Thinking and Language

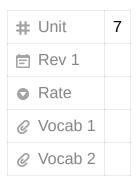| # Unit	7
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7.1 - Cognition

▼ **Thinking**

Thinking, or *cognition*, refers to a process that involves knowing, understanding, remembering, and communicating.

▼ **Cognitive Psychologists**

Thinking involves a number of mental activities, which are listed below. Cognitive psychologists study these in great detain

▼ **Concept**

The mental grouping of similar objects, events, ideas, or people. There are a variety of chairs but their common features define the concept of a chair.

  ▼ Category Hierarchies

    We organize concepts into category hierarchies

  ▼ Development of Concepts

- Form concepts with definitions
- Form concepts with mental images (prototypes)

    ▼ Example

A robin is a prototype of a bird, but a penguin is not

▼ **Problem Solving**

Two ways to solve problems:

    ▼ Algorithms

    Methodical, logical rules or procedures that guarantee solving a particular problem

- Anyone can solve the problem by applying the rules/steps

    ▼ Examples

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▼ **Insight**

Insight involves a sudden novel realization of a solution to a problem. Humans and animals have insight

- Incubation Period
- "AHA" experience

7.2 - Fixation

▼ **Fixation**

Being stuck on one problem/solution and not seeing other possibilities

    ▼ *Fixation*

    An inability to see a problem from a fresh perspective

    ▼ Examples

- Mental Set
- Functional Fixedness

    ▼ The Matchstick Problem

    How would you arrange six matches to form four equilateral triangles?

▼ **Mental Set**

A tendency to approach a problem in a particular way, especially if that way was successful in the past

▼ **Functional Fixedness**

A tendency to think only of the familiar functions of an object

▼ **Obstacles in Solving Problems**

   ▼ Confirmation Bias

   A tendency to search for information that confirms a personal bias. Often ignore the counter-evidence.

▼ **Heuristics**

   ▼ Representativeness Heuristic

   Judging the likelihood of things or objects in terms of how well they seem to represent, or match, a particular prototype. Similar to stereotyping.

   ▼ Availability Heuristic

   Whatever increases the ease of retrieving information increases its perceived availability.

      ▼ How is retrieval facilitated?

         1. How recently we have heard about the event

         2. How distinct it is.

         3. How correct it is.

▼ **Overconfidence**

Intuitive Heuristics, confirmation of beliefs, and the inclination to explain failures increase our overconfidence. Overconfidence is a tendency to overestimate

▼ **Exaggerated Fear**

The opposite of having overconfidence is having an exaggerated fear about what may happen. Such fears may be unfounded.

   • The 9/11 attacks led to a decline in air travel due to fear.

▼ **Framing Decisions**

Decisions and judgments may be significantly affected depending upon how an issue is framed

▼ **Belief Bias**

The tendency of one's preexisting beliefs to distort logical reasoning by making invalid conclusions.

7.3 - Language

▼ **Language**

- Our spoken, written, or gestured work

- A way to communicate meaning to ourselves and others

- ▼ Language Structure

  - ▼ Phonemes

    The smallest distinct sound unit in a spoken language

    - ▼ Example

      bat, has three phonemes *b - a - t*

      chat, has three phonemes *ch - a -t*

  - ▼ Morphemes

    The smallest unit that carries a meaning. It may be a word or a part of a word

    - ▼ Example

      Milk = *milk*

      Pumpkin = *pump - kin*

      Unforgettable = *un - for - get - table*

  - ▼ Structuring Language

    - ▼ Phonemes

      Basic sounds

    - ▼ Morphemes

Smallest meaningful units

▼ Words

Meaningful units

▼ Phrase

Composed of two or more words

▼ Sentence

Composed of many words

▼ Grammar

The system of rules in a language that enable us to communicate with and understand others

▼ Semantics

The set of rules by which we derive meaning from morphemes, words, and sentences

▼ Example

Semantic rule tells us that adding *-ed* to the word *laugh* means that it happened in the past

▼ Syntax

Consists of the rules for combining words into grammatically sensible sentences

▼ Example

In English, adjectives come before nouns; *white house*

In Spanish, it is reversed; *casa blanca*