

# Introduction to CogSci - End Sem

- 👉 Sensation and Perception
- 👉 Attention and Perception
- 👉 Memory
- 👉 Mental Imagery
- 👉 Revision - John R. Anderson

## Sensation and Perception

- Top down and bottom up processes
- Agnosia
  - Apperceptive - No perception
  - Associative - perception, but no recognition
  - Profound : No pattern id
- Perceptual Process Diagram
- Transduction and the electro-cellular background of information transmission
- Study of Perceptual Process:
  - Self Report (PP)
  - Objective-Subjective Stimuli (PH1 and PH2)
- Measuring Perception
  - Recognition
  - Detection
  - Perceiving Magnitude
  - Searching
  - Threshold
  - Difference Threshold - Weber's Law
- Signal Detection Theory
- Multitasking - Automobile Experiment
- Dual Task Paradigm
- Sensory Adaptation
- Sensory Cross Talk, Synesthesia
- Three Levels of Description
- Where - What - pathways and brain areas
- Triesman's Feature Integration Theory
- Perceptual Constancy
- Perceptual Set

- Closure
- Proximity
- Continuation
- Figure-Ground Segregation
- Fovea
- Oculomotor Cues
  - Binocular Disparity
  - Texture Gradient
  - Occulsion, Atmospheric
  - Linear Perspective
  - Motion Parallax
- Object and Pattern Recognition
- Illusion
- Naive Realism

Spatial : Parietal Lobe

Objects : Temporal Lobe

Faces : Fusiform Gyrus

Location : Parahippocampal - temporal cortex

## **Attention Perception and Performance**

- Attention
- Sensory Filter Diagram - Physical and Semantic Selection
- Main Selection Diagram
- Loci of Selection
- Dichotic Listening Experiment
- Early Selection vs Late Selection
- Treisman's Attenuation Model
- Green and Bavelier Experiment - <https://www.cin.ucsf.edu/~houde/coleman/green.pdf>
- Scope of Attention
- Drivers of Attention
- Global and Local Cues
- Semantic and Syntactic Inconsistency
- Overt Attention : Attention to information being looked at with eye movements
- Covert Attention : Attention not related to eye movements
- Binding Problem
- Treisman's : Feature Integration Theory

- SEEV Model
- Visual Neglect

## Memory

- Memory - a definition
- Retrospective Memory
- Prospective Memory
- Encoding, Storage and Retrieval
- Visual and Information Persistence
- STM vs LTM
- Sensory Memory
- Recall and Recognition
- Free and Cued Recall
- Depth of Processing
- Primacy Effect
- Recency Effect
- Mnemonic Techniques
- SM --> STM --> LTM and losses for each ----- Modal Model
- Working Memory
- Phonological Loop -- Central Executive -- Visuospatial Sketchpad -- Baddeley's Working Memory Model
- Multicomponent Working Memory Revision -- Episodic Buffer Included, Fluid and Crystallised System Levels
- Procedural Memory
- Types and cases of Amnesia
- Brain regions for memories
- Chunking
- Loftus Palmer Experiment
- Endogenous vs Exogenous Cues
- Declarative vs Non-Declarative Memory

## Mental Imagery

- Epiphenomenal
- Brain areas for mental images
  - Left cortex
- Santa's Experiment - Geometric vs Verbal
- Mental Rotation - Shepard's Experiment
- Brook's Experiment - Image Scanning
- Magnitude Comparison — Visual Imagery without spatial

- properties, Moyer's Experiment
- Levine et al. Double Dissociation Task
  - **Temporal Lobe Damage** : Could not describe object features
  - **Bilateral Parietal Lobe Damage** : Could not describe object location
- Farah et al. : Similar

## **Book - Attention**

- Serial Bottlenecks
- Early and Late Selection
- Broadbent's Filter Theory
- Treisman's Attenuation Theory
- Fovea and visual attention
- Neisser Becklen Experiment
- Fusiform Gyrus - Recognises faces
- Parahippocampal area - places
- Binding Problem
- Treisman's Feature Integration Theory
- Automaticity
- Stroop Effect
- Executive Control - prefrontal Cortex

## **Book - Mental Imagery**

- Santa's study of shapes and words — linear vs spatial changes
- Shepard's study of rotation
- Brook's study of mental vs physical array
- Moyer's study of comparison of magnitudes
- Egocentric vs Allocentric navigation

## **Book - Memory**

- Frontal Structure - Creation of memories
- Temporal Structure - Storage of memories
- Sperling's Partial report experiment
- Iconic Memory
- Echoic Memory
- STM (Attention)
- LTM (Rehearsal)
- Depth of Processing

- Baddeley's Theory
- Working Memory — Frontal Cortex
  - Visiospatial Sketchpad
  - Phonological Loop
  - Central Executive
- Activation
- Elaborative Processing
- Flashbulb Memories
- Interference
- Decay
- False Memories
- Amnesia
  - Retrograde Amnesia
  - Anterograde Amnesia
- Explicit Memory
- Implicit Memory
- Procedural Memory
- Semantic and Episodic Memory