Reading crowd emotion: The roles of hemispheric specialization, task goal, anxiety, and facial identity

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Introduction

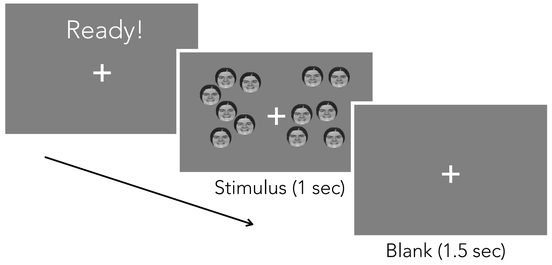
- Crowd emotion provides important social information that guides out interactions with others [1] (e.g., whether to approach or to avoid them).
- How crowd emotion perception is achieved and modulated by intrinsic and extrinsic factors remains virtually unexplored.

Method

- 50 morphed faces between Happy and Angry

6 sets from different identities [2] (3 males, 3 females)

- Which group (left or right) would you rather ***Avoid?*** ***Approach?***



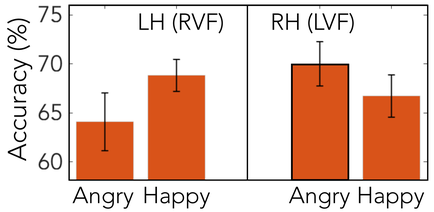
Emotional vs.Neutral crowds

Single face trials

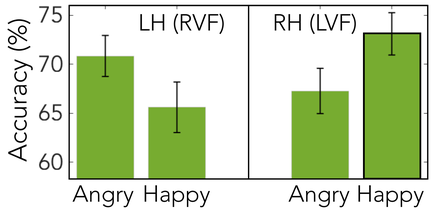
Task-dependent laterality effect

- Right hemisphere: more accurate for processing task-relevant crowd emotion.
- Left hemisphere: more accurate for processing the alternative choice, for confirmatory or inhibitory signal.

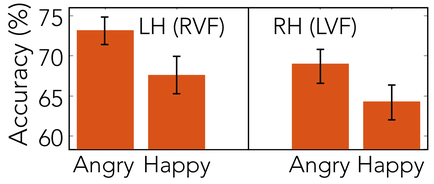
Avoid?
N=21



Approach?
N=21

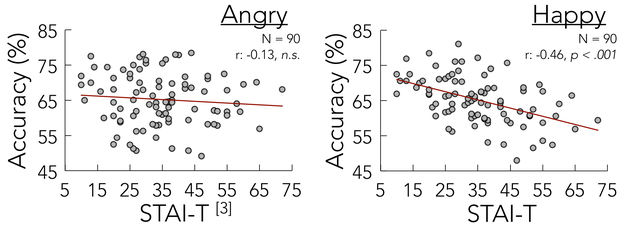


But, not for single faces
N=18

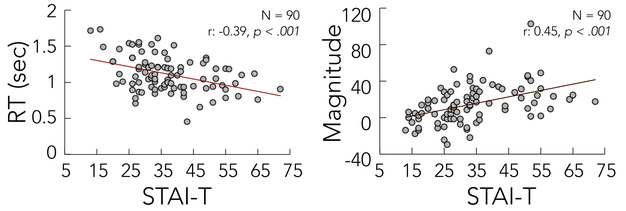


Observers' anxiety level

High-Anxiety observers were less accurate for perceiving happy crowds (not angry crowds).



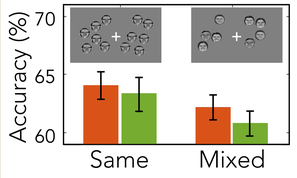
Faster RT overall **Greater laterality effect**



Laterality effect magnitude = $(LVF_{Angry}\text{-}LVF_{Happy}) + (RVF_{Happy}\text{-}RVF_{Angry})$

Facial identity

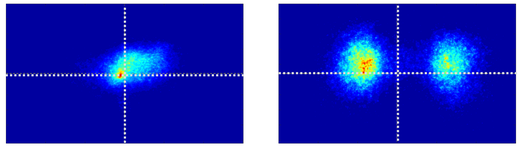
Mixed identities showed interference with extraction of crowd emotion.



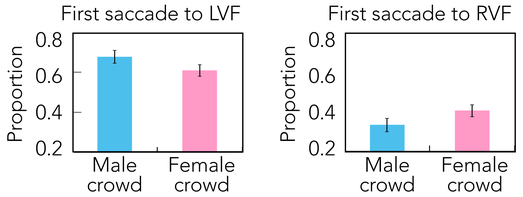
Angry male crowds and happy female crowds were perceived more accurately.

Eye movement during free viewing

- Higher proportion of first saccades to LVF



- Direction of first saccade modulated by crowd gender: More frequent to LVF when viewing male crowds.



- **Perception of crowd emotion shows task-driven dominance of the right hemisphere.**
- **Crowd emotion perception is modulated by observers' anxiety level and facial identity cues (e.g., sex) of crowd of faces.**

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Reference
[1] Haberman, J., & Whitney, D. (2007). Rapid extraction of mean emotion and gender from sets of faces. *Current Biology, 17*, R751-3.
[2] Ekman, P., & Friesen, W. V. (1976). Pictures of facial affect. Consulting Psychologists Press; Palo Alto, CA.
[3] Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). Manual for the State-Trait Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press.