

Visual Attention

- **Attention**
 - Focusing on events
 - Internal and external
 - Ignoring and selecting
 - Take in --> filter --> perception
- Historical Perspectives
 - William James- believed everyone knew what attention was
 - Harold Pashler- believed no one knew what attention was
- Basic Characteristics
 1. **Limited capacity**
 - a. **Juggler Metaphor**- hold all things in the air at the same time
 - i. Difference is that you can't really get better with practice
 - b. **Spotlight metaphor**- whatever is in the center of attention gets processed
 2. **Flexibility**
 - a. Easily shifted
 - b. Cocktail Party Effect- attention automatically drawn to your name
 3. **Voluntary Control**
 - a. Choose to direct attention
- Pre vs Post attentive processing
 - **Pre-attentive**
 - Before focused attention
 - Very quick
 - Pre-thinking
 - Global precedence- see whole image before we see parts
 - Laws of Organization- see a cube or etc.
 - **Post-attentive**
 - After focused attention
 - Choose to focus on somethings
 - **Subitizing**
 - Pre-attentive
 - Quick, effortless
 - Small numbers (1, 2, 3)
 - Puppy picture example
 - Counting
 - Post-attentive
 - Requires focused thought
 - Larger numbers (4+)
- Types of Visual Attention
 - Goal-driven attention= **top down processing**

- Active attention
- Goals guide attention
- Willful direction
- **Space Based Attention**
 - Focused spotlight
 - Center has most processing
 - Periphery has less
 - Laberge (1983) tested hypothesis
 - Present 7, T, or Z
 - Respond when 7 is present, measure reaction time
 - Should be processing faster closer to “spotlight” at middle position
- Stimulus-driven attention= **bottom up processing**
 - Passive attention
 - Stimulus guides attention
 - Attention gets “Grabbed”
 - Ex.- cocktail party effect
 - **Attentional Capture**- What draws our attention
 - **Visual Search Task**
 - Look for an object- target
 - Vary amount of overlap
 - Features: only a small amount of overlap
 - Overlap of shape but not color
 - Conjunction search: lots of overlap
 - Shape and color overlap
 - Vary number of distractors
 - In feature search, more distractors does not slow down reaction time
 - In conjunction search, reaction time slows
 - Visual Search is Two Stages
 - 1st
 - Basic perceptual phase (size, shape, color)
 - Quick and efficient
 - “Pop-Out effect”
 - Pre-attentive
 - 2nd
 - Focused attention on each item
 - Increases reaction time, takes longer,
 - Post-attentive
- Inattentional Blindness
 - Failure to notice obvious change or event
 - Simons and Chabris (1999) “Gorilla Study”
 - Visual similarity

- White shirts: 46%
 - Black shirts: 71%
 - Task Difficulty
 - Count all passes: 63%
 - Separate counts: 54%
- Change Blindness
 - What does it tell us about attention?
 - Coherence
 - Attention hold all elements of a scene together
 - Perceptual glue
 - Basketball vs. Gorilla- what you focus on
 - Attentional Set
 - What you are focused on
 - One particular thing focuses all attention
 - Black vs. White

Auditory Attention

- Gateway Metaphor
 - Only certain number of things will get through and become perceived
- Selective attention
 - Actively choose to focus on one stimulus and ignore others
- Dichotic listening
 - 2 different messages played in 2 different ears
 - Cherry (1953)
- Speech Shadowing
 - Required to repeat what you're hearing only from one ear
- What happens during dichotic listening:
 - Successful at shadowing
 - Successful at ignoring unattended message
 - Know that it's there but do not know what is says
 - Can tell superficial information such as pitch or gender
- Early Selection Theory
 - Both messages go into ears, then filter gets rid of one of them, one message gets through the filter and is translated into meaning
- Attenuation Theory
 - Some information is still getting through both ears, you just don't attend to both
- Automaticity
 - Little attention or effort
 - Years of practice
 - Reading
- Stroop Effect
 - Automatically read the word