Sensation

Defined: The process by which our sensory receptors and nervous system receive and represent stimulus energies from our environment.

- **perception** – the process of organizing and interpreting sensory information, enabling us to recognize meaningful objects and events.
- **bottom-up processing** – analysis that begins with the sense receptors and works *up to* the brain's integration of sensory information
- **top-down processing** – information processing guided by higher-level mental processes, as when we construct perceptions drawing on our experience and expectations.
- **psychophysics** – the study of the relationships between physical characteristics of stimuli, such as their intensity, and our psychological experience of them.

I. Thresholds

A. **Absolute Threshold** – the minimum stimulation needed to detect a particular stimulus (light, sound, odor, taste, pressure) 50 percent of the time

ex: we can: see a candle flame atop another mountain 30 miles away
feel the wing of a bee falling on our cheek
smell a single drop of perfume in a three-room apartment

B. **Signal Detection Theory** – predicts how and when we detect the presence of a faint stimulus ("signal") amid background stimulation ("noise"). Assumes that there is *no single absolute threshold* and that detection depends partly on a person's experience, expectations, motivation, and level of fatigue.

ex: exhausted parents of a newborn, sentry standing guard during wartime
- people's vigilance diminishes after about 30 minutes of judging when a faint signal appears.

C. **Subliminal Stimulation** – *below* one's absolute threshold for conscious awareness
- can subtly influence people, but does *not* have a powerful enduring effect on behavior
  - ex: viewing slides of peoples' faces

D. **Difference Threshold** (aka – *just noticeable difference* or *jnd*)
- the minimum difference between two stimuli required for detection 50 percent of the time.
  - increases with the magnitude of the stimulus

- **Weber's Law** – the principle that, to be perceived as different, two stimuli must differ by a constant minimum percentage (rather than a constant amount).

II. **Sensory Adaptation** - diminished sensitivity as a consequence of constant stimulation
- after constant exposure to a stimulus, our nerve cells fire *less frequently*

- enables us to focus on *informative* changes in our environment without being distracted by uninformative constant stimulation (clothing, odors, noise, etc.)

- thus, we perceive the world not exactly as it is, but as it is useful for us to perceive it