

MAPPING HUMAN CORTEX

Prof. Alexander Huth

9.24.2020

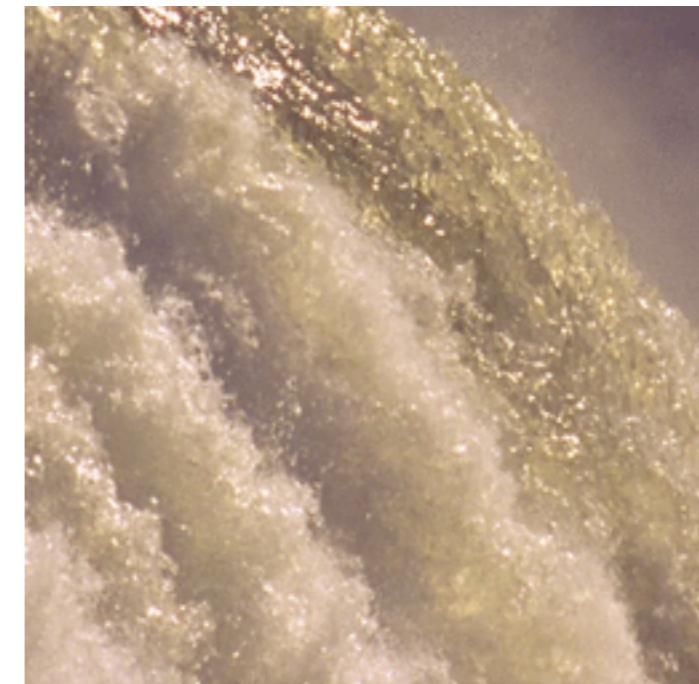
INFOGRAPHIC

- * Your first **infographic** homework was due TODAY!
- * YOU'RE AMAZING

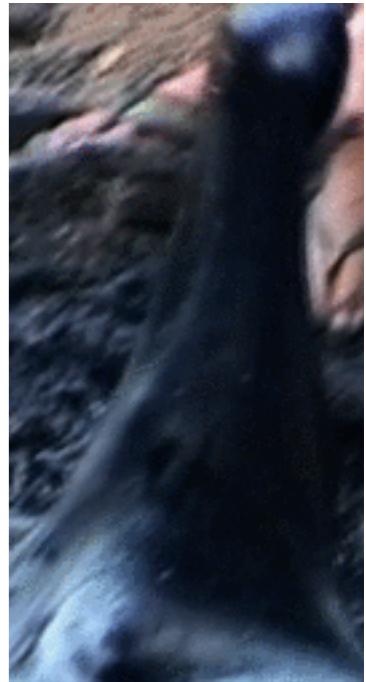
INDUCTIVE APPROACH

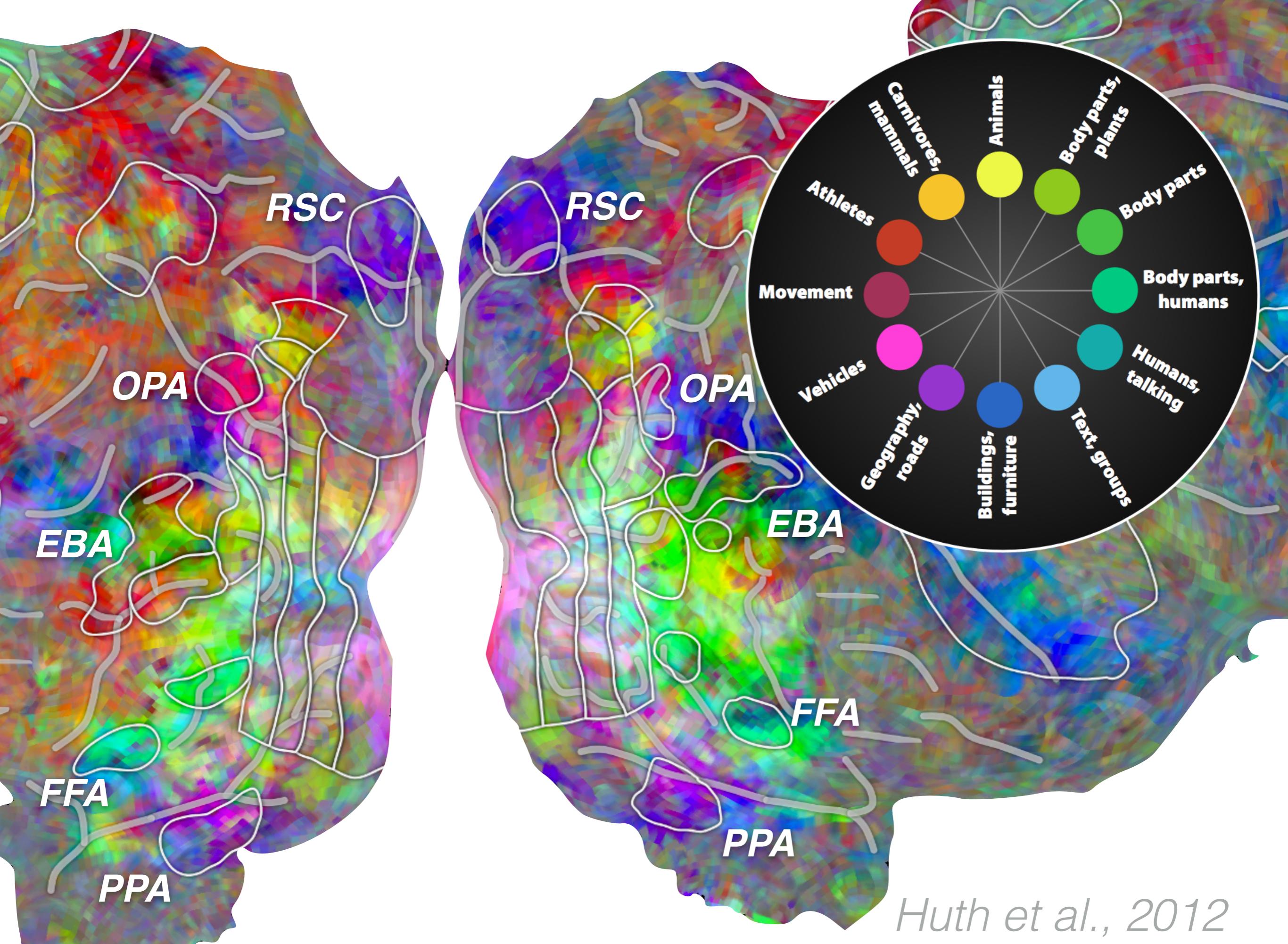
- * **Measure** brain responses to a wide variety of stimuli
- * **Build** model to predict responses based on stimuli
- * **Test** whether model generalizes to different stimuli
- * **Use** model to answer questions about brain

NATURAL STIMULI

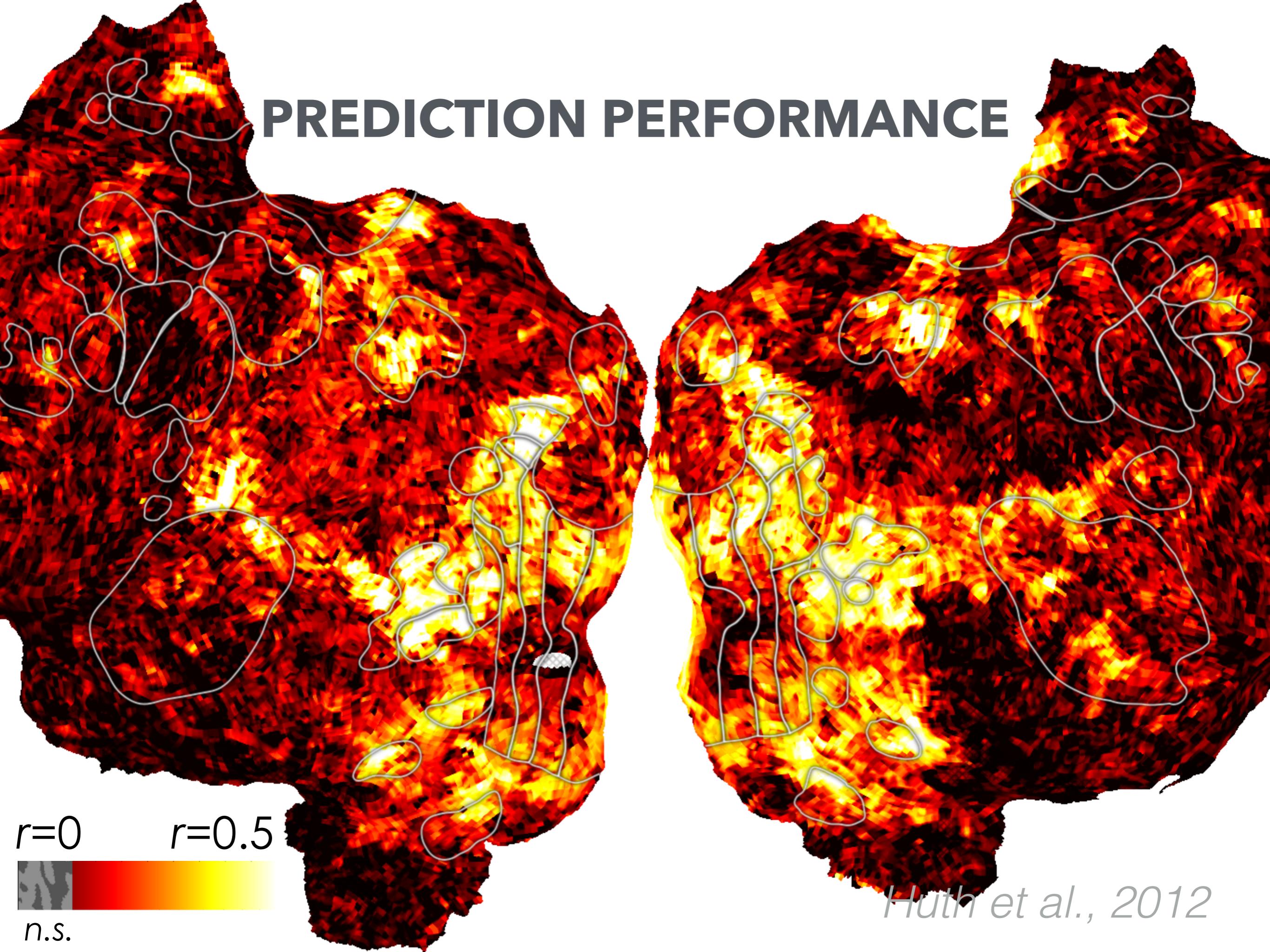


horseman
horse
walk
road
spectator
mountain

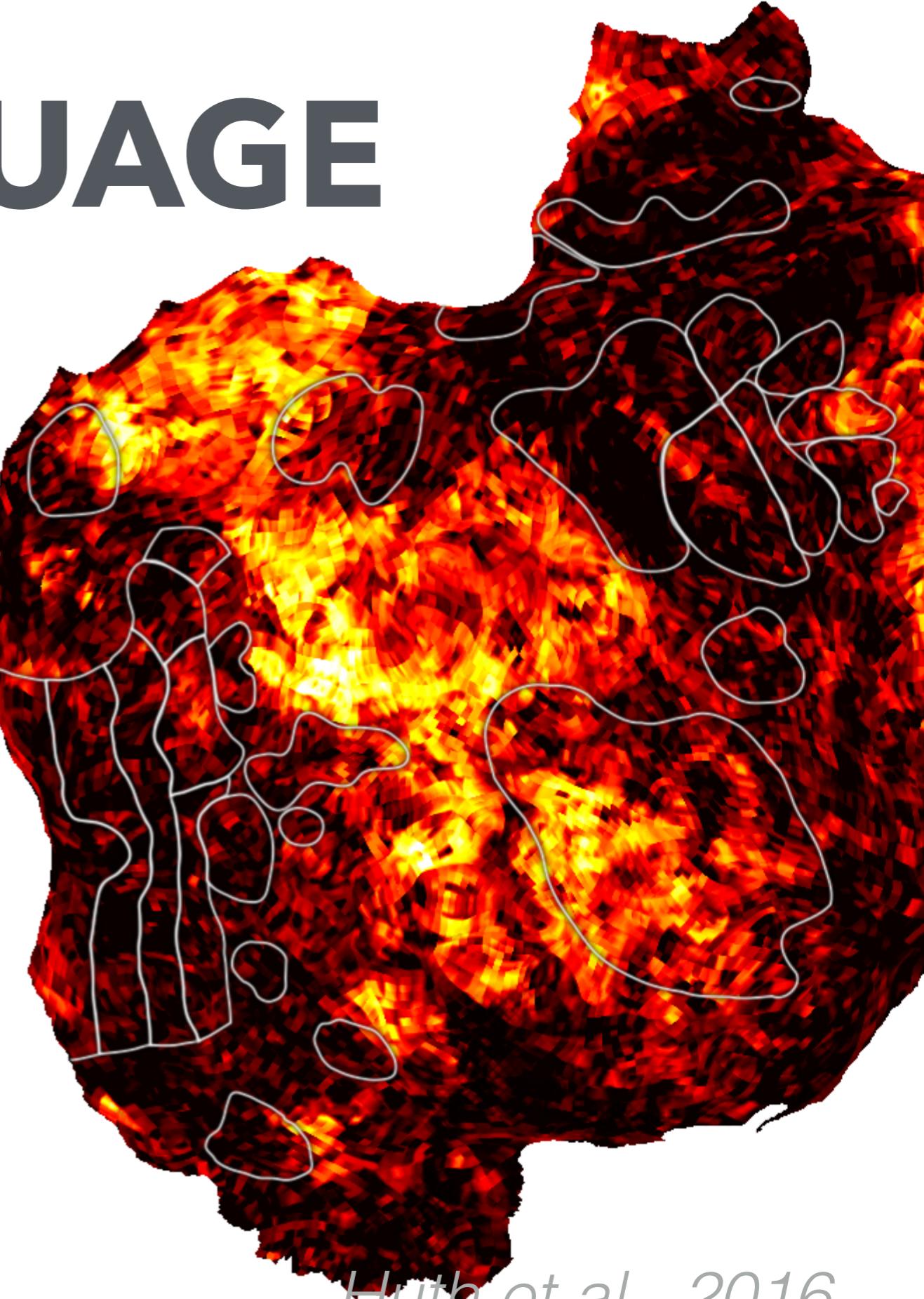
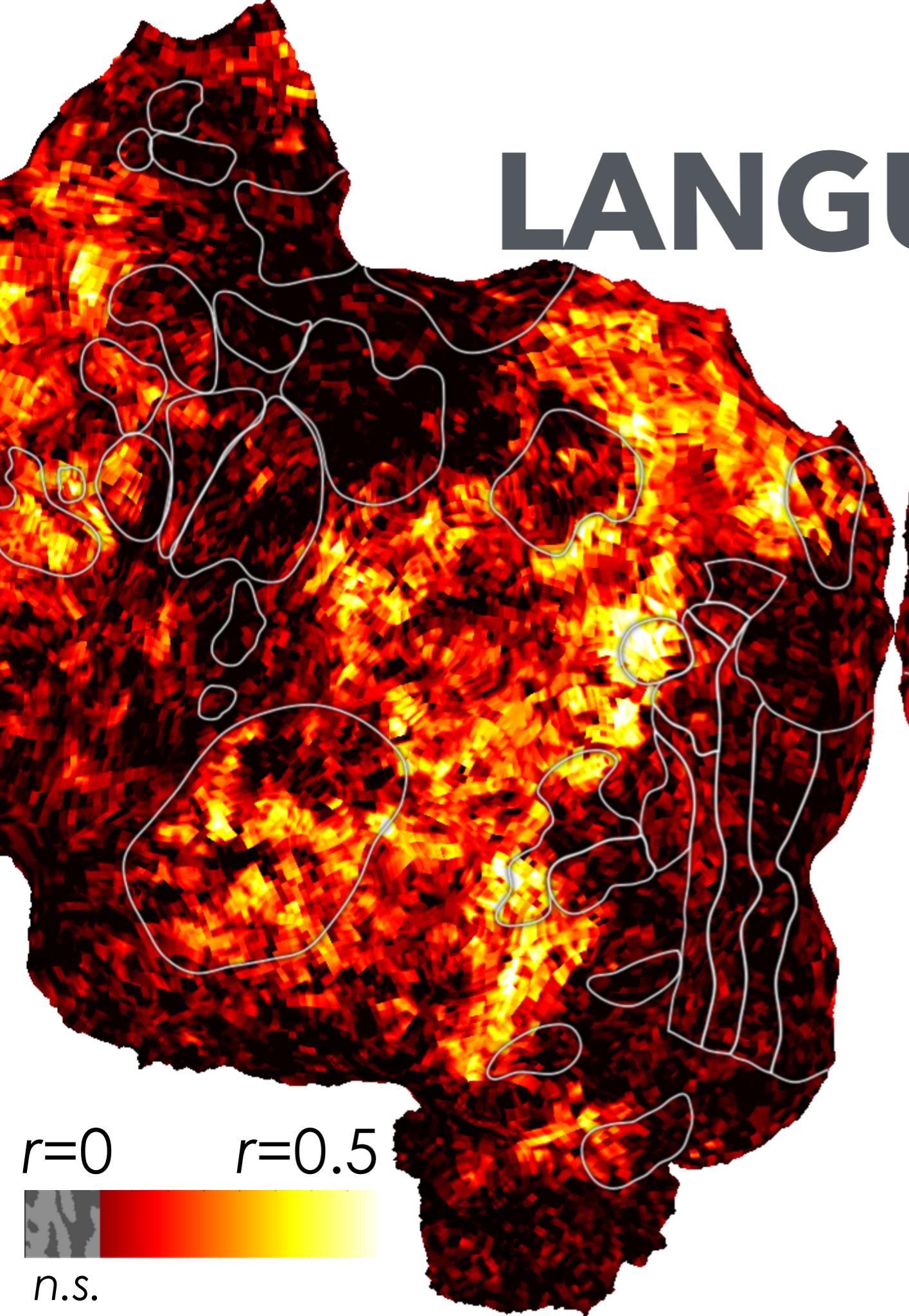




Huth et al., 2012

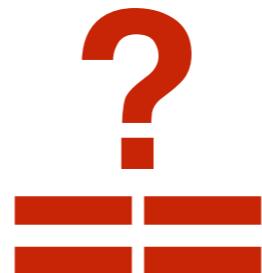
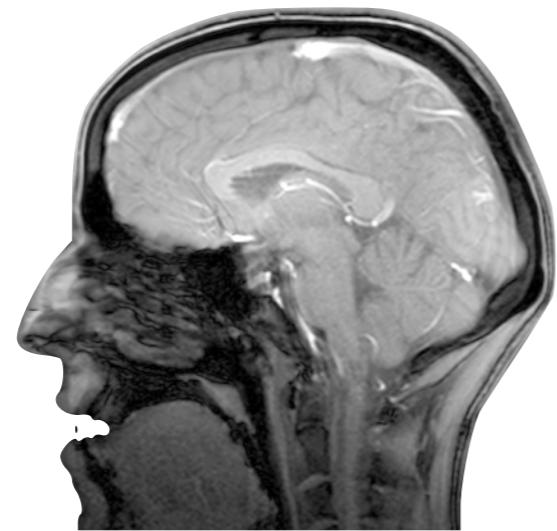
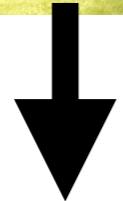


LANGUAGE

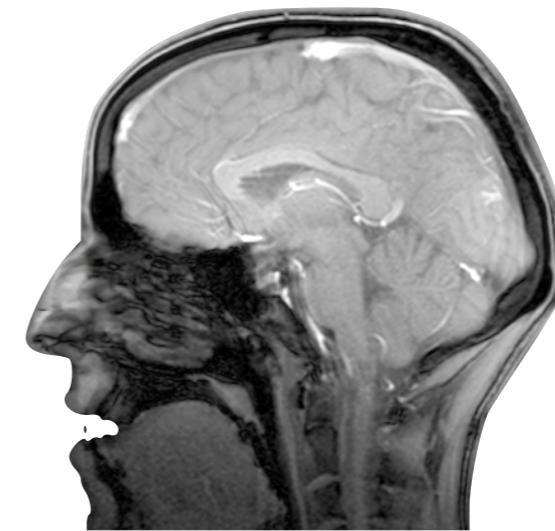


Huth et al., 2016

LANGUAGE v. VISION



“Dog”



EXPERIMENTS

Visual fMRI data

2h natural movies from
Hollywood movie trailers



Language fMRI data

2.5h narrative stories from
The Moth Radio Hour

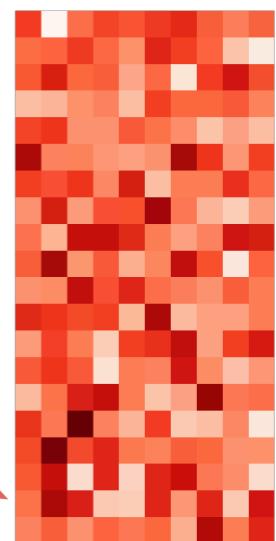


*...she was removing photographs
from the walls and placing them in
little piles around the house...*

5 subjects,
~15h MRI /
subject

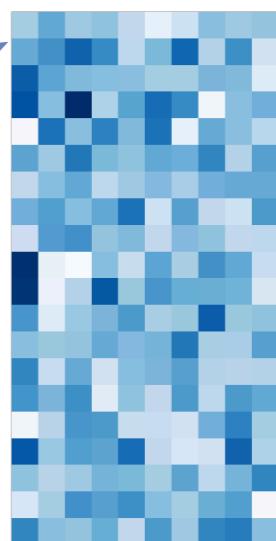
month	month	week	hour	park	building	location	woman	boy	child
week		week	hour						
hour			hour						
park				park	building	location			
building					building	location			
location						location			
woman							woman	boy	child
boy								boy	child
child									child

985 features



Visual semantic
models

~80k voxels / subj.

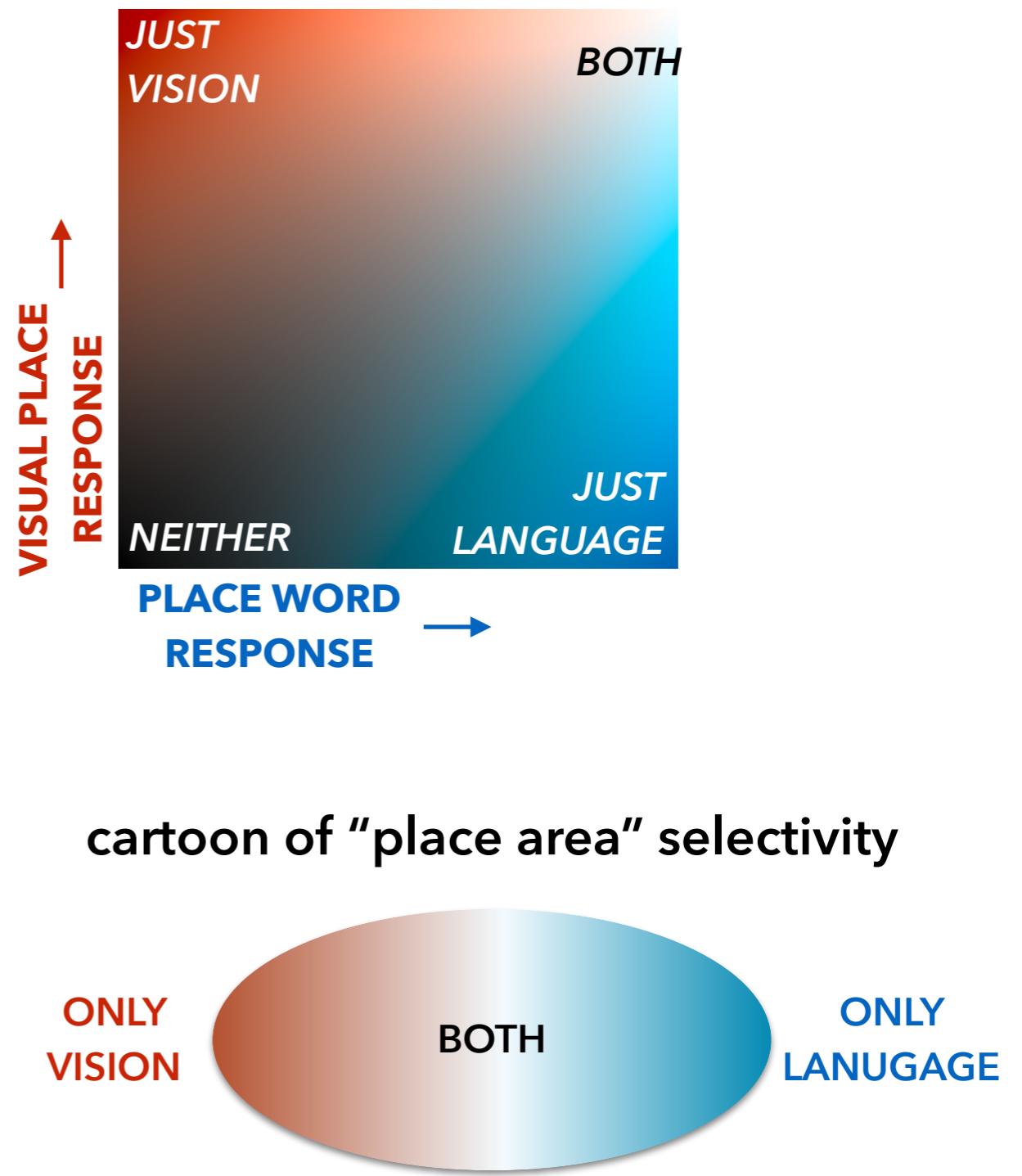
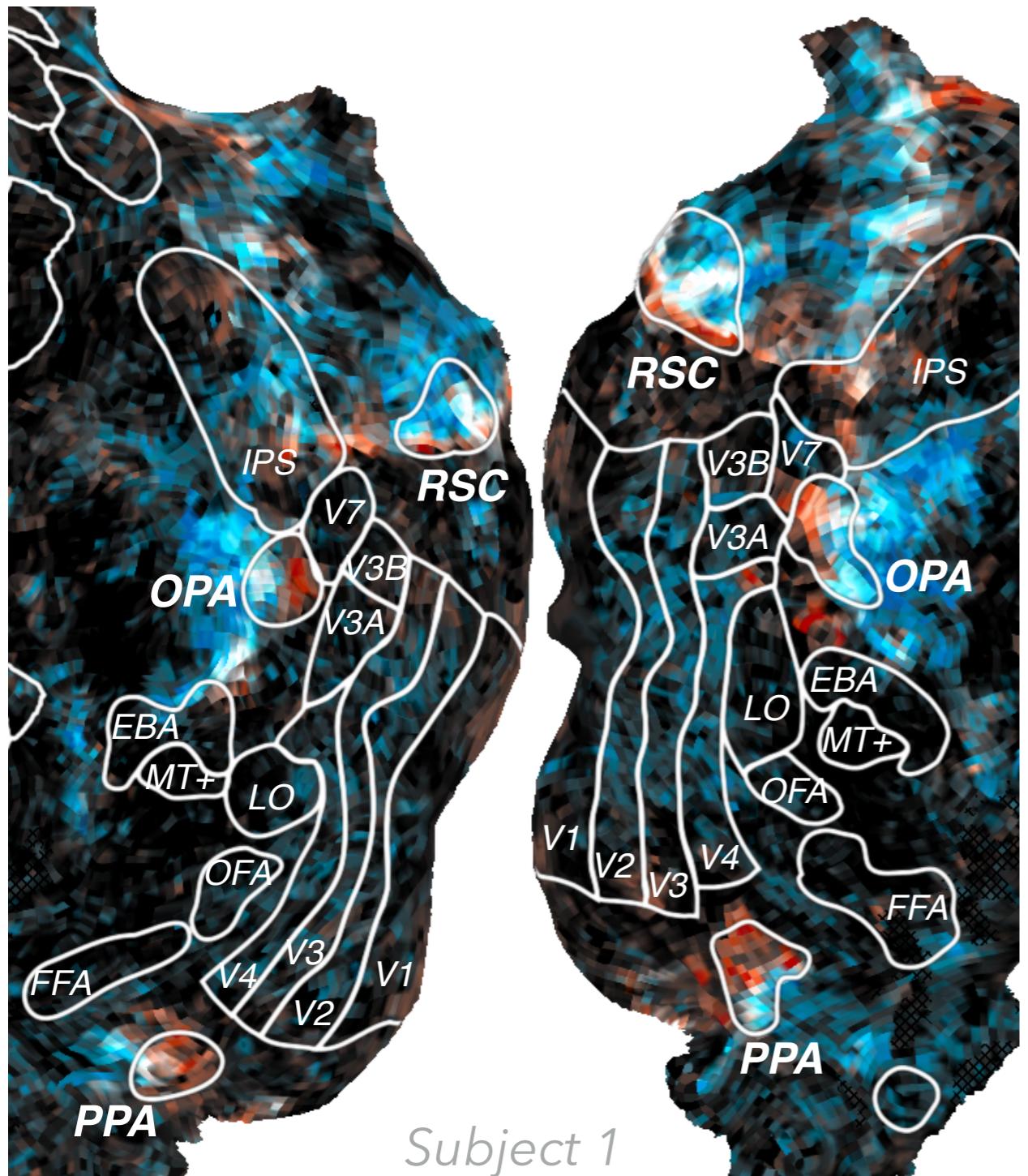


Language semantic
models

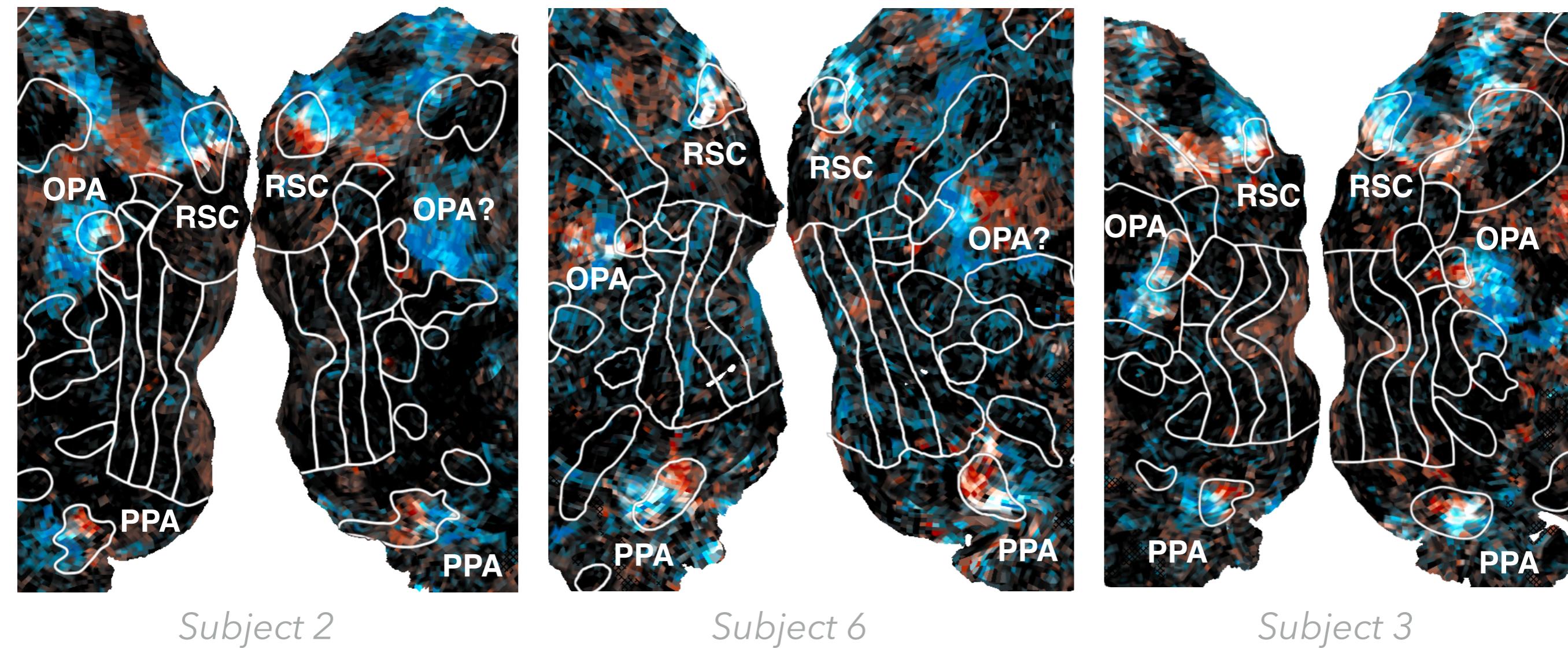
~80k voxels / subj.

985 features

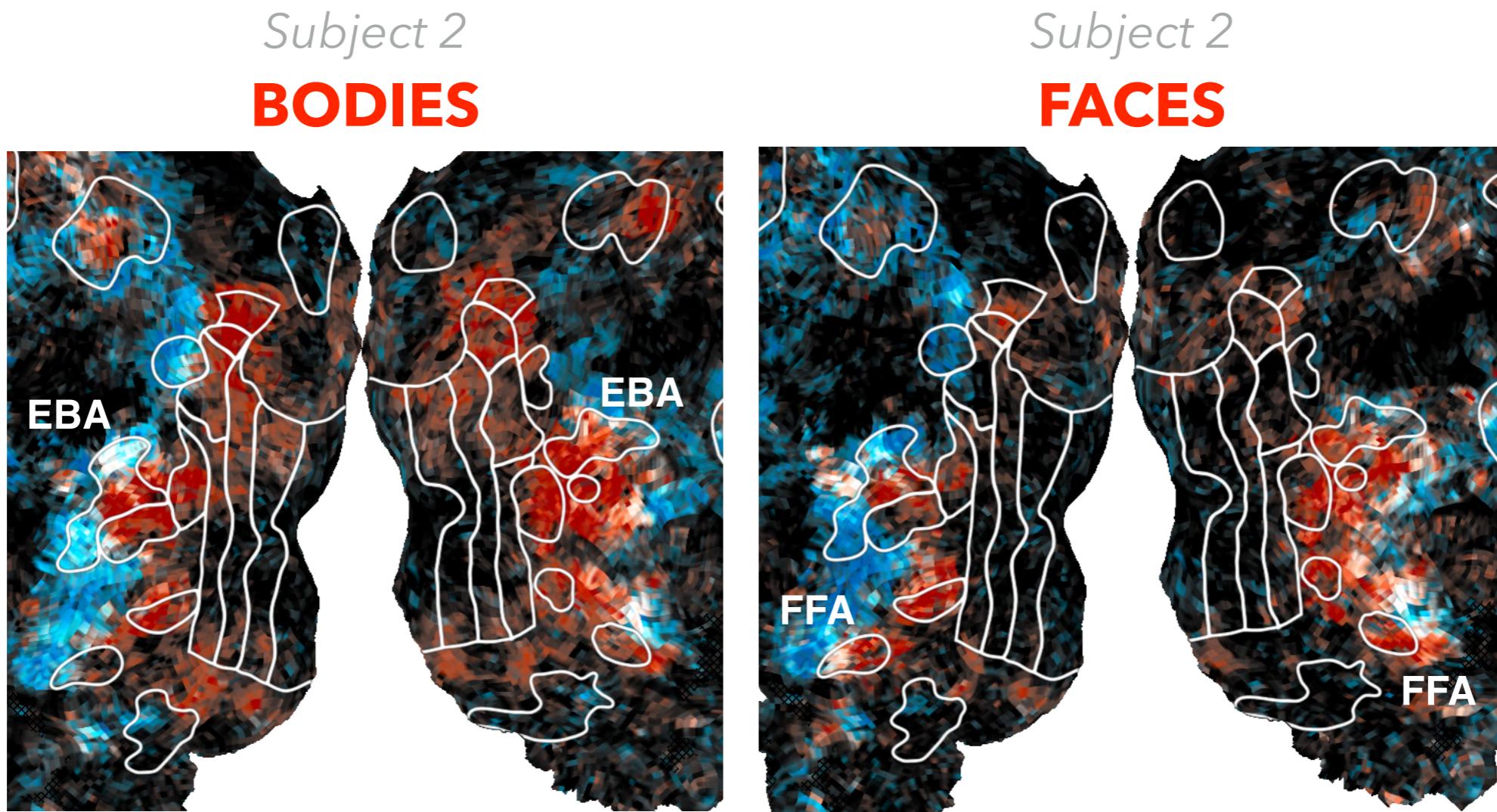
ONE CATEGORY: PLACES



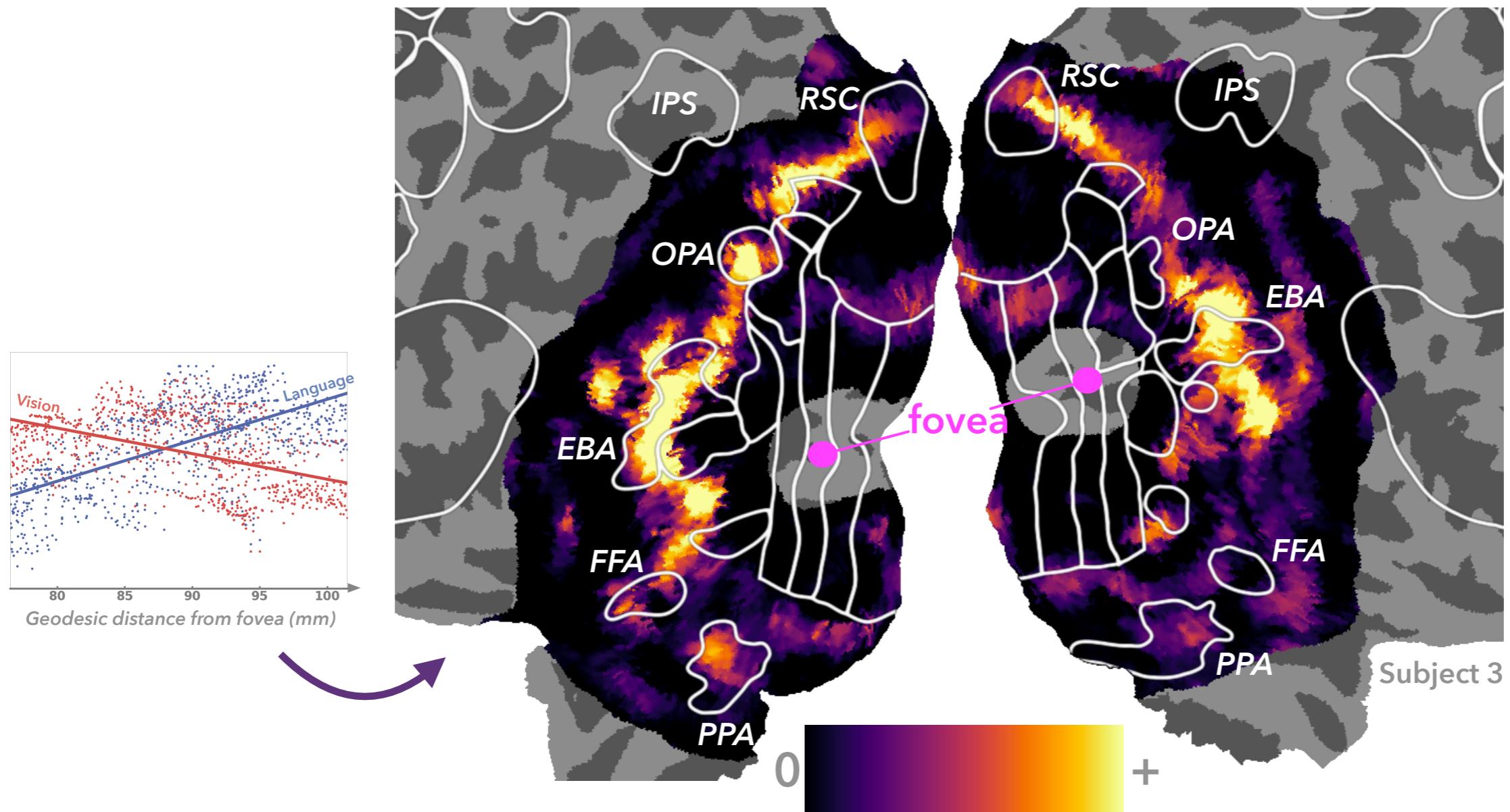
ONE CATEGORY: PLACES



GRADIENTS ALSO APPEAR FOR OTHER CATEGORIES



GENERAL PROPERTY!



Sara Popham



UNTIL

NEXT

TIME