

Introduction to Cognitive Psychology

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Key concepts, historical background, major topics, and foundational methods

1. What Is Cognitive Psychology?

Aspect	Description
Definition	The scientific study of mental processes that underlie how we acquire, store, transform, and use information.
Core Questions	How do we perceive the world? How do we attend to stimuli? How are memories formed and retrieved? How do we solve problems and make decisions?
Scope	Perception, attention, memory, language, reasoning, problem-solving, decision-making, and mental imagery.
Goal	Explain behavior by uncovering the internal “software” of the mind (information processing, representations, and computational mechanisms).

2. Historical Foundations

Era	Milestones	Key Figures
Early Roots (19th c.)	Introspection, study of mental life	Wilhelm Wundt, William James
Behaviorist Reaction (1920-1950)	Focus on observable behavior; mental processes deemed “black box.”	B.F. Skinner, John B. Watson
Cognitive Revolution (1950-1960)	Reintroduction of mental processes; analogy to computer information processing.	George Miller, Ulric Neisser, Noam Chomsky
Modern Era (1970-present)	Integration of neuroscience, computational modeling, and experimental methods.	Alan Baddeley, Daniel Kahneman, Elizabeth Lloyd Bostock

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3. Major Topics & Core Theories

3.1 Perception

- **Bottom-up processing:** Sensory input drives perception (e.g., edge detection).
- **Top-down processing:** Prior knowledge, expectations, and context influence interpretation.
- **Gestalt principles:** Proximity, similarity, closure, continuity, common fate.

3.2 Attention

- **Selective attention:** Filter models (Broadbent) vs. attenuation (Treisman).
- **Capacity limits:** Limited-resource models (Kahneman's capacity theory).
- **Spotlight metaphor:** Focused vs. divided attention.

3.3 Memory

System	Characteristics	Typical Capacity	Duration
Sensory	Iconic (visual) & echoic (auditory) registers	Large (entire scene)	<1s
Short-term / Working Memory	Central executive + phonological loop, visuospatial sketchpad, episodic buffer (Baddeley)	4-7 chunks (Miller)	Seconds to minutes
Long-term	Declarative (episodic, semantic) vs. non-declarative (procedural, priming)	Effectively unlimited	From minutes to a lifetime

- **Encoding processes:** Levels of processing (Craik & Lockhart); depth matters.
- **Retrieval cues:** Context-dependent, state-dependent, and cue-dependent retrieval.

3.4 Language

- **Modular view:** Separate syntax, semantics, phonology (Chomsky's Universal Grammar).
- **Connectionist view:** Distributed networks learn language patterns.
- **Speech perception:** Categorical perception, McGurk effect.

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3.5 Problem Solving & Reasoning

- **Algorithms vs. heuristics:** Systematic procedures vs. mental shortcuts.
- **Common heuristics:** Availability, representativeness, anchoring.
- **Insight & incubation:** Sudden restructuring of problem representation.

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