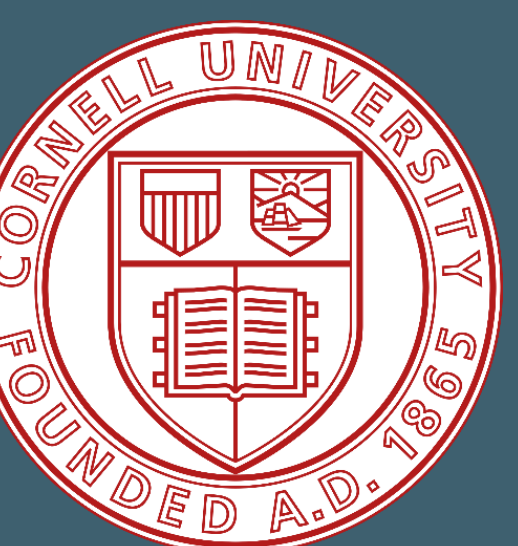




Perspective-Taking in Mental Imagery of the Actions of Others

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Introduction

- People imagine their own actions by relying on the motor systems they use to perform those actions. [1]

How do people imagine other people's actions?

H1: Egocentric perspective

People imagine others' actions the way they typically perform actions themselves.

H2: Allocentric perspective

People imagine others' actions the way they see others perform actions.

- Previous righties-only studies have failed to differentiate, since hypotheses make same prediction for righties. [2]
- *Lefties*: perform left-handed actions, see others perform right-handed actions.

Methods [1]

handedness

lefties (n=16)

righties (n=17)

person

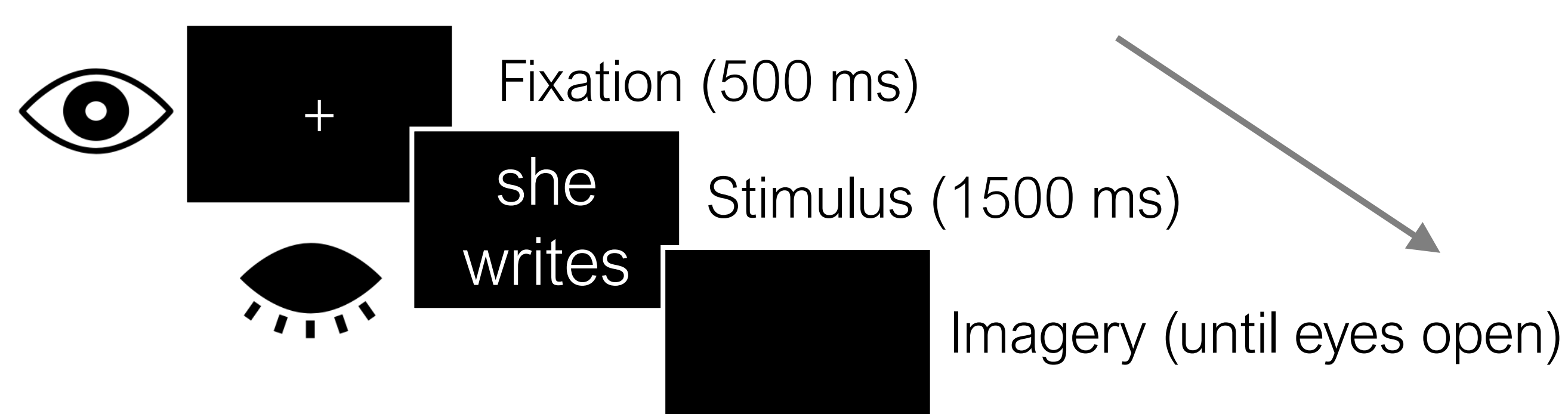
2nd

3rd

verb type

manual

nonmanual



Artifact removal:

- Scanner issues caused ghosting and slice order artifacts
- Runs with visible artifacts excluded

Whole brain analysis:

- 2nd manual > 2nd nonmanual
- 3rd manual > 3rd nonmanual

ROI analysis:

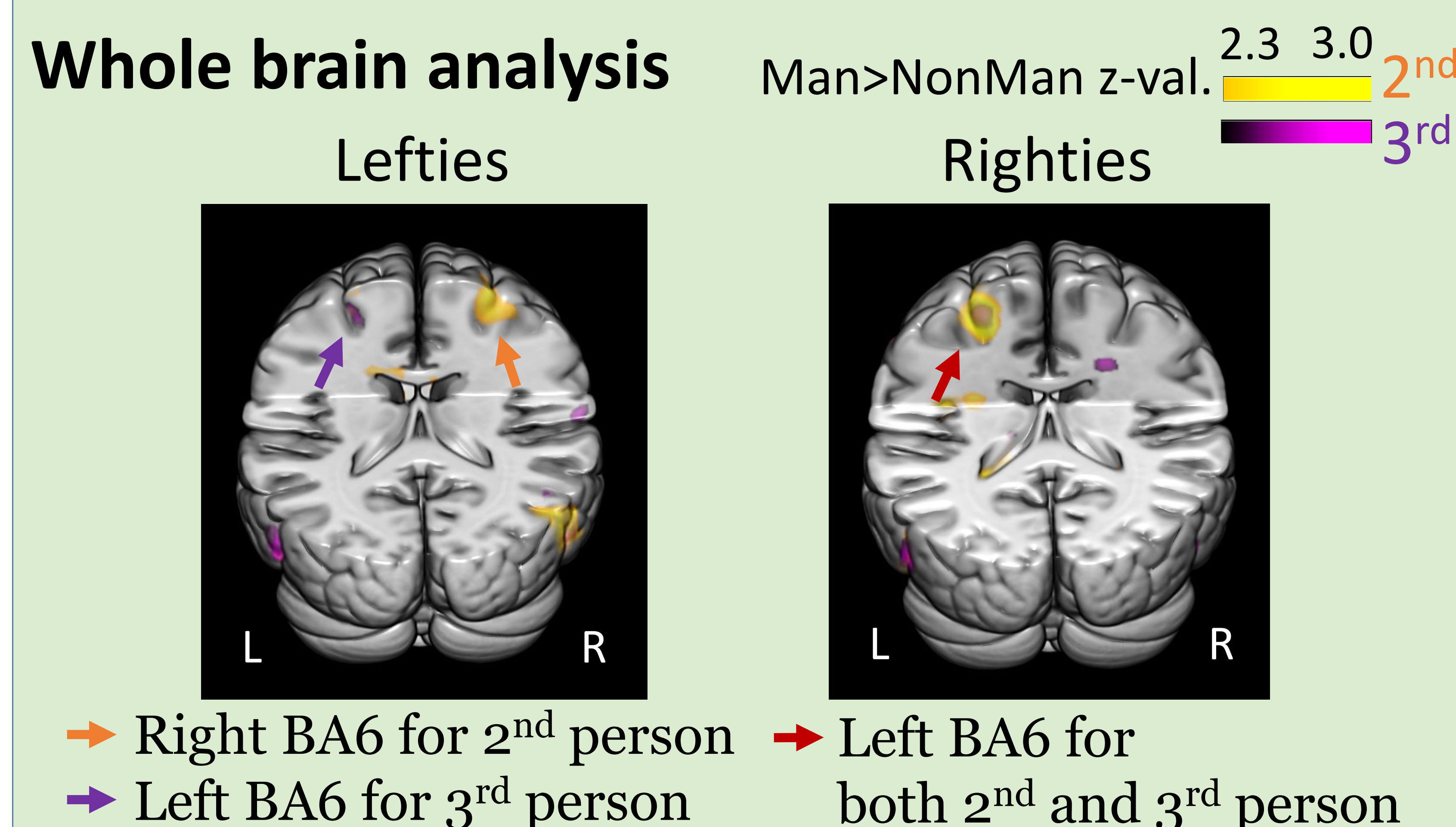
- Max. voxel for man. > nonman. in left & right BA6
- 4mm spheres
- Extract z-value for each person contrast
- Repeated measures ANOVA

Predictions

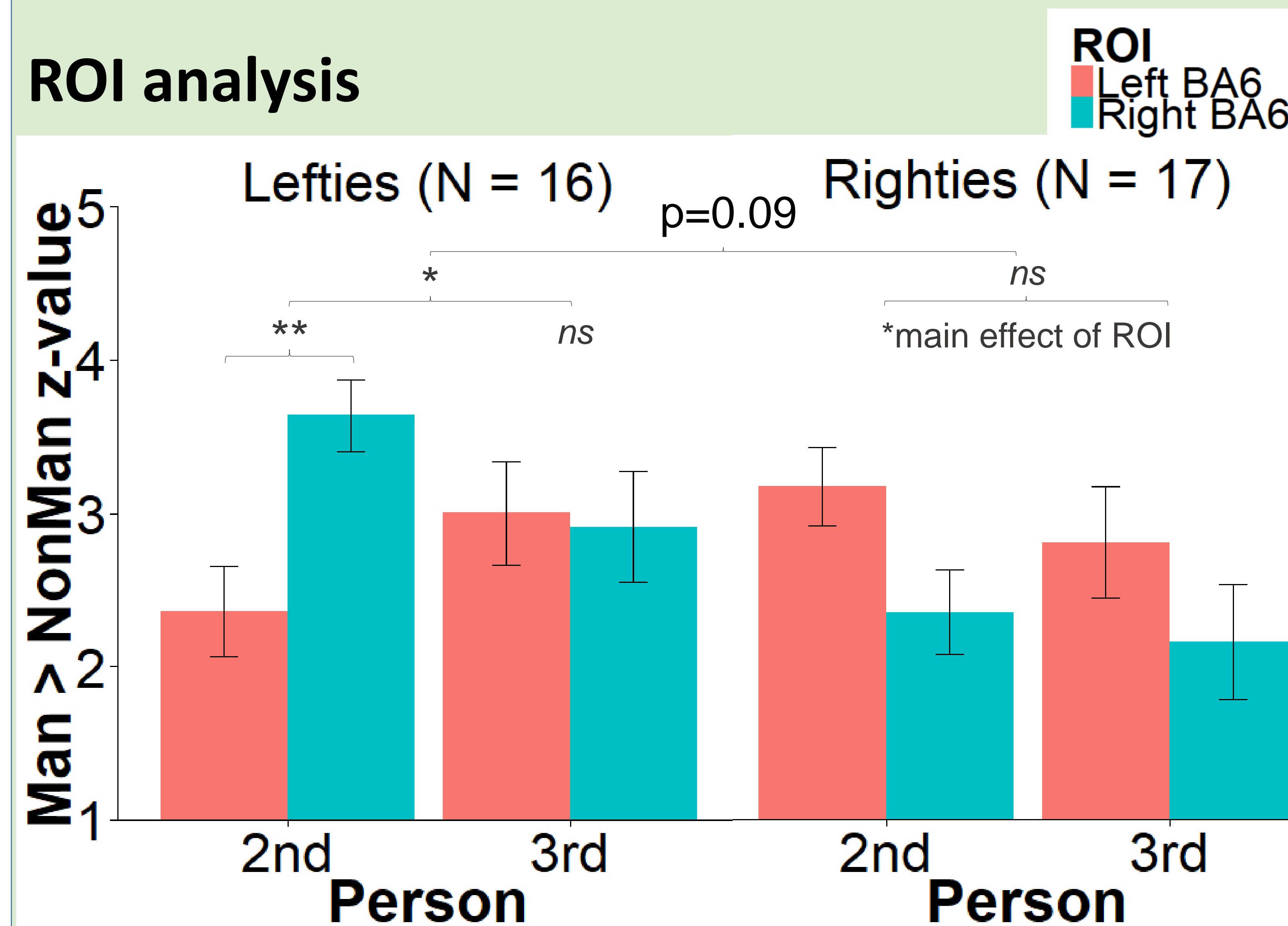
	Lefties	Righties
Egocentric		
Allocentric		

2nd
3rd
both

Whole brain analysis



ROI analysis



Results

- 2nd person – imagining *own* actions
 - Righties: left BA6 > right BA6
 - Lefties: left BA6 < right BA6
- 3rd person – imagining *others'* actions
 - Righties: left BA6 > right BA6
 - Lefties: left BA6 ≈ right BA6

Discussion

- People imagine actions differently based on who is imagined to perform the action.
- Own actions – egocentric perspective
 - Consistent with body-specific imagery. [1]
- Others' actions – allocentric perspective
 - Righties: cannot distinguish egocentric vs allocentric persp. [2]
 - Lefties: allocentric: how they see others perform actions.

We provide the first evidence that people use an *allocentric perspective* to imagine other people's actions.

References

- [1] Willems, R. M., Toni, I., Hagoort, P., & Casasanto, D. (2009). Body-specific motor imagery of hand actions: neural evidence from right- and left-handers. *Frontiers Human Neuro.*, 3(39), 1-9
- [2] Tomasino, B., Werner, C.J., Weiss, P.H., & Fink, G.R. (2007). Stimulus properties matter more than perspective: An fMRI study of mental imagery and silent reading of action phrases. *NeuroImage*, 36, 128-141.

Acknowledgements

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