6. Cognition

We will now study the different areas of cognition. This section will cover intelligence, creativity, language, memory, thinking and problem-solving.

6.1. Intelligence and creativity

6.2. Language

6.3. Memory

6.4. Thinking and problem solving

6.1 Intelligence and Creativity

- **Intelligence is our inherent potential for learning**
  - **how well you solve problems**

- **Alfred Binet**
  - **first intelligence test**

  - **intelligence quotient (IQ)**

  - **comparison between test taker score and average**

- **g-factor theory of intelligence**
  - **Charles Spearman**

- **Triarchic theory of intelligence**
  - **Robert Sternberg**
    - **analytic intelligence (academic skills)**
    - **practical intelligence (problem solving)**
    - **creative intelligence**

- **Multiple intelligences theories**

- **Raymond Cattell**
  - **Fluid intelligence**
    - **How fast you can learn new things; respond to your environment; puzzle ability**

  - **Crystallized intelligence**
    - **Using skills, experience and learned knowledge to solve problems**

- **What leads to differing levels of intelligence?**

- **Nature vs nurture**
  - **intelligence hereditary**
  - **learning environment**

- **Learning disabilities**
  - **dysgraphia**
  - **dyslexia**

- **Creativity**
  - **ability to generate, create or discover new ideas, solutions and possibilities**

  - **divergent thinking- "outside of the box"**

  - **facet of intelligence- difficult to measure objectively**

6.2 Language

- **Use of words and systematic rules to transmit information (and solve problems)**

- **Form of communication used uniquely by humans**

- **Way of getting ideas from one person to another**

6.2. Language

- **Spoken, written or signed**

- **Components of Language**
  - **lexicon and grammar**

  - **phoneme and morphemes combined to form words**

  - **syntax and semantics used to construct language**

6.2. Language

- **Noam Chomsky**
  - **Language Acquisition Device**
  - **Universal Built-in System**

6.3 Memory

- **Sensory memory**

- **Short-term/working memory**
  - **information left in the mind long enough to solve problems**
  - **Capacity of 7 items +/- 2**

- **Long-term memory**
  - **extra effort required to transfer from short-term**
  - **Unlimited capacity**

- **Mnemonic strategies**
  - **can be deliberate or unconscious**

  - **method of getting information into long-term memory or keeping more in short-term**

  - **rehearsal, <u>chunking</u>, spelling**

6.4 Thinking and Problem Solving

- **Heuristics**
  - **representativeness heuristic**
  - **availability heuristic**
- **Trial and Error**
- **Algorithm**
- **Problem solving pitfalls**
  - **Biases**
    - **confirmation**
    - **hindsight**
    - **representative**
    - **availability**
- **Functional fixedness**
  - **Can a quarter tighten a screw?**