NEURAL CORRELATES OF WOMAN FACE PROCESSING BY 2-MONTH-OLD INFANTS

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NeuroImage (2002)
Introduction

- By the age of 2 months, infants are able to recognize their mother’s face among others (Morton and Johnson, 1991)
  - Humans are experts at face discrimination, hence faces are the primary visual stimulus category

- Young infants: recognition by outer contour of head & hair line and internal face configuration; 2-Month-Old
  - Infants: recognition solely on internal face configuration (Bushnell et al., 1989)
Experimental Task

- PET scans in six 2-month-infants; clinical follow-ups
  - Infants (full term) suffered from hypoxic-ischemic encephalopathy (HIE)

- **Stimuli**: presented (1) front view of woman faces, (2) diodes
  - Each slide showed a different woman, but one presented repeatedly at irregular intervals
  - Image Analysis: Faces minus diodes difference volumes averaged over six infants
Results

- Activated a network of areas
  - **Right inferior temporal gyrus**
  - Other activated areas: bilateral inferior occipital and parietal areas, left inferior frontal and superior temporal gyri (during face processing)
Discussion

- 2-month-old infants activated a network of areas belonging to core system for *face perception identified in adults* (Haxby et al., 2000)

- Inferior temporal gyrus likely to be *homologue of adult fusiform face area (FFA)* (Kanwisher et al., 1997)

  - **Debate:** Is FFA specialized for faces (Kanwisher, 2000) or is it domain general – related to acquisition of expertise in object discrimination (Gauthier et al., 1999)?
My Opinion

- **Strengths**: incorporating the debate on adult fusiform face area

- **Limitations**: clinical follow up – normal developmental age in four children (3 years); one child tested up to 6 months only; not possible to follow up one child
Next step:

- Inferior temporal gyrus (infant) / FFA (adult) activation – specialized vs. general domain
- Left inferior temporal gyrus (did not reach threshold for significance in this experiment) – matching face parts (Rossion et al., 2000)
References