Unit 1: Introduction To Attention

* Attention allows you to navigate through a crowded world full of distractions
  + Without attention you can’t have a conversation, enjoy music, learn, joke, etc.
* Selection: The act of attending to an object to select it apart from the unattended objects
  + i.e. When you first put on clothes, you can feel the fabric touching your skin. However, as you go on with your day, you’re no longer aware of the clothing
* Attention is an active process
  + Refers to our conscious ability to attend to information that is relevant to us
    - i.e. Browsing the aisles at Food Basics for popcorn
* When irrelevant information overwhelms us, we get distracted
  + i.e. Talking on the phone while driving
  + i.e. Music playing in the background as you search for a new house

Unit 2: Automation & Controlled Attention

* Automatic
  + Involuntary “capture”
    - Fast, efficient
  + Salient information captures our attention
    - Salient: Information that naturally pops out at you
      * i.e. Flashing lights and loud noise of an emergency vehicle
  + Consciously effortful tasks can become automatic through practice
    - i.e. Driving a car becomes auto-ed after much practice
* Controlled
  + Conscious attention
    - Slow, effortful
  + Our attention resources are limited and must be controlled carefully
    - i.e. Having to turn down the radio when searching for a new address
  + As demand for attention increases, adjustments must be made to compensate or else performance in all tasks suffer

Unit 3: The Spotlight Model

* Conscious visual attention focuses like a spotlight
  + i.e. Searching for your friend in a crowd of people
* Objects within your “spotlight” are more strongly attended to
  + Faster reaction times
  + Higher accuracy
* Our attentional spotlight is automatically attracted to cues
  + Flashing, glowing, enlargement, etc. of an object, attracts our attention
    - i.e. Cue Paradigm Test For Attention
    - i.e. Inaccurate stimulus causes faster reaction times
  + Cueing to the target can ease the fluency of processing at that location
    - i.e. Turning a plate so that the dessert faces you
    - i.e. Bolding, underlining, etc., attracts a reader’s attention

Unit 4: Filter Models

* We use auditory cues to filter target sounds from background noise
  + i.e. During a loud party surrounded by people and filled with noise you can single out the person you are having a conversation with, and manage to hear them
    - This is known as the Cocktail Party Effect
  + The ability is separate target sounds from background noise is based on physical characteristics, such as the gender, tone, pitch, speed, direction of the speaker
* Spotlights enhance the stimulus, whereas filters suppress the noise
  + Filters shifts away distractions and only allow important information through
* Filter and spotlight models propose different mechanisms for attention
  + i.e. Consider a single rose in a field of grass
    - The spotlight model suggests that attention would enhance the processing of a single flower, relative to the grass
    - The filter model suggests that attentions helps us ignore the grass, and allows the flower to continue on for further processing
* Broadbent’s Single Filter Model
  + The attentional filter selects important information on the basis of physical characteristics, and allows that information to continue for further processing
    - Information that does not pass through the early physical filter was assumed to be completely eliminated and unavailable for deeper analysis
  + Only information that is attended is filtered through for deeper processing
    - Demonstrated using the dichotic listening paradigm experiment. Subjects had no problem remembering the message in the attended ear, but most seemed to process almost no information from the unattended ear
    - Explains the shadowing paradigm; subjects process little to no information from the unattended ear
  + However, some information can still be processed, even when not attended to
    - Experiment carried out by Von Wright et al.
    - Subjects show a response to unattended information
    - Classical conditioning was used to associate a word with a shock
* Treisman’s Dual Filter Model
  + If highly relevant, unattended information can “breakthrough” the attentional stream
  + Breakthrough: Participants remember unattended information
    - i.e. You’re at a loud party talking to someone and then suddenly you hear your name being called/used by someone else
  + Treisman’s model proposes two filters: one physical and one semantic
    - Physical filter: Information evaluated based on physical cues such as intensity or pitch to find the most relevant/important signal
    - Semantic filter: Information evaluated for meaning based on importance
  + This model explains Broadbent’s findings from the dichotic listening paradigm and breakthroughs, experienced by Von Wright et al.
  + The semantic filter can override the early filtering decisions based on physical traits by considering the meaning of particular information

Unit 5: The Stroop Task

* Manipulates the congruency of text colour and text meaning
  + Congruent: Contains matching word and colour dimensions
    - i.e. The word red is written in red
  + Incongruent: Contains mismatching word and colour dimension
    - i.e. The word red is written in blue
* Researchers measure how long it takes a participant to correctly identify the colour while trying to identify the word dimension
  + Words that are congruent in colour and meaning are read faster than when incongruent
  + Demonstrates that attention is facilitated by stimulus relevance
* Controlling the stroop effect
  + Researchers used a proportion congruent manipulation that changes the ratio of congruent to incongruent for each trial
  + 75% congruent and 25% incongruent results in an increase in stroop effect
    - Better performance = Increase in stroop effect
  + 25% congruent and 75% incongruent results in a decrease in stroop effect
    - Worse performance = Decrease in stroop effect
* The stroop task shows that automatic processes can be consciously controlled
  + Automatic: Word reading influences performance even when the word is to be ignored
  + Controlled: People can adopt consciously controlled word reading strategies that modulate the stoop effect

Unit 6: Visual Search

* Visual search
  + Set size: The number of items to search through
  + Set size effect: Increase in difficulty as set size increases
    - i.e. It is harder to find a red “Q” among 50 red “O” than 20
  + Single feature search tasks are relatively easy
* Feature search
  + Pop-out effect: When the object of a visual search is easily found, regardless of set size. Easily induced by colour
    - i.e. Finding a single green “O” in a field of 20 red “O”
  + Feature search
    - i.e. Finding a single red “Q” among 20 red “O”
* Conjunction search
  + Uses two or more features to create a more difficult search
  + These tasks are harder and take more time
    - i.e. Finding a single green “Q” in a field of red “O”, green “O”, and red “Q”
* Contextual Cueing
  + Context acts as a cues our attention and improves our reaction time
    - i.e. If you know something’s last location, you will search their first, allowing you to find it much faster. Like your phone, wallet, keys, etc.

Unit 7: Conclusion

* Attention allows you to select and ignore specific information from a sea of noise
* Attentional errors lead to minor inconveniences such as forgetting to put the milk back in the fridge
* Chronic attentional errors are related to ADHD, anxiety, insomnia, depression, etc.

Lecture Notes

* Hemi spatial neglect
  + Ignore the right side of everything
    - Do not even realize it
  + Left side of the brain is damaged

Tutorial Notes

* Automatic processes: Fast and unconscious
* Controlled processes:
* Single filter model: Discard excess information. All stimuli that is not focused on is blocked out
* Dual filter model: All information is not discarded, some are kept

Reading is automatic

Spotlight model: Focusing on one thing

Filter model: Blocking out everything else

Contextual search: Decreasing set-size to a smaller area