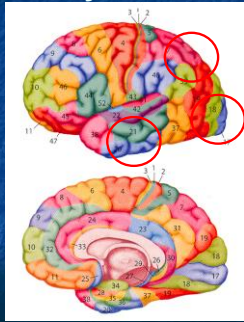
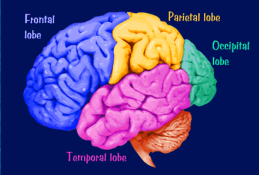


Introduction to Neuropsychology

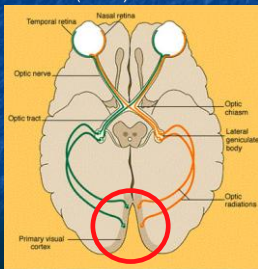
Visual Perception

Basic Anatomy



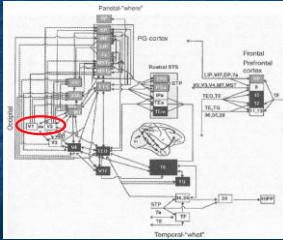
Visual Perception The Visual System

- Retina > Striate cortex (V1/V2)



Visual Perception The Visual System

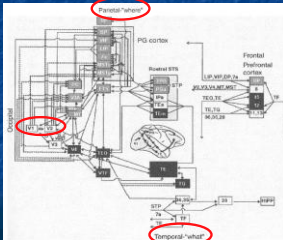
- Striate cortex (V1/V2) > ...



(Ungerleider & Mishkin, 1982; Carey, 2010)

Visual Perception The Visual System

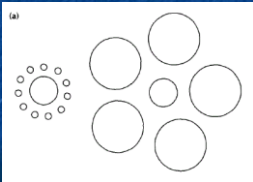
- Striate cortex (V1/V2) > Parietal (dorsal) and Temporal (ventral) lobes



(Ungerleider & Mishkin, 1982; Carey, 2010)

Visual Perception Vision for Perception

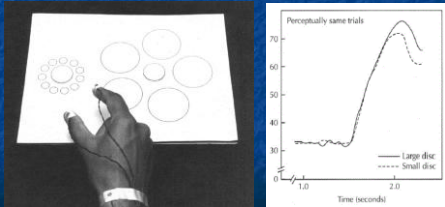
- Ebbinghaus Illusion: *size contrast*
 - Vision for perception: world-based; size/location relative to other objects; view-point independent; **allocentric co-ordinates**



(e.g. Aglioti et al., 1995)

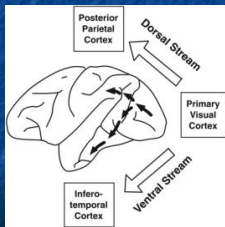
Visual Perception *Vision for Action*

- Vision for action: effector-based; size/location estimated in real-time/online; view-point dependent; **egocentric co-ordinates**



(e.g. Aglioti et al., 1995)

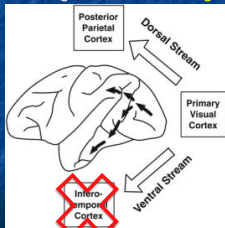
Visual Perception *Two Visual Systems*



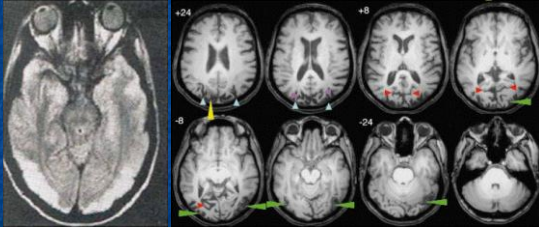
(Ungerleider & Mishkin, 1982; Milner & Goodale, 1995; 2008)

Two Visual Systems *Vision for Perception*

- Agnosia: *prosopagnosia; achromatopsia; object agnosia; ventral simultanagnosia; visual form agnosia*



Vision for Perception Visual Form Agnosia (D.F.)



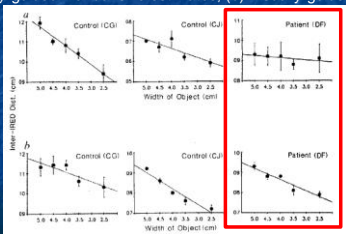
Vision for Perception Visual Form Agnosia (D.F.)

- Carbon monoxide intoxication at 35yrs
 - At 4 months
 - ✗ No recognition of drawings
 - ✗ No (single) *letter recognition*
 - ✗ No *shape, size or orientation* discrimination
 - ✗ No appreciation of symmetry
 - ✗ No Gestalt perception (continuity)
 - ✗ No recognition of faces (*prosopagnosia*)
 - ✗ No recognition of *common objects*
 - ✓ Average IQ
 - ✓ Visual acuity
 - ✓ Colour vision
 - ✓ Tactile recognition
 - ✓ Normal digit span

(Milner et al., 1991)

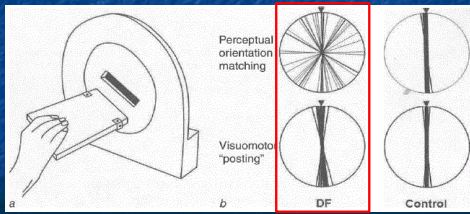
Vision for Perception Visual Form Agnosia (D.F.)

- (a) Visually guided manual size estimates; (b) Visually guided grasping



(Goodale, Milner, Jakobson & Carey, 1991)

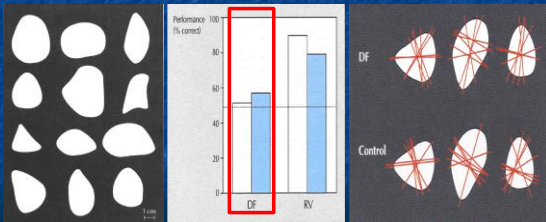
Visual for Perception Visual Form Agnosia (D.F.)



(Goodale, Milner, Jakobson & Carey, 1991)

Visual for Perception Visual Form Agnosia (D.F.)

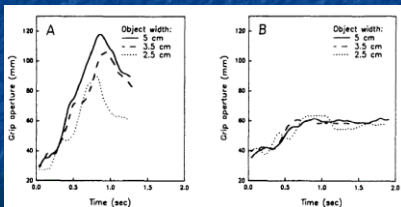
- Visual (form) discrimination at chance (white = same orientation; blue = different orientation)



(Goodale et al., 1994)

Visual for Perception Visual Form Agnosia (D.F.)

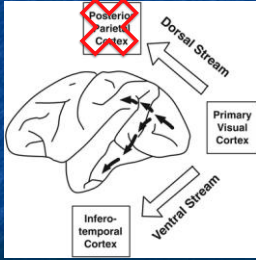
- A = object present; B = pantomimed actions to removed objects (requires visual memory representation)



(Goodale, Jakobson & Keillor, 1994)

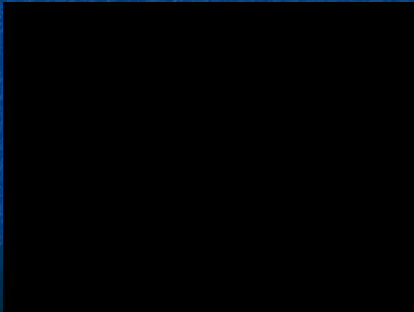
Two Visual Systems

Vision for Action



Vision for Action

Optic Ataxia



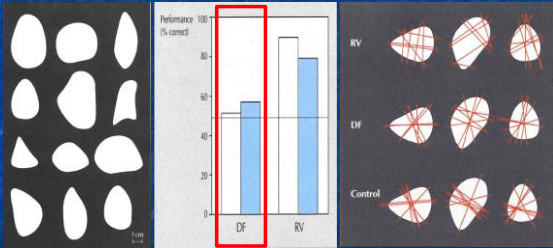
Vision for Action

Optic Ataxia (R.V.)



(Goodale et al., 1994)

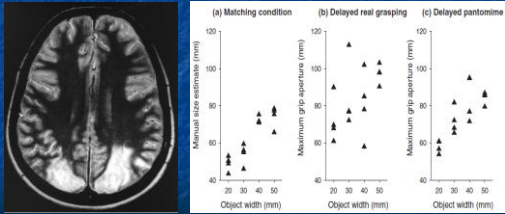
Vision for Action Optic Ataxia (R.V.)



(Goodale et al., 1994)

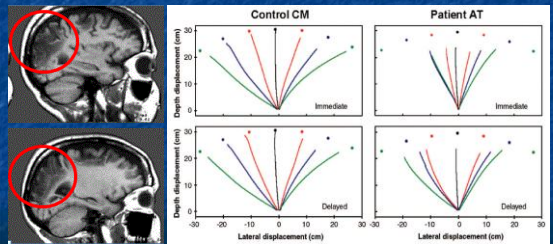
Vision for Action Optic Ataxia (I.G.)

- A = object present; B = pantomimed actions to removed objects
- Requires visual memory representation



(Milner et al., 2003)

Vision for Action Optic Ataxia (A.T.)

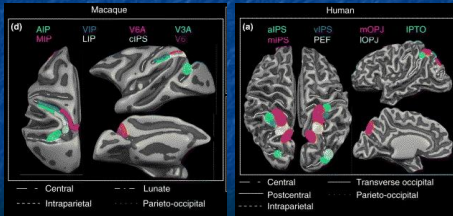


(Milner et al., 2003)

Discussion

Functional Anatomy...

- Intraparietal Sulcus (IPS)
 - aIPS - hand; lIPS - eye; mIPS - arm; vIPS - mouth

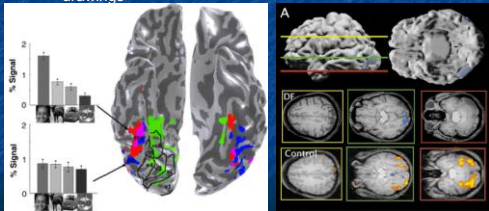


(Fogassi & Luppino, 2005; Iacoboni, 2006; Culham & Valyear, 2006)

Discussion

...Functional Anatomy

- Lateral Occipital Cortex (LOC)
 - Left = Recognition of objects; Right = Recognition of line drawings

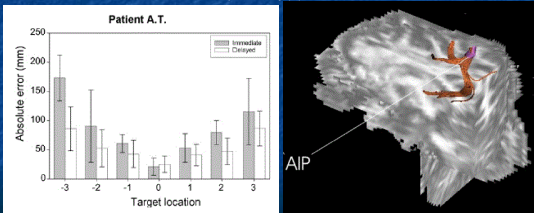


(Gill-Spector et al., 2001; James et al., 2003)

Discussion

Double Dissociation?

- Reaching to centrally vs. foveally fixated objects in OA
- Evidence of dorsal-ventral pathway(s)



(Pisella et al., 2006)

Vision for Perception
Associative Agnosia

