

# Characterizing cortical responses to faces and scenes in infant ventral temporal cortex.

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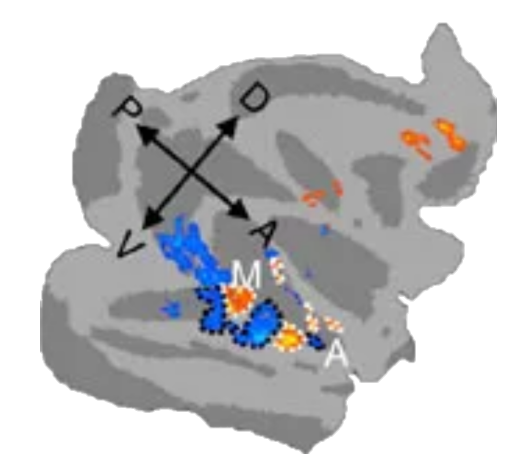
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## Background

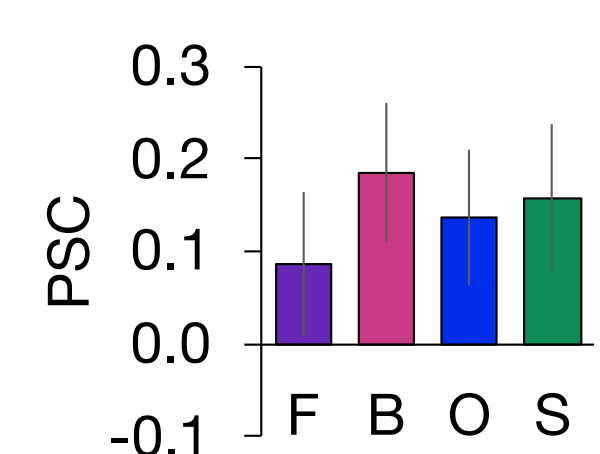
- Adults have cortical areas that respond selectively to categories such as faces, bodies, objects, and scenes (Kanwisher, 2010).

When does selectivity emerge?

- Infants prefer faces and spend more time looking at faces than other objects (Farroni et al., 2005; Fausey et al., 2016).
- Infant neuroimaging experiments have failed to find face selective responses in primate infants (Livingstone et al., 2017; Deen et al., 2017).

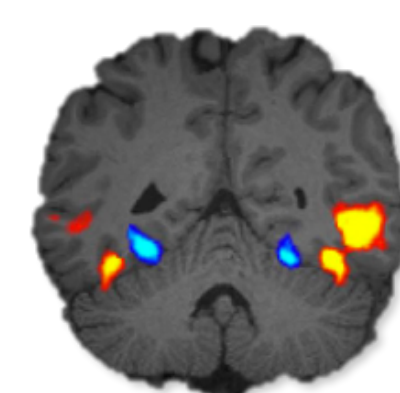


Macaque infants  
n=3

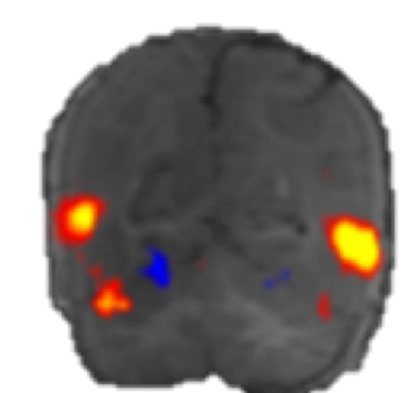


Human Infants  
n=6

- Cortical responses to faces (face>scene) and scenes (scene>face) are in similar areas in infants & adults (Deen et al., 2017).



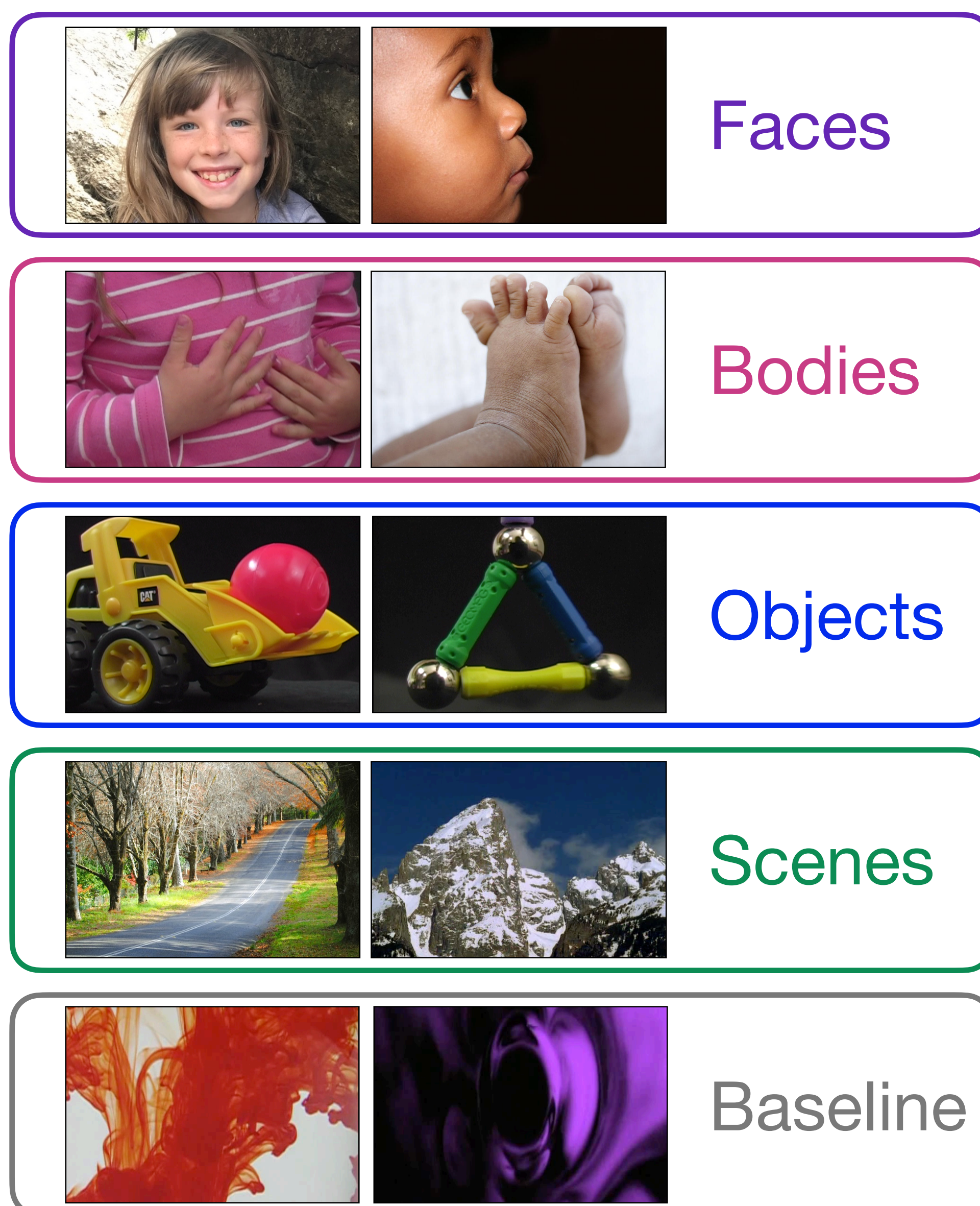
Adult



Infant

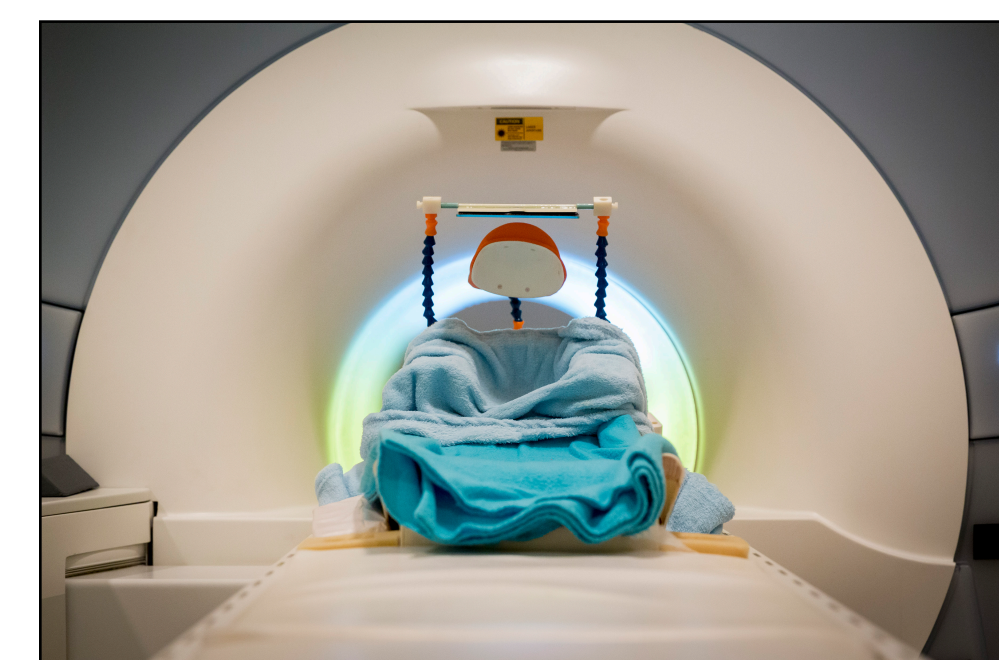
How are behavioral face preferences supported by the infant brain? Do infants have selective responses for any category?

## Stimuli



Colorful videos played continuously. Blocks were 18s long with 2.7-3s videos.

## Infant fMRI data collection



Special infant coil for awake infant fMRI.



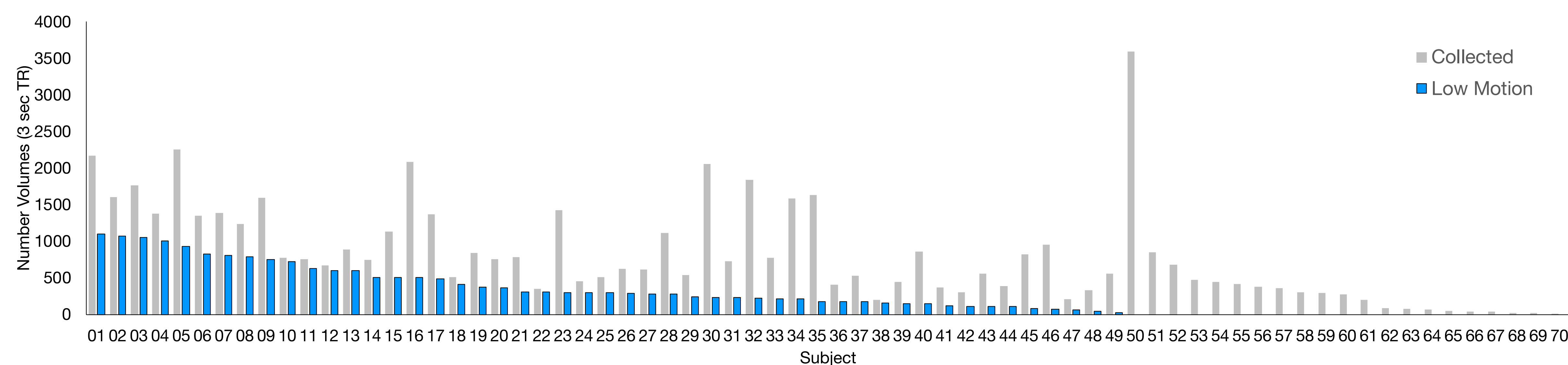
Scanner buddy and parent with infant.



New coil and better acquisition sequence



Flexible design for infant headphones.



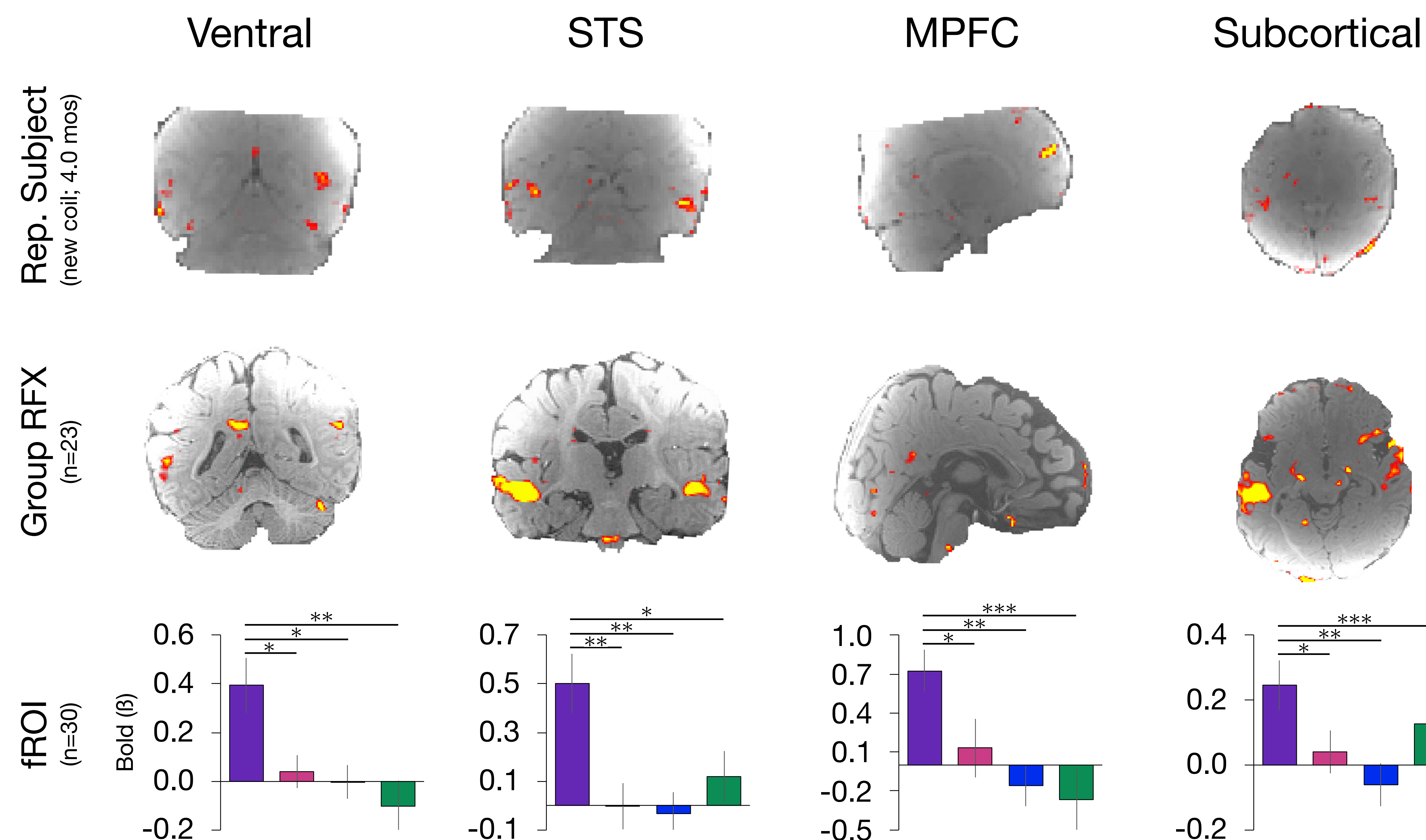
### Subject Inclusion

- Recruited: 86 subjects 2.1-11.9 months mean age = 5.2m; 41 female; 42 new coil
- RFX: 49 subjects 2.1-9.7 months mean age = 5.1m; 24 female; 23 new coil
- fROI: 30 subjects 2.5-9.4 months mean=4.9m; 11 female; 16 new coil

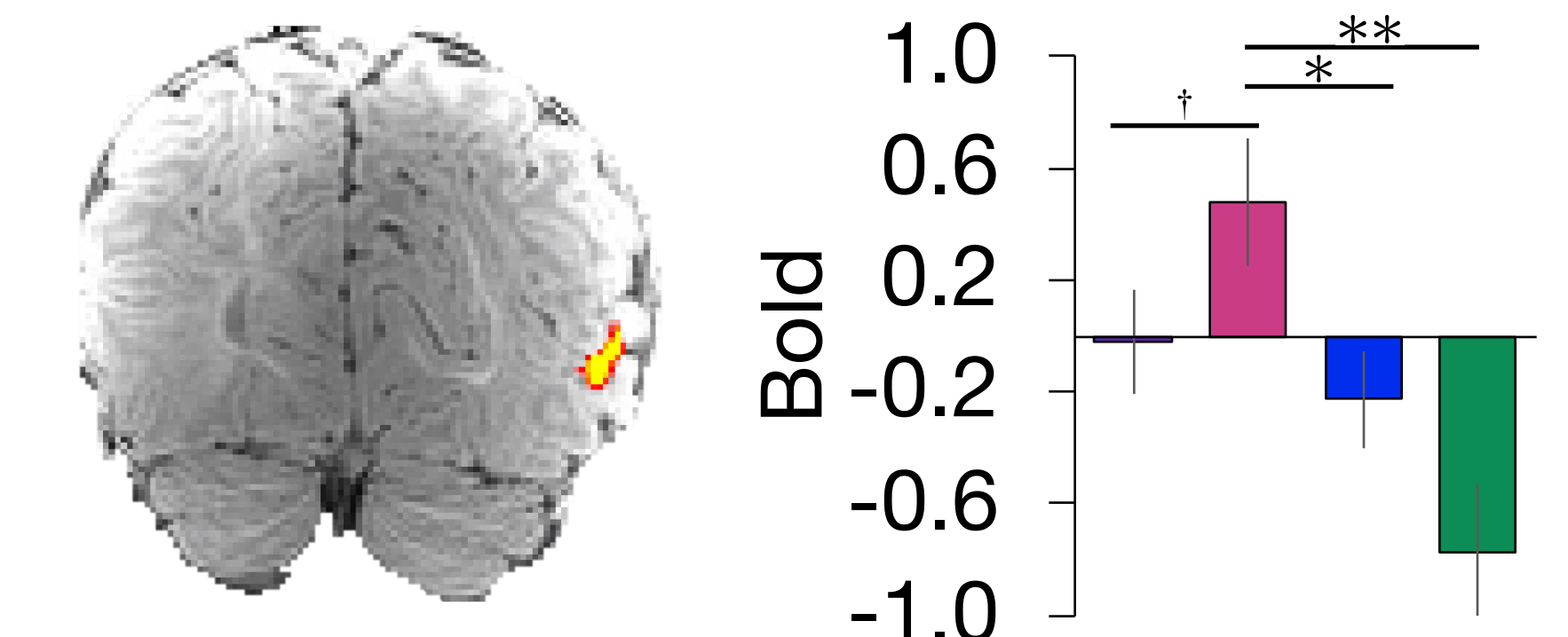
### Data Inclusion

- High motion volumes (>0.5 mm or degrees of motion) are removed to create "subruns"
- Subruns minimum 24 consecutive volumes
- Minimum 96 volumes for group random effects
- Minimum 2 subruns with 96 volumes for fROI

## Face selective responses in the infant brain

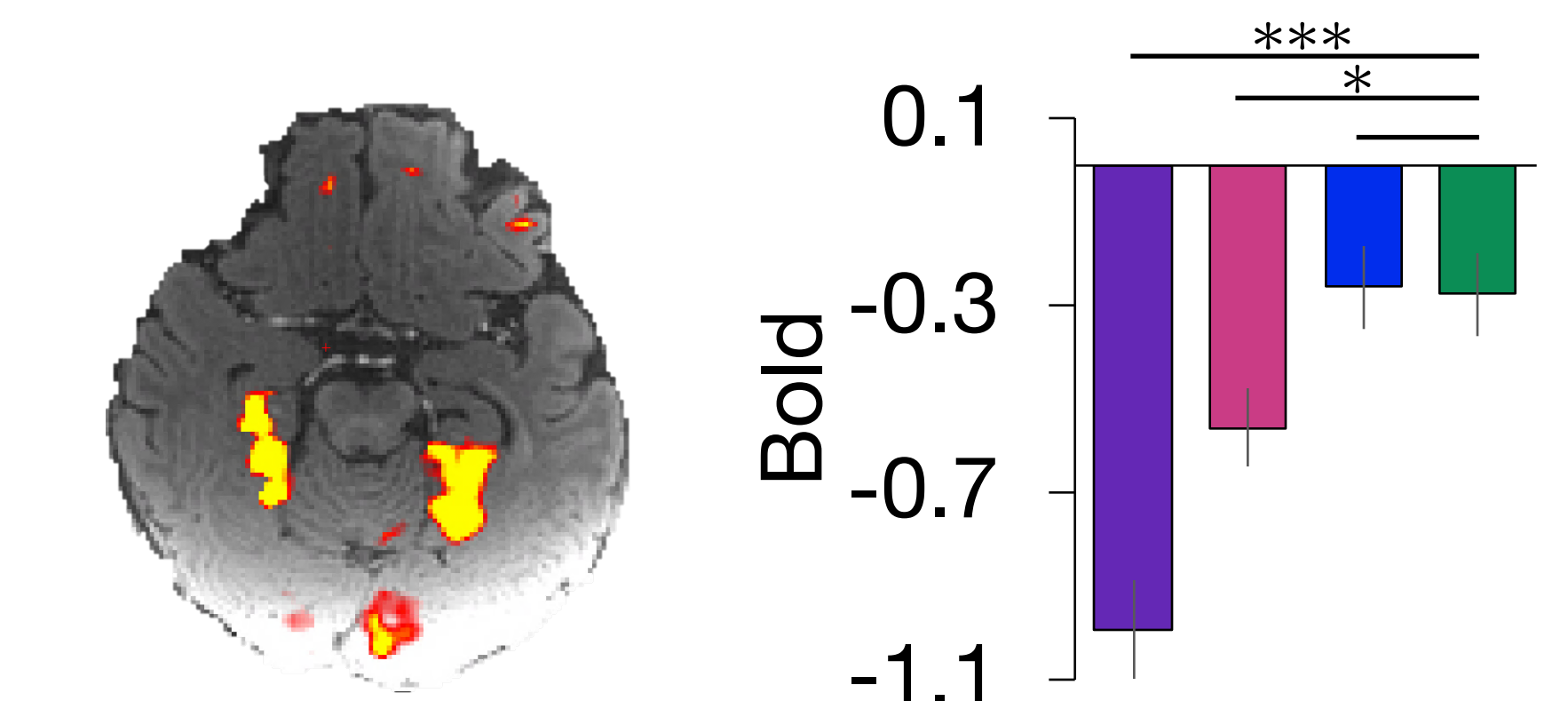


## Bodies



Body selectivity in infant lateral occipital cortex. New coil group RFX n=23; fROI n=30.

## Scenes



Infant ventral scene preferences lack selectivity. New coil group RFX n=23; fROI n=30.

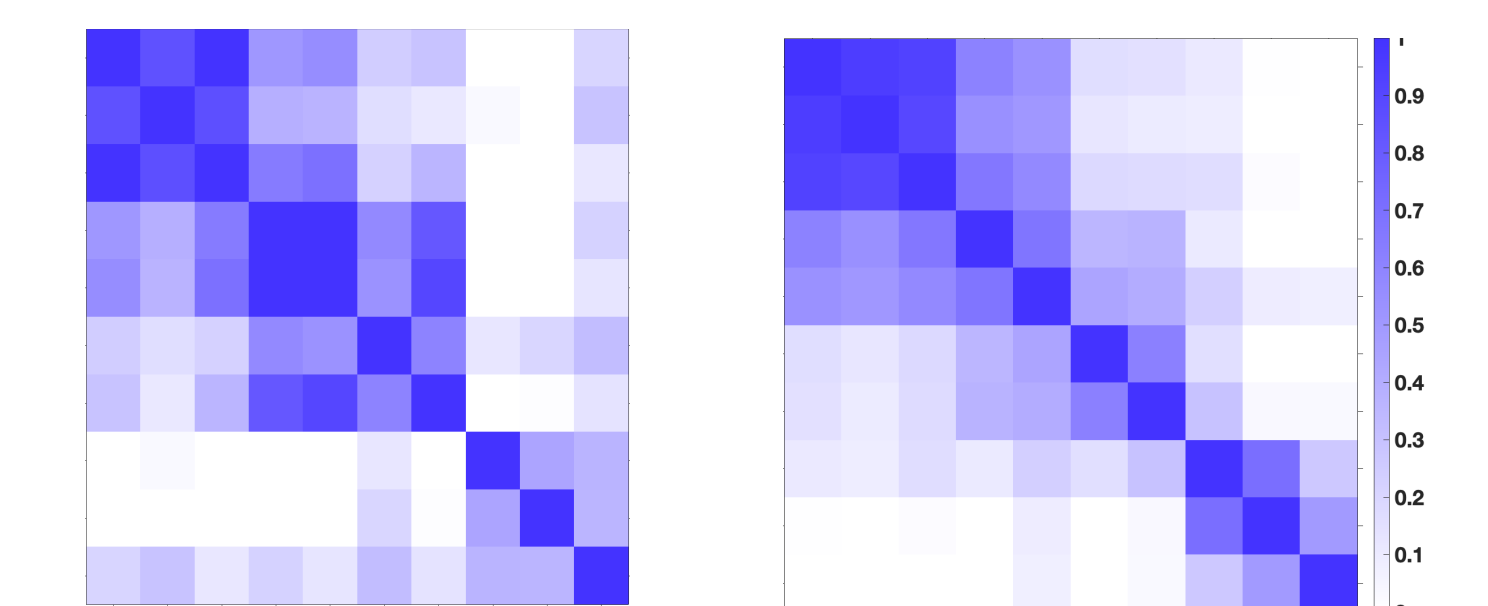
## Discussion

- We found the first evidence of face selective responses in the infant brain.
- We did not find selective response for other categories.

## Future Directions

What is the role of top-down connections in the development of category-selectivity?

What is the representational space of infant cortex?



## Acknowledgements

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