

# Chapter 10



## THINKING AND LANGUAGE

# I. Thinking



- Cognition – All mental activities associated with thinking, knowing and remembering.
- Concepts – Mental grouping of similar objects, events and people.
- Prototype – Mental image or best example that incorporates all the features we associate with a category. (If it doesn't match our prototype, we have a hard time classifying it.)

# I. Thinking



- Solving Problems
  - Tower of Hanoi Problem
  - (Play the dice game “Petals Around a Rose”)
    - ✦ What is the rule?
    - ✦ How did you solve the problem?
  - Trial and error
  - Algorithm – Step-by-step procedure that guarantees a solution to certain types of problems.
  - Heuristic – Mental shortcut to quickly simplify and solve a problem; the correct solution isn’t guaranteed.
  - Insight – Sudden appearance (often creative) or awareness of a solution to a problem.

# I. Thinking



- The maker doesn't want it, the buyer doesn't use it, and the user doesn't see it. What is it?
- What number is next in this series: 10, 4, 3, 11, 15...?  
A. 14 B. 1 C. 17 D. 12
- Six glasses are in a row. The first three are filled with water, and the last three are empty. By moving only one glass, can you arrange them so that the full and the empty glasses alternate?
- What is so unusual about the following sentence?  
“Jackdaws love my big sphinx of quartz.”

# I. Thinking



- How can you physically stand behind your father while he is standing behind you?
- Can you translate the following into a sentence?  
100204180
- What occurs once in every minute, twice in every moment, yet never in a thousand years?
- A man left home one morning. He turned right and ran straight ahead. Then he turned left. After awhile, he turned left again, running faster than ever. Then he turned left once more and decided to go home. In the distance he could see two masked men waiting for him. Who were they?
- Can you translate the following?  
YYURYYUBICURYY4ME

# I. Thinking



- Solving Problems

- Obstacles to problem solving

- ✦ Confirmation bias – Tendency to search for information that confirms our beliefs.
- ✦ Fixation – The inability to see a problem from a fresh perspective.
- ✦ Mental set – Barrier that occurs when we apply only methods that have worked in the past rather than new strategies.
- ✦ Functional fixedness – When we are not able to recognize novel uses for an object.

# I. Thinking



- Making decisions and forming judgments
  - Representative heuristic – Tendency to judge the likelihood of things according to how they relate to a prototype. (This is a form of stereotyping. We judge people according to the likelihood that they fit our representation of groups to which we feel they should belong.)
  - Availability heuristic – Tendency to estimate the probability of certain events in terms of how readily they come to mind.
  - Overconfidence bias – Tendency to overestimate the accuracy of our knowledge and judgments.
  - Framing – The way an issue is stated. (Can significantly affect decisions and judgments.)

# I. Thinking



- Belief bias – Tendency for our beliefs to distort logical reasoning, making illogical conclusions seem valid or logical conclusions invalid.
- Belief perseverance – Tendency to hold onto a belief after the basis for the belief is discredited.



# II. Language



- Language – Our spoken, written or gestured words and the ways we combine them as we think and communicate.
- Language structure
  - Phonemes – Set of basic sounds (Ex: Bat has 3 – b, a, t)
  - Morpheme – Smallest unit of language that carries meaning (Ex: undesirables has 4 – un, desire, able, s)
  - Grammar – System of rules that enables us to communicate with and understand others.
    - ✦ Syntax – Rules that we use to order words into a sentence.
    - ✦ Semantics – Set of rules we use to derive meaning from morphemes, words and sentences.

# II. Language



- Language development
  - Acquiring language (Simple to complex)
    - ✦ Babbling – Infant's spontaneous production of speech sounds (3-4 months old)
    - ✦ One word – Child speaks mostly in single words (1-2 years)
    - ✦ Telegraphic speech – Meaningful two words sentences, usually one noun and one verb and usually in the correct order (2 years)

# II. Language



- **Explaining language development**
  - Behavioral perspective – Language is developed by imitating sounds we hear to create words.
  - Nativist perspective – Idea that the human brain has an innate capacity for acquiring language possibly during a critical period of time after birth.
  - Social-interactivist perspective – Babies are biologically equipped for learning language which may be activated or constrained by experience.

# III. Animal Thinking and Language



- **Do animals think?**
  - Monkeys show signs of counting
  - Chimps show signs of problem solving
- **Do animals exhibit language?**
  - Animals DO communicate
  - Honeybees use dance (not language) to communicate
- **Case of the apes**
  - Washoe – was taught to use sign language
  - Communication entails gestures
  - Lana – chimp that “talks” by pushing buttons a computer translates to English

# III. Animals Thinking and Language



- Can apes really talk?
  - Apes have the capacity to communicate through a meaningful sequence of symbols.
  - Critical time for learning language is early in life.
  - Loulis – “Adopted” baby of Washoe uses signs to communicate with other apes after observing their language.