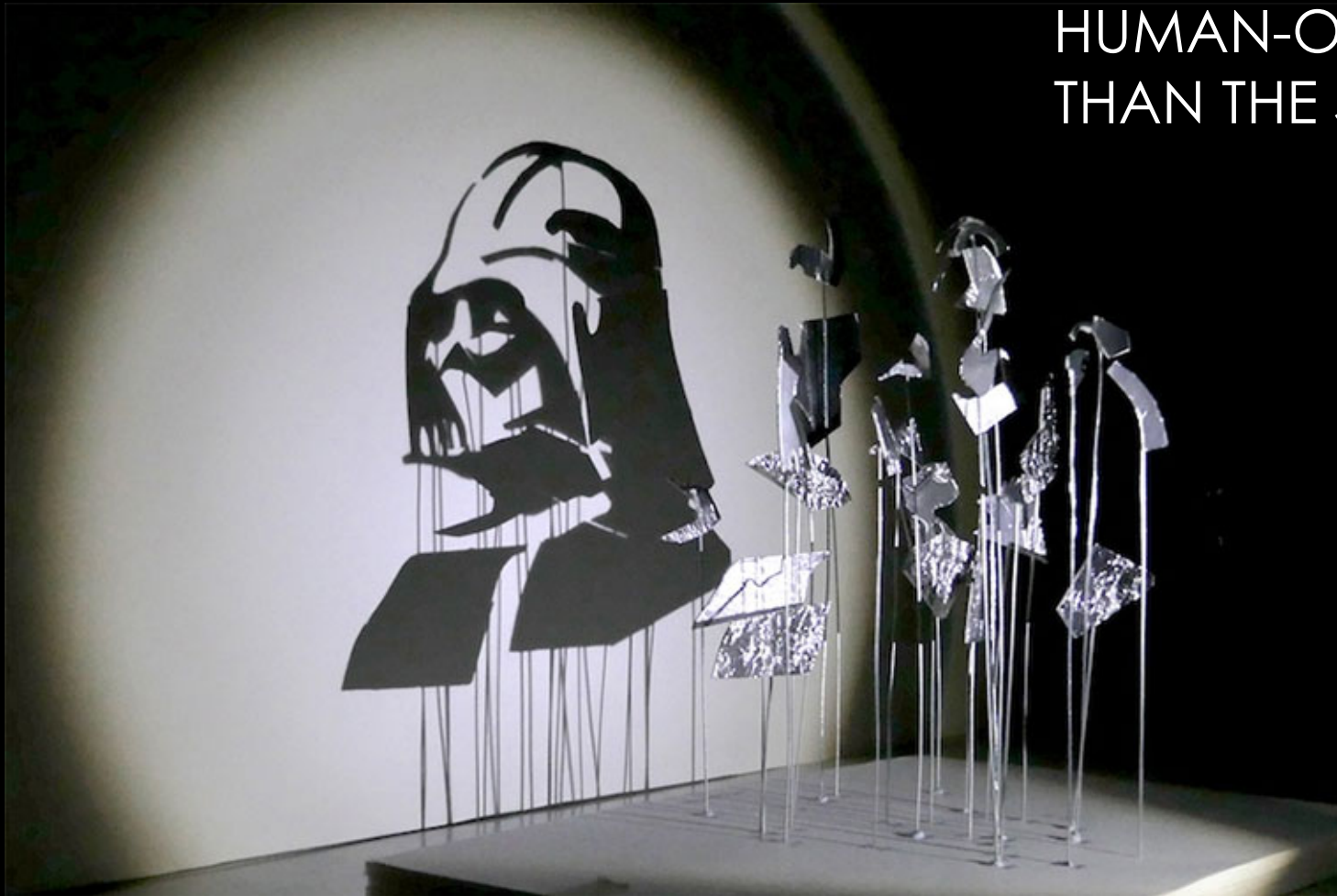


# JOURNAL CLUB SOBOTS LAB

HUMAN-OBJECT INTERACTIONS ARE MORE THAN THE SUM OF ITS PARTS -FMRI STUDY

(Baldassano, Beck & Fei-Fei, 2016)



University  
of Glasgow



# GOAL

- Studying the brain activation of participants while they watched human-object interactions
- Is there an area responding more to interactions versus non-interactions?
- AKA is this activity just the average signal made up by the individual components or is there more to it?
- Previous work has shown that some regions' response to a pair of simultaneously presented stimuli is simply the average of the responses to the individual stimuli.

# REGIONS THAT PROCESS FEATURES OF INTERACTIONS

Lateral occipital complex (LOC) & Parahippocampal Place Area (PPA)

- Object identity information

Extrastriate Body Area (EBA)

- Human pose information
- Observing interactions versus non-interactions (Walbrin and Koldewyn, 2019)
- Discriminating between different interactions (Walbrin and Koldewyn, 2019)

Posterior Superior Temporal Sulcus (pSTS)

- Observing interactions versus non-interactions (Isik et al., 2017; Walbrin et al., 2018)
- Discriminating between different interactions (Walbrin and Koldewyn, 2019)

# EXPERIMENT 1



Objects and animals

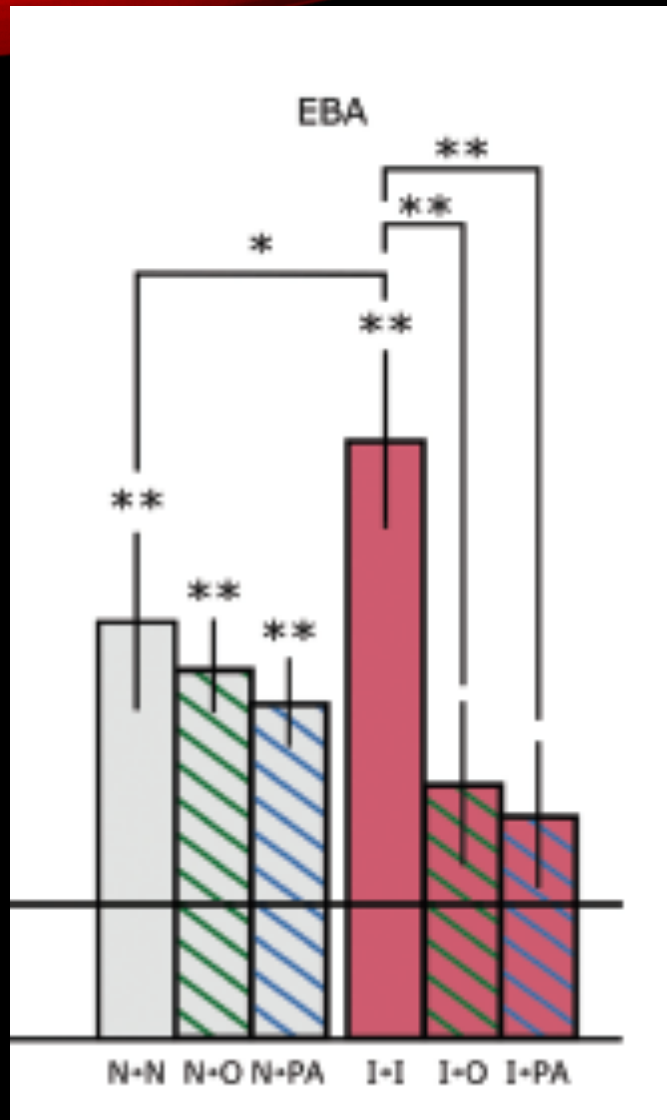
In isolation, non-interacting or interaction with a person



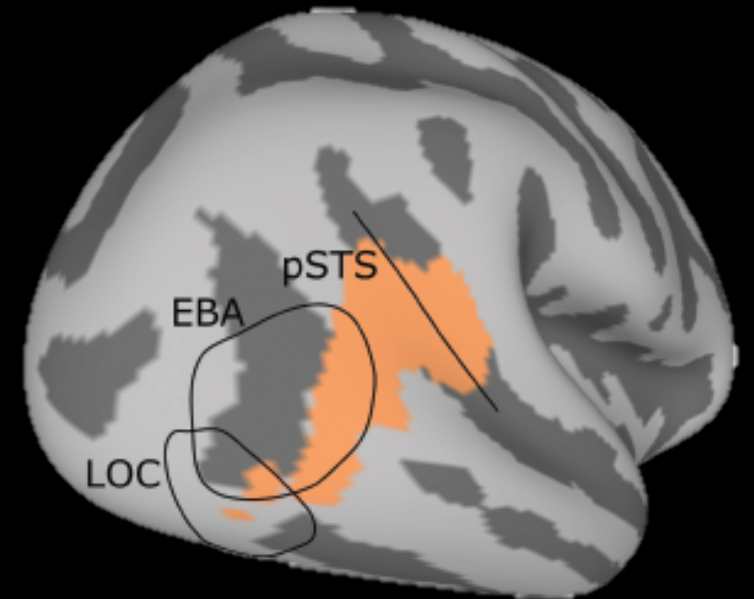
Similar construction for noninteracting and interacting images



# RESULTS EXP 1



- No differences in activity in LOC between conditions
- Right EBA and right pSTS exhibit sharper (more tightly clustered) responses to action categories when an interaction is present between the human and object

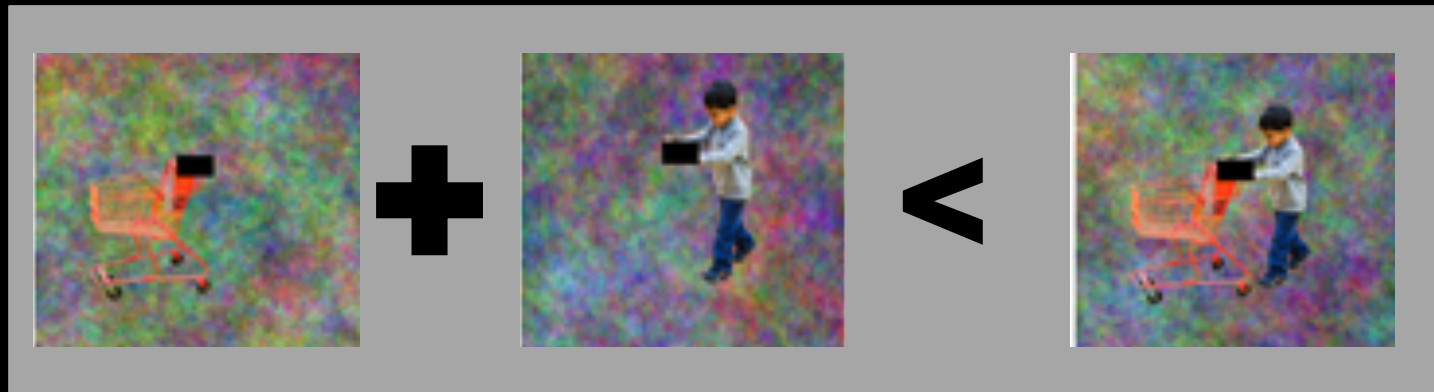
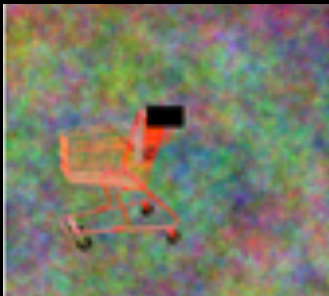


# EXPERIMENT 2

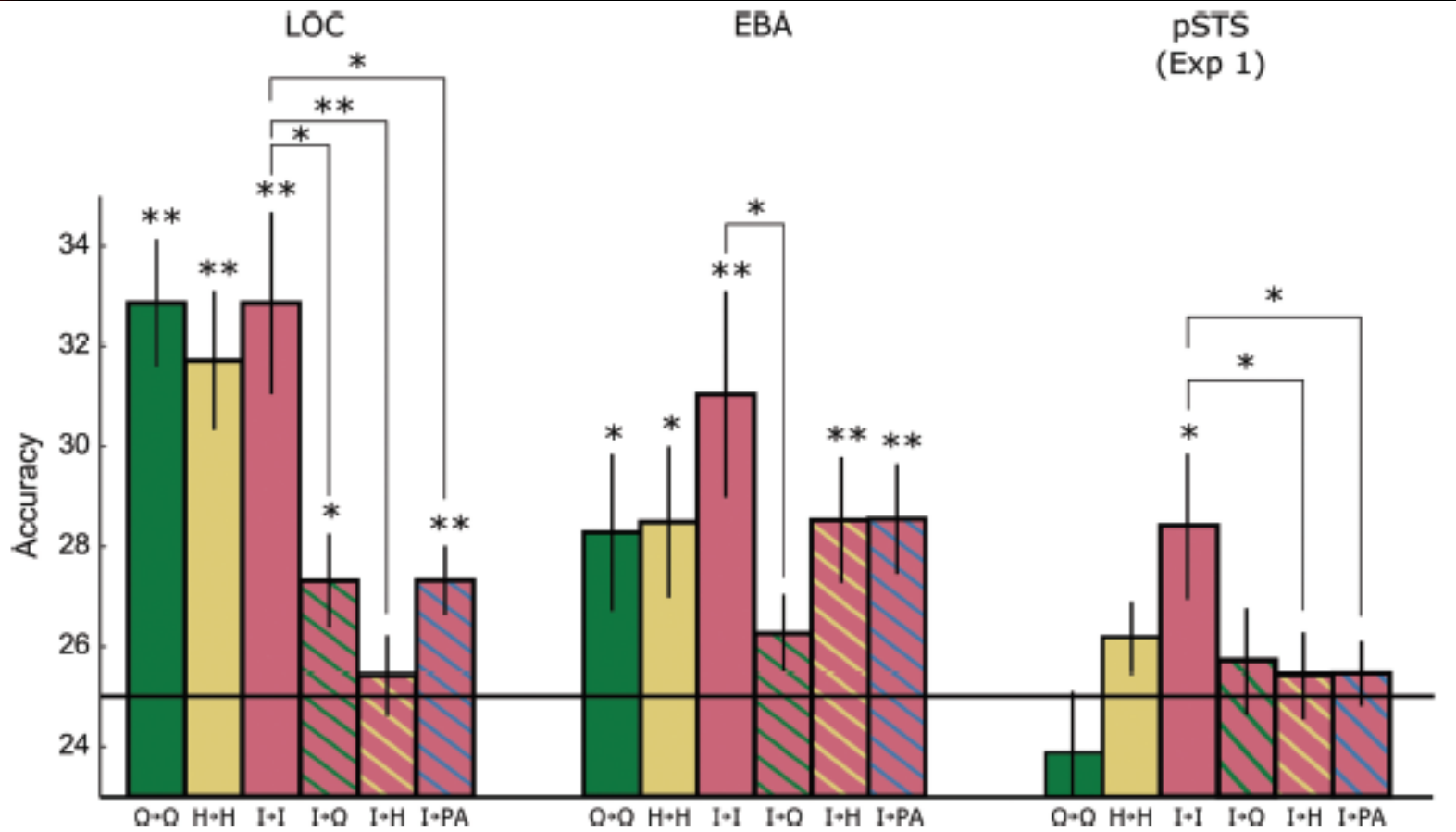


Interaction with object, isolated objects or isolated human

Overlap between person and object was covered with a black rectangle



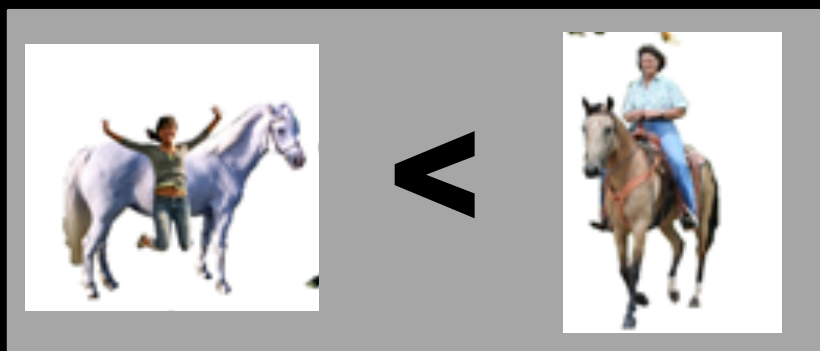
# RESULTS EXP 2



- Both LOC and EBA show significant decoding of action category from isolated objects (green), isolated humans (yellow), or full actions (pink).
- pSTS is only activated significantly during the observations of object-human interactions

# OVERAL CONCLUSION

- pSTS less related to individual human or object representations, more involved in understanding the visual or semantic features of full interactions
- HUMAN-OBJECT INTERACTIONS ARE MORE THAN THE SUM OF ITS PARTS





# DISCUSSION

- What do you think of the used stimuli?
  - i.e. the use of the black square to cover the overlap?

Which experiment do you prefer in order to study the effect of non-interactions versus interactions?

What did you think about how the article was structured, especially the results section?

