Perception Processes

Overview

- The Computational Brain
- Sensation and Perception

Computational Brain

- The mind processes information
- We see, hear, smell, taste, and feel the sensations of the world as the first link in a chain of events and subsequently involves coding stimuli; storing information; transforming material; thinking; and, finally reacting to knowledge.

Computational Brain

- Physical energy that falls within the limited range of human detection stimulates the sensory system, is transduced (converted to neural energy by sensory organs), is briefly held in a sensory storage, is subjected to further processing by the central nervous system (CNS) and coded, may be passed on to memory systems for processing.

Computational Brain

- The mind processes information
- Involves computational stages
  - Sensory system (eyes, nose, etc.)
  - Transduced from physical form
  - Sensory storage
  - CNS processing / Encoding
  - Memory systems

Sensation & Perception

- Sensation refers to the initial detection of energy from the physical world. The study of sensation generally deals with the structure and processes of the sensory mechanism and the stimuli that affect those mechanisms.
- Perception involves higher order cognition in the interpretation of the sensory information.
- Sensation refers to the initial detection of stimuli. Perception refers to interpretation of the things we sense.

Sensation & Perception

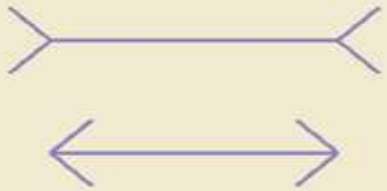
- Sensory events are processed within the context of our knowledge of the world, culture, expectations, and even who are we with at the time. These give meaning to simple sensory experiences-that is perception.

- Detection & Processing
  - 5 senses-structures, stimuli, receptors

Sensation & Perception

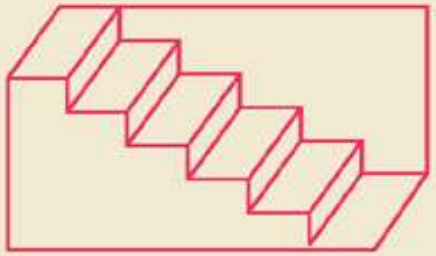
Illusions

- Psychophysics
  - Study of inner / outer world relationship. The study of the relationship between the physical changes of the world and the psychological experiences associated with these changes.
- Illusions
  - Mind's distortion of reality—teaches us something about our visual and cognitive system
  - Psychophysicists use measurements of the physical and psychological quality of the same sensory stimuli. Sometimes reality and perception do not match, as in the case of perceptual illusions.
  - Illusions are important to psychophysicists, not because they point out fault in out ability to perceive, but rather because they provide insight into how our perceptual system works.



(a) Which of the horizontal lines is longer?

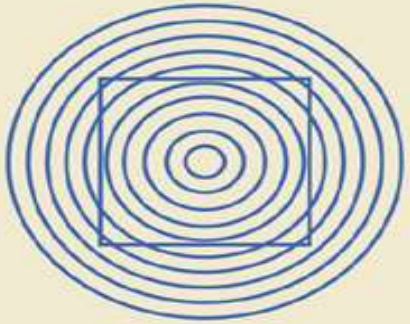
(b) Is the diagonal a single straight line? Check it with a ruler.



(c) Is this a drawing of a staircase descending from upper left to lower right . . . or is it the view of the underneath of a staircase from lower right to upper left?

(d) Are these lines parallel? Cover some of the slash marks to see.

(e) Which line is longer, horizontal or vertical?



(f) Notice how the background distorts the square.

(g) Which quadrilateral is larger?

(h) Which column is shortest? Which is longest?

FIGURE. Some interesting perceptual illusions. Such illusions are a normal part of visual perception.

Sensation & Perception

- Prior knowledge—driving perception by interpretation
- Perceptions are influenced by past knowledge, previous hypotheses, and prejudices, as well as sensory signals.
- The way we perceive the primary information of the world is greatly influenced by the way the sensory system and brain are initially structured- we are "hard-wired" to perceive the world in a certain way- and by our past experiences, which give abundant meaning to the initial sensation of stimuli.
- Perceptual performance is also based on expectations.

Sensation & Perception

- Sensory brain predisposition (act in a particular way)
  - Sensations of the world and what they mean are as much a function of the fixed mechanisms as they are of the past history of the observer.

Everything we know is wrong?

- Sensory system and brain distort sensory information.
- At the sensory level information is very specific, whereas on the interpretation level, information is commonly abstract. Our view of the world is determined by the integration of what we know (in an abstract sense) with what we sense (in a specific sense).

- 1. ---------refers to the initial detection of energy from the physical world.
- **Sensation**.
- perception.
- retinal image.
- Feature analysis.

2. ----------n involves higher order cognition in the interpretation of the sensory information

- Sensation.
- **perception**.
- retinal image.
- Feature analysis.

3. The way we perceive the primary information of the world is greatly influenced by the way the sensory system and brain are initially---------.

- **Structured**.
- Associated .
- perceived.
- built.

4. Our view of the world is determined by the integration of what we know (in an -------- sense) with what we sense (in a specific sense).

- original.
- **abstract** .
- specific.
- clear.

5. Sensation refers to the initial detection of stimuli. Perception refers to ------of the things we sense.

- Familiarity
- Recognizing.
- clarity.
- **interpretation**

Let us Discuss

- What are computational stages for processing of information by our minds?
- Compare & Contrast sensation and perception.
- How are perceptions influenced?