



How the Brain Resolves Ambiguity in Emotion Perception



Sarah M. Olshan^{1,2}, Martín Irani^{1,2}, Max Egan^{1,2}, Jonathan Wirsich², Ezra Winter-Nelson², Sophia Giakas^{1,2}, Brad Yang^{1,2}, Chris Periello^{1,2}, Samar Wageh², Sepideh Sadaghiani^{1,2}

¹Dept. of Psychology, ²Beckman Institute for Advanced Science and Technology University of Illinois Urbana-Champaign

BACKGROUND

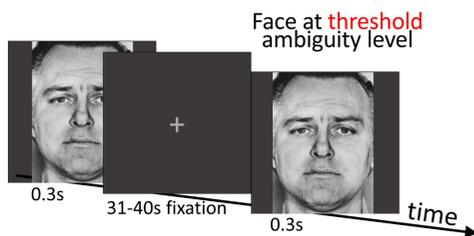
- Interpreting emotional information from the faces of others guides social behavior.
- This information is often ambiguous, requiring reliance on internal brain states¹.
- Intrinsic brain processes involved in resolving emotional ambiguity have important implications for everyday interactions, especially in the context of conditions like depression² and autism³.
- Prior work has examined neural correlates of discrete emotions (e.g., ⁴), but much remains unknown about emotionally ambiguous face valence judgments (e.g., ⁵).
- It is unknown how evoked responses differ for different perceptual outcomes to an **identical** emotionally ambiguous stimulus.

OBJECTIVE: Investigate what brain systems are important for **different percepts** (sad, neutral) occurring on **identical trials** of emotionally ambiguous stimulus presentation

METHODS

Participants (N = 30, 21 Female, Mage = 21.71)

Emotion Face Judgement Task:



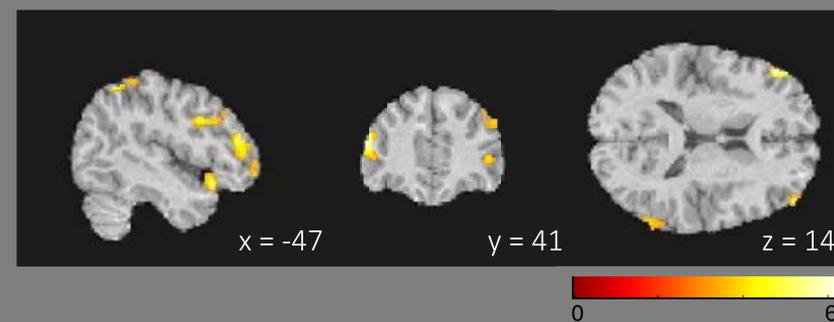
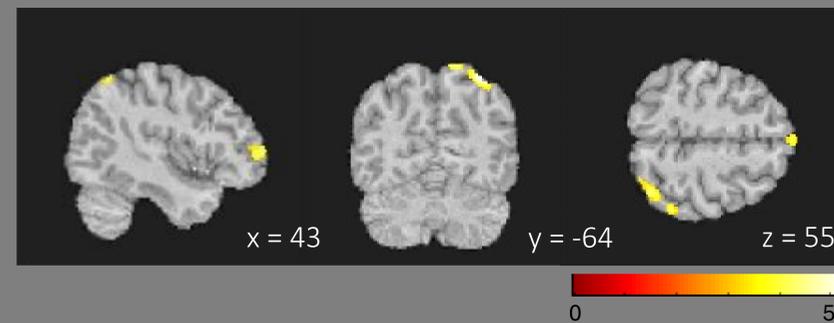
- Repeated exposure to emotionally ambiguous face
- Judged as 'sad' or 'neutral'
- Image individually chosen for each subject prior to experiment using **threshold detection procedure** on eleven different levels of sad-to-neutral morphing

Visual-spatial working memory task (for main effect of task comparison)

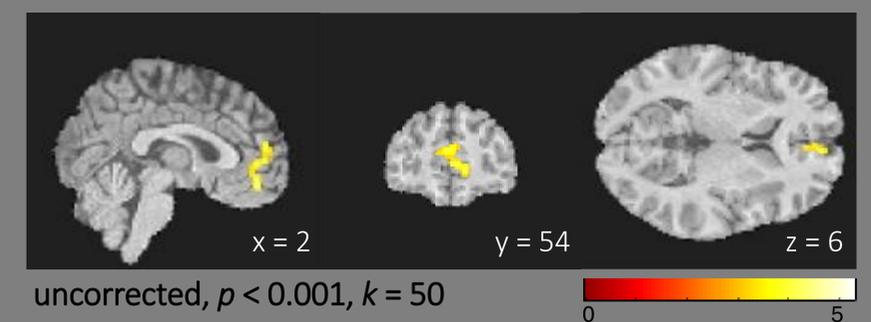
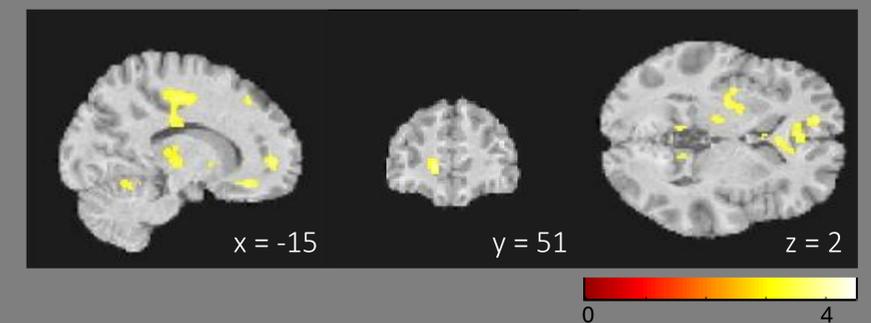
General linear models constructed using spm12

Higher-order control regions and those related to internal mentation may be especially important in resolving emotional ambiguity

Single-subject sad > neutral



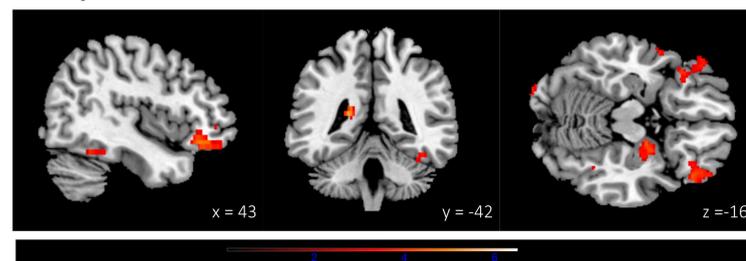
Single-subject neutral > sad



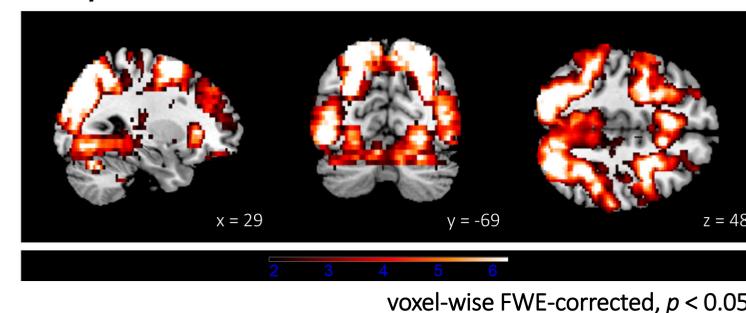
MAIN EFFECT OF TASK

As expected, face judgments activated ventral stream compared to visual-spatial WM task relying on dorsal stream

Group-level faces > arrows



Group-level arrows > faces



CONCLUSIONS

- Repeating analyses in a larger sample will clarify whether a larger effect size is needed given subtle differences between perceptual outcomes.
- Absence of task-evoked differences at the group-level could reflect different decision-making strategies that e.g., give weight to different types of stimuli features across individuals.
- Future work will investigate how pre-stimulus brain states and transdiagnostic factors may be related to the tendency to perceive the stimulus as sad compared to neutral.

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FUNDING: NIMH: 5R01MH116226-05