INTRODUCTION

How does attentional strategy impact information processing in the action observation network?

• The pSTS of the action observation network is implicated in encoding actions (Grossman et al., 2000) and in understanding action goals (Wyk et al., 2000). These connections are modulated, in part, by top-down influences from the IFG (Sokolov et al., 2018).

• We hypothesize that perceptual encoding on the pSTS is influenced by attentional strategy and that information about actor goals is apparent in the IFG. Therefore, connectivity between the pSTS and IFG may be strengthened when attending to action kinematics.

METHODS

Procedure:
1. Participants were asked to attend to the action, goal or identity of the actor in a 3-way choice. Animations depicted one of two actors (man or boy), directing attention up or down, then jumping or crouching to the intended goal.
2. Participants (N = 22) selected correct response based on the task cue.

RESULTS

Action Recognition Connectivity Results

Action > Identity
Left
Right

P value
ROI
IFG
MT
aSTS
pSTS
V3
S1

Goal > Identity
Left
Right

P value
ROI
IFG
MT
aSTS
pSTS
V3
S1

Correlation Map
Action > Identity
Goal > Identity

CONCLUSION

• The IFG and pSTS are more connected when attending to action than when attending to actor identity. This is consistent with the hypothesis of top-down information from IFG shaping action encoding in the pSTS.

FUNCTIONAL CONNECTIVITY DURING ACTION RECOGNITION MODULATED BY TOP-DOWN GOALS

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FUTURE DIRECTION

• Dynamic Causal Modeling (DCM)

Dynamic causal modeling is a datadriven process that uses probability to compare plausible models. Shulman et al. (2000) has used DCM to understand the direction of connectivity between pSTS and inferior frontal gyrus (IFG) when subjects viewing biological motion or faces.

I am planning to use DCM to find out direction of information flow between pSTS, IFG, and M1 under three attentional cues used in the current study: action, identity, and goal. Since DCM usually requires smaller selection of regions, current study will be a good preparation.

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