Chapter 7- Thought & Language

Joseph Angulo and Miranda Chaidez
7.1: Thought

- Thought is an extension of perception and memory
- Mental representations are formed, recalled, and manipulated using memory
- Thinking can involve words, images, or can involve mental models

Process of Categorization

- Categorization involves recognizing an object as a member of a category
- We categorize objects by comparison with defining features
- We also rate objects based on similarity/dissimilarity to characteristics of the category
- Categories are organized in hierarchies: Basic level to subordinate level

7.2: Reasoning

- Reasoning refers to the process by which people generate and evaluate arguments
- Inductive: We reason from specific observations to general proposition
- Deductive: We draw a conclusion from a set of assumptions and we argue that the conclusion is true if the premises are true
- A Syllogism is a set of formal statements in deductive reasoning.

Problem Solving

- Process by which we transform one situation into another to meet a goal
- Problems vary by definition from well-defined to ill-defined

Impediments to Problem-Solving

- Functional fixedness: Our tendency to fix on a function for an object and to ignore other possible uses (candle, matches, and tack problem)
- Confirmation bias: We seek to confirm what we already believe
7.3: Heuristics
- Heuristics are cognitive shortcuts that allow us to make decisions.
- Representative heuristic is when we match an object to its category but don’t process how likely the match is.
- Availability heuristic refers to when we decide that events that we can easily recall are common and typical.

7.4: Language
- Language is the system of symbols, sounds, meanings, and rules for their combination that constitutes the primary mode of communication among humans.

- Pragmatics of Language
  - Known as the way language is used and understood in everyday life.

- Discourse
  - The way people ordinarily speak, hear, read, and write in interconnected sentences.

Implicit Cognition
- Implicit Thinking refers to a focus on unconscious thought processes (as opposed to conscious explicit thought).

Emotion, Motivation and Decision Making
- Dorsolateral prefrontal region: damage here leads to impaired planning, distractibility, and deficits in working memory.
- Ventromedial prefrontal region: damage here interrupts connections to the limbic system and results in mood swings, loss of social inhibition, and changes in personality.
Chapter 7

Important People

- Cooper & Shepard: The Manipulation of visual representations.
- Johnson Laird: Mental Models.
- Kamil & Jones: Nutcracker experiment.
- Goldstone & Kersten, Murphy & Medin: Categories and Concepts.
- Malt & Smith: Visual task. (penguin experiment)
- Rosch: The Basic Level of Categorization.
- Mahon & Caramazza: Neuropsychological studies
- Mervis and Rosch, Tanaka & Taylor: “Basic level”.

- Irwin: Sorting Performance.
- Passig & Eden: Inductive reasoning and cognitive flexibility.
- Edwards: Weight Utility Value Calculations.
- Medvec: Counterfactual thinking.
- Rumelhart: Parallel distribution.
- Jodie Foster: Portrayed the case of idioglossia.
- Premack & Premack: Sarah the chimpanzee.
- Tanner & Byrne: Symbolic gestures.
Chapter 7.1-7.2

Summary

7.1:
- Concepts and Categories
  Objects are classified on the basis of their properties
  Categories are natural groupings based on common properties
  A concept is a mental representation of a category
  "Cat": small, hairy, and fiercely independent creature
- Process of Categorization
  Categorization involves recognizing an object as a member of a category
  We categorize objects by comparison with defining features
  Some objects can be "clearly" defined (salt), others are "fuzzy" (honest)
  We also rate objects based on similarity/dissimilarity to prototypes
  Prototypes are a model based on abstraction of the characteristics of the category
  A prototype can be based on a combination of visual shape and verbal characteristics
  Categories are organized in hierarchies: Basic level to subordinate level

7.2:
- Problem Solving
  Process by which we transform one situation into another to meet a goal
  Problems vary by definition from well-defined to ill-defined
  Strategies of problem solving:
  Hypothesis testing involves making and testing an educated guess about a problem.
  Mental simulation involves mental rehearsal of the steps needed to solve a problem.
- Reasoning
  Reasoning refers to the process by which people generate and evaluate arguments
  Inductive: We reason from specific observations to general proposition
  Deductive: We draw a conclusion from a set of assumptions and we argue that the conclusion is true if the premises are true
  A Syllogism is a set of formal statements in deductive reasoning.
  A syllogism is comprised of 2 premises and a conclusion
Chapter 7.3-7.4

Summary

7.3:

- **How Rational Are We?**
  Some have pointed to the cognitive shortcuts people use that can lead them to make less than optimal decisions, whereas others have suggested that the concept of rationality itself may be limited.

- **Emotion, Motivation and Decision Making**
  The Frontal lobes are critical for the processing of thought. The Dorsolateral prefrontal region: damage here leads to impaired planning, distractibility, and deficits in working memory. The Ventromedial prefrontal region: damage here interrupts connections to the limbic system and results in mood swings, loss of social inhibition, and changes in personality. For example, the case of Phineas Gage.

7.4:

- **Transforming Sounds and Symbols into Meaning**
  **Elements of Language**
  A language is a system of symbols, sounds, meanings, and rules of combination that allows for communication among humans. 
  - **Phonemes** are the smallest units of sound.
  - **Morphemes** are the smallest units of meaning.
  - **Phrases** are composed of morphemes.
  - A **sentence** is a string of morphemes and phrases that express a thought or intention.

- **The Use of Language in Everyday Life**
  Psychologists interested in the pragmatics of language—the way language is used and understood in everyday life—are interested in how people decode linguistic messages of this sort. For years, Chomsky was such a towering figure in linguistics that his research, much of it on grammar and syntax, set the agenda for psychologists studying language. More recently, some researchers have begun to focus on levels of linguistic processing broader than the isolated sentence. Rather than studying the elements of language from the bottom up, they have turned to the analysis of discourse.