

Chapter 4: Sensing + Perceiving

* sensation → awareness resulting from the stimulation of a sense organ.

* perception → the organization + interpretation of sensations.

* transduction → the conversion of stimuli detected by receptor cells to electrical impulses that are then transported to the brain.

①.2 * psychophysics → the branch of psychology that studies the effects of physical stimuli on sensory perception + mental states.

* absolute threshold of a sensation → the intensity of a stimulus that allows an organism to just barely detect it.

* signal detection analysis → a technique used to determine the ability of the perceiver to separate true signals from background noise; analyzed using the measures:

→ sensitivity: the true ability of a person to detect the presence or absence of signals.

→ response bias: a behavioral tendency to respond "yes" to trials; independent of sensitivity.

* difference threshold or "just noticeable difference" (JND) → the change in a stimulus that can just barely be detected.

* Weber's law → the JND of a stimulus is a constant proportion of the original intensity of the stimulus.

* subliminal stimuli → events that occur below the absolute threshold and we're not conscious of.

* blindsight → a condition in which people are unable to consciously report on visual stimuli, yet can still answer indirect questions about what they're seeing.

* blindsight → a condition in which people are unable to consciously ~~report~~ report on visual stimuli, but are still able to accurately answer questions about what they're seeing.

② * Humans are greatly reliant on their sense of sight → a large part of the cerebral cortex is devoted to seeing.

* cornea → a clear covering that protects the eye + begins to focus the incoming light.

* pupil → a small opening in the center of the eye

* iris → the colored part of the eye that controls pupil size in response to light intensity.

* lens → focuses the incoming light on the...

* retina → layer of tissue at the back of the eye that contains photoreceptor cells.

* visual accommodation → the process of changing the curvature of the lens to keep entering light focused on the retina which allows us to adjust our focus on things near or far.

↳ not always perfect → cause of near and farsightedness

* When light falls on the retina, receptor cells called rods and cones are activated → spreads to the bipolar cells + then the ganglion cells.

* the optic nerve → a collection of millions of ganglion neurons that send vast amounts of visual info via the thalamus to the brain.

* rods → visual neurons that specialize in detecting black, white, + gray
→ help us see in dim light
→ particularly active in peripheral vision
→ located around the edges of the retina



* cones → visual neurons that are specialized in detecting colors and fine detail.

→ operate best in bright light

→ located primarily around the fovea (center of retina)

* Both eyes send their info to both hemispheres of the brain; the visual cortex processes each cue separately and in parallel.

* Specialized neurons in the visual cortex turn sensations received from the optic nerve into meaningful images

* feature detector neurons → specialized neurons in the visual cortex that respond to the strength, angles, shapes, edges, and movements of a visual stimulus.

② * hue → shade of a color; conveyed by wavelength

→ short wavelengths = blue, long wavelengths = red

* intensity → brightness; conveyed by wave amplitude (height)

→ larger amplitude = brighter, smaller amplitude = dimmer

* Young-Helmholtz trichromatic theory → the color we see depends on the mix of the signals from the three types of cones (red, blue, green)

* the opponent-process color theory → proposes we analyze sensory info not in terms of red, blue, and green, but in 3 sets of "opponent" colors: red-green, yellow-blue, and white-black
Ex. afterimages