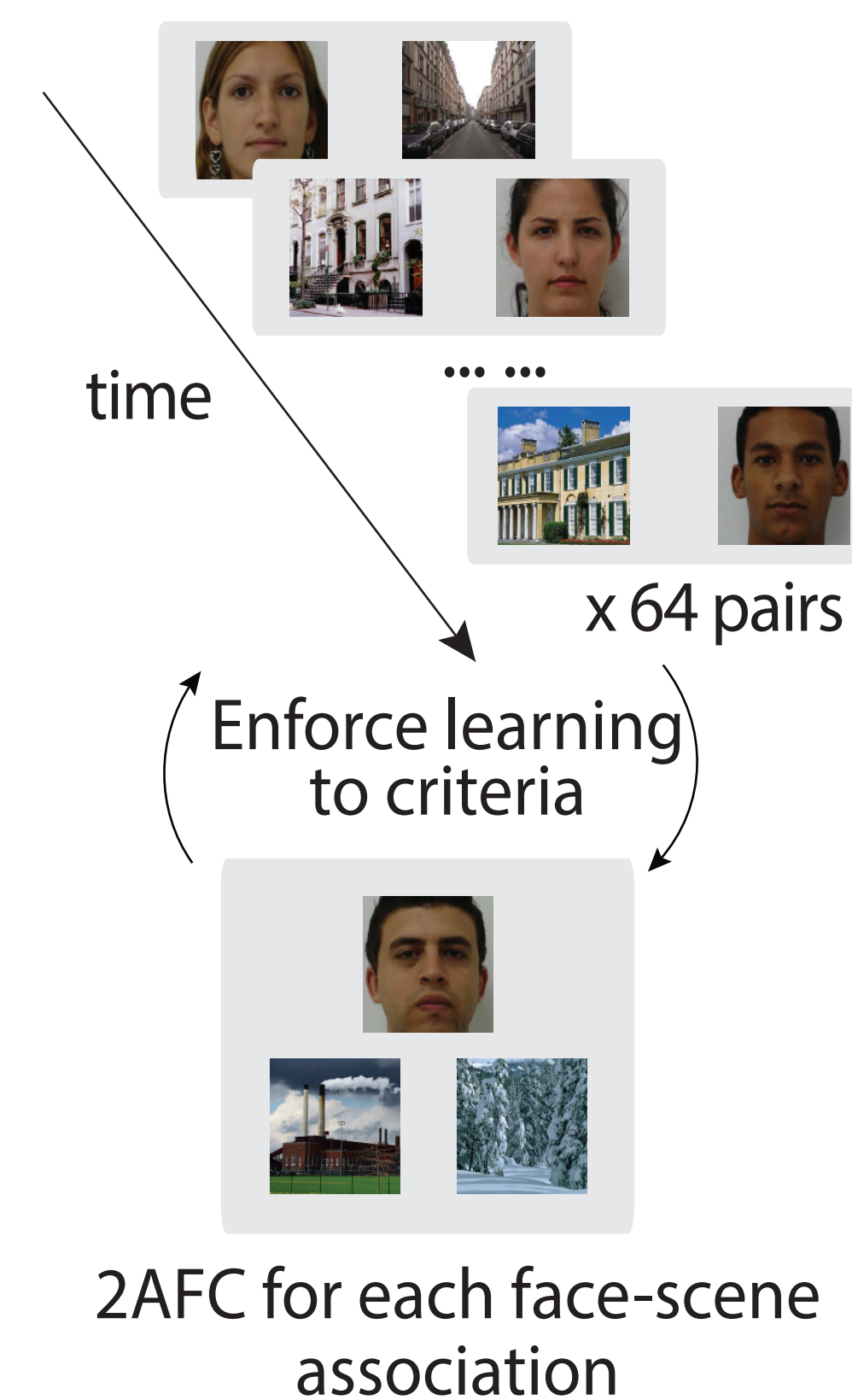


Introduction

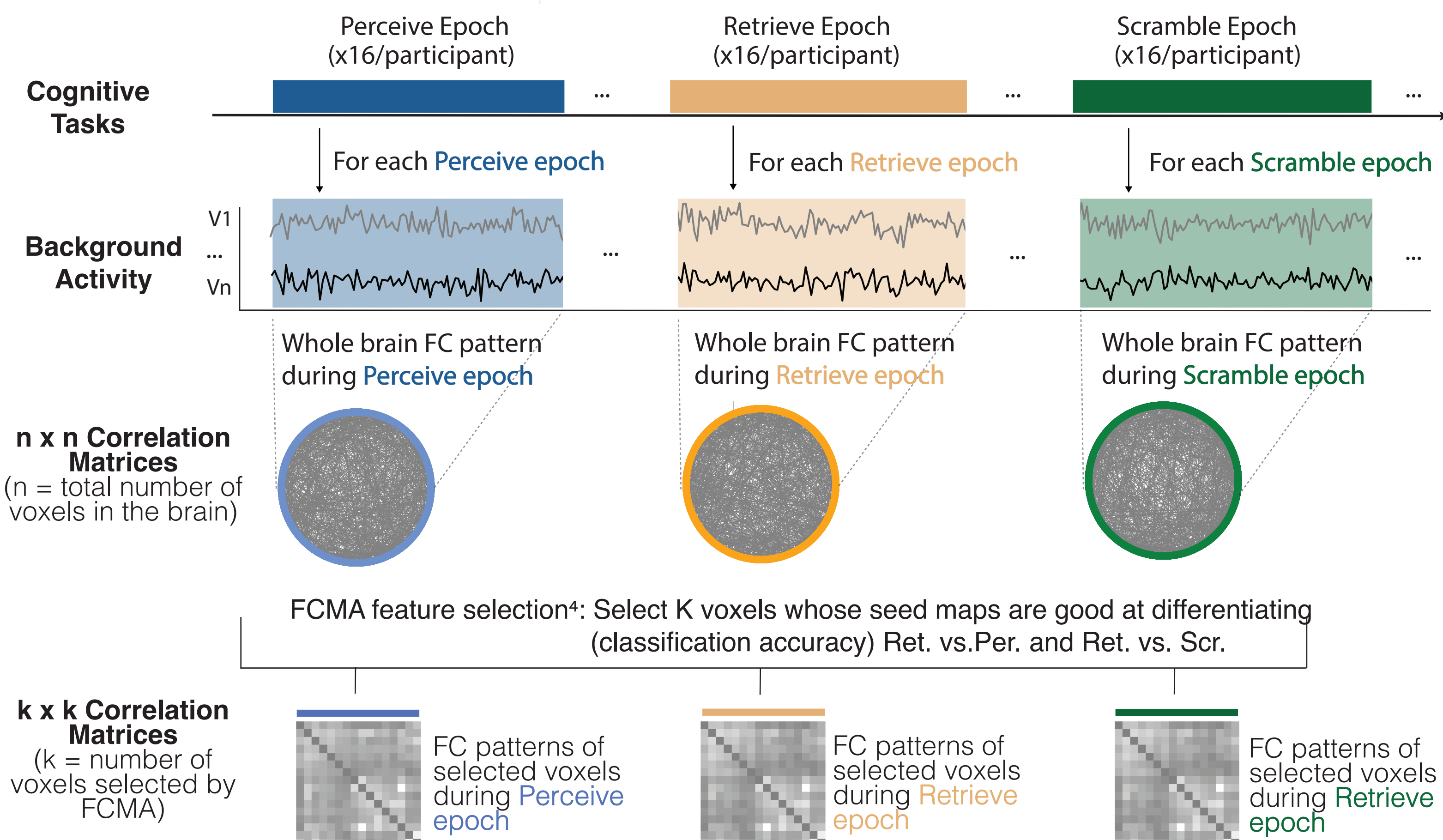
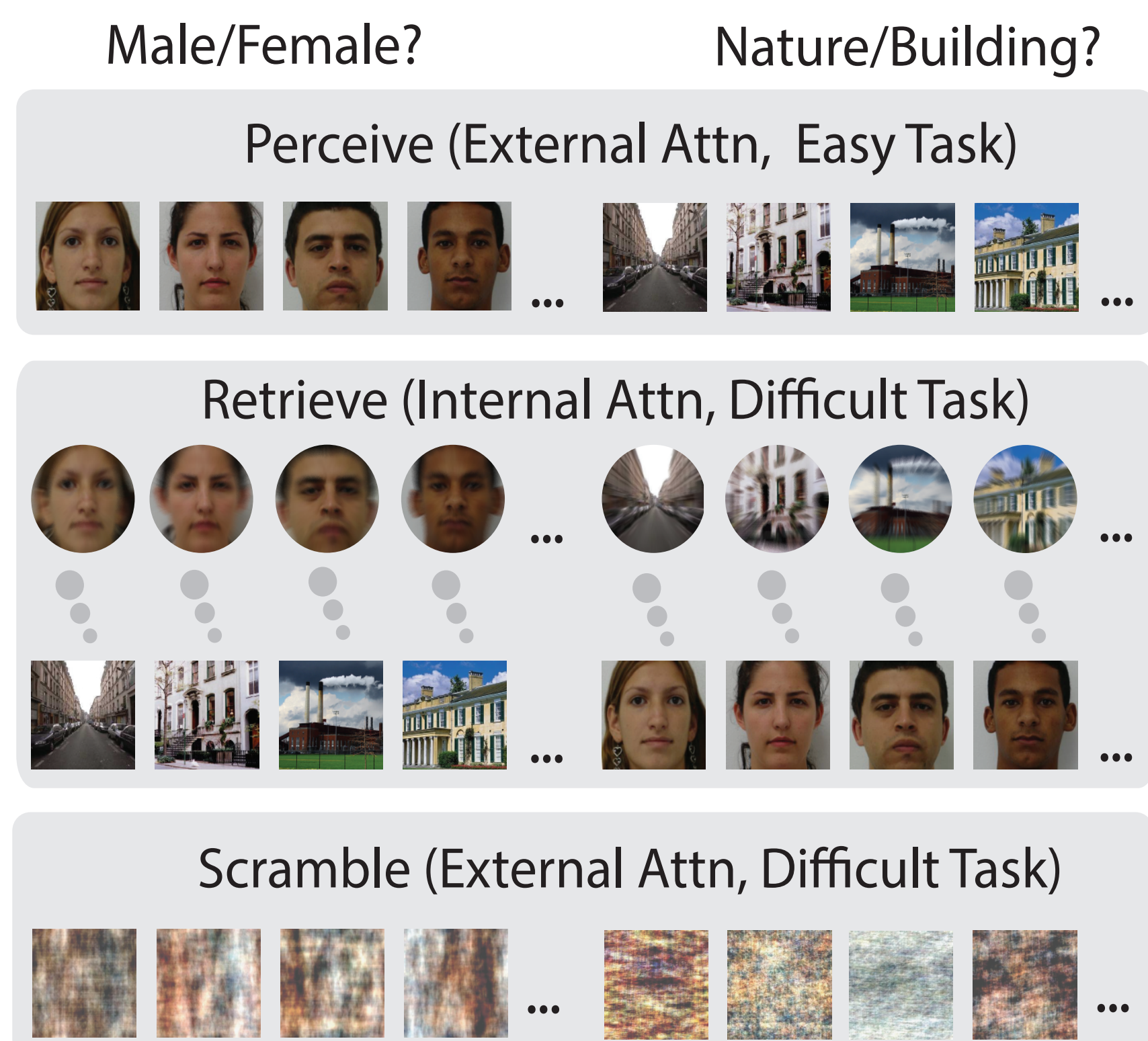
- The same input information can be either the target of perception or additionally the cue that triggers retrieval.
- Selective attention account!
 - Deploy attention externally: Selectively attend to perceptual features related to the input information.
 - Deploy attention internally: Selectively attend to self-generated, mnemonic episodes associated with the input information.
- Attention strengthens the coupling, as measured by background functional connectivity between goal-relevant areas^{2,3}.
- How does the brain implement external versus internal attention?

Task Paradigm / Analysis Pipeline

Behavioral Training:



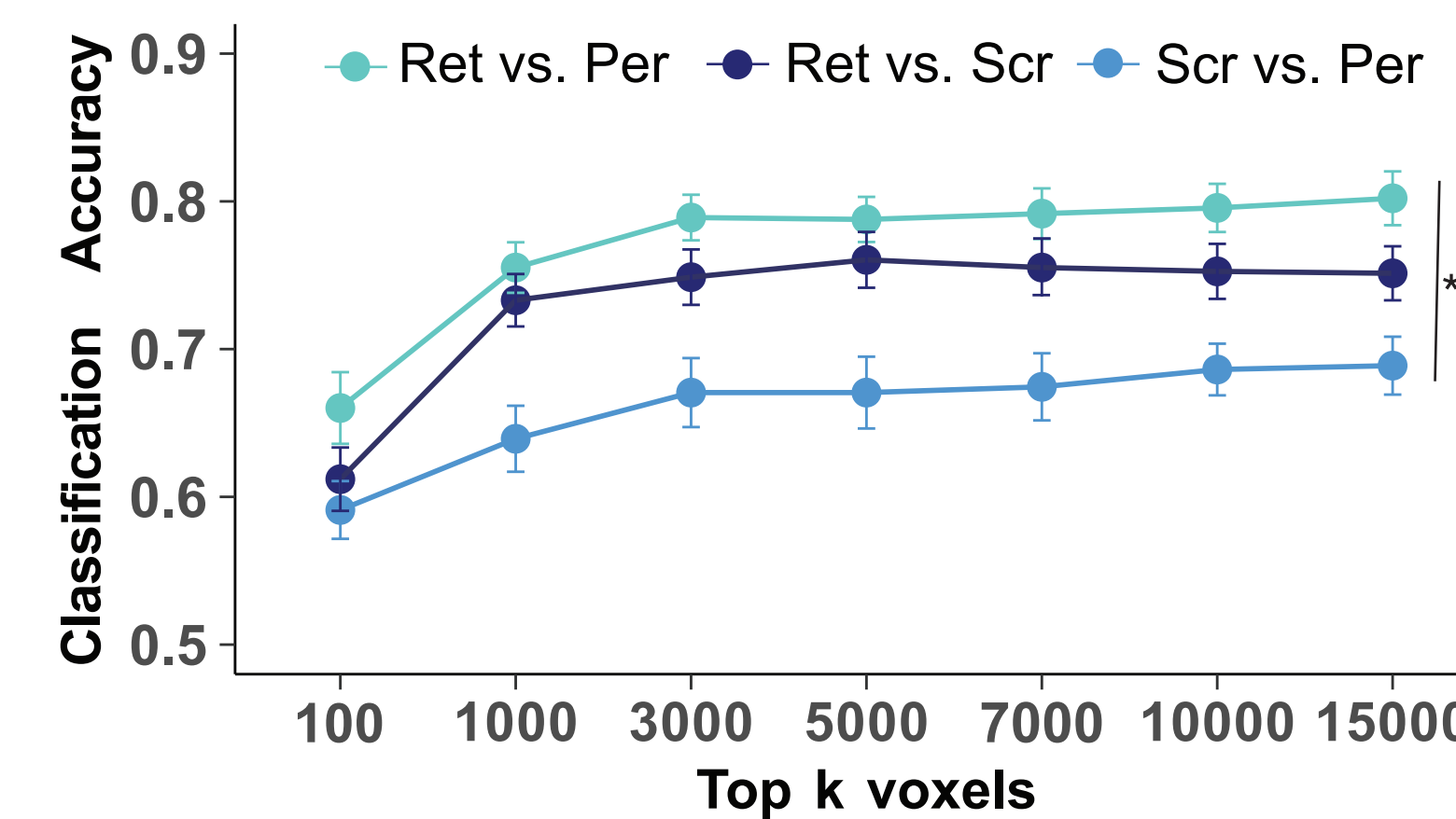
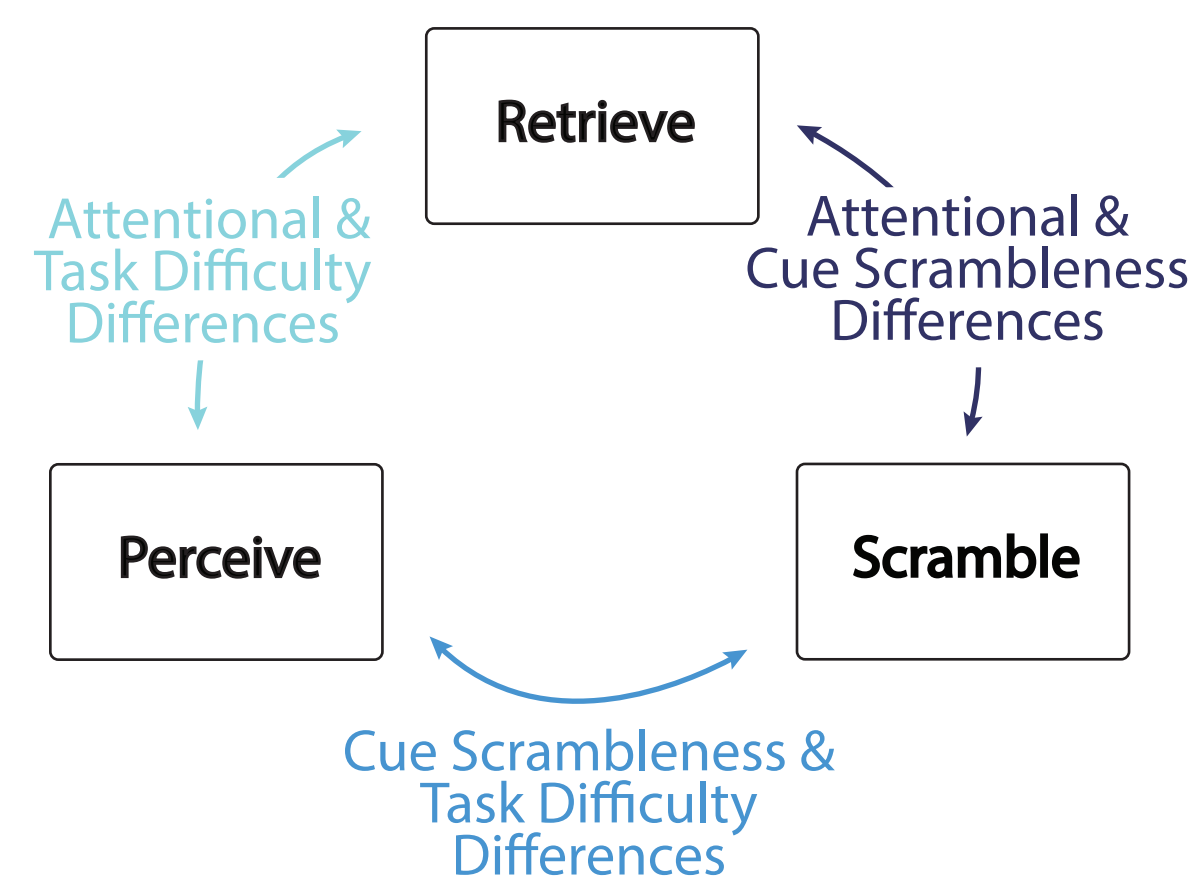
fMRI Task:



FC Captures Attentional Differences

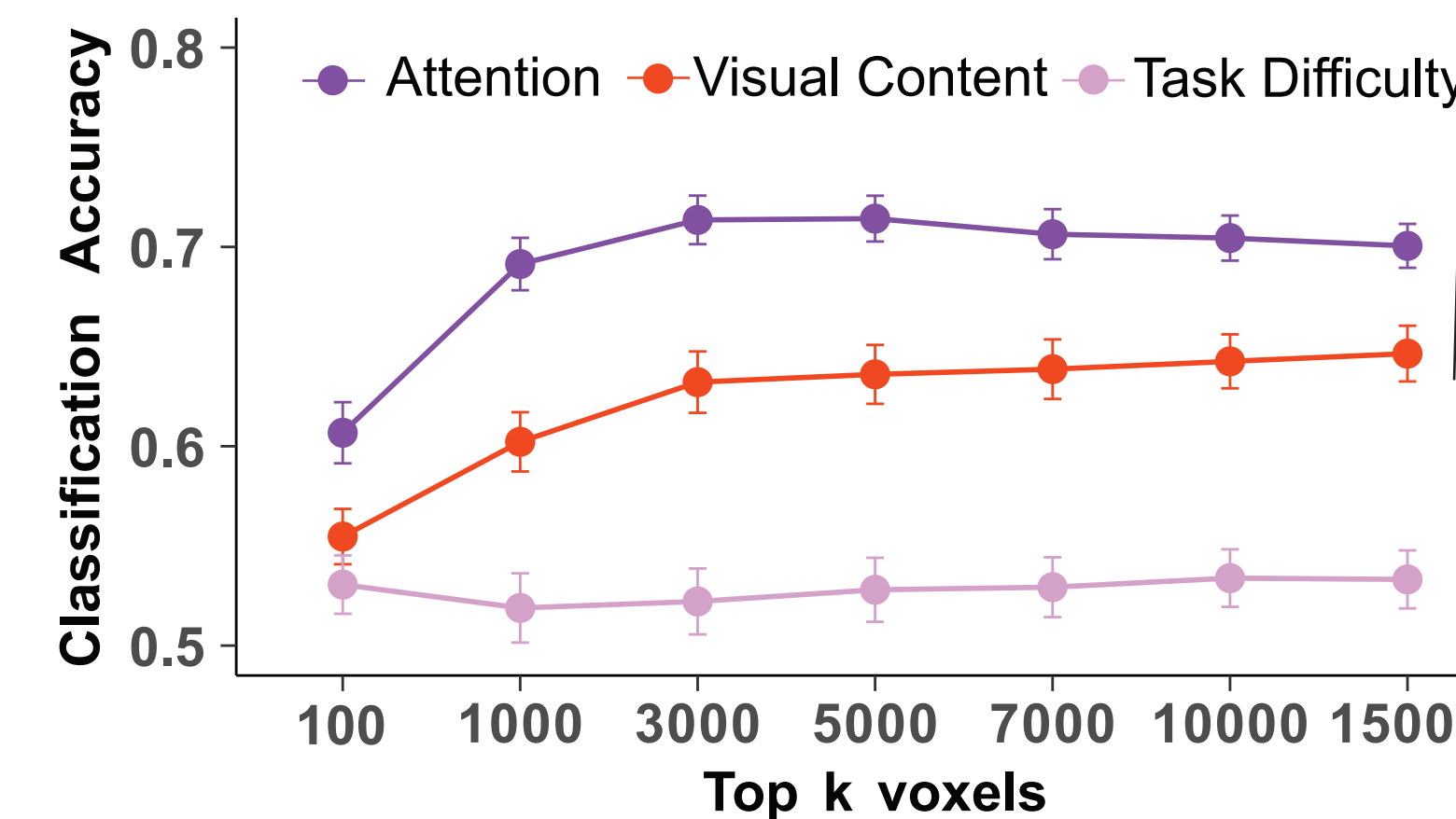
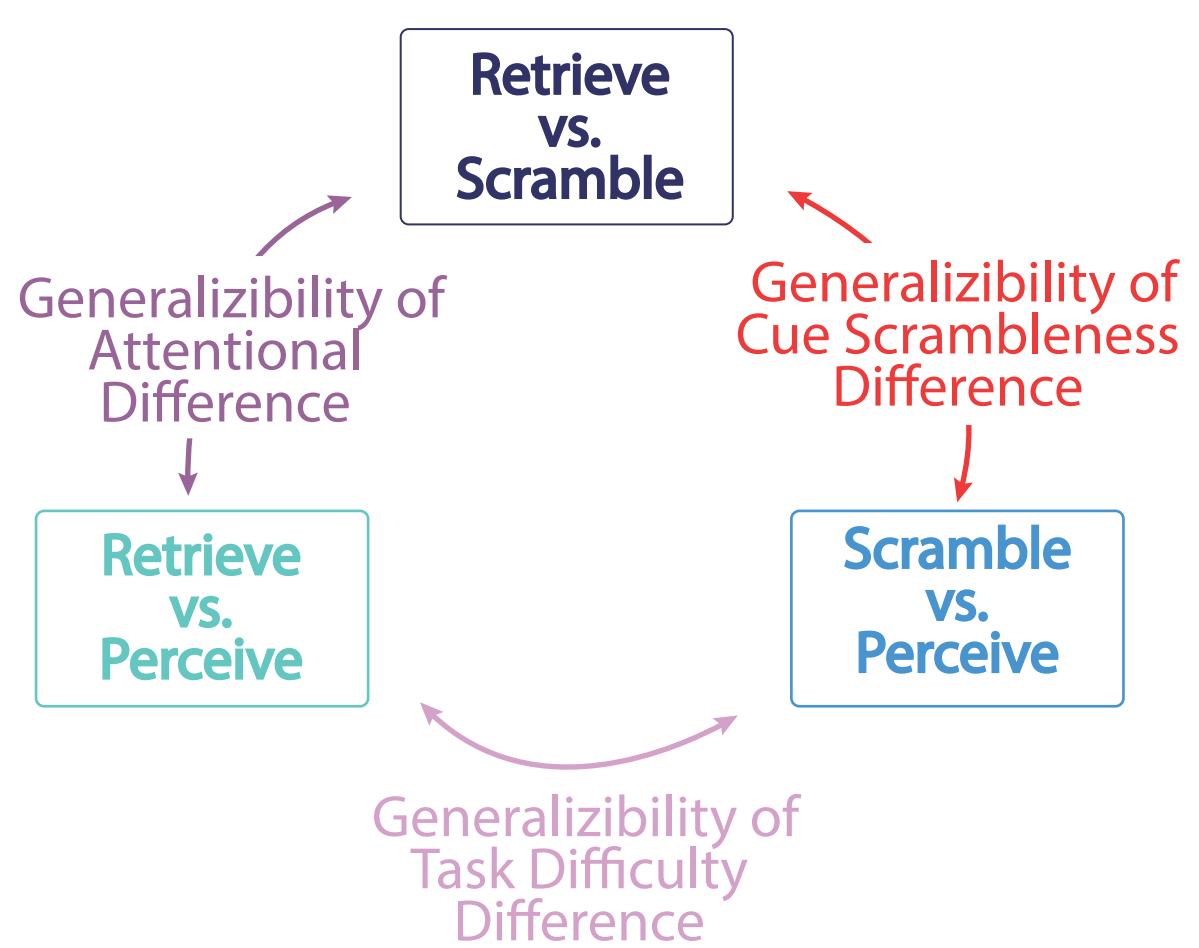
Train/test condition-wise classifiers:

- FC patterns preferentially capture external vs. internal attentional differences.



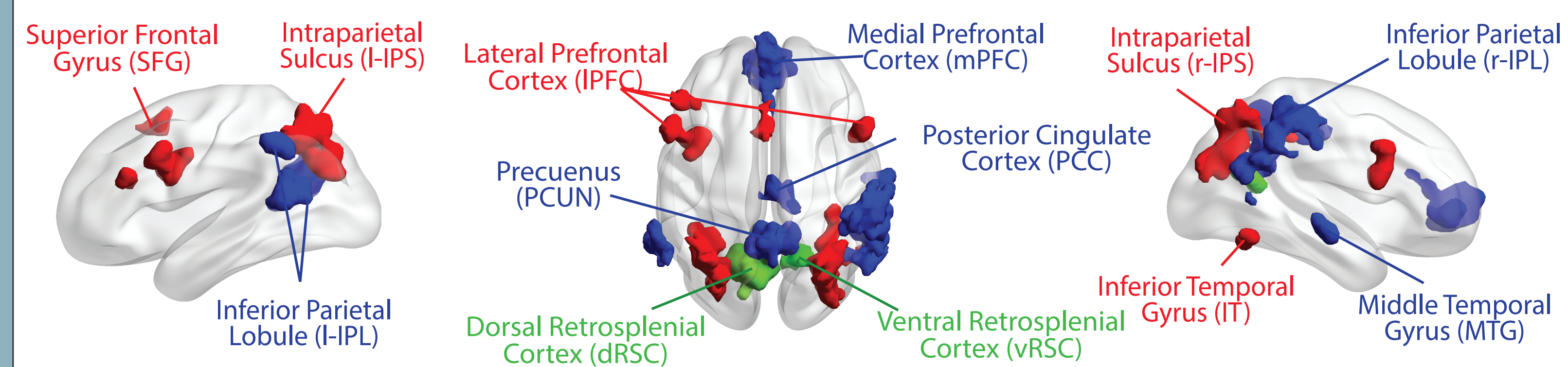
Train/test generalization classifiers:

- FC patterns generalize in terms of attention moreso than other factors.

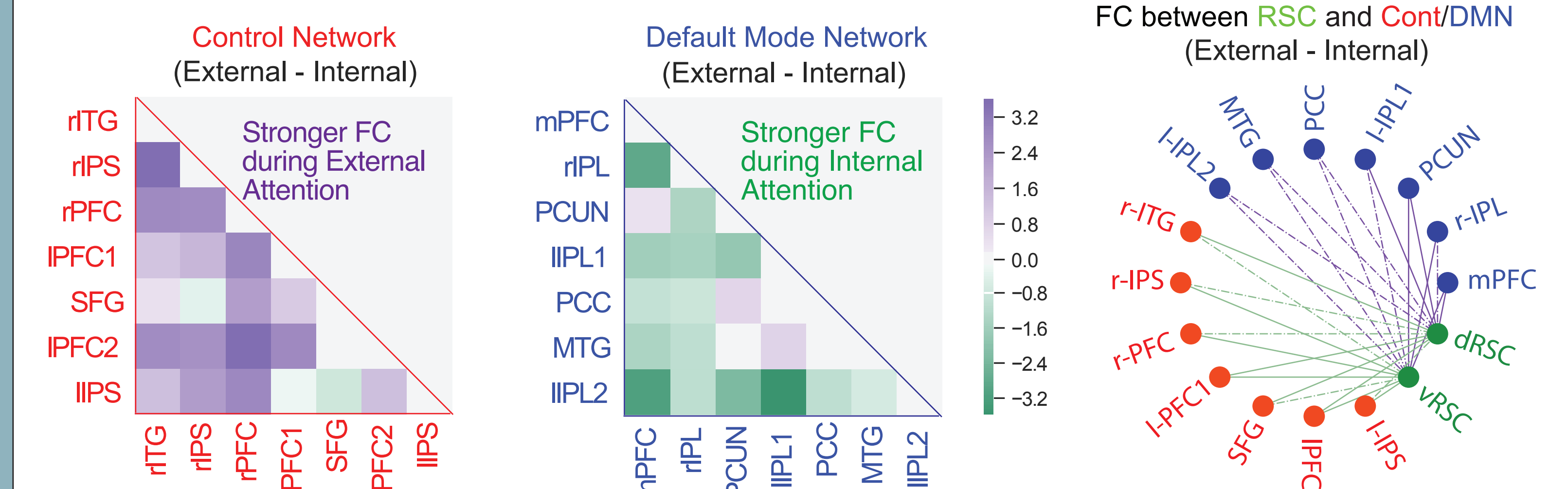


Where/What is the Difference?

Feature selection plus permutation test revealed 16 clusters across 3 functional communities: the **Control Network**, the **Default Mode Network** and the **Retrosplenial Cortex**.



FC patterns across the 16 clusters are different between external versus internal attention - **What functional configuration represents this difference?**

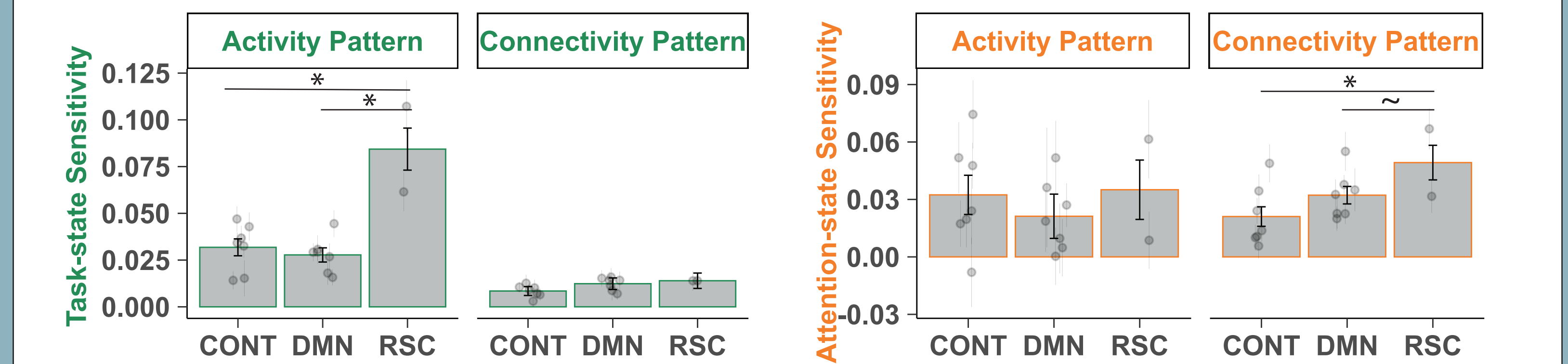
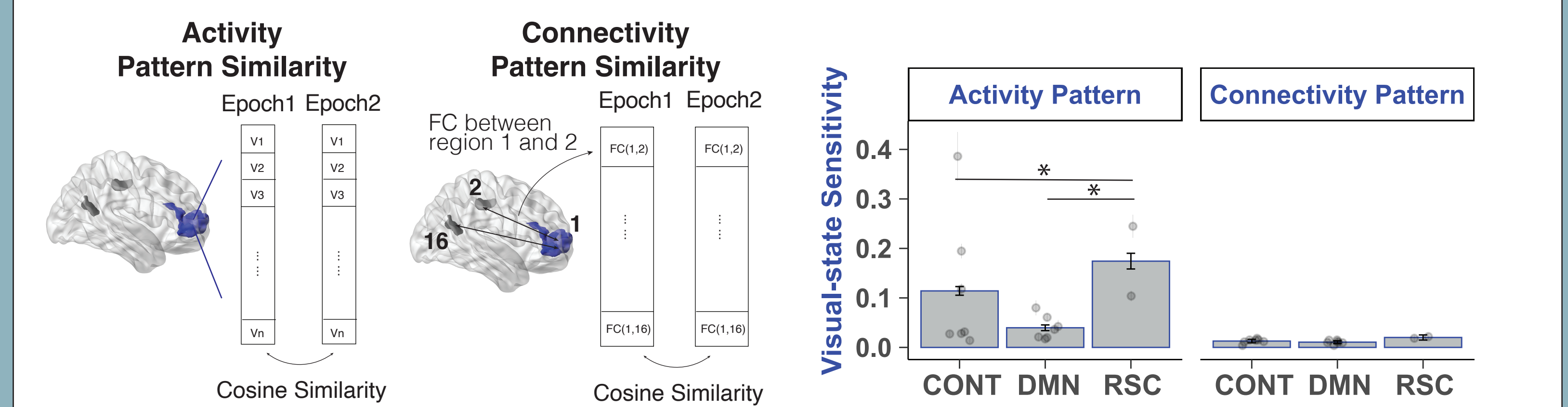
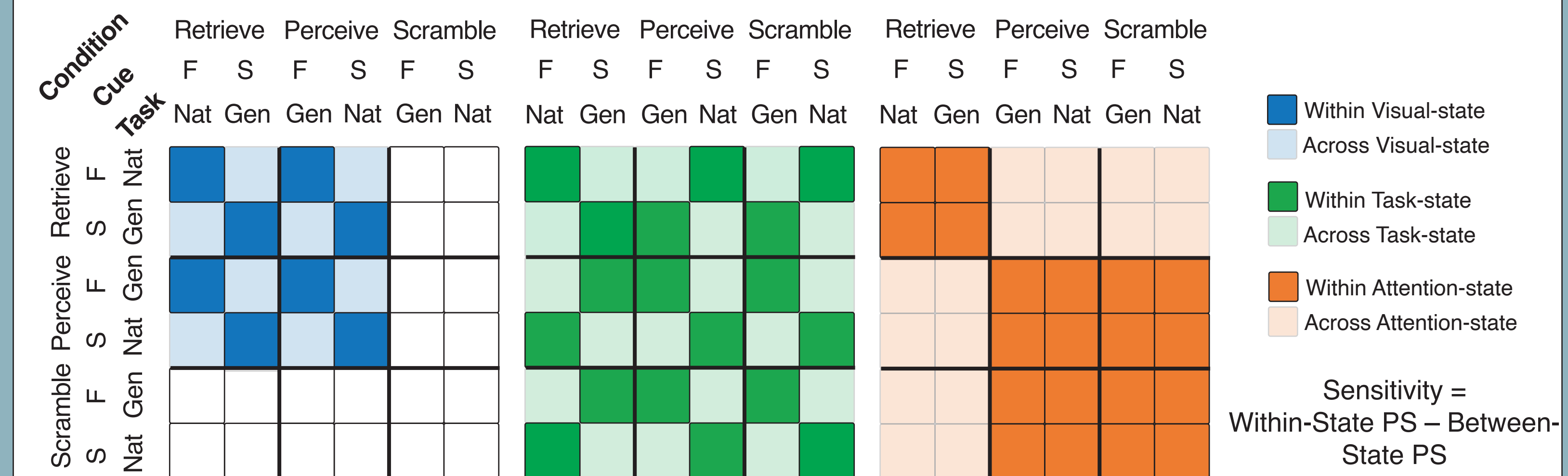


- Control Network and DMN showed greater within-community coupling strength during external attention and internal attention, respectively.
- RSC coupled more strongly with Control Network during internal attention, but with DMN during external attention.

RSC Plays an Important Role

What information does each functional community capture?

- What is currently being presented — Face or Scene?
- What is the current task goal — Gender or Naturalness?
- How to achieve the goal — Attend externally or Attend Internally?



- RSC activity patterns showed the greatest sensitivity to both the current perceptual experience and task goals.
- RSC connectivity patterns showed the greatest sensitivity to attention (i.e., external vs. internal)

Discussion

- External attention is characterized by stronger within Control network connectivity density and stronger coupling between RSC and DMN.
- Internal attention is characterized by stronger within DMN connectivity density and stronger coupling between RSC and Control network.
- Retrosplenial cortex may play an important role in integrating external and internal information⁵, which parallels function bridging sensory and MTL in formation in rodent literature.

References

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