The Neural Representation of Other-Race Faces

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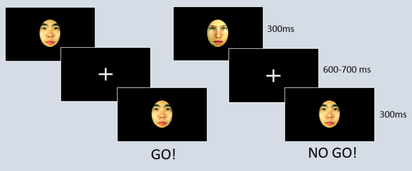
Introduction

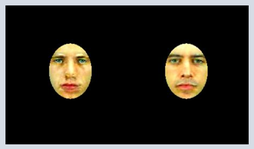
- **The other-race effect (ORE)**: the disadvantage in recognizing faces of other races than one's own (1)
- **Electroencephalography (EEG):** a method that records the brain's electrical activity using electrodes placed on the scalp (2)
- EEG recordings linked to **perception of faces** may help in identifying the neural mechanisms for how facial identities are represented (3,4)
- We investigated the neural and representational bases of facial race and identity

Methods

- **Participants:** 20 White and 20 East Asian adults (Age = 18-30, 12 males, 28 females)
- **Behavioral Experiment:** 2 Cambridge Face Memory Tests (CFMT)
  - CFMT-White (5), CFMT-Chinese (6)
- **EEG Experiment**
  - 64-channel Biosemi ActiveTwo system
  - Go/no-go identity task
  - 60 male face images (30 White, 30 East Asian)

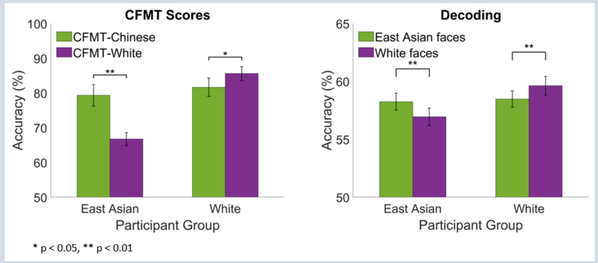
- We used an **EEG based facial image reconstruction algorithm** to retrieve visual representations of facial race and identity (4)





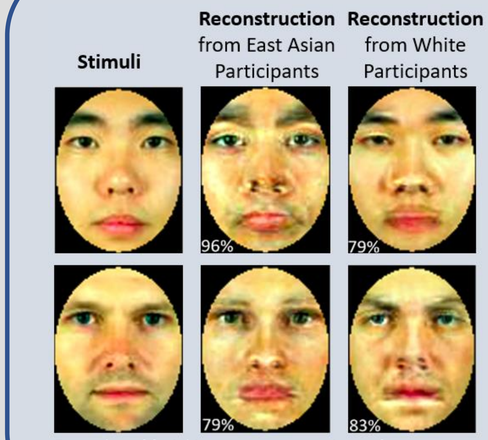
- **Validation Experiment**
  - 23 White and 23 East Asian adults (Age = 18-35, 24 males, 22 females)
  - Validators viewed 2 face images side by side, and selected the one in a pair which appeared younger, more expressive, and more typical of its race

Results

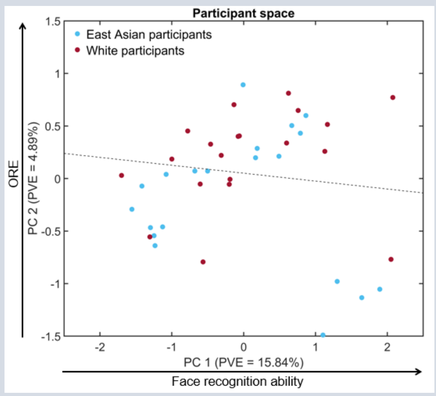


Behavioral performance and neural decoding accuracy for White and East Asian participants

- Behavioral performance and neural decoding revealed a disadvantage for other-race (OR) faces both for White and East Asian participants

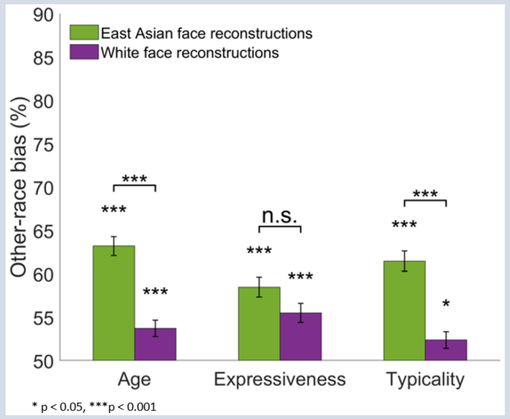


Examples of facial image reconstructions of SR and OR faces



Correlations between EEG and behavioral findings

- Participants vary at the neural level primarily in terms of **face recognition ability** and **ORE**



Reconstruction facial images and visual biases

- Validators selected OR face reconstructions as **younger, more expressive**, and **more typical** of their race than same-race (SR) faces

Conclusions

- Behavioral and EEG results confirmed the ORE by showing both poorer recognition and lower decoding accuracy for OR faces
- The ORE is prominent at the neural level across participants
- **OR faces are perceived as younger, more expressive, and more typical of their race**

References

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