

# Working memory synchronizes oscillations in visual cortex

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Contact Sheet



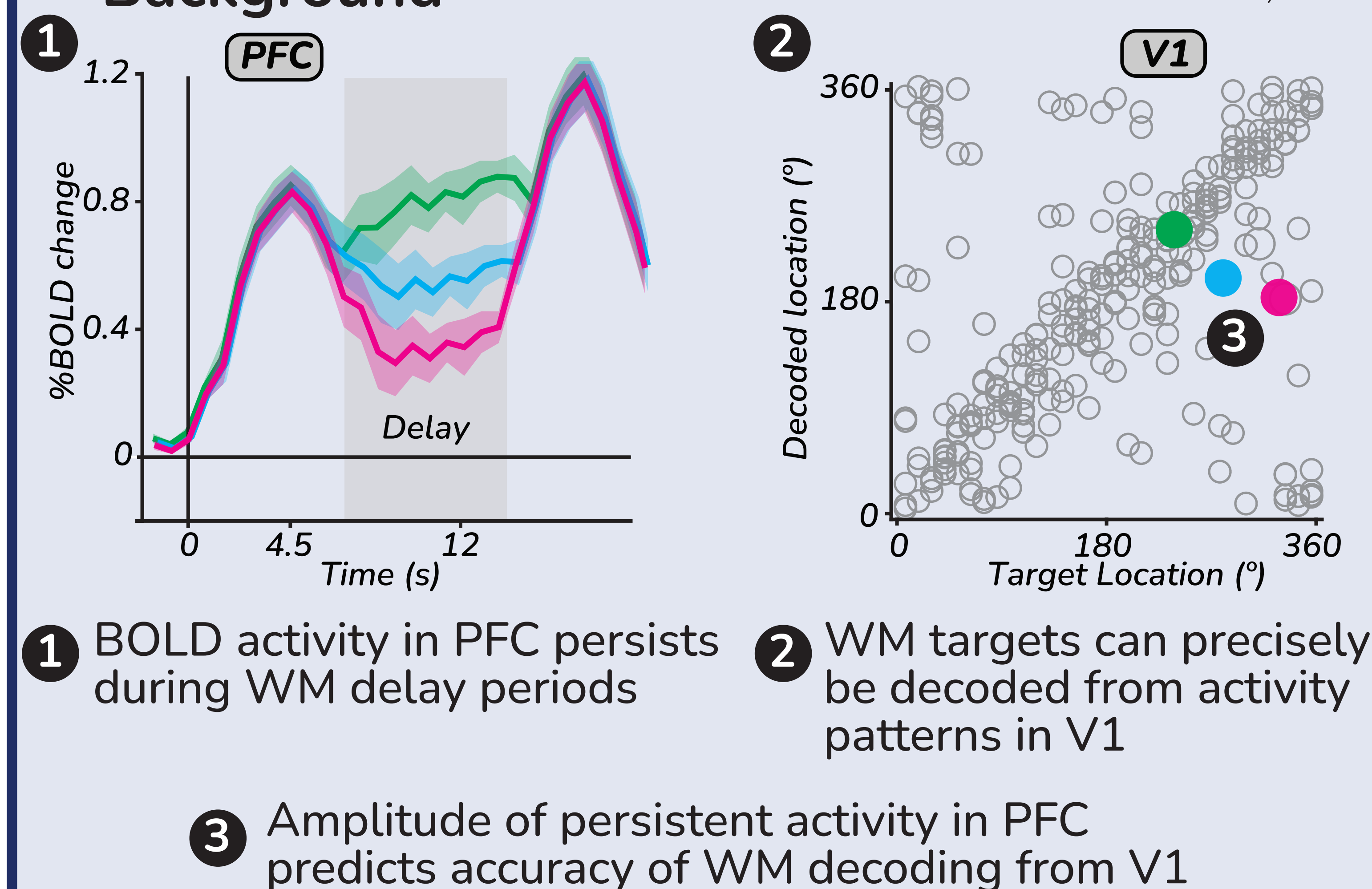
## TL; DR

Oscillations in beta ( $\beta$ ) band over visual cortex:

- Change in topographic patterns of power during WM delay
- Contain item-level specific information about memoranda
- Predict trial-wise memory behavior
- Act as communication channel between PFC and VC

## Background

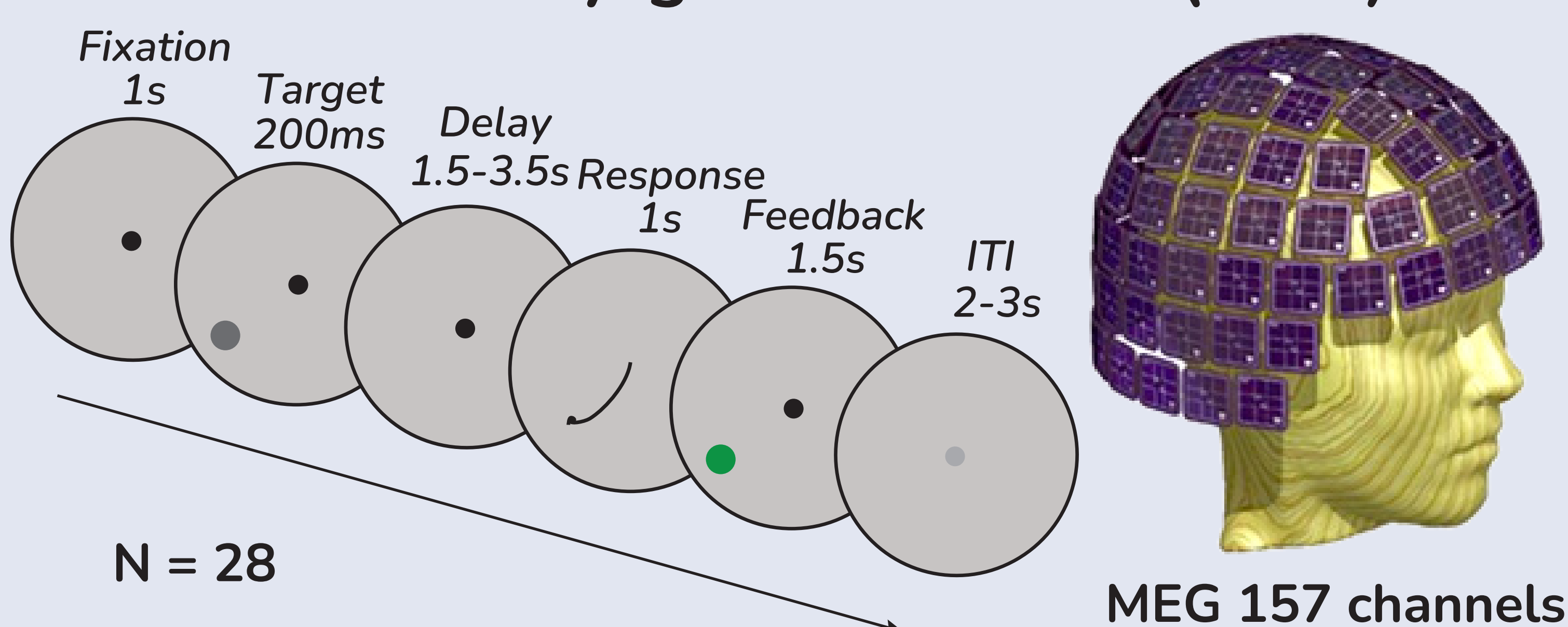
Li et al., 2022



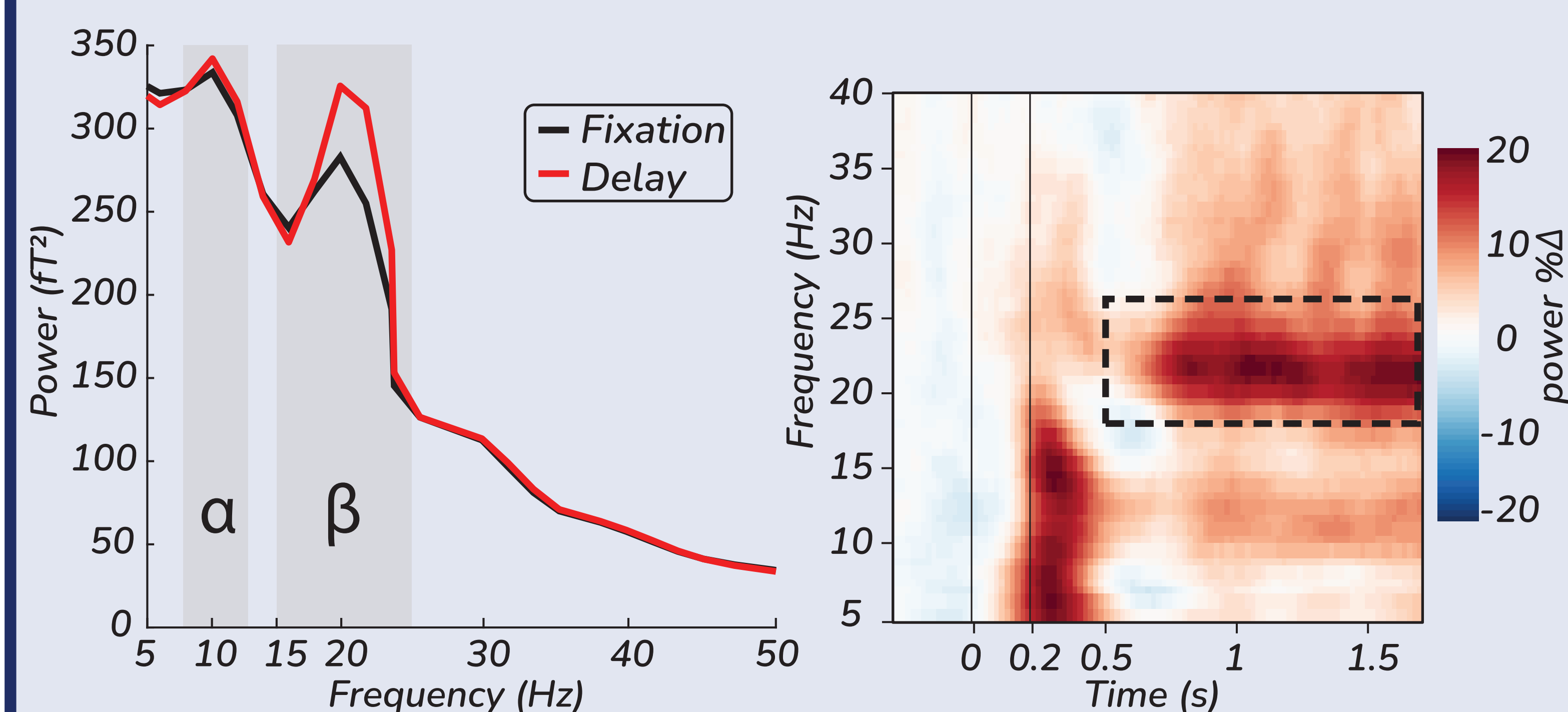
## RESEARCH QUESTION:

By what mechanisms does PFC modulate V1 to help maintain precise stimulus-specific information in WM?

## MEG and Memory-guided saccade (MGS) Task



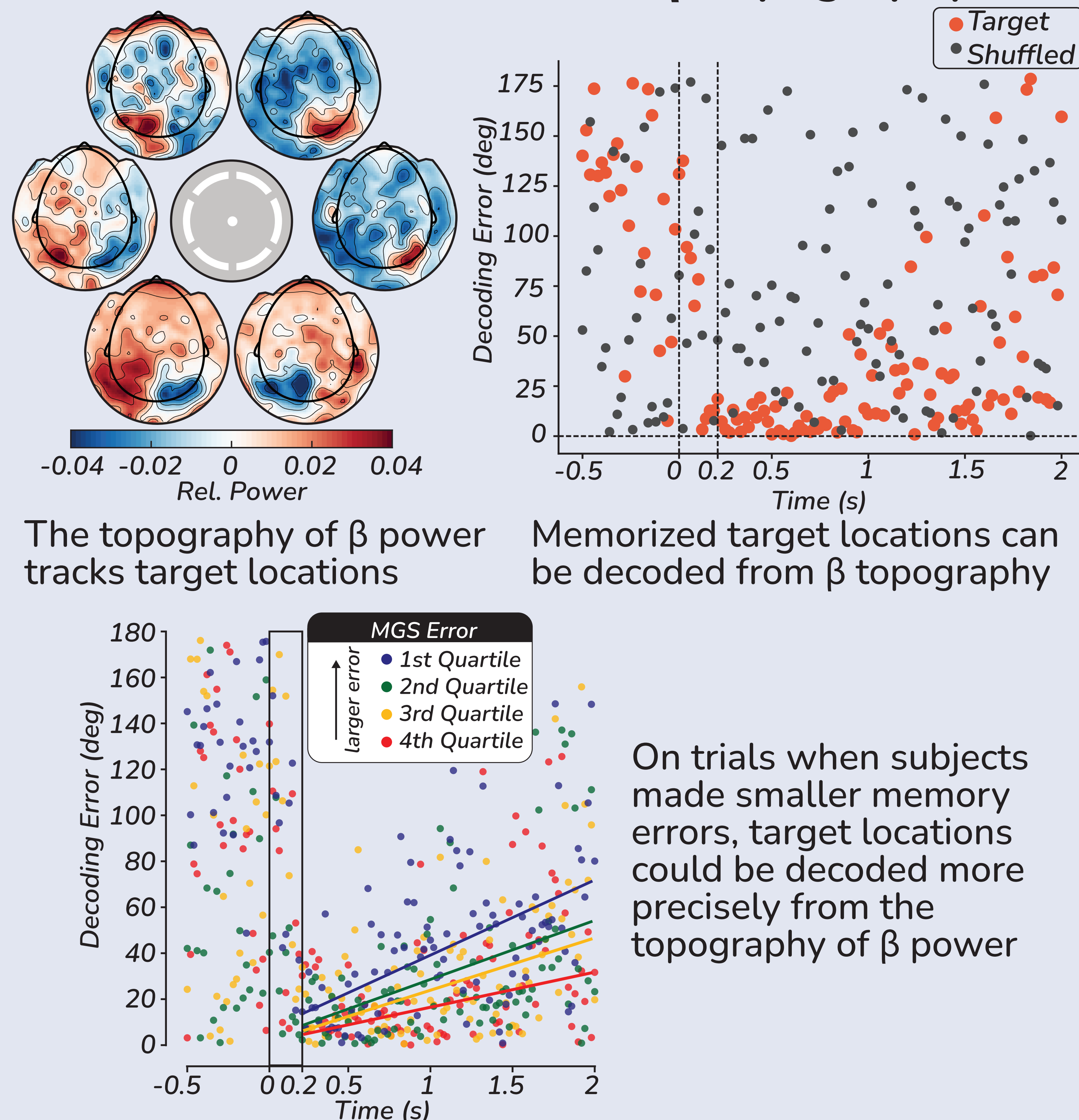
## $\beta$ power increases during WM delay



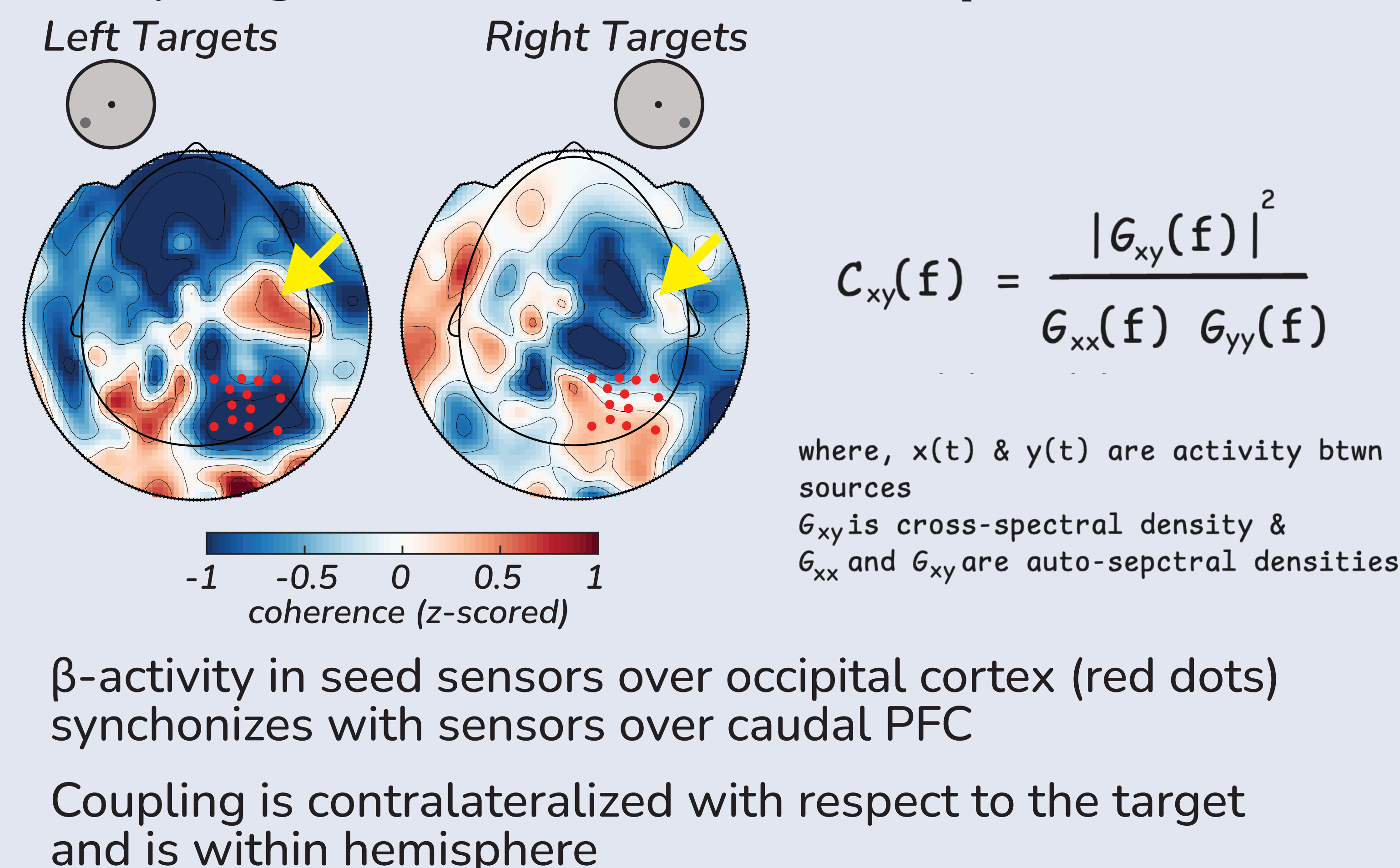
Sensors over occipital cortex show selective increase in  $\beta$  power during WM delay period

This increase in  $\beta$  power also persists during the delay

## WM information encoded in $\beta$ topography



## Coupling between V1 & PFC in $\beta$ band

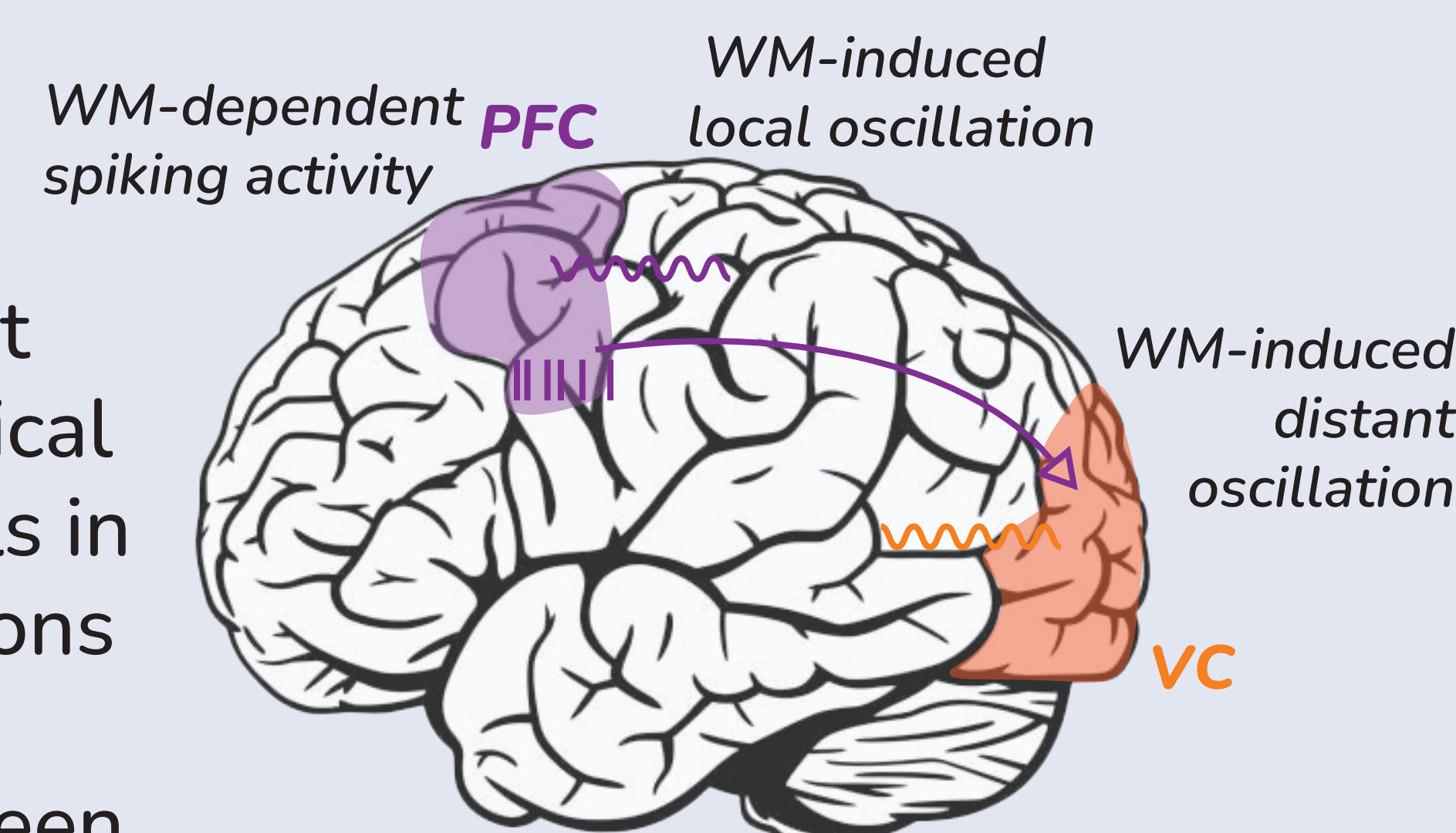


## Summary and Conclusion

$\beta$ -activity demonstrated several key hallmarks of WM (i.e., persistent activity, encodes stimulus info, predicts behavior)

Moreover, during the delay PFC activity synchronized with visual cortex in  $\beta$ -band

Consistent with recent empirical and theoretical work, feedback signals in the form of  $\beta$  oscillations may coordinate WM representations between PFC and visual cortex



Commeaux, Clark, Noudoost et al., 2023