

CHAPTER 9: COGNITION AND LANGUAGE • LECTURE NOTES

- Cognition
 - Thinking, gaining knowledge, and dealing with knowledge
- Cognitive Psychology
 - Studies how they get knowledge, how they imagine, and how they solve problems
 - Language acquisition and organization
 - It is not as easy as asking someone what they are thinking.
 - Sometime people make mistakes with what they think or experience
 - Sometimes people don't know what they think or experience
- Mental Imagery
 - Shepard and Metzler
 - Studies how people solve problems
 - They hypothesized that the time it takes people to rotate mental images is the same as if they were rotating a real image
 - The further it has to be rotated, the longer it would take to do
- Categorization
 - The easiest way we categorize is by using yes/no
 - Some argue that categories are best defined by familiar or typical examples
 - Prototypes: typical example
 - Some things do not have prototypes:
- Conceptual Networks and Priming
 - We naturally organize information into hierarchies.
 - Animal – Bird – Sparrow
 - Measured by the delay in responding to certain
- Spreading Activation:

- Cross-cultural studies of concepts
- Words do not translate exactly
- Arranged pictures of objects into groups of similar items: similar categories, but different names
- People speaking different languages do not think very differently

- Attention Limits
 - Change blindness
 - The frequent failure to detect changes in parts of a scene
 - If changes occur suddenly, we _____, but if the change is slow or when you are not watching, then _____
 - Change deafness- the frequent failure to detect changes in speaking
 - The point is that we remember the gist of things, but not many details
- Attentional Blink
 - During a brief time after perceiving one stimulus, it is difficult to attend to something else
- Expertise
- Practice makes nearly perfect: 10 years of concentrated practice= expertise
- Experts are made, not born
- Extremely impressive only in their area of specialization

Problem Solving

- Understand problem
- Generate one or more hypotheses
- Test the hypotheses
- Check results

Algorithms test out every possible hypothesis

Heuristics Strategies for simplifying a problem or for guiding an investigation

- Errors in Human Cognition
 - Overconfidence: believe one's opinion or predictions are highly correct when in fact they are not
 - Confirmation Bias
 - We accept something and THEN look for evidence to support it, rather than looking for another explanation
 - Functional Fixedness
 - Tendency to adhere to a single approach or a single way of using an item
- Language
 - Many species have language, yet none have _____
 - The ability to express new ideas
 - The ability to generate sentences that no one else has ever said before

- Transformational Grammar
 - A system for converting a **deep** structure into a **surface** structure
 - Deep Structure
 - _____
 - Surface structure
 - _____

- Non-Human Precursors to Language
 - Vocal chords _
 - - Chimps are trained to use language using symbols
 - These are mostly used to _____, and are not strung together in sentences

- Language in Non-Humans
 - Chimpanzees
 - Vocal cords are poorly adapted to making **voice sounds** _____
 - Learned sign language
 - Washoe, **100** words
 - Bonobos
 - Specie of chimps that has been very good at learning language
 - Can use symbols to **name objects, no request. Describe past events. Creative request. 2-2.5 year old child**
 - Their abilities are approximately at the level of a **2-2.5** year old child
 - Interestingly, learning by observing humans is the fastest way for chimps to learn language

- Language in Humans
 - Language is not synonymous with overall intelligence, you do not need one for the other

- Language Acquisition Device
 - **A built in mechanism for acquiring language**
 - It is still unclear if we are born with concepts and primitive grammar, or if we are just born with the ability to learn them

- Language and the Brain
 - 2 brain areas are responsible for language
 - **Broca's area**
 - Broca's aphasia
 - **Inarticulate speech and difficulty with both using and understanding grammatical devices**