

# 3 Models of Face Detection

- ‘Detection Model’ (Kanwisher). Special-purpose mechanism
- Feature Map. Small, localized regions are activated by a single category of objects
- Flexible Process Map. Detection not *a priori* a function of feature geometry. Training should improve recognition

# FFA Processing

- Different level of object recognition
  - Generally recognize individual faces
  - Most objects are only recognized as members of a class
- Far greater expertise with faces

# Manipulating Categorization Level

- FFA shows a similar response for animals as humans, even when their faces are obscured
- FFA is more active for judgments requiring subordinate classification
- Living things may recruit FFA because of their visual homogeneity

# Critiques of Previous Studies

- Did not require viewing at subordinate level
- Face vs. Hand study (Kanwisher) did not give enough time for non-expert recognition

# Neurophysiology

- Prosopagnosia does not distinguish between models
- Face detection but not identification, so detection model doesn't explain activity in FFA
- Patient CK can only identify parts of objects, cannot integrate them

# Patient CK

- Identified as:
  - Fencer's mask
  - Rose twig with thorns
  - Feather Duster

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

(Behrmann 1994)

# Definition of FFA

- If the region is large enough to encompass FFA for all subjects, it also includes many non-face selective voxels
- If it's small enough to contain only face selective voxels, it may not include the FFA!

# Definition of FFA

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(Gauthier 1999)



# IT “Face cells” may be more complex

- What do these stimuli have in common?
- Single feature probably isn't enough to explain

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# Goals

- Hypothesis: The FFA responds to faces because it has extensive experience differentiating between faces
- If we people learn to differentiate between different novel objects, they should also show activation in FFA.

# Greebles

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# Greebles

- They are not sufficiently face-like for FFA to work for novices
- Novices don't have FFA activation, Experts do
- CK cannot recognize Greebles better than other objects

# Training Effect

- Only significant effects in Right Middle Fusiform Gyrus

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# Becoming a Greeble Expert

- Can learn to recognize Greeble parts, but novices are slower than experts

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(Gauthier 1997)

# Expertise only goes so far

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(Gauthier 2000)



# Prosopagnosia

- Prosopagnosia usually associated with ventral temporal lobe lesions
- Can detect but not identify faces at individual level
- FFA good candidate for explaining these results

# Naming?

- Fusiform Gyrus associated with encoding pictures and words
- Each run had different greebles, so it is unlikely that subjects gave them names

# Open Question

- What is it about expertise that leads to recruitment of the “face area”?