A ubiquitous and uniform representational structure across higher-level visual cortex

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Questions
Does the representational structure of visual cortex predict performance on a behavioral task?
Which neural structures are the most behaviorally relevant (i.e. strongest brain/behavior correlations)?
How does the representational structure of these different regions compare to each other?

Stimuli & behavioral task

Search reaction times

Brain/behavior correlations

In six new participants, whole-brain neural patterns for these 8 categories were obtained using a blocked design.

Correlate search RT with similarity of the neural patterns of multiple large scale sectors:

**Brain/brain correlations**

Correlate search RT with similarity of the neural patterns of category selective regions.

**Brain/brain correlations**

Multivariate responses in FFA & PPA

Correlations between neural regions

Activation bin analysis

Correlate search RT with similarity of the neural patterns within 10 independent voxel activation bins.

Summary

We found strong brain/behavior correlations within:
- large scale neural sectors
- smaller scale regions
- category selective regions

Suggests that responses across this entire cortex have the requisite representational structure to predict behavioral performance in visual search.

Implications & questions

These results highlight questions about the relationship between tuning (e.g. face selectivity) and the representational structure (e.g. pairwise neural similarity).

Selectivity may arise from different weights on this uniform structure.

What are the specific mechanisms by which this ubiquitous and uniform structure constrains behavior?

What behaviors are and are not constrained by this particular structure?