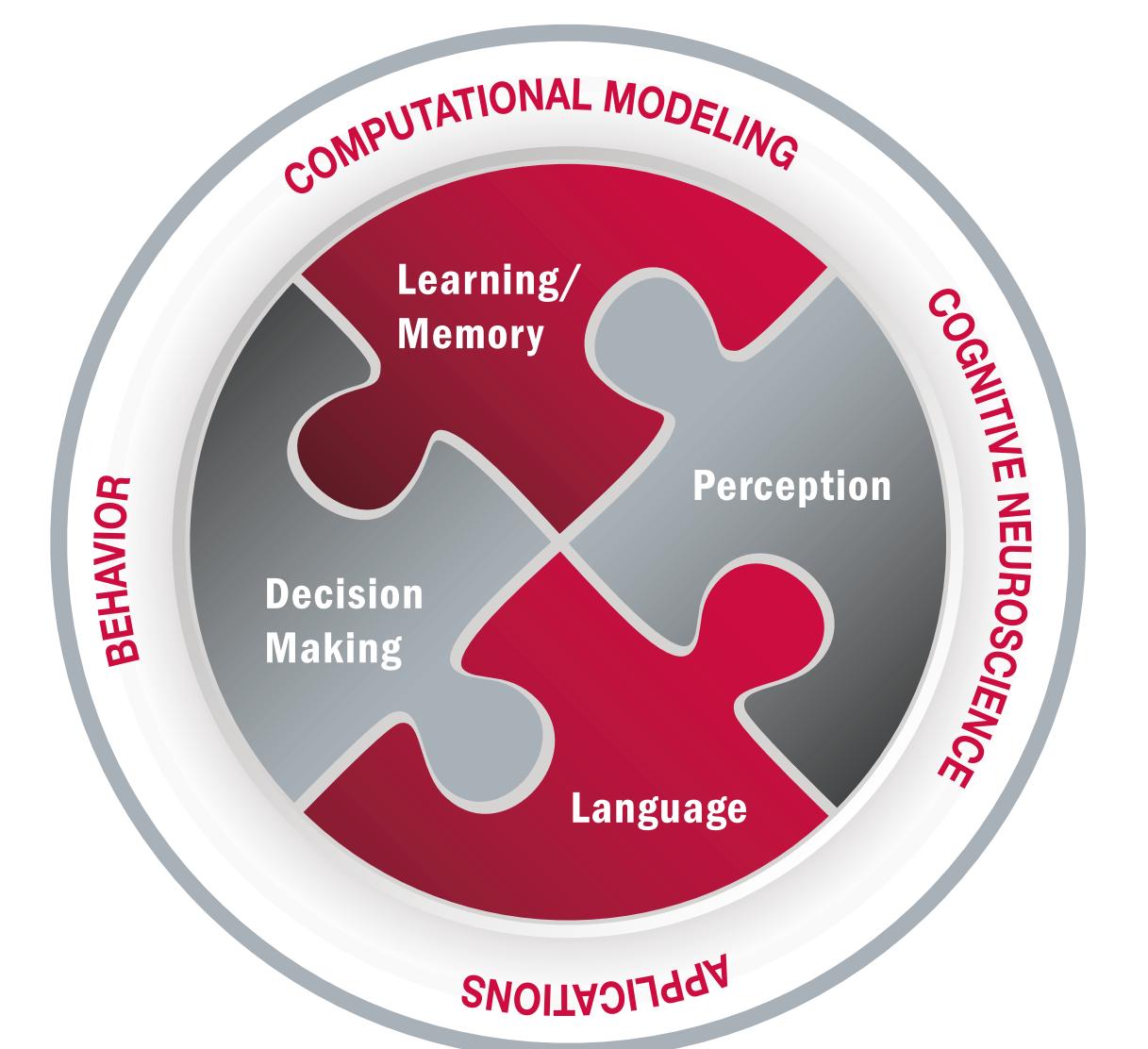


Depth Preferences of Category-Selective Regions in Human Visual Cortex

Matthew Heard¹, Daniel Berman¹, Nonie J. Finlayson^{1,2} & Julie D. Golomb¹

¹Department of Psychology, Center for Cognitive and Brain Sciences, The Ohio State University;

²Department of Experimental Psychology, University College of London



Center for Cognitive and Brain Sciences
The Ohio State University

Introduction

Category-selective areas of cortex have differential sensitivities to a variety of visual features besides the superordinate categories they are defined by.

- Examples include:

- High spatial frequencies (PPA) (Rajimehr et al., 2011)
- Foveal information (LO, pFs); or peripheral information (PPA) (Hasson et al., 2002)
- Symmetry across visual hemifields (FFA) (Caldara & Seghier, 2009)
- Upper visual field (PPA and OPA); lower visual field (EBA and LO) (Schwarzlose et al., 2008)
- Distal stimuli (PPA and OPA); proximal stimuli (LO) (Amit et al., 2012)

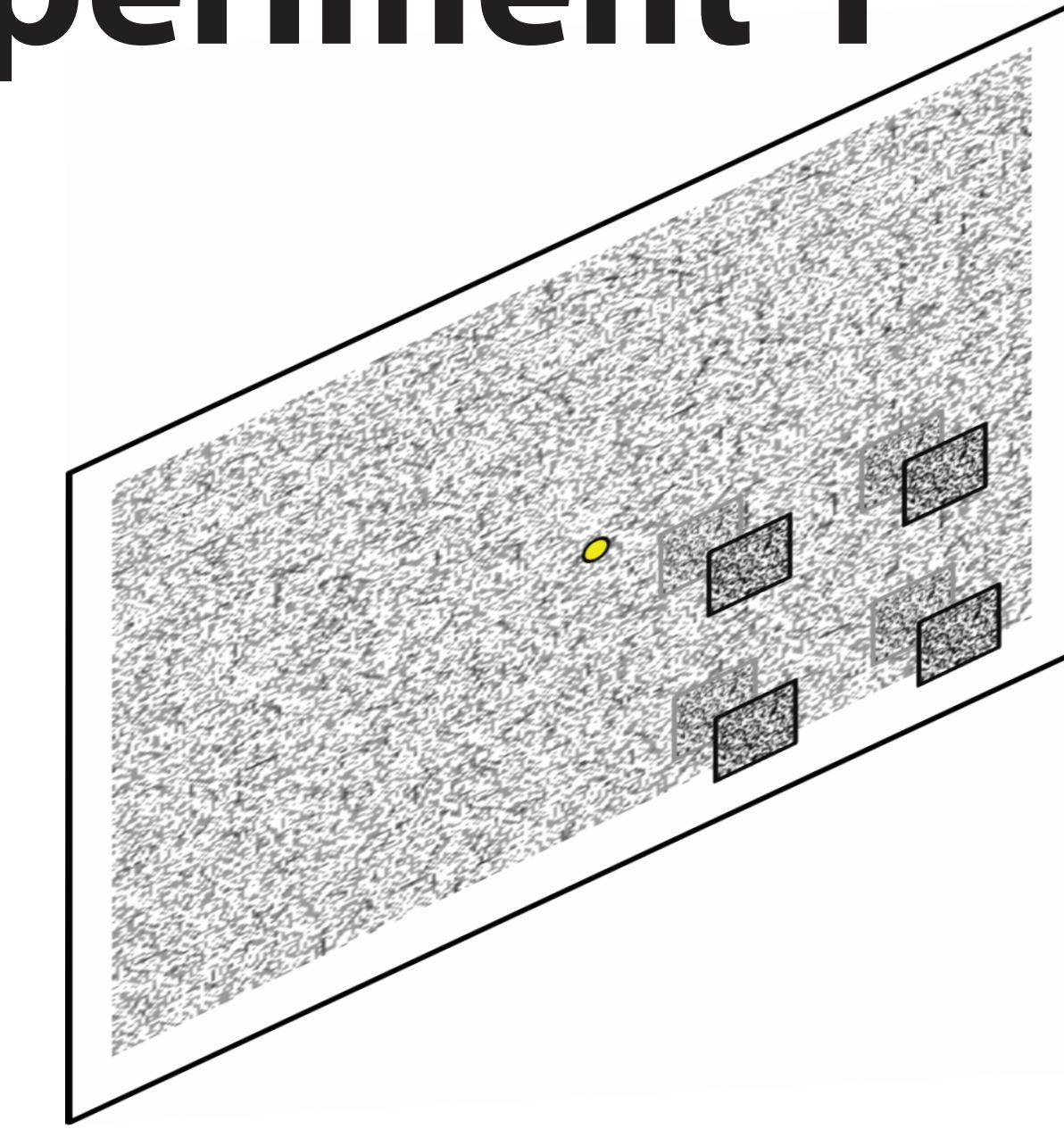
Do category-selective areas of visual cortex have any preference for different depths?

Methods

- Red/green anaglyph glasses used to achieve depth perception in scanner
- Standard functional localizers used to independently delineate ROIs
- TR = 2500 ms; TE = 28 ms; 2x2x2 mm voxels



Experiment 1

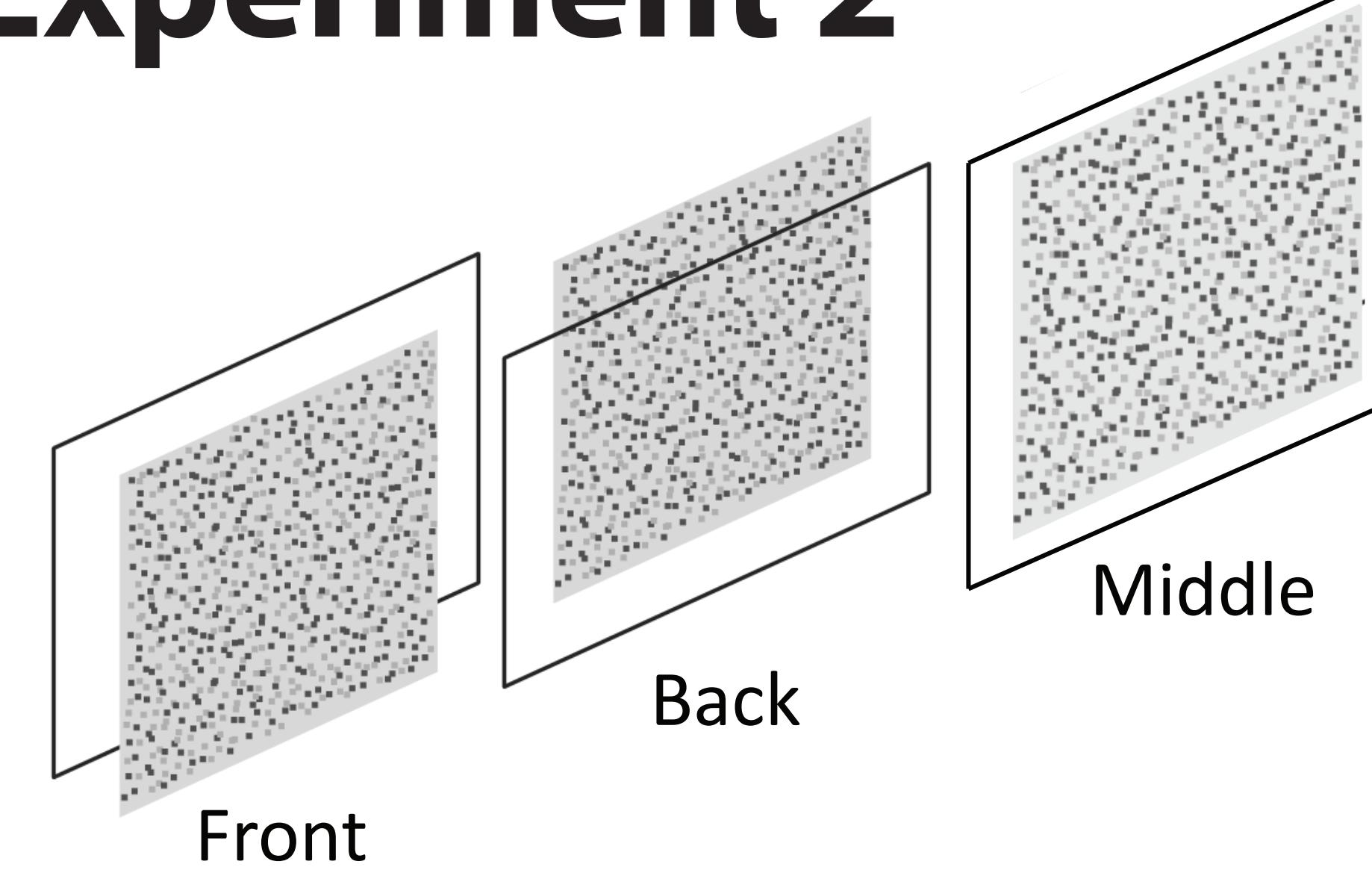


- Small square patches of random dot motion presented in front of or behind fixation plane.

(Finlayson, Zhang, & Golomb, under revision)

n = 16

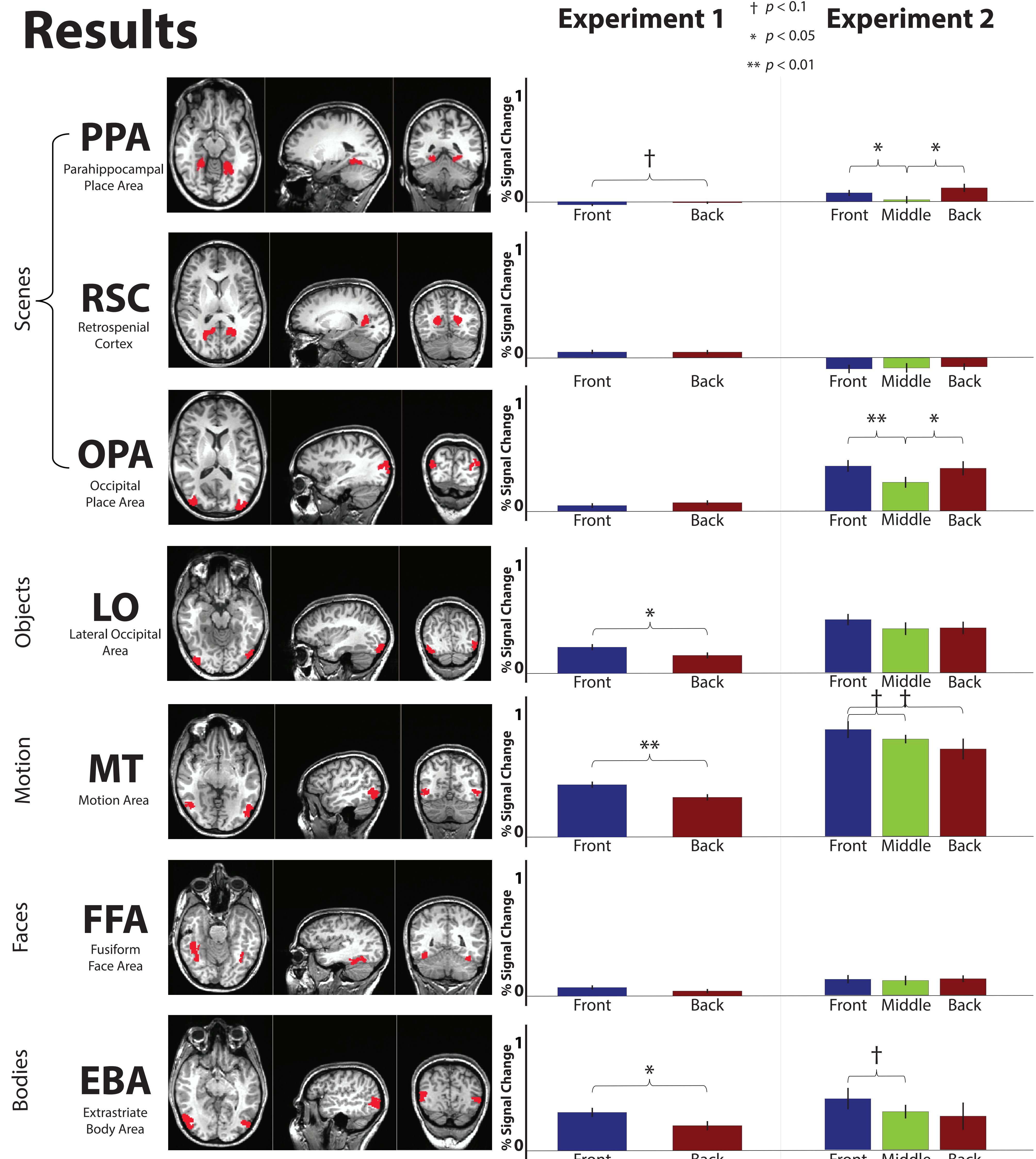
Experiment 2



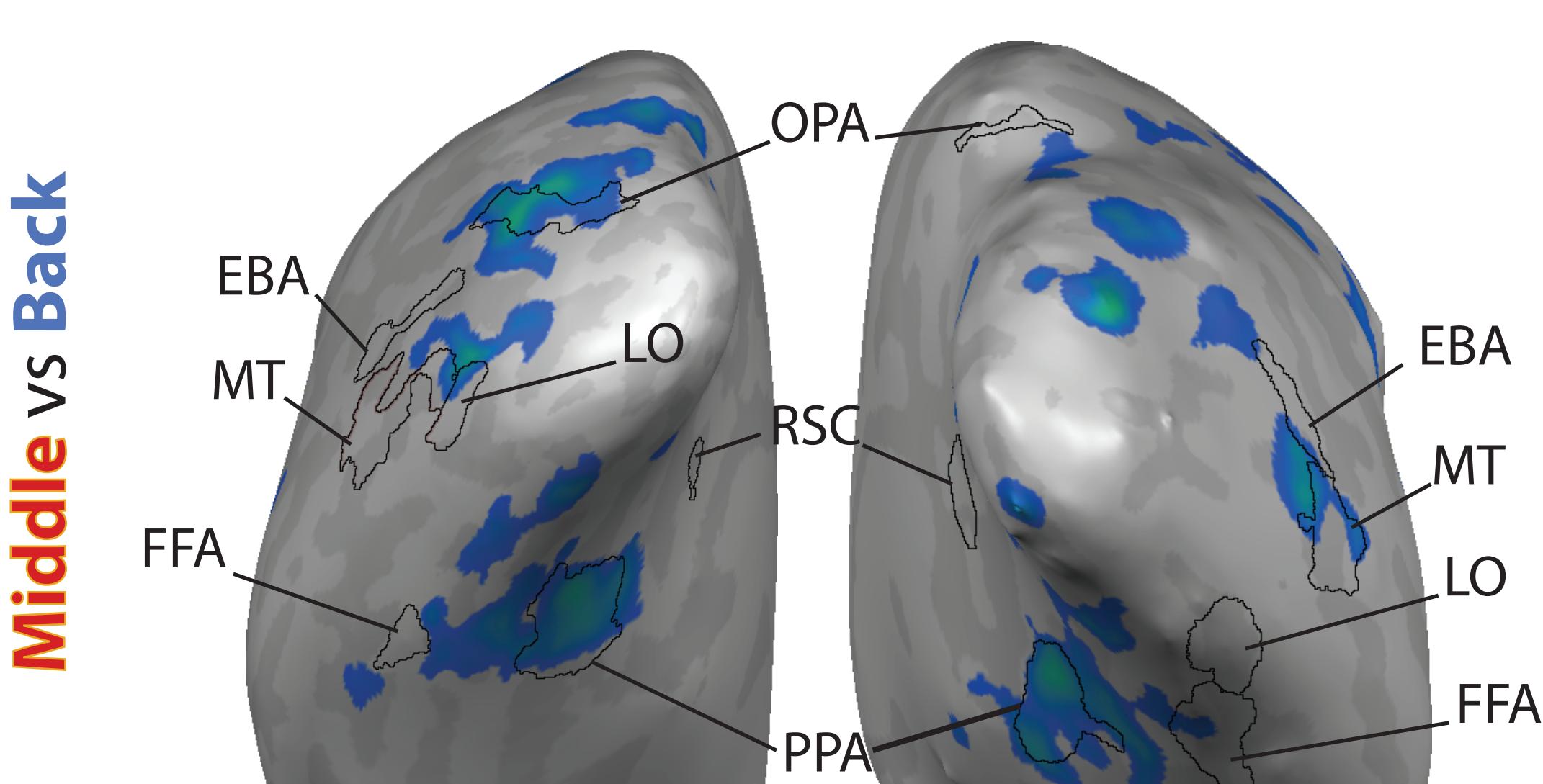
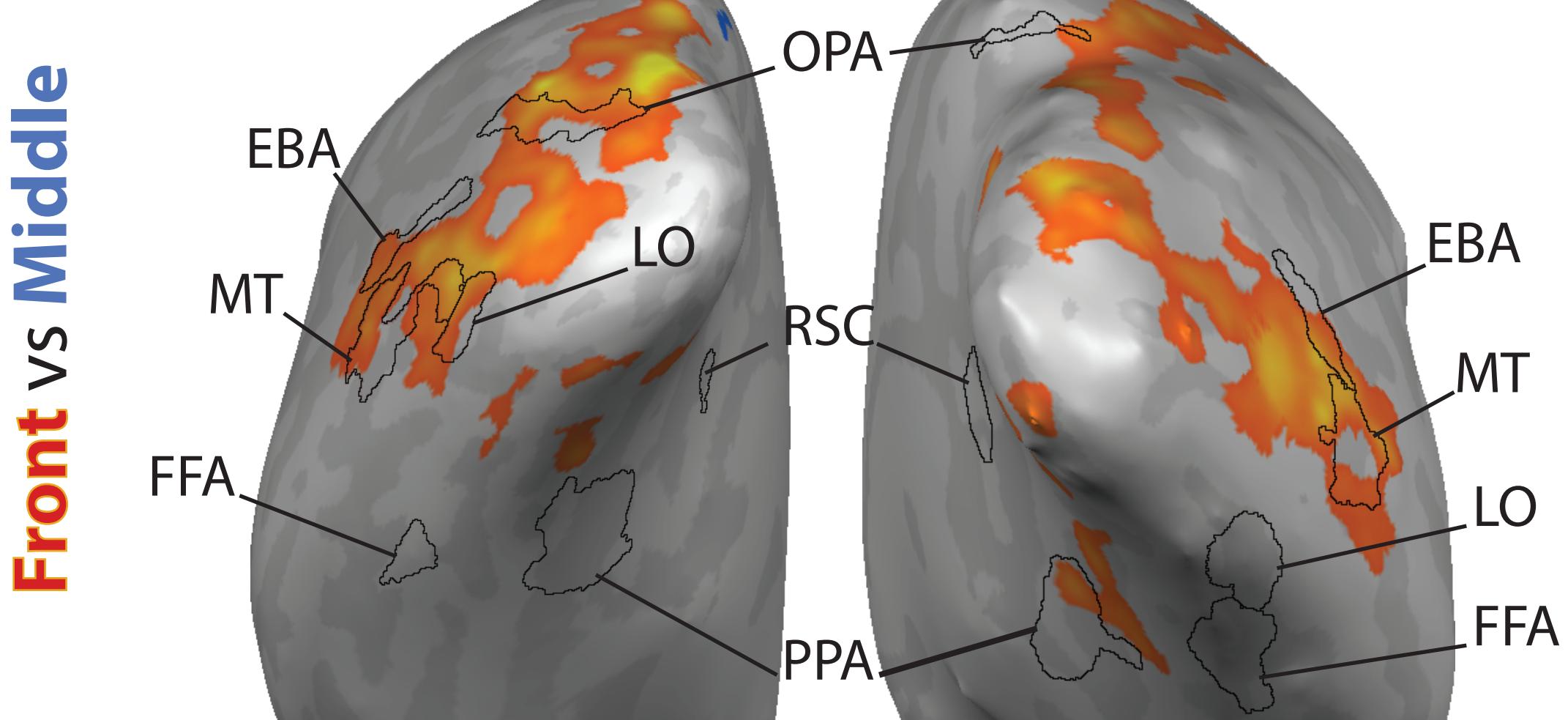
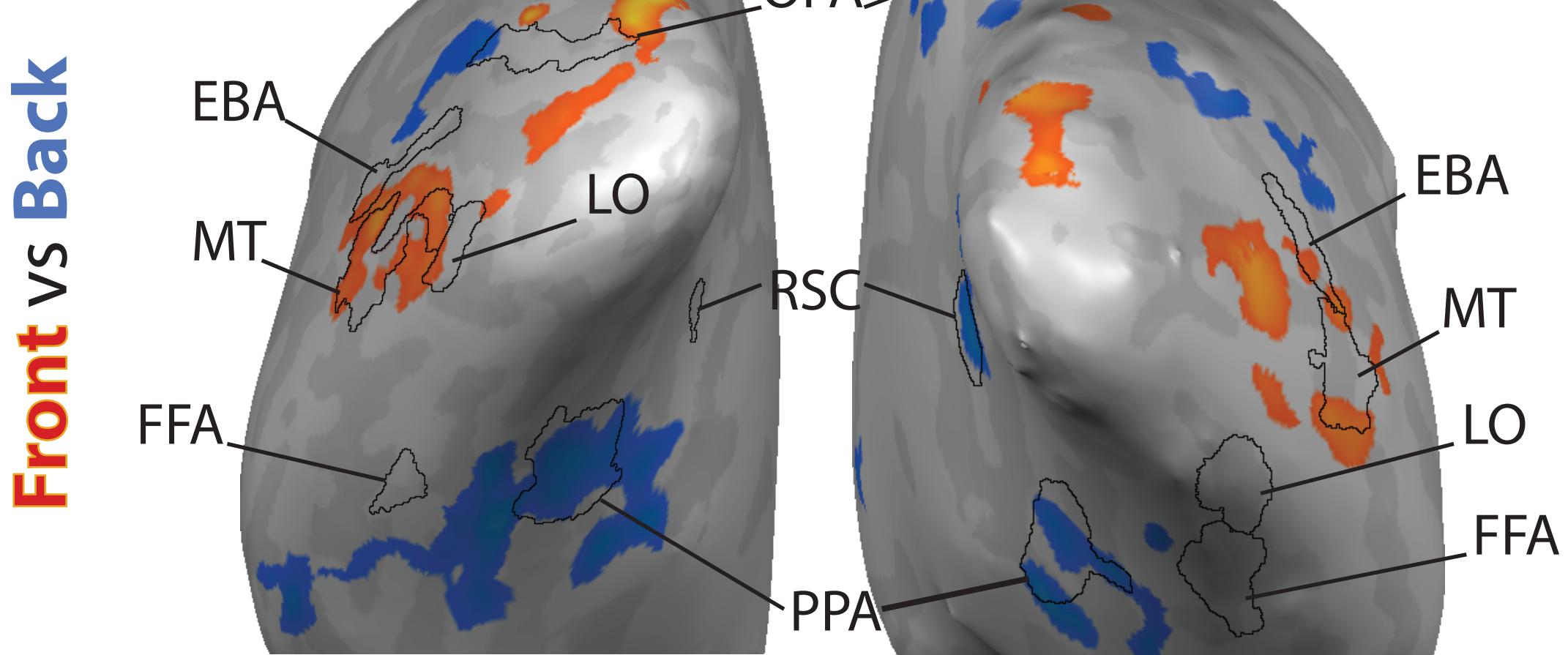
- Flickering dot patterns extending ~14 degrees of visual field, that are in front, behind or at the same depth as fixation (middle).

n = 10

Results



Left Hemisphere Right Hemisphere



Conclusions

- Place areas PPA and OPA are sensitive to differences in depth, but do not show a significant difference in mean activity between front/back depths
 - Could PPA and OPA use both place and non-place information to provide context for non-place stimuli?
- Object area LO and body area EBA activate more when stimuli is in foreground
 - Objects and bodies processed in front of fixation
- Motion area MT prefers front depths, may also be sensitive to differences in all depths
 - Parallax effect? Objects in front plane have higher angular velocities

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