Object Ensemble Coding is Distinct from Texture Processing in the Parahippocampal Place Area

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Background

- Information is represented at multiple levels in visual scenes
- Lateral occipital complex (LOC) processes shape
- Collateral sulcus (CoS), overlapping the parahippocampal place area (PPA), processes texture

Experiment 1

PPA ensemble adaptation driven by repetition of objects' texture in the ensemble?

Aim: Investigate ensemble adaptation in PPA by equaling object texture but varying shape

Conditions

- Same
- Shared
- Different

PPA Predictions

Results

% Signal change compared to fixation

Ensemble representation in PPA is not driven solely by repetitions of object texture

Experiment 2

How do object texture & shape contribute to PPA ensemble adaptation?

PPA sensitive to processing shape & texture of ensemble elements

Conclusion & Implications

- Shape and texture of ensemble elements contribute to object-ensemble representation in collateral sulcus/PPA
- PPA may contribute to scene processing by extracting ensemble & texture features, in addition to 3D spatial layout

Two Complementary Object Representation Pathways

- Object-Specific Processing
  - Object-specific representation, can support functions such as attention selection and actions like grasping
- Ensemble-Statistics Processing
  - Non-object (element)-specific representation, can support functions such as texture & scene perception & navigation