Chapter 1 Notes Cognitive 02/12/2015

- **COGNITVE PSYCHOLOGY: studying the mind**
- The mind:
  - Creates and controls mental functions such as perception, attention, memory, emotions, language, deciding, thinking, and reasoning.
  - A system that creates representations of the world so that we can act within it to achieve our goals.
- Studying the mind: early work in cognitive psych
- Donders 1868 – how long does it take for someone to make a decision?
  - Reaction time – how long it takes to respond to presentation of a stimulus.
  - Simple reaction time task – pressing a button upon presentation of a stimulus.
  - Choice reaction time task – presented two lights, one on the left and one on the right. Participants' task was to push one button when the light on the left lit up and a different button when light on the right lit up.
  - Donders' experiment was important because it shows something significant about studying the mind: mental responses cannot be measured directly, but must be inferred from behavior.
- Eppinghaus's Memory Experiment
  - Nonsense syllables (3 letter)
  - Learned the list of nonsense syllables, after learning, he waited a number of days to repeat the experiment.
  - Savings method – subtracting the number of trails need to learn the list after a delay from the number of trials it took to learn the list the first time. – retention interval
    - [(initial repetitions – relearning reps) / initial reps] X 100
  - The curve indicates that memory rapidly drops for the first two days after the initial learning and then levels off.
- Wundt's Psychology Lab: Structuralism and Analytic Introspection
  - 1879 – Wilhelm Wundt founded first lab of scientific psychology
  - Structuralism – our overall experience is determined by combining basic elements of experience the structualists call sensations.
  - Analytic introspection – a technique in which trained participants described their experiences and thought processes in response to stimuli.

- William James: Principles of Psychology - book

Abandoning the Study of the Mind

Watson founds Behaviorism

- Watson rejects introspection as a method
  - 1) It produced extremely variable results from person to person
  - 2) the results were difficult to verify because they were interpreted inner mental processes.
- Observable behavior is the main topic of study – what is the relation between the stimuli in the environment and behavior?
- "Little Albert experiment" – Watson subjected a 9 month old boy to a loud noise every time a rat came close to the child – after a few trials the boy became afraid of the rat
  - Classical conditioning – how pairing one stimulus with another previously neutral stimulus causes changes in the response to the neutral stimulus.

Skinner's operant conditioning

- Operant conditioning – behavior is strengthened by the presentation of positive reinforcers, or withdrawal of negative reinforcers.

Reemergence of the mind in psychology (Tolman)

- Tolman rat study
- Cognitive map – conception of the maze's layout.

Rebirth of the study of the mind (1950s – cognitive revolution)

Information procession approach – an approach that traces the sequence of mental operations involved in cognition.

Introduction of the Digital Computer

- Psychologists were interested in how computers processed information in stages
- Input → input processor → memory unit → arithmetic unit→ output

Flow diagrams in the mind

- Experiment by Colin Cherry 1953 – participants were presented with two message simultaneously, one to the left ear and one to the right, and were told to focus their attention on one of the messages (attended message) and to ignore the other (unattended)
- Donald Broadbent 1958 – 1st flow diagram of the mind

Artificial intelligence and information theory

- Artificial intelligence – making a machine behave in ways that would be called intelligent if a human were so behaving

- **Researching the Mind**
- Memory Consolidation from a behavioral perspective
  - Memory consolidation – process by which experiences or information that has entered the memory system becomes strengthened so it is resistant to interference caused by trauma or other events.
  - Experiment by Muller and Pilzecker – two groups of participants learning two lists of nonsense syllables – the immediate group learned one list and then was asked immediately to learn a second list. The delay group learned the first list and waited 6 minutes before learning the second list. The delay group remembered more of the lists because the memory had time to consolidate.
- Models of the Mind
  - Models make a complicated system easier to understand