**Background**

* Several studies have shown evidence for object-centered tuning in macaque V4 and IT, as well as human LOC.
* Other studies have shown that attention can change receptive field properties.
* Computational models of “shifter circuits” explicitly predict a transformation of the coordinate system of the visual representation from absolute to object-centered space.
* Standard retinotopic paradigms confound object-centered position and retina-centered position.
* Could there be an object-centered map in LOC?

**Methods**

- **Experiment 1**: 4 Screen rotations per run (72s each)
- **Experiment 2**: 12 Screen rotations per run (32s each)
- **Experiment 3**: 12 Screen rotations per run (32s each)

**Results - Experiment 1**

Within-Object Puzzle Piece

The number of voxels with a First, Second, or Third peak in the Fourier magnitude spectrum at each frequency was counted for four different regions of interest (V1, V4, LO, and pFs).

**Results - Experiment 2**

Within-Object Border Shape

**Results - Experiment 3**

Between-Object Relations

**Conclusions**

* There is no millimeter-scale object-centered coordinate map in LOC.
* The vast majority of the voxels, in all subjects, showed stronger modulation to changes in absolute (screen) position than object-centered position.
* Thus it is likely that the circuits that mediate object-centered coding are smaller than the scale of MRI voxels.
* Consistent with other results showing sensitivity to object-centered position in V4 and LOC, a secondary modulation of activity, i.e., a second peak in the Fourier spectrum at the frequency of the object-centered rotation, was observed in ~20% of the voxels in V4 and LO in experiments 1 and 2.
* A productive direction for future work would be to determine whether the object-centered location of attention could be read out of higher-level visual areas using multi-voxel classifiers, the same way orientation can be read out of earlier visual areas.

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