

### **1 What is cognition?**

- To recognise objects and people
- Navigate the world
- Use language to speak and write
- Plan and execute actions
- Think
- Make decisions
- Remember

**Question: What is it not?**

---

### **2 How do we assess cognitive function?**

- The Mental Status Exam (MSE):
  - Appearance and general behaviour
  - Mood
  - Talk and content of thought
  - Cognitive function
    - *Orientation*
      - Time:
      - Space
      - Person
    - *Attention and concentration*
      - Ease of distraction
      - Fluctuations or shifts in attention
      - Concentration of line of thought
      - Digit span (repeat digits evenly forwards & backwards)
      - Serial 7's
    - *Memory*
      - Long term:
      - Short term
        - 5-digit number or name/address
        - repeat, retain & retrieve
    - *Visual cognition*
      - Object recognition
      - Visual search
    - *General intelligence*
      - Sentence repetition
      - Current events
      - Proverb interpretation
      - Problem solving
    - *Ability to act out or copy sequences of motor commands*
    - *Specialised neuropsychological testing, e.g. The Rey Figure*
    - *Brain imaging (MRI, fMRI, EEG/MEG)*
    - *Arteriography (Angiography)*

**Question: A Patient appears confused, how would you start your questions?**

### **3 Cortical Modularity of Cognitive Function**

- Frontal lobe: executive function, motor control, attention
  - Behavioural judgment; self-determination; self-awareness (esp RH); self-control

- Parietal lobe: multimodal sensory integration (vision, touch, body); spatial orient'n
  - Spatial, abstract and mathematical reasoning; visual attention
- Temporal lobe: hearing, memory, perceptual organisation, emotions
- Occipital lobe: visual perception

**Question: What is a frontal lobe syndrome?**

#### **4 Effects of brain damage on cognitive function**

- General deterioration in all aspects of brain function
- Differential group effects, depending on location, extent & type of damage, e.g. Frontal lobe syndromes
  - Orbitofrontal syndrome (disinhibited)
  - Frontal convexity syndrome (apathetic)
  - Medial frontal syndrome (akinetetic)
- Highly specific effects in certain locations
  - E.g. prosopagnosia, akinetopsia, cerebral achromatopsia

**Question: Name a parietal lobe disorder and how you would test for it.**

#### **Causes of brain damage**

- Cerebrovascular disorder
  - Transient ischaemia
  - Stroke
  - Infarction
- Trauma
- Encephalitis: viral, bacterial, or prion
- Degenerative disease
  - E.g. Alzheimer's Disease
- Alcohol or drug abuse
- Tumour
- Ageing

**Question: What are two of the most common sources of brain damage?**

#### **5 Deficits in object recognition**

- Visual object agnosia
    - Inability to recognise objects by vision, with preserved ability to recognise them by other senses e.g. *associative* visual agnosia. Can copy, but cannot recognise original or his own copy.
    - Prosopagnosia: inability to recognise faces:
      - Acquired:
        - Stroke (PCA)
        - Trauma
        - Degenerative disease
      - Developmental
        - Genetic
        - Pre- or post-natal brain damage
- Compensatory strategies – Brain plasticity to deal with loss of function
- To recognise faces, prosopagnosics use other traits:
    - **Items on the body** –
    - **Essences** – Gait, mannerisms, body language, emotions.
    - **Sound of the voice** –
  - Auditory object agnosia: Phonagnosia: inability to recognize voices
    - **Can double dissociate from prosopagnosia**
    - **A person can use visual information to recognize the person**