10/23 Attention

- Conciousness is only needed when something is not going as expected/usual
  - It is limited
- Attention determines what gets into the conscious (so it is not overwhealemed)
- Alertness and Arousal
  - Vigilance: sustained attention
  - Selective attention: ignores everything but something specific
  - Divided attention: 2 or more inputs
  - Resources are limited- Multiple Resource theory
- Arousal: reticular activating system (inhibition/excitatory)
  - Yerkes-Dodson law: resources as a function of arousal
    - Inverted "u" shape: too much or too little arousal impedes performance
    - Coma= no arousal
- Sustained attention/vigilance
  - Cholinergic system
  - Too good= stop in monitoring the environment
  - Noradrenergic (activating system) increases ability to function parallel (2 different systems working at once)
- Selective attention
  - bottom up: driven by stimulus
  - Top down: driven by our processing, beliefs, perceptions
  - Time course: early vs late selection
    - Early= physical/sensory features
    - Late = based on content/meaning
- Gating: habituating (cease in response) to repeated stimulus
- Superior colliculus: shifts attention (spatial-visual attention)
  - Saccadic eye movements = 200-300 ms
  - express saccades = 120 ms
- Thalamus-Pulvinar: filters out distractions
- Parietal lobe: resource allocation
  - feature detection: color and shape perceived together need conscious attention "binding problem"
  - Dorsal superior: spatial driven bottom up attention shifts
    - Faster with advance warning (can shift attention quicker), slow when attention is misguided with errors

    1. Disengage attention from previous stimulus (hemi-neglect: cannot disengage from right)
    2. Shifting attention
- Frontal lobe (medial): top-down, executive attention
  - motor neglect: cannot make voluntary motor action to left side of space (behavior that attention leads us to)
- Cingulate cortex: response conflict
  - stroop task: natural process of reading words (automatic drive) needs to be bypassed
- Object vs space based views of perception
  - space based example: "lets meet at the NE corner"
  - object based: "wearing wool parka"
  - parallel: find a conjunction of waldos clothes to find him.