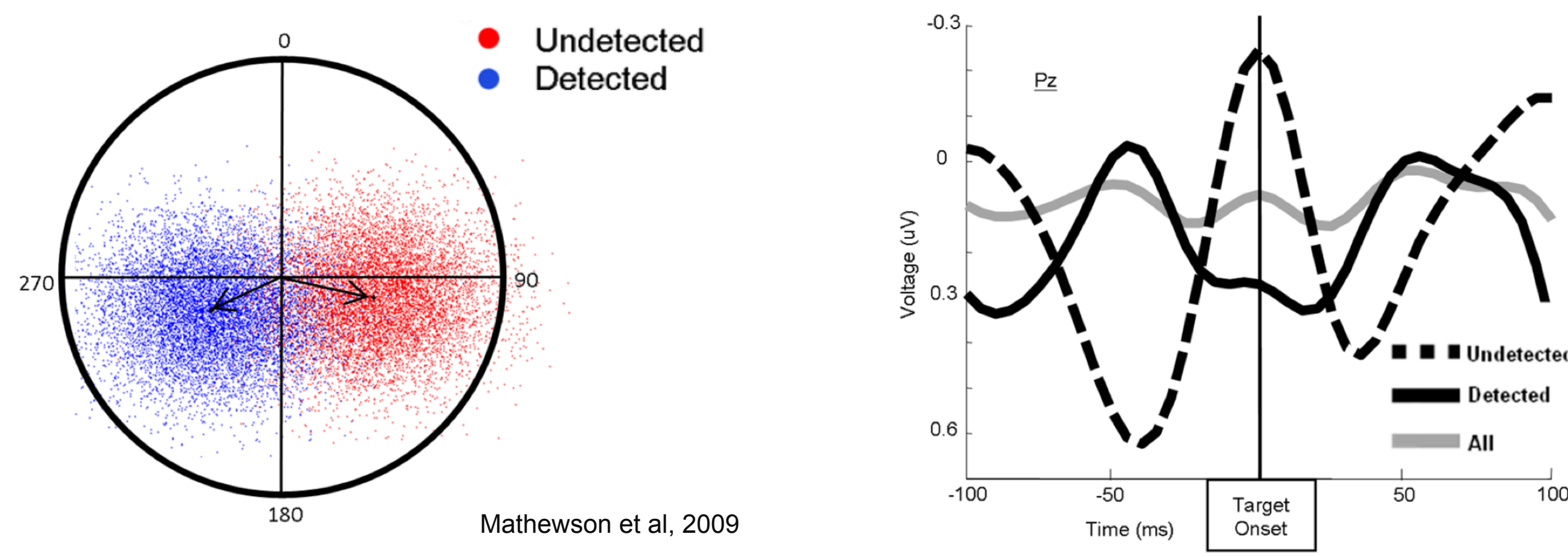
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## Introduction

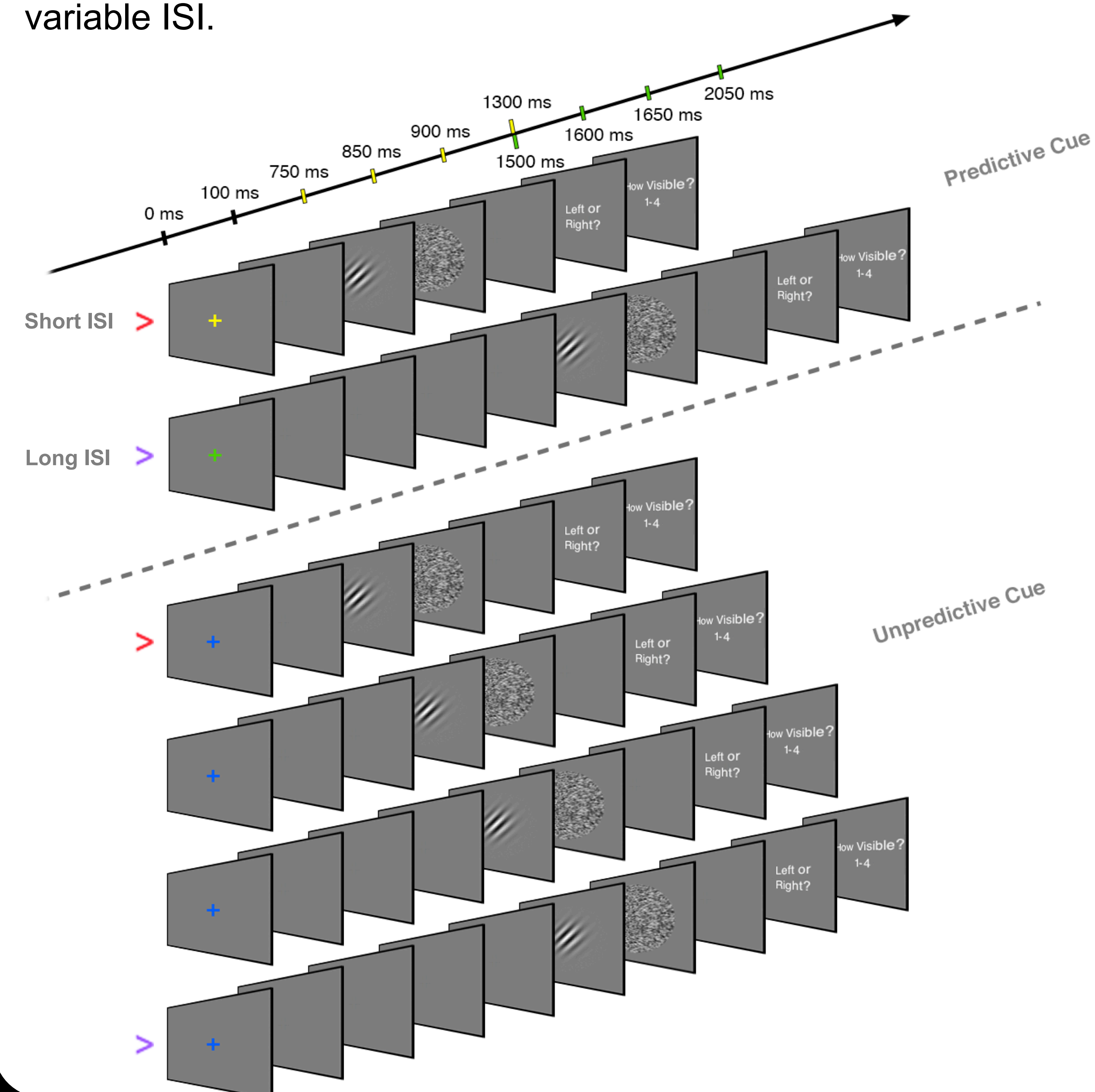
Previous research suggests that pre-stimulus alpha-band phase is predictive of visual awareness [1,2], evoked fMRI responses [3], and activity in other frequency bands [4].



Does alpha phase reflect spontaneous fluctuations of cortical excitability, or is it under attentional control?

## Task and Methods

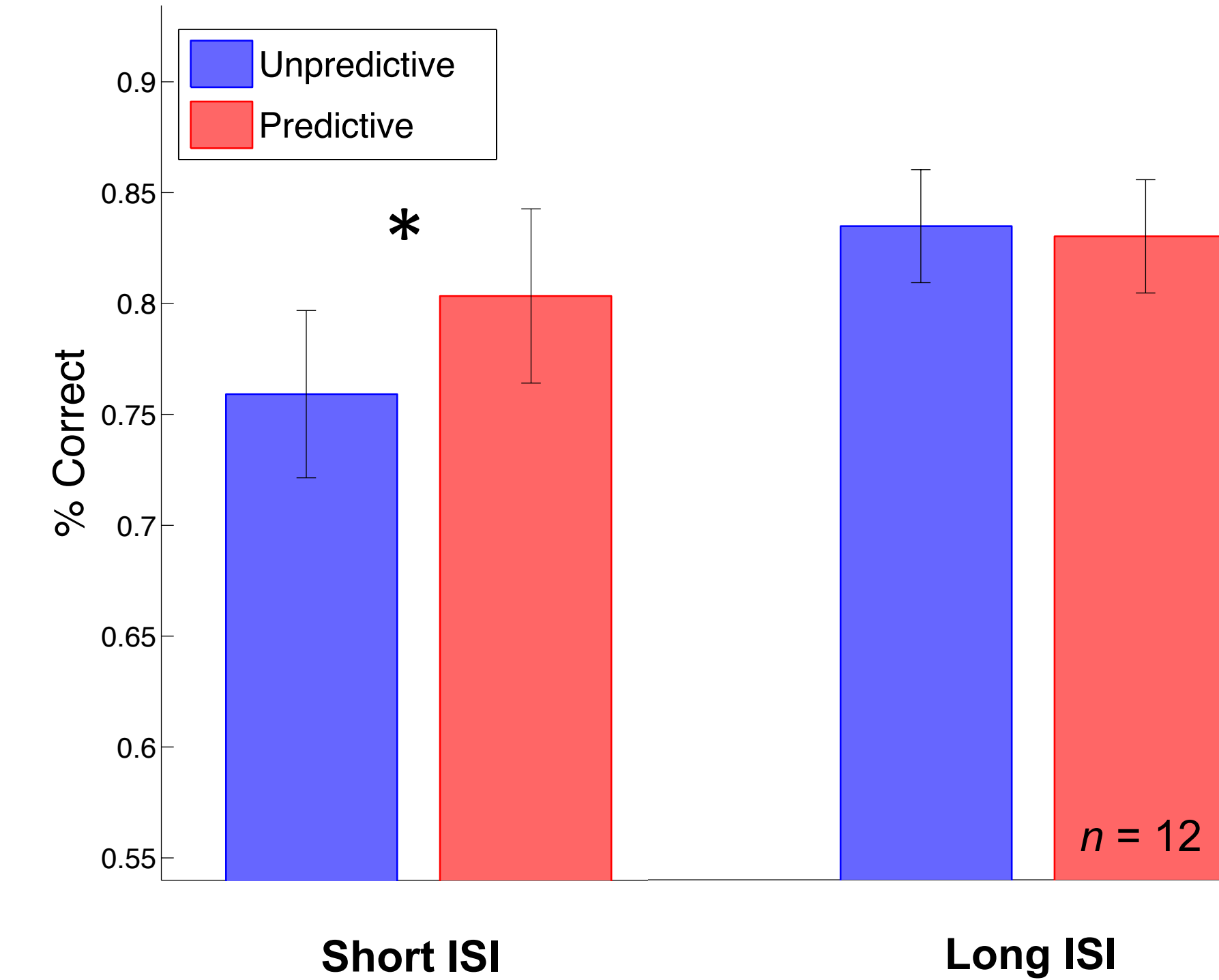
While recording 256 ch. EEG, we manipulated temporal attention to determine whether knowledge of when in time a stimulus would appear could improve visual discrimination and modulate alpha phase. Predictive cues were followed by backwards-masked Gabor targets at one of two constant inter-stimulus-interval (ISI): 650 ms ("short") or 1400 ms ("long"). Unpredictive cues were followed by a variable ISI.



## Results

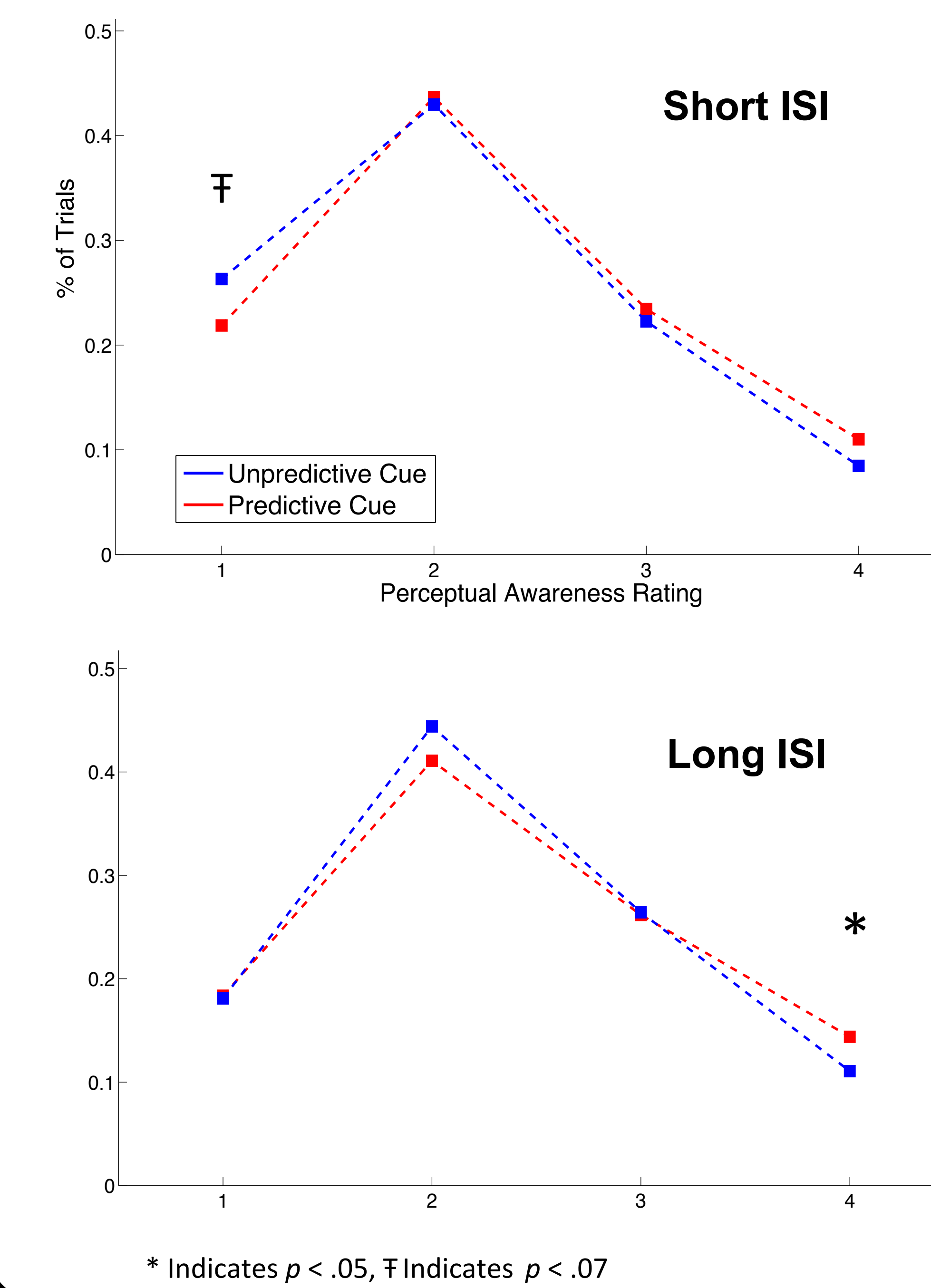
### Accuracy

Top-down temporal attention improves discrimination accuracy.



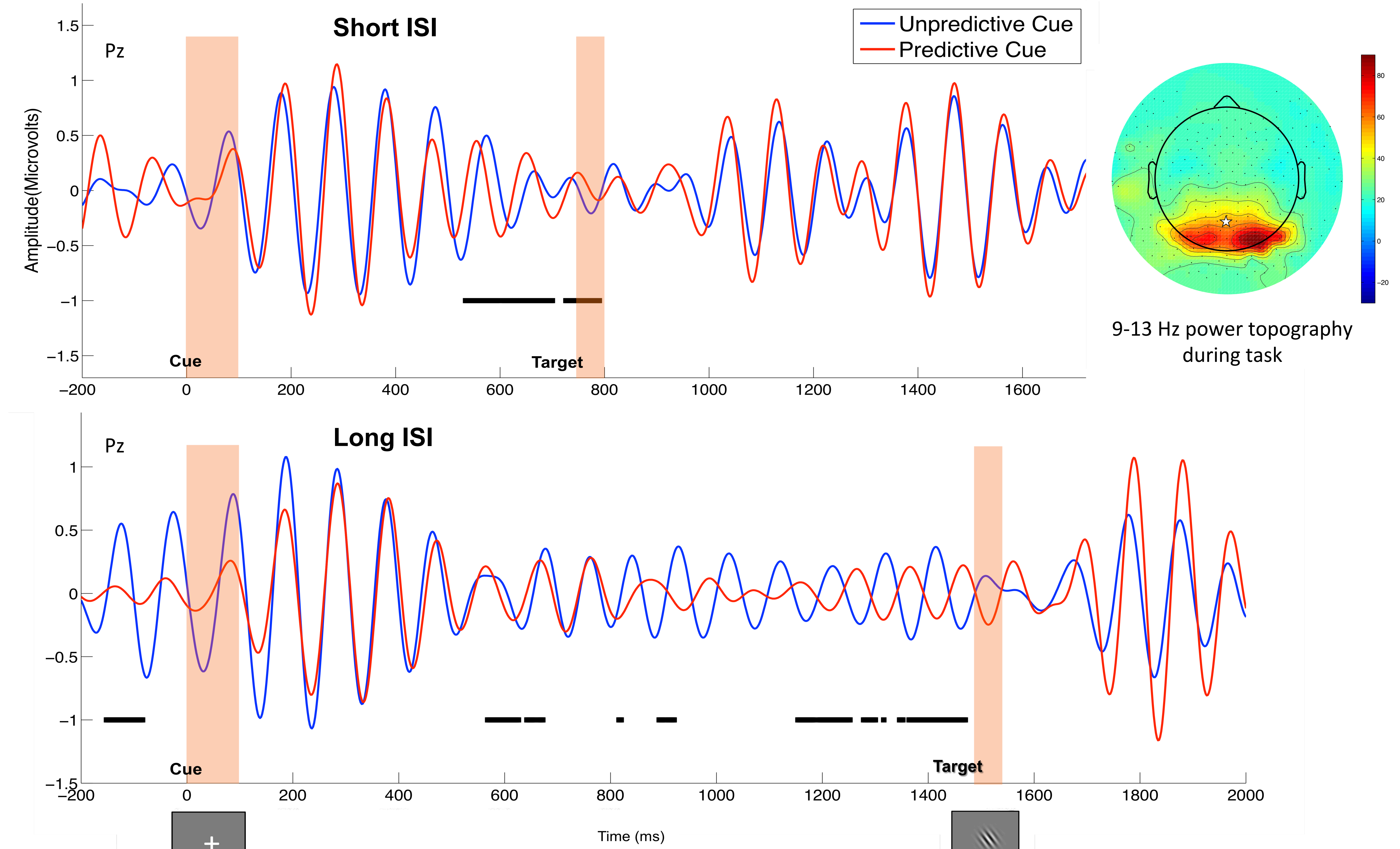
### Subjective Visibility (PAS)

Temporal cueing increases visibility ratings even in the absence of accuracy increases.

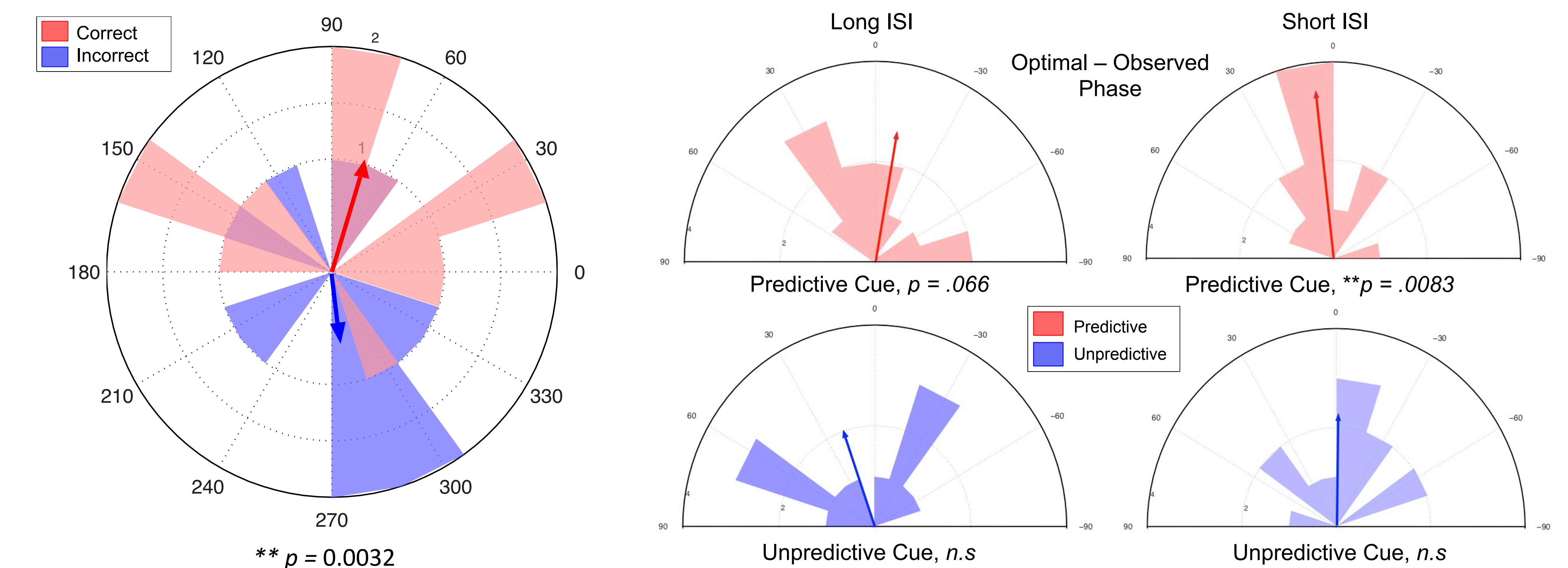


### EEG

Cueing modulates alpha phase prior to target onset for correct trials only.



Temporal cueing biases alpha phase at target onset towards individuals optimal phase for detection.



## Conclusion

Temporal cueing improves visual discrimination, alters subjective visibility, and could be supported by top-down control of the phase of ongoing alpha oscillations.

- References
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