Sensation/Perception

Sensation: Stimulation (in sense organs, neural signal)

- The process by which we receive info from the environment
- Involves coordination among:
    - 1. accessory structures – part of the system that first comes in contact with the stimulation (outer ear, lens of eye, etc)
    - 2. transduction – the process of converting incoming energy into neural activity
    - 3. sensory neurons – carry the neural activity to the CNS
    - 4. Thalamus or Amygdala – process and relay the neural activity to the cerebral cortex
    - 5. cerebral cortex – receives input, and produces the sensation and perception

A. Receptors - a cell that is responsive to a particular form of stimulation and which reliably undergoes a particular pattern of change (rods, cones, taste buds, hair cells in ear, and pressure sensitive cells in the skin)
B. Neural pathways - a route formed by neurons along which nerve conduction takes place
C. Sensory Process - some form of energy stimulates a receptor cell, receptor cell changes the energy into a neural signal, travels along the sensory nerves to the CNS

Perception: Interpretation

1. Process of selecting info from the environment
2. Interpretation of info from the environment

Bottom-up processing – analysis of sensation that starts with the sensory receptors, and moves toward the brain

Top-down processing – information processing guided by thought and experience

*** for example - the forest has eyes –

- BU = enables our sensory system to detect lines, angles, and colors that form the riders and surroundings
- TD = we consider the title, notice the apprehensive expression, and then direct our attention to certain aspects of the painting.

When we were talking about the neuron sending messages, we said that a certain intensity was required in order to send a message down the axon→ the same is true for us to produce a sensation

Psychophysics: study the relationship between the physical stimulus (intensity, etc) and our experience of them

Absolute Threshold: How much pressure to the skin for a person to notice?

- Minimum stimulation needed for detection
- Point at which a stimulus can be detected 50% of the time

Signal Detection theory: Whether or not we pick up on stimulation (a signal) depends on more than our absolute threshold.

- State of mind, alertness, expectations, etc
- People that study this theory try to explain/understand how and what can affect our detection

Difference Threshold: Just noticeable difference

- The smallest change in stimulation that can be detected 50% of the time (i.e. a light is brighter)

Absolute thresholds:
Taste - 1 gram salt in 500 liters of H2O
Smell - 1 drop of perfume in a 3 room apartment
Touch - Wing of bee falling on cheek from 1 cm
Hearing: tick of a watch from 20ft in very quiet conditions
Vision: candle flame from 30 miles on a clear dark night

Weber's Law: the larger or stronger a stimulus, the larger the change needed for the observer to notice.

Sensory Adaptation: diminished sensitivity to constant stimulation

Subliminal Stimulation: stimulation that is just below our conscious awareness

- Yes, we can be affected by stimuli that we do not "notice"
    - Studies:
        - people look at neutral pictures, while also being exposed to a pleasant, neutral, or unpleasant smell… rate the picture scale of 1-10 how nice is this person/picture…ratings corresponded to the smells

        - people flashed positive scene (kittens, romantic couple) or negative scene (werewolf, dead body)…so quickly they just "saw" it as a flash of light…then had to rate neutral pictures…what they "saw" in the flash did affect their ratings
- But, this does not mean that subliminal messages work
    - Research seems to support a very brief, fleeting affect, you are "primed" by the exposure
    - Priming = often unconscious, activation of associations, predisposing your perception, memory, or response