Psych 207 Review Chapters

Chapter 4

Summary:

1. Attention has been shown to be a flexible aspect of cognition. We see that attention, rather than being rigidly and mechanically limited, as first described, is instead a more flexible system, affected by things such as practice, the kinds of tasks being performed and the persons' intention.
2. The idea that there are limits on the number of things we can pay attention to at once is known as selective attention. Anecdotal, laboratory, and even neuroscientific evidence seems to suggest that we process information to which we are actively paying attention differently from the way we process information to which we are not attending.
3. Whereas once attention was compared to a bottleneck, today people tend to liken attention more to a pool of resources that can be allocated in a fairly flexible manner.
4. The most common metaphor to describe spatial attention seems to be a spotlight (although some disagree over how far that metaphor extends). The idea here is that attention can vary in effectiveness, just as a spotlight aimed at one spot, more or less lights surrounding areas, depending on its size and intensity.
5. Cognitive neuropsychologists have identified three different neural (brain) networks of attention, which they have localized in specific regions of the brain. They have also demonstrated a different pattern of event-related potentials for attended and unattended information
6. Practice with a physical or cognitive task seems to change the amount of attention we need to perform that task. Tasks that require little mental capacity to perform are said to be automatic.
7. Some critera offered to call a task or process automatic include the following:
    a. It occurs without intention
    b. It occurs without conscious awareness
    c. It does not interfere with other mental activity
8. It appears that tasks can be performed simultaneously so long as operations such as memory retrieval or response selection are performed serially
9. A real-world example of the relevance of laboratory research on attention comes from work on conversing via cell phone while driving a car.

Key Terms:

Attention hypothesis of automatization: The proposal that attention is needed during a learning phase of a new task

Attenuation Theory: Model of selective attention proposed by Anne Treismann. Is a means to explain how unattended stimuli sometimes came to be processed in a more rigorous manner than Donald Broadebent's Filter Model. We sometimes observe things and process information that we did not intend to.

Automatic Processing: Sort of like muscle memory, when you start to do something that you have done many times and you can complete it successfully without giving it any thought. It can sometimes be disruptive when you think about the process (overthinking).

Controlled Processing: Opposite of automatic processing, we have to think to do these tasks.

Dichotic Listening Task: A person is given headphones, each ear is playing different things. The person must answer questions about one of the ears. The other is for distraction and other things

Divided Attention: When mental focus is on multiple tasks or ideas at once, also called multitasking.

Dual Task Performance: Performing two tasks simultaneously.

Event-related potential (ERP) : is the measured brain response that is the direct result of a specific sensory, cognitive or motor event.

Feature Integration Theory: Explains how an individual combines pieces of observable information about an object in order to form a complete perception of the object. First Stage: focus on one attribute of an object that stands out. Second stage: occurs when the attribute does not stand out. Ie finding a penny in quarters vs a nickel in quarters

Filter Theory: View of Attention, such that humans process information with limited capacity and selected information to be processed early. Due to the limited capacity a filter is needed for information processing.

Inattentional Blindness: A person doesn't see new and unexpected things that suddenly appear within their visual field.

Late Selection Theory: Information is selected after processing for meaning

Priming: Things are done to prepare memories, ie talking about cats then asking a person what their favourite animal is.

Psychological Refractory Period: Response to a stimulus is significantly slowed because a first stimulus is still being processed.

Selective Attention: Purposefully focussing your attention on one stimulus.

Spatial Cue: ?

Stroop Effect: Test that demonstrates interference in task reaction time. This particular test uses words that name colors but then print the names in a different color.

Visual Search: an active scan of the visual environment for a particular object

Chapter 5:

Summary:

1. Memory is a very basic cognitive process used in almost every cognitive activity. It involves encoding information, storing it, and later retrieving it from that storage. Cognitive psychologists

consider memory an active, constructive process. This means that the information does not sit still in a storehouse, waiting to be retrieved, but instead is elaborated and sometimes distorted or constructed.

2. One approach to the study of memory, called the modal approach, divides memory into different types: sensory memory, which holds information in specific modalities for fractions of a second up to several seconds (depending on the modality); STM, which holds a limited amount of information for brief periods of seconds or minutes; and LTM which holds on to memories for longer, sometimes infinite periods of time.
3. The number of unrelated pieces of information that can be held in the short term (without rehearsal or recording) seems to be seven, plus or minus two. This limit can be overcome through techniques such as chunking, which requires some knowledge about the pieces of information and how they relate.
4. There is controversy in the explanations proposed for why we forget information. The question is whether information in a memory store ever decays or "disintegrates" or whether all supposedly "forgotten" information is actually buried information displaced by interference from other information. Although these two possibilities are quite distinct, as a practical matter it is very difficult to design critical experiments that would rule out one of them. Perhaps both kinds of processes play some role in forgetting.
5. Saul Sternberg's work suggests that retrieval from STM is serial and exhaustive. Later work suggests that this may depend on the nature of the stimuli presented.
6. A newer conception of STM, proposed by Alan Baddeley, is called working memory (WM). Working memory is thought to consist of a central executive concerned with coordinating and controlling incoming information; a phonological loop, acting as an inner ear: and as a visuospatial sketch pad, used as an inner eye. Recent work suggests that WM capacity is a powerful variable relating to the ability to resist distraction and distortion, to reason with abstract or concrete premises and to maintain control of attention more generally.
7. Retrieval of information is made easier when the information to be retrieved is categorized, when the retrieval cues match the cues that were available at the time of encoding (the encoding specificity principle) and when the retrieval cues are very distinctive.
8. Consistent with the encoding specificity principle, investigators have found that recal(but not recognition) is made easier when the recall context is the same as the learning context (the context effect) or when the pharmacological sate of the person at recall matches his or her pharmacological state during encoding (the state dependent learning effect).
9. Neuropsychological studies of memory provide a glimpse at some very exciting "cutting-edge" research. Investigators are examining the role of particular brain structures, such as the hippocampus and medial temporal cortex, in memory formation as well as attempting to localize the brain regions involved in encoding and retrieval.

Definitions:

Anterograde Amnesia: Refers to an individuals inablity to form new memories following a tramautic event.

Capacity: Amount of items that can be stored in memory

Categorization: Compare and differentiate objects into categories

Central Executive (Working memory): Information that is currently coming into your brain. Temporary items you can use immediately. (a cache)

Chunking: Taking data and grouping it so that it is easier to remember ie CIA rather than C-I-A

Coding: The way things are stored in your brain.

Context Effect: the environmental factors that surround an event effects how an event is perceived and remembered.

Decay: Memories slowly fade, STM things last only 20-30 seconds

Echo: Sensory memory for auditory material.

Encoding: The process of storing information in memory

Encoding Specificity: the idea that memory is improved when information available at encoding is also available at retrieval.

Episodic Memory: Long term declarative memory in which we store memories of personal experiences that are tied to particular times and places.

Exhaustive Search: Even if a result is found you continue looking at every other item in the set .

Fan Effect: Recognition times or error rate for a particular concept increases as more information about the concept is acquired (more branches like a fan in a tree)

Forgetting: losing information/information getting overwritten

Icon: Visual memory

Interference: When memories overlap and interfere with each other

Long Term Memory: Memories that can be stored for some amount of time, thought to be infinite size storage

Long-Term Potentation: ability of brain cells to retain how frequently they send signals to other brain cells.

Memory Systems: Episodic vs Semantic

Memory Trace: Also known as an engram, is a theoretical means by which memories are physically stored in the brain.

Modal Model of Memory: Assumes that information is received, processed and stored fiferently for each kind of memory. Unattended information is stored briefly in sensory memory, attended info is in short term memory for 20-30 seconds nad longer periods of exposure are sent to long-term memory.

Paired Associates learning: Participants hear lists of pairs of words such as flag-spoon and drawer-switch. After one or more presentation of a list the experimenter then presents participants with the first word in each pair and participants are asked to recall the paired word.

Parallel Search: Searching for one item against multiple other items at the same time

Phonological loop: part of our working memory system that handles auditory and verbal information, including language and music. It consists of two components: storage and rehearsal.

Primacy Effect: The tendency for the first items presented in a series to be remembered more easily.

Proactive Interference: Difficulty learning new information because of already existing information

Recency Effect: The tendency for the last things in a list to be remembered more easily.

Rehearsal: repeating things so they stay in memory

Retention duration: varied from a few days to a lifetime for LTM, 20 seconds for STM

Retrieval Cue: Prompt that helps us remember. When we make a new memory, we include certain information about the situation that helps trigger the memory

Retroactive interference: New information interferes with old information

Retrograde Amnesia: The loss of memory surrounding a traumatic event, also usually includes events shortly before the event.

Self Terminating Search: terminate the search when we find the solution

Semantic memory: one of the three types of LTM, we store general world knowledge like facts, ideas words, problem solving etc.

Sensory Memory: The part of the memory system which is the initial contact for stimuli. Very short retention period.

Serial Position Effect: Tendency to recal information that is first and last

Serial Search: go through each item in a list and compare (not parallel)

Short term Memory: holds memories for ~20-30 seconds

State-dependent learning: Recall from long term memory that is dependent on certain cues from our physical states

State dependent memory: See above

Storage: where we hold information

Visuospatial sketch pad of working memory: Responsible for handling visual and spatial information. Temporarily stores information on how thigns look and allows us to manipulate images in our mind.

Working memory: Small amount of memory 7 items plus/minus 2. Basically a cache

Chapter 6:

Summary:

1. We've seen in this chapter, as well in Chapter 5, that cognitive psychologists approach the study of memory in a variety of ways and that this diversity dates back at least to founding cognitive

psychologists such as Ebbinghaus and Bartlett. Some of the diversity arises in theoretical orientations: Some psychologists seek evidence for the proposition that there are different memory stores, whereas toehrs focus on the kind of processing done with the to-be-remembered information

2. Work on the levels of processing theory has demonstrated that the more active and meaningful the original processing of the information, the more memorable the information will be. This idea has obvious and practical relevance for students. If you want to improve your recall of material for later testing (in midterms and finals), organize it and think about its meaning (deep processing) rather than merely reading, underlining or highlighting the words (shallow processing)
3. The work reported here on people's recall of their own life events dovetails in several ways with the laboratory-based investigations of memory described in this chapter and the last. Somne of the findings that have emerged-for example, the constructive nature of recall-fit well with laboratory findings. However, different results are found in laboratory-and everyday-based studies. Autobiographical recall seems better than recall of laboratory stimuli, but whether different cognitive mechanisms are at work remains an open question.
4. Work on flashbulb and eyewitness memories suggests that people's recollections of mements oftheri past can be wrong, even when those people seem absolutely convinced of the accuracy of the memory. This suggests that our own confidence in our memories may sometimes be too high; at the very least, there are propbably occasions when we are both very sure of our memories and also very wrong. Work on eyewitness testimony suggests that memory traces of a witnessed event are very malleable and subject to disruption by post-event leading questions.
5. Debates over whether memory traces can be repressed for long periods of time, then recalled, have erupted in recent years. Some studies purport to show that under repeated urgings, people can be induced to "recall" emotional events that never happened.
6. Neuropsychologists who study memory deficits recognize two different kinds of amnesia. Both seem to involve damage to either the hippocampal system or the midline diencephalic region. This damage can arise in several different ways: through closed head injury, a stroke, oxygen deprivation to the brain, bilateral electroconvulsive shock treatments, a virus such as encephalitis or other diseases such as Alzheimers or Korsakoff's
7. Anterograde amnesia, which extends forward in time from the onset of amnesia, selectively affects long term (but not working) memory, regardless of modality or type of memory test, and spares memory for general knowledge and skilled performance (although the learning of the latter will not be explicitly remembered) but can result in memories for skills that are hyper specific to the original learning context and cannot be transferred to other similar contexts.
8. Retrograde amnesia, the loss of memory acquired and stored before the point of the onset, is almost always a component of amnesia. The temporal extent of the amnesia varies in different patients; it is worst for memories of information acquired closest to the point of onset. Some recovery of some of the lost retrograde memories is often possible. Retrograde amnesia also spares material that has been "over-learned" before the onset. Including such things as language, general knowledge and perceptual and social skills. As with anterograde amnesia, retrograde amnesia seems to spare skill learning.
9. Some theorists have proposed a distinction between explicit and implicit memory: the former rrefers to conscious recollection, the latter to facilitation in performance as a function of past

learning without awareness of that past learning. In this proposal, implicit memory phenomena have been seen as ways of determining how general knowledge is organized.

10. Some have argued against associating different memory tasks with different memory systems. Jacoby(1991) believed the best way of understanding memory process is to distinguish between automatic and intentional memory processes.

Definitions:

Amnesia: Inability to recall past events

Amygdala: 2 areas of the brain containing lots of neurons that influence anger, aggression, fear and rage.

Anterograde Amnesia: inability to form new memories following a traumatic event

Autobiographical Memory: memory system of a person's life built from a combination of experiences and general knowledge collected over a lifetime.

Cognitive Economy: Properties and facts are stored at the highest level possible. To recover information you use inference. Try to prevent storing redundant information

Elaboration: development of an existing idea by incorporating new information to augment the idea. It can be used as a method of memory retention by making a memory or idea with greater detail in order to remember it accurately.

Explicit Memory: Type of long term memory in which we store memories of fact.

EyeWitness memory: Study of eyewitnesses in court and how they remember events.

False Memory: Times where you sure you are 100% correct about something, but turn out to be false.

Flashbulb memory: The sudden clear memory of an emotionally significant moment or event. When you are trying to remember something and then it all of a sudden comes to you.

Hippocampus: Part of the limbic system that is vital for the formation of memories.

Implicit Memory: Involves recollection of skills, things you know how to do, preferences etc. You do not need to recall consciously.

Incidental Learning: Learning that happens inadvertently.

Levels of processing theory of memory: Memory varies according to and is a by-product of the process of processing information during encoding.

Lexical Decision Tasks: Type of experiment where participants see a series of letter strings and are asked to decide as quickly as possible if the letter strings form real words.

Memory Consolidation: Storage of information initially requires the hippocampus to link different aspects (sights, smells, sounds) of an event and to retrieve these at a later time;

Process dissociation framework: people perform differently on implicit memory tasks from the way they do another memory tasks?????????? BLAH

Recovered Memory: When a repressed memory is remembered we say it has been recovered

Repetition priming: Cognitive processing of information immediately after encountering that information.

Repressed Memory: A memory that is too difficult or unacceptable to deal with, we unconsciously exclude them from our consciousness.

Retrograde amnesia: Loss of memory surrounding a traumatic event, often lose memory just before the event as well.

Schemata: A conceptual framework. It is used to refer to a mental set or representation.

Semantic Network: Collection of nodes associated with all of the words and concepts one knows

Semantic Priming: Exposure to one word which facilitates the recognition of other cognitive processing of a semantically related word.

Spreading activation: the idea that excitation spreads along the connections of nodes in a semantic network.