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Neural Responses to Visually Observed Social Interactions

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Title: Neural Responses to Visually Observed Social Interactions

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Highlights:

- The pSTS is sensitive to visual dynamic social interactions
- We show that the pSTS is sensitive to both the presence & contents of interactions
- This effect is independent of face & body information

Abstract:

Success in the social world requires the ability to perceive not just individuals and their actions, but pairs of people and the interactions between them. Despite the complexity of social interactions, humans are adept at interpreting those interactions they observe. Although the brain basis of this remarkable ability has remained relatively unexplored, converging functional MRI evidence suggests the posterior superior temporal sulcus (pSTS) is centrally involved. Here, we sought to determine whether this region is sensitive to both the presence of interactive information, as well as to the content of qualitatively different interactions (i.e. competition vs. cooperation). Using point-light human figure stimuli, we demonstrate that the right pSTS is maximally activated when contrasting dyadic interactions vs. dyads performing independent, non-interactive actions. We then used this task to localize the same pSTS region in an independent participant group, and tested responses to non-human moving shape stimuli (i.e. two circles' movements conveying either interactive or non-interactive behaviour). We observed significant support vector machine classification for both the presence and type of interaction (i.e. interaction vs. non-interaction, and competition vs. cooperation, respectively) in the pSTS, as well as neighbouring temporo-parietal junction (TPJ). These findings demonstrate the important role that these regions play in perceiving and understanding social interactions, and lay the foundations for further research to fully characterize interaction responses in these areas.

Keywords: Social interaction; Person Perception; fMRI; Vision; Shapes; pSTS

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