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- ERSP analysis
  - Channel vs component ERSP
  - ERSP vs ERP image
  - ERSP analysis examples
- ERSP mode analysis
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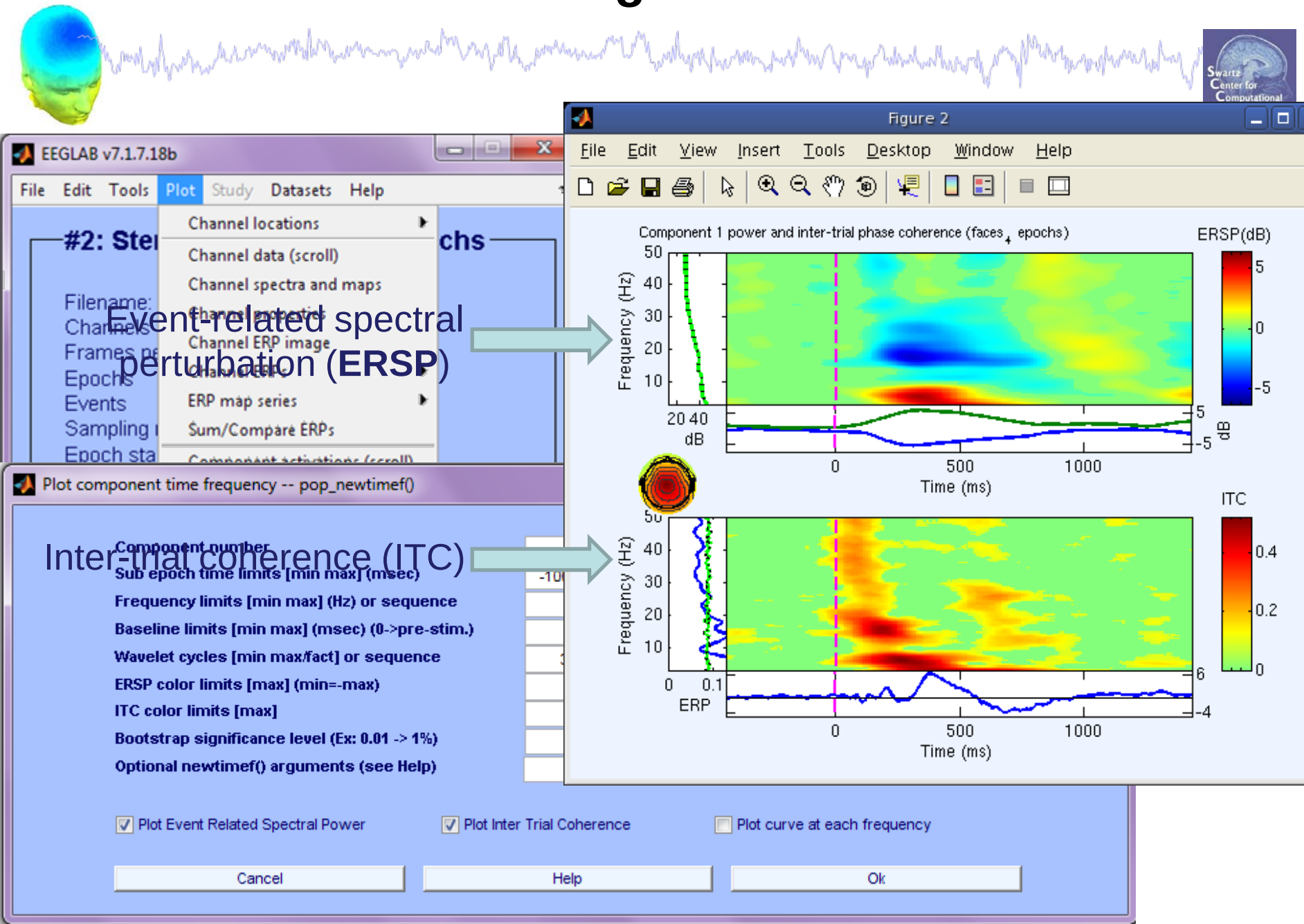
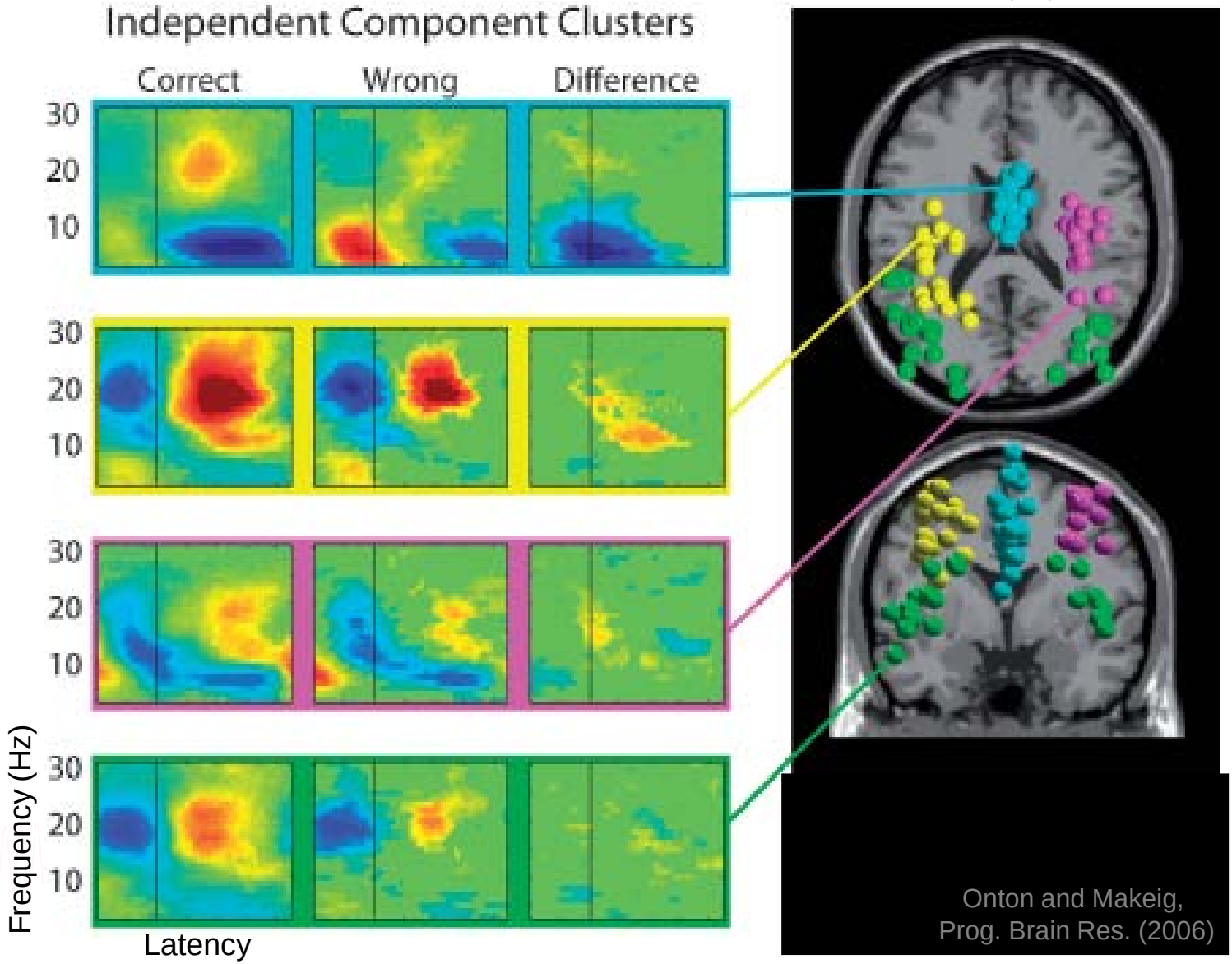
Plotting an ERSP

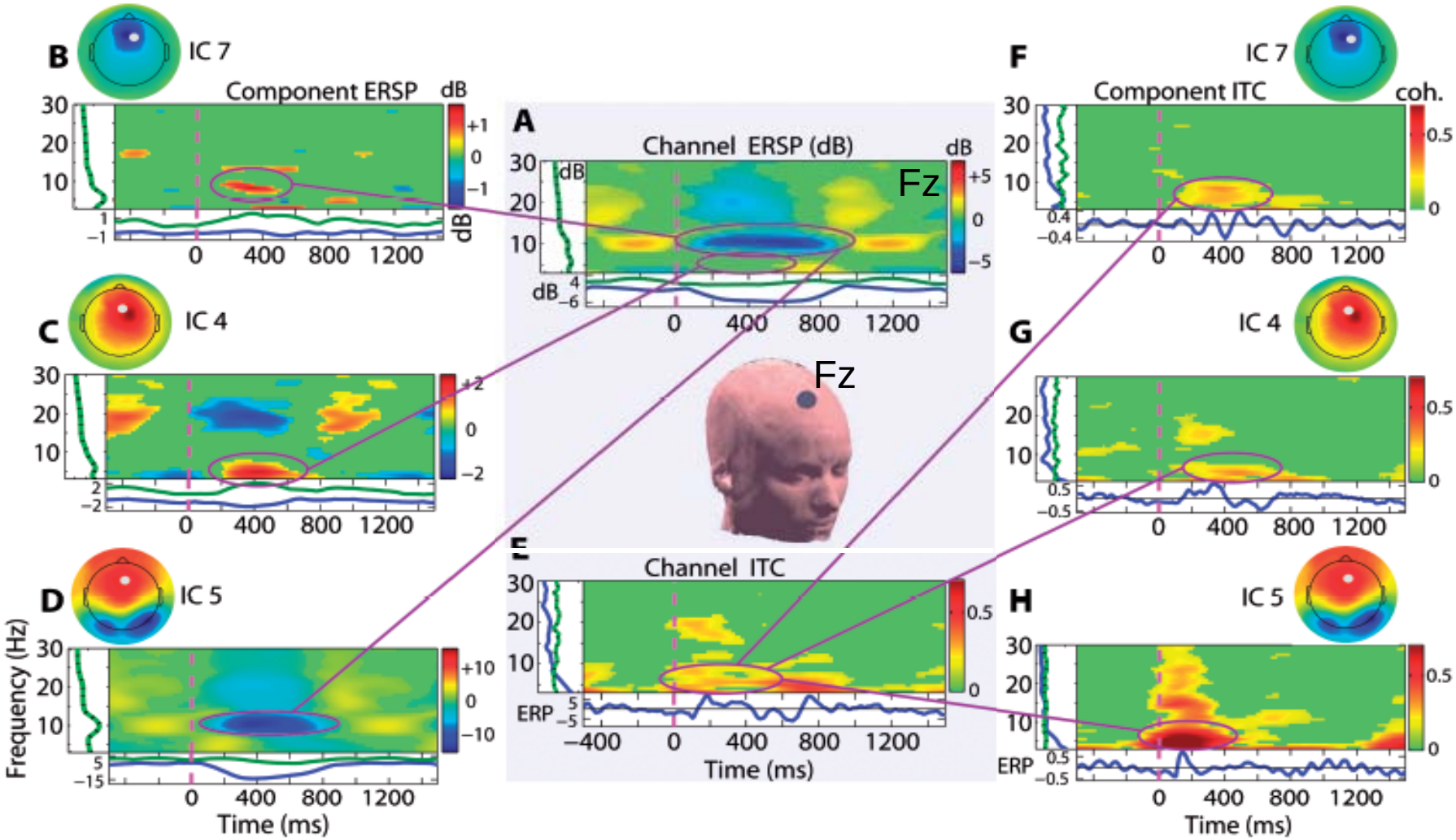


Distinct ERSP patterns in different regions



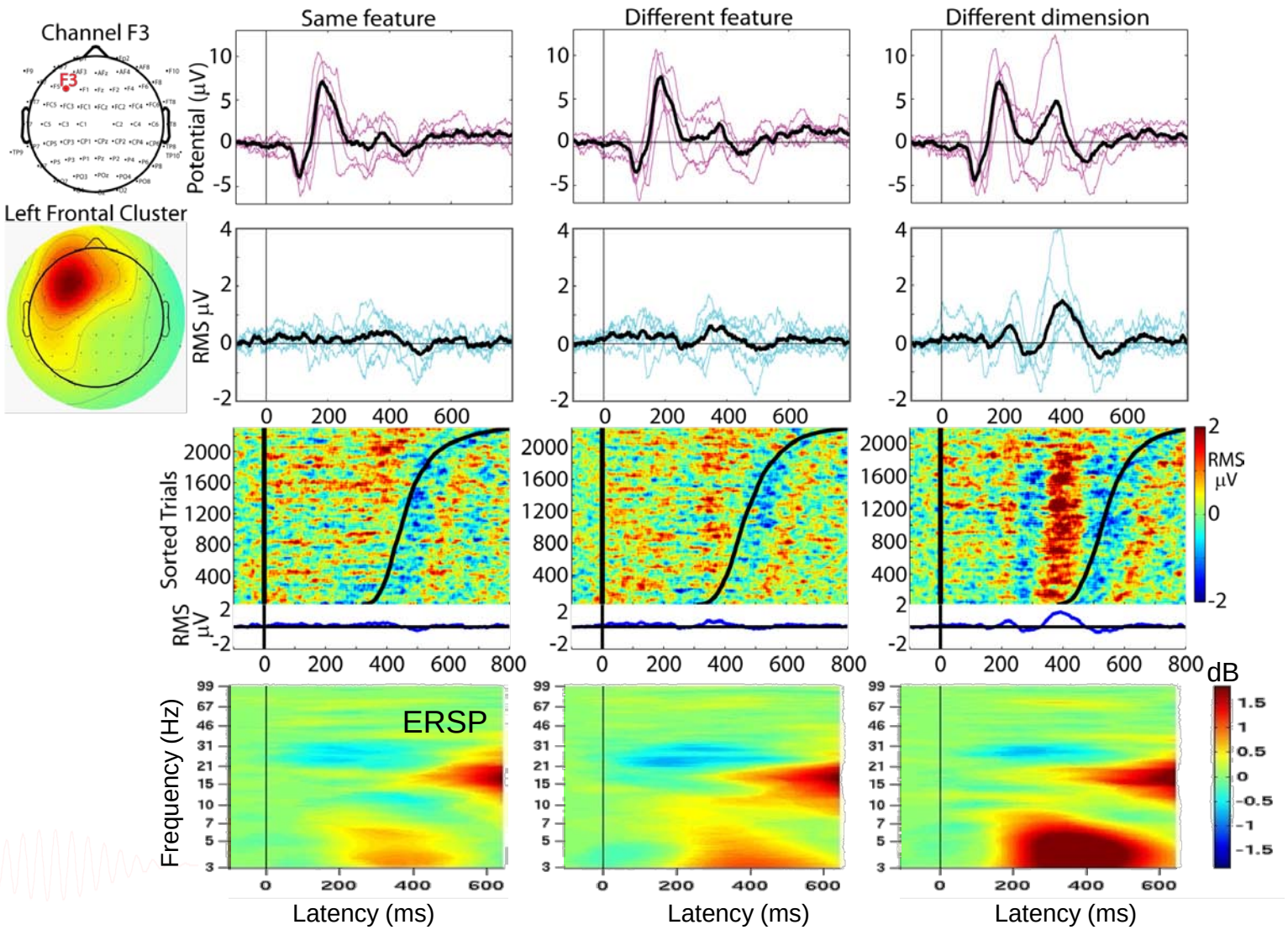
Onton and Makeig,
Prog. Brain Res. (2006)

Channel vs component ERSP

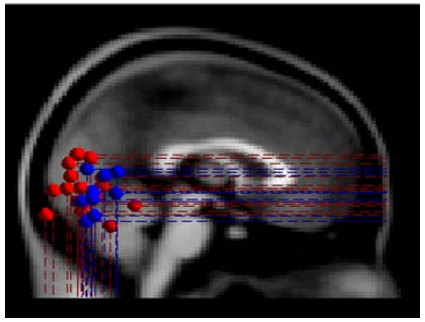


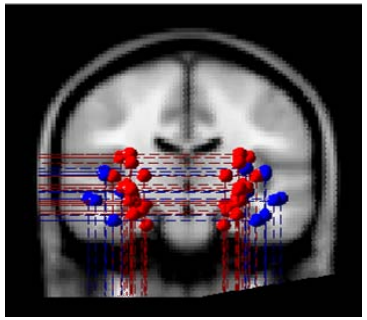
Onton and Makeig, Prog. Brain Res. (2006)

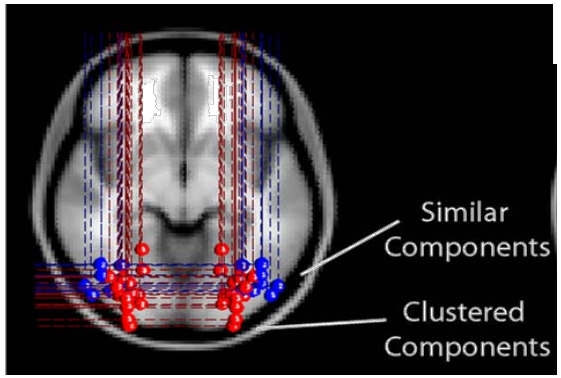
ERSP, ERP image and ERP comparison

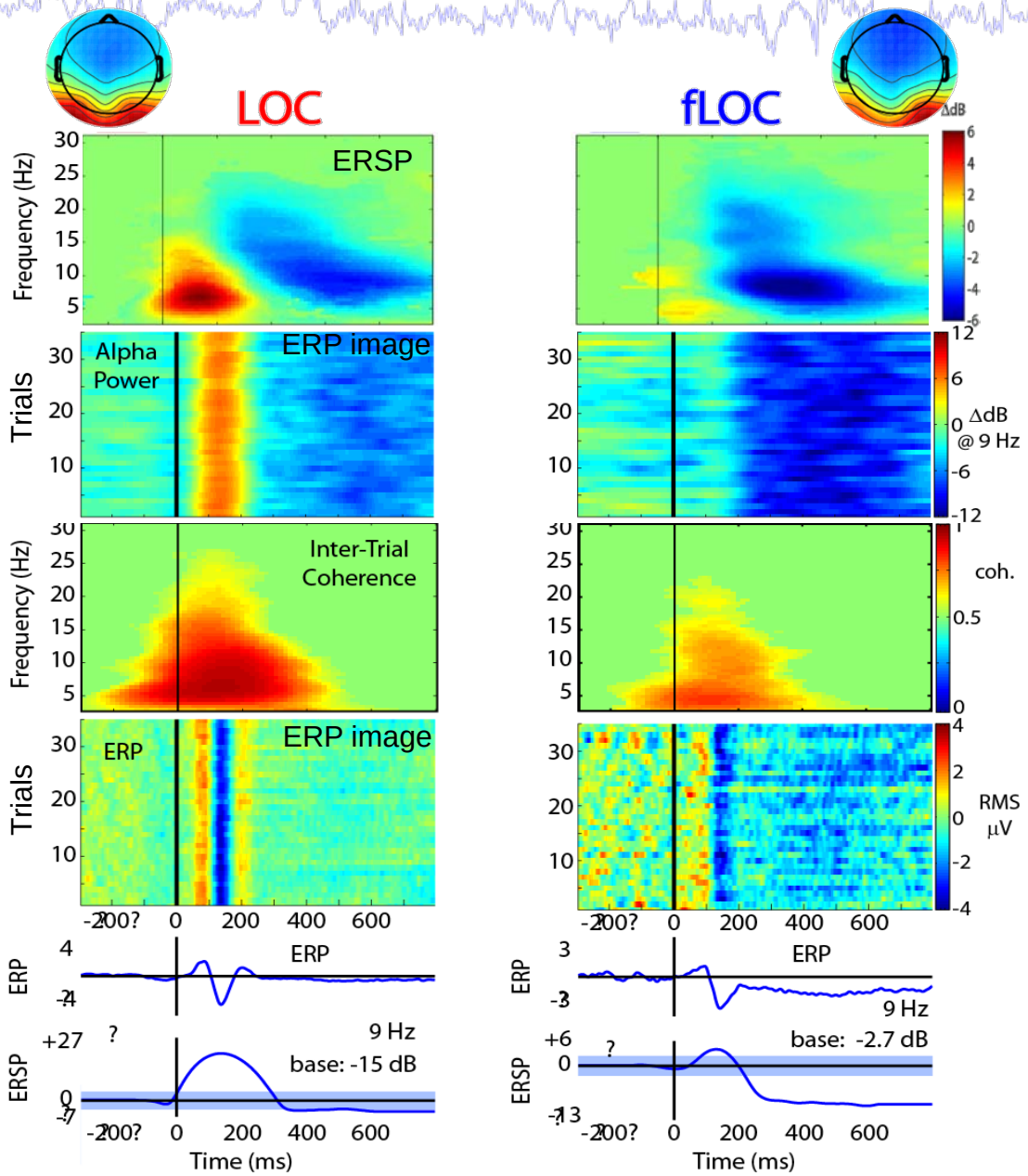


Lateral occipital clusters (LOC/fLOC)

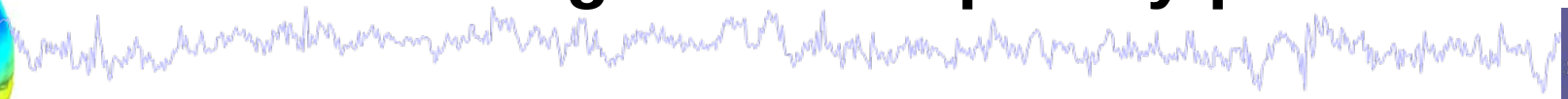




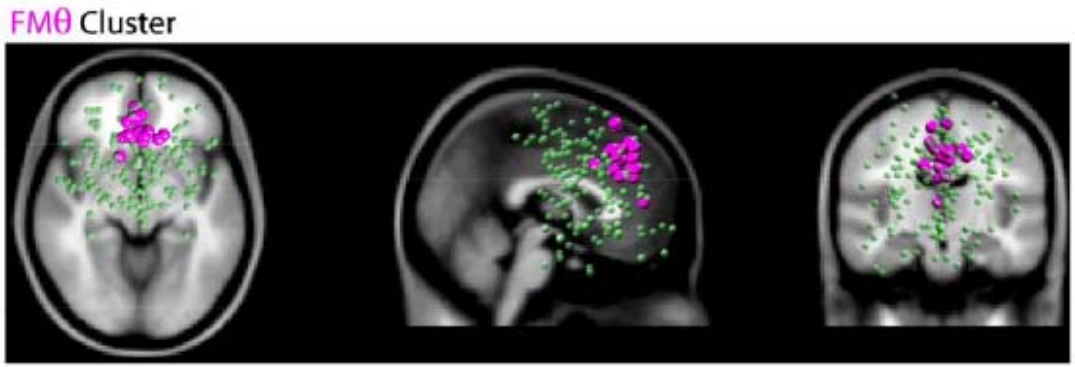


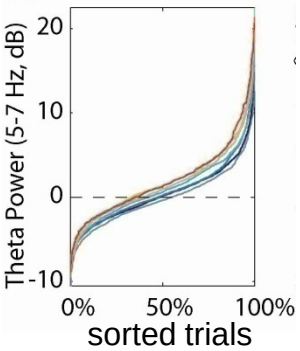


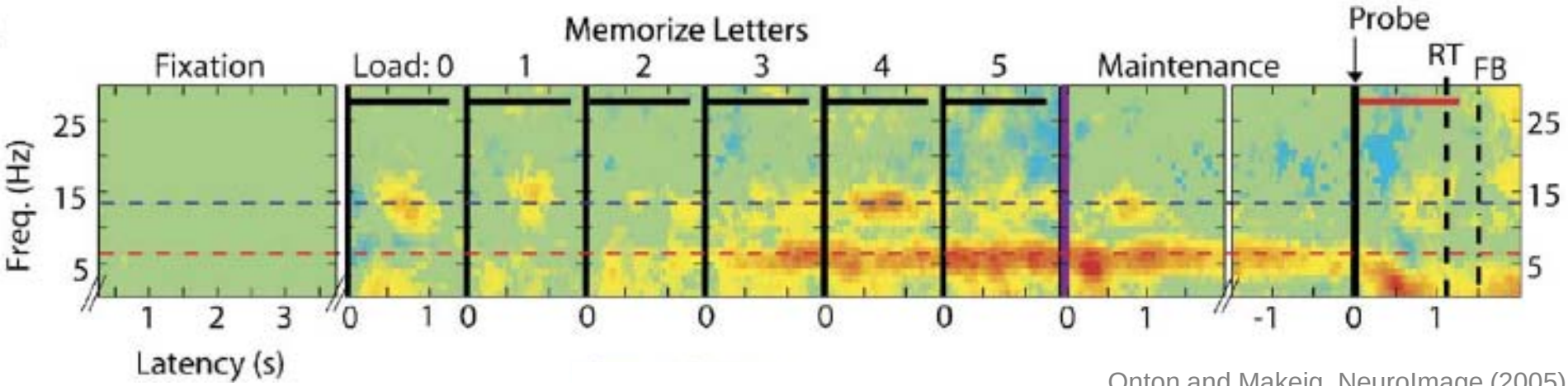
FMθ: average time/frequency power



+ M L T G P Y Q W - T

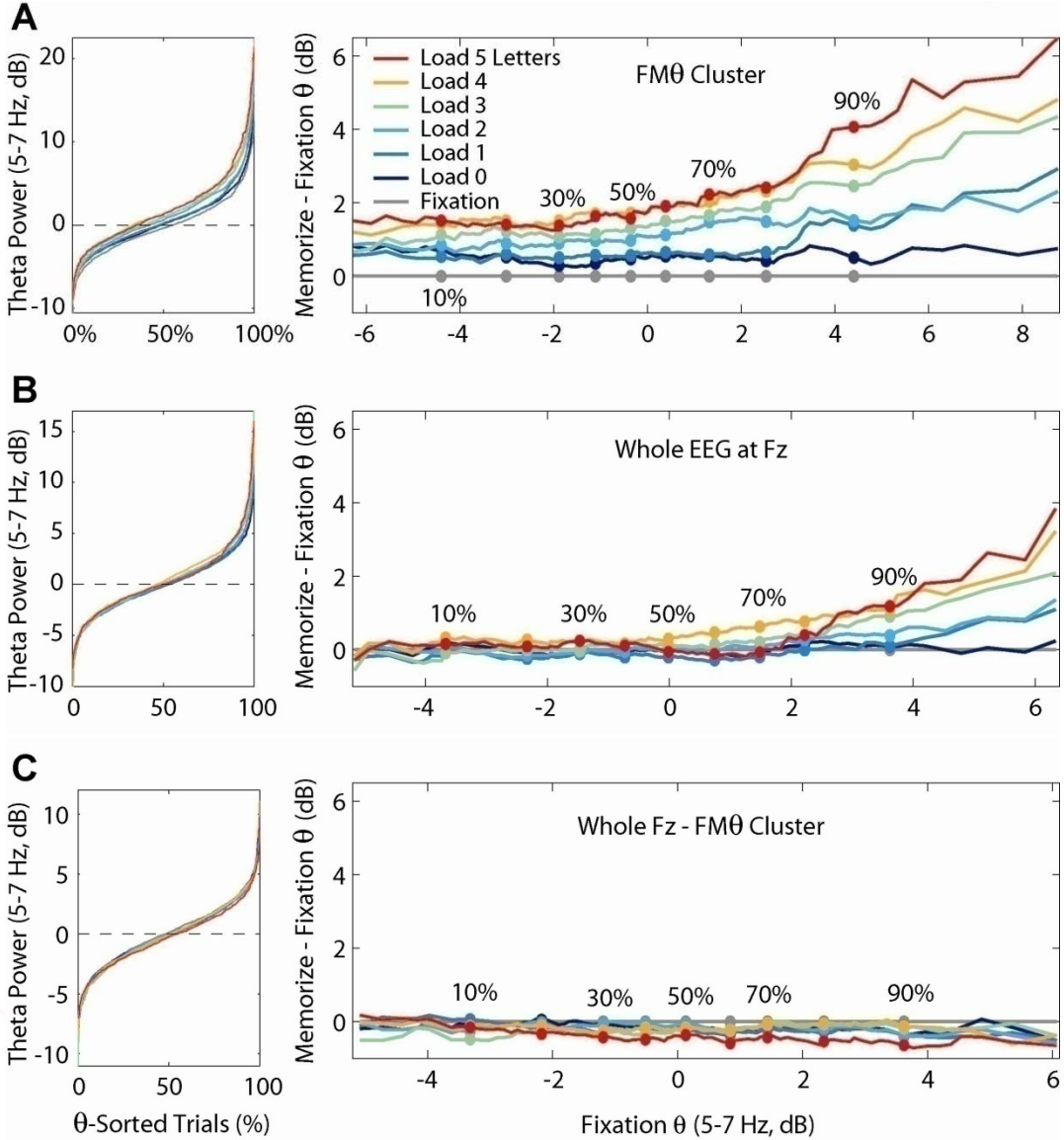






Onton and Makeig, NeuroImage (2005)

Single-trial theta power and memory load



All load-related theta power from frontal midline cluster!

Onton et al., NeuroImage 27 (2005)

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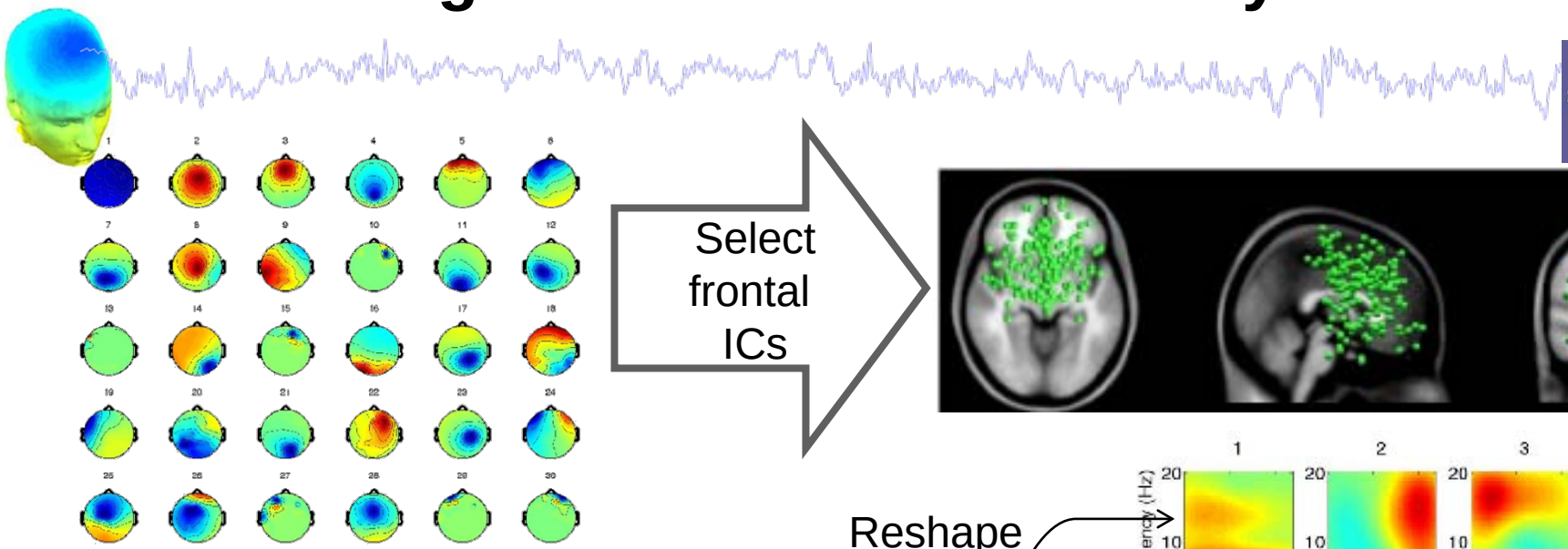
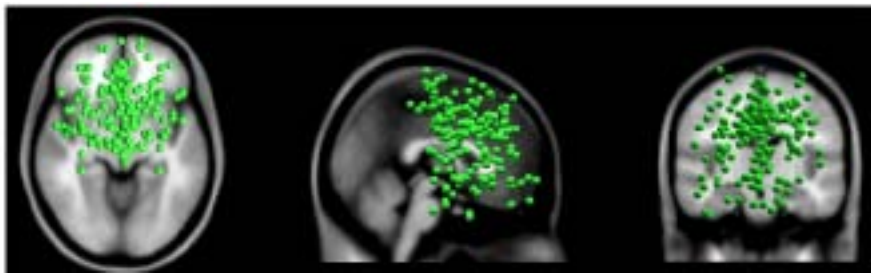
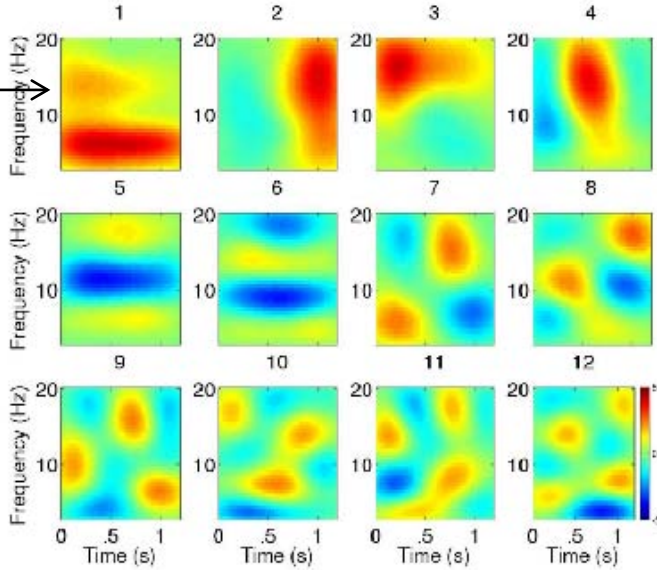
Single-trial ERSP mode analysis

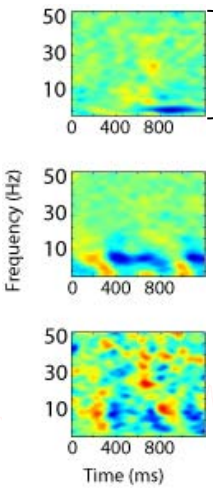




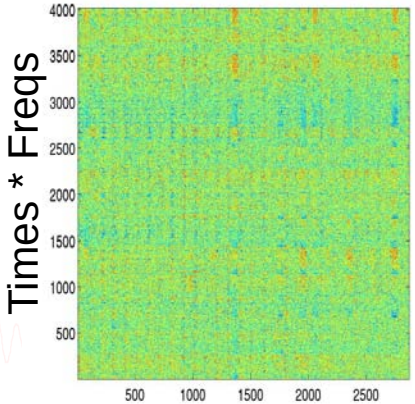
Reshape back to ERSP



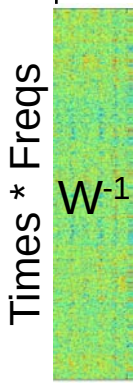
Single-trial ERSPs



Finds Independent Spectral Patterns



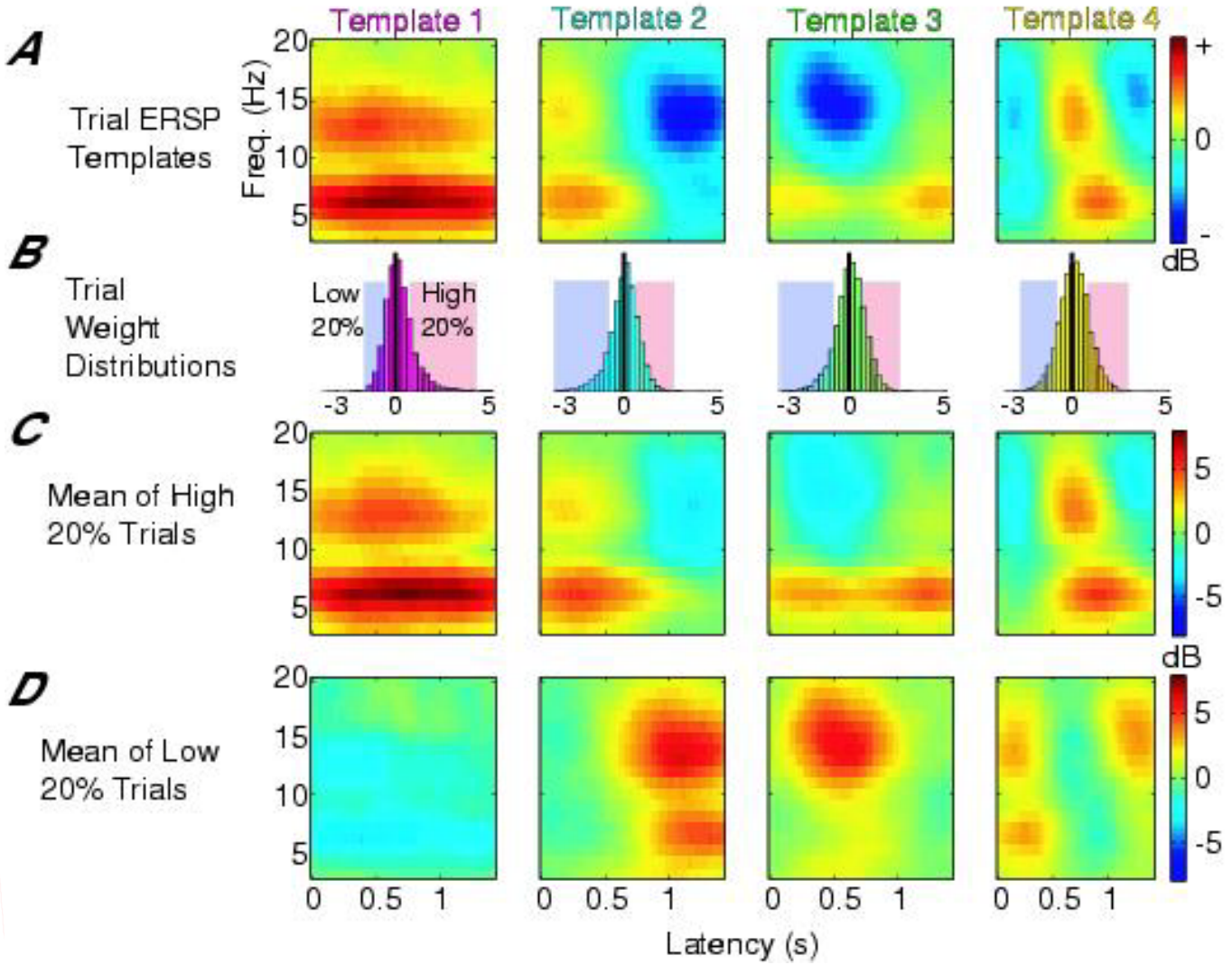
PCA/ ICA



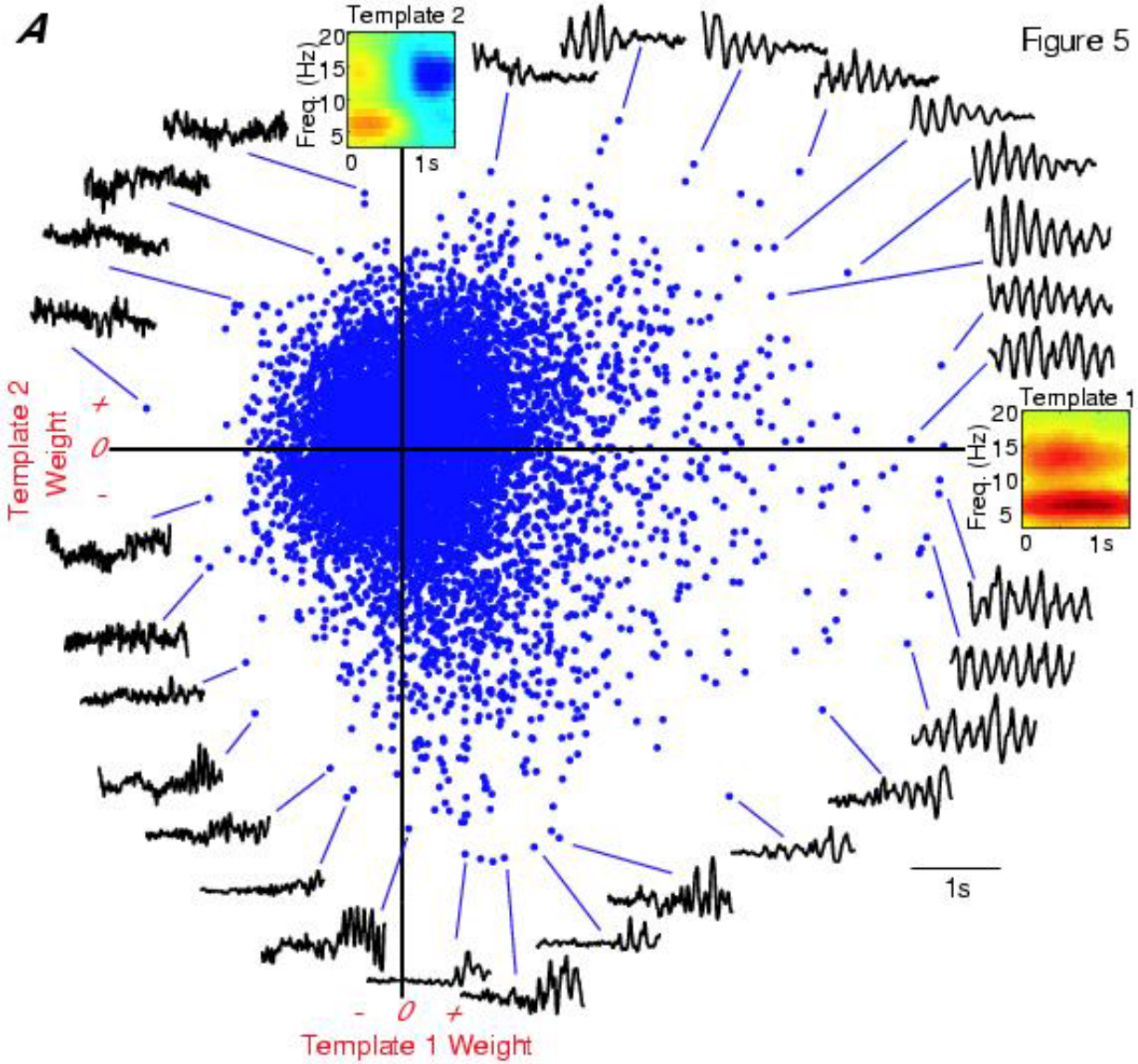
*

Modes (Trial weights) activations Trials

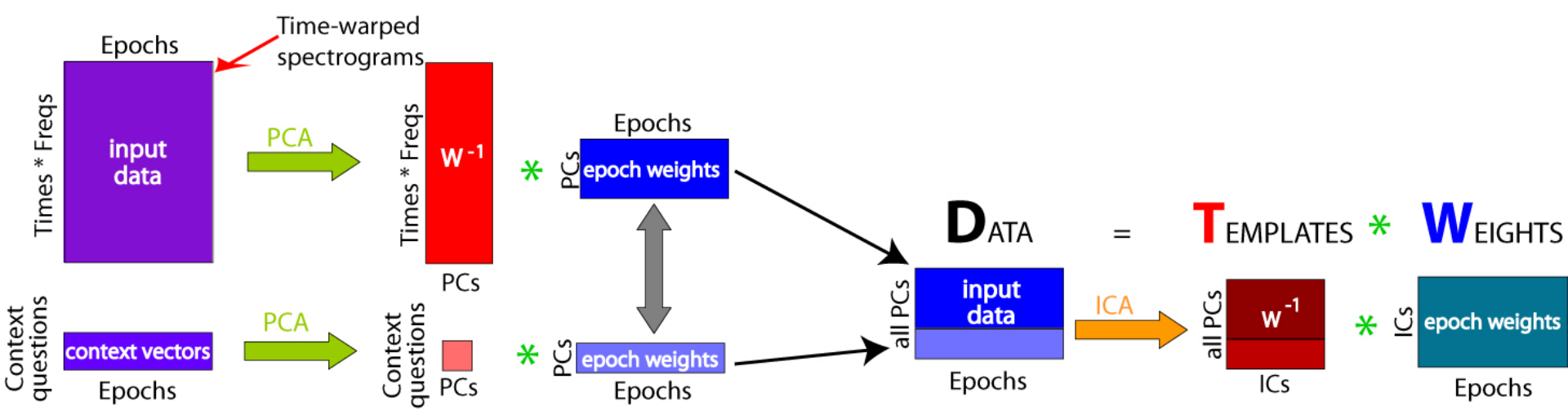
ERSP modes during memorization



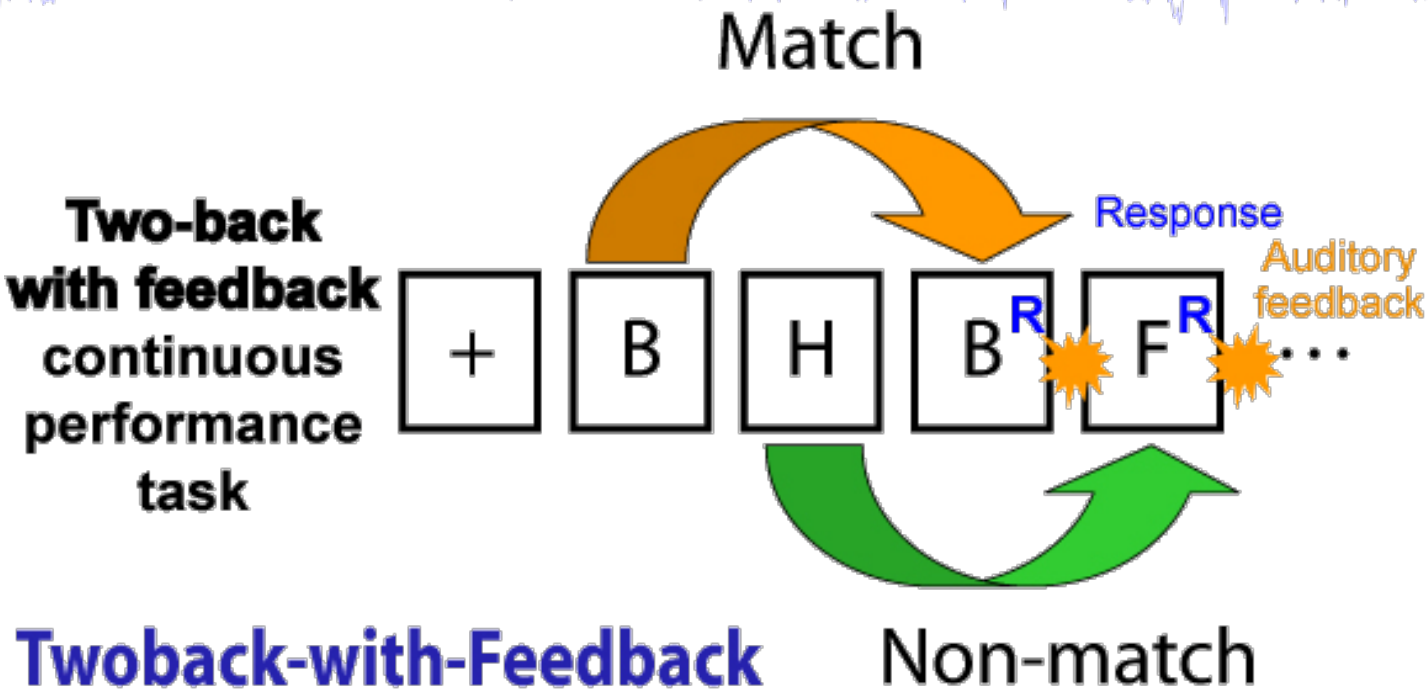
Separation of distinct EEG activity

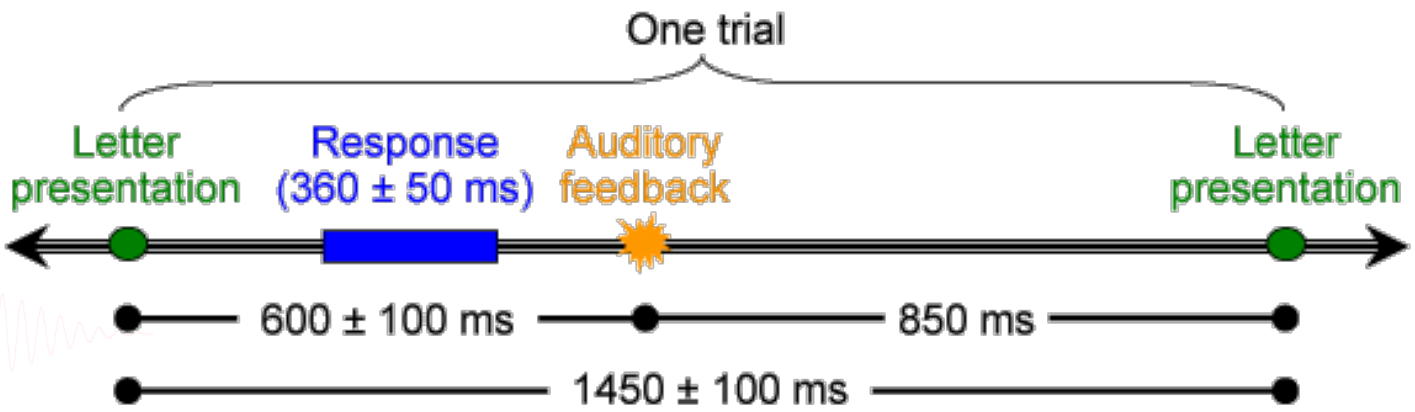


Context ICA decomposition

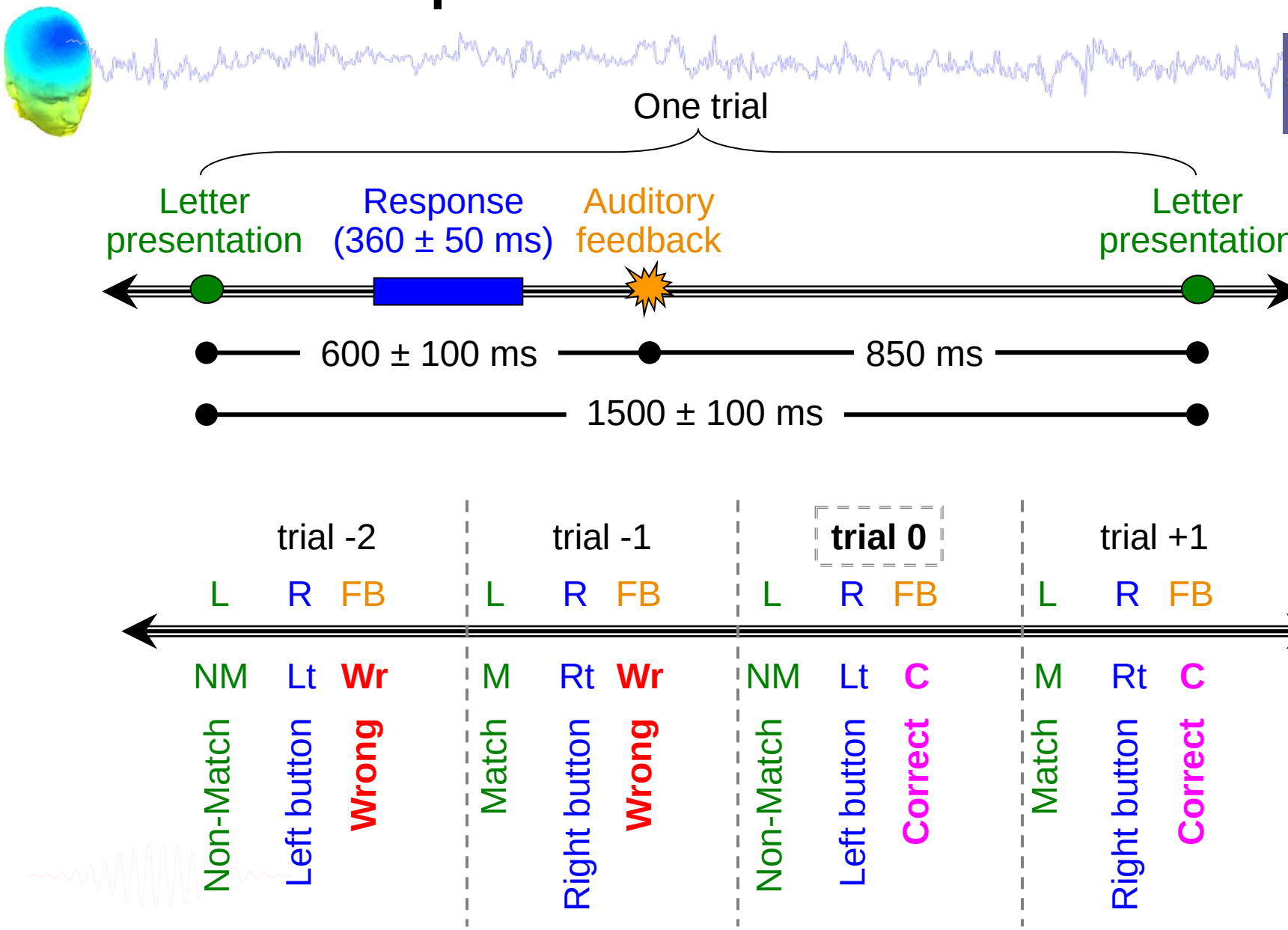


Two-back continuous performance task

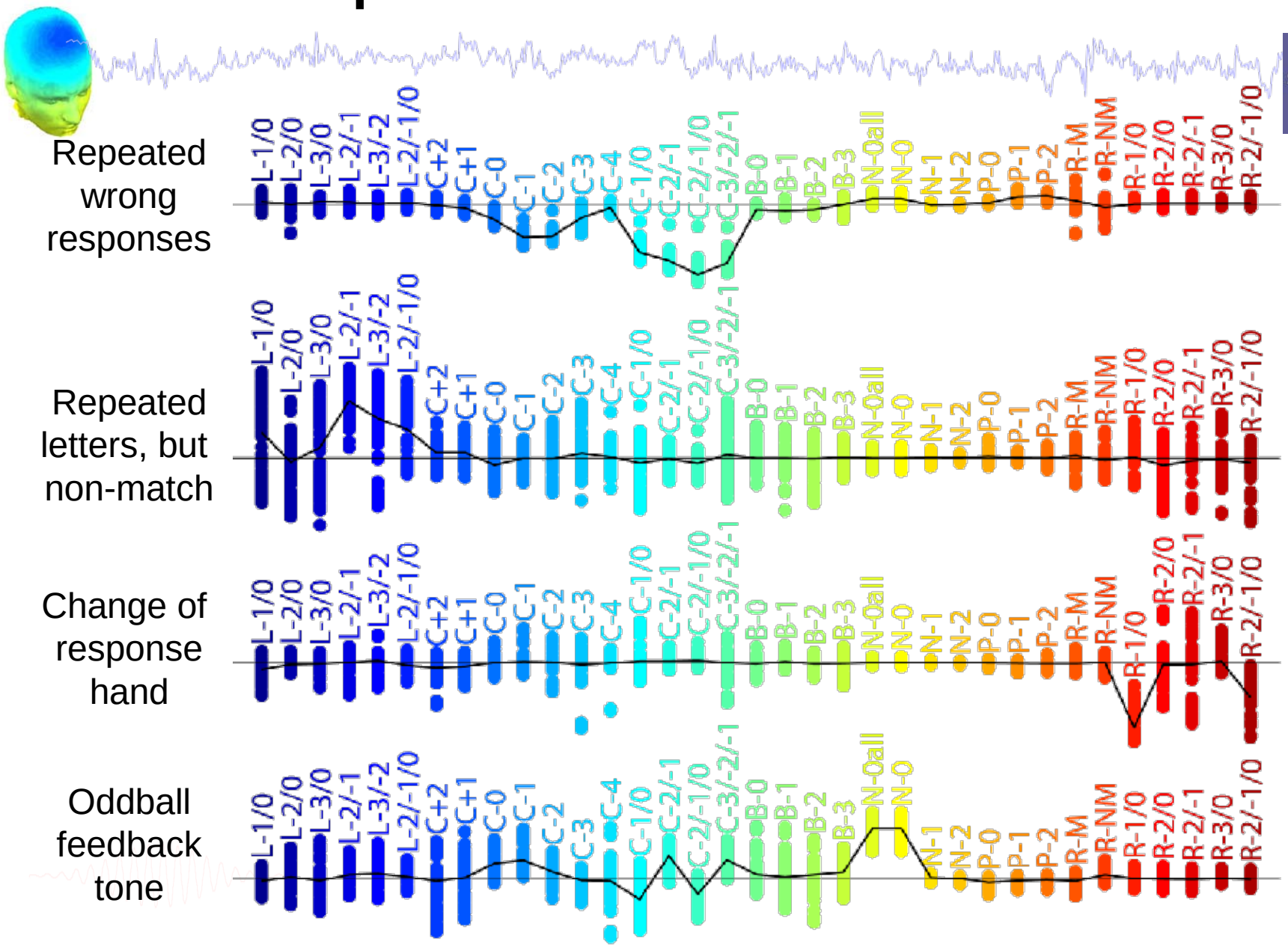




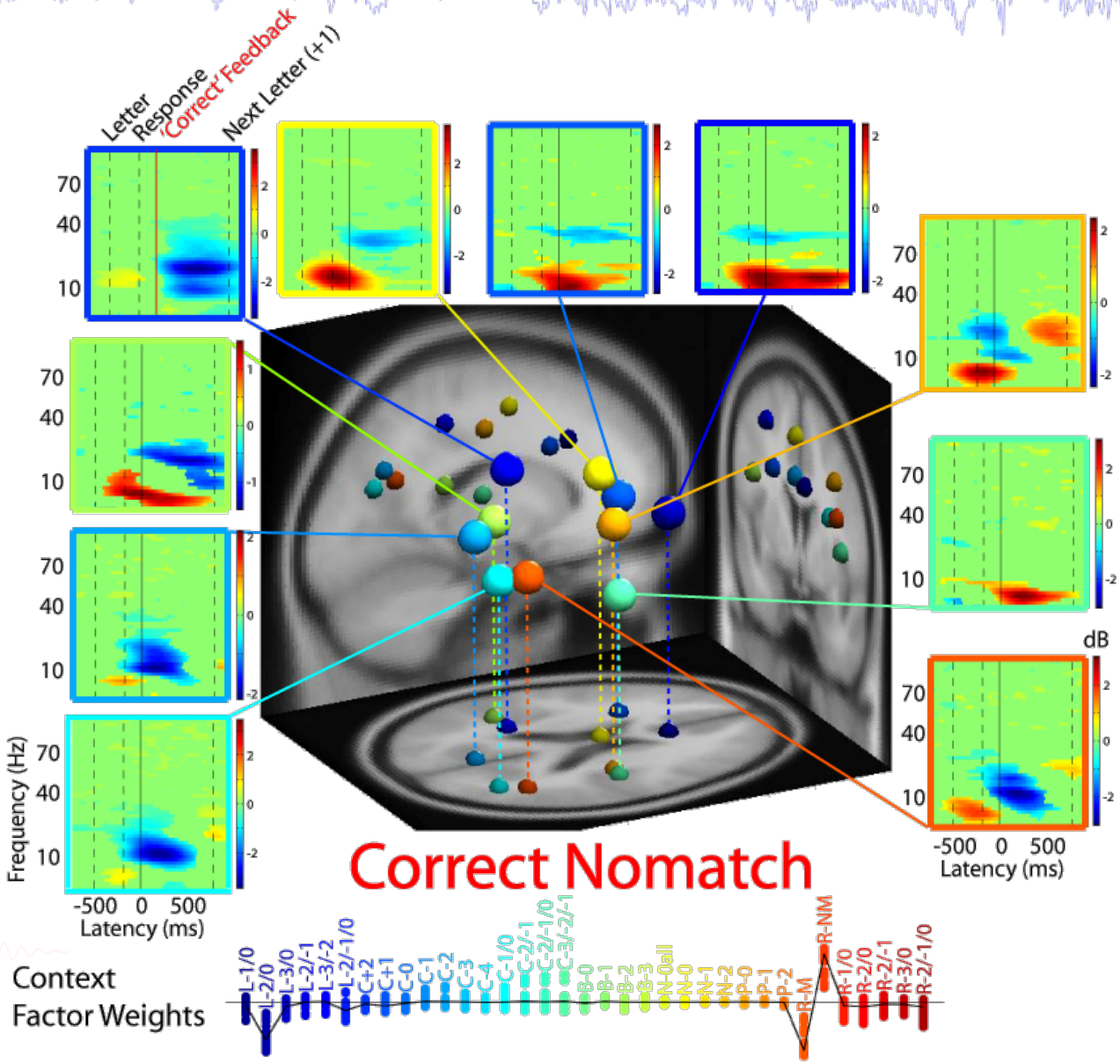
Examples of behavioral context



Examples of common context factors



Context ICA results across subjects



Summary

- ERSP most informative on component instead of channel
- ERSP allows assessment of all frequencies/latencies at a glance
- ERSP is an average across trials; single-trial power is likely quite variable
- ERSP mode analysis can extract independent variations across trials