Feature based vs. holistic processing

### Composite Face Effect
- **Aligned**
- **Misaligned**

- identical top halves seen as different when aligned with different bottom halves
- when misaligned, top halves perceived as identical

### Face Inversion Effect
- **Upright**
- **Inverted**

inversion disrupts recognition of faces more than other objects

#### Whole-Part Effect
- **Whole**
- **Part**

identification of “studied” face is significantly better in whole vs. part condition

The power of averages, Burton et al. (2005)

- “average faces” (samples from the internet)
  - average “shape”
  - average “texture”

- recognition of average faces (vs. instances)
  - greater accuracy
  - faster reaction times

The power of averages, Burton et al. (2005)

- greater accuracy
- faster reaction times

Ventral visual pathway

- response latency increases
- receptive field size increases
- neurons become selective to more complex spatial patterns
- neural responses become more invariant to changes in position, scale, pose, etc.

Face selective cells in IT cortex

- Desimone et al., 1984

Locations of face selective cells in IT, from single cell recordings
Fusiform Face Area (FFA) in the human brain

The Journal of Neuroscience, June 1, 1999, 19(11):4180-4191

Nancy Kanwisher, Josh McDermott, and Marvin M. Chun

The Fusiform Face Area: A Module in Human Extrastriate Cortex Specialized for Face Perception

Tsao, Freiwald, Tootell, and Livingstone, 2006

Targeting neurons in middle face patches using single cell recording

Tsao et al. 2006

The face patch network

Combined micro-stimulation & fMRI to determine the connectivity of face patches

Used single cell recording to probe viewpoint dependence of neural responses

Tsao, Freiwald, Tootell, Livingstone, 2006