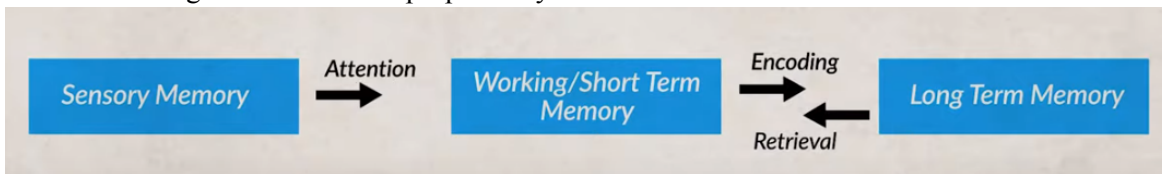


## Unit 5: Cognitive Psychology

### Topic 5.1 – Introduction to Memory

1. What is the difference between memory and metacognition? **Memory is information that persists over time; it is information that was acquired through different experiences and can be stored and retrieved. Metacognition is an awareness of one's own cognitive process**
2. Describe the difference between semantic memory and episodic memory. **Semantic memory is knowledge, facts, general information. Episodic memory is experiences or events**
3. Identify the three different retention measures. **1) Can you recall the information? 2) Can you recognize the information? 3) Can you quickly relearn the information?**
4. What is the difference between explicit memories and implicit memories? **Explicit memories are memories that are consciously made. While implicit memories are information or skills that are learned without an individual's awareness**
5. Provide an example of explicit memories and implicit memories. **Explicit memory: Learning information for a psychology test. Implicit memory: Remembering the different smells in the room while you were studying**
6. Describe parallel processing. **This is when the brain processes a variety of things simultaneously; this is the brain's normal mode of information processing when dealing with multiple bits of information**
7. How does effortful processing differ from automatic processing? **Effortful processing is intentional. These memories we have to consciously work to make, for example explicit memories. Automatic processing happens constantly without an individual trying, for example implicit memories**
8. Explain how an individual uses shallow processing to learn information. **This is when an individual encodes information on a basic level, the focus is on the appearance of words or basic structures of the information. There is little to no focus on the meaning**
9. Explain how an individual uses deep processing. **This is when an individual encodes information based on the meaning of the information. This tends to be better for retention of the information, here an individual will also work on taking new information and making connections to old information**
10. Create the three-stage model that was proposed by Richard Atkinson and Richard Shiffrin.



11. Compare and contrast iconic memory and echoic memory. **Both are sensory memories, which are memories that are very brief. Iconic memories are involved with visual information and echoic memories are involved with auditory information. Both of these memories only last for a couple of seconds, this is why you can sometimes see an afterglow of an image or remember the last couple of words someone said even if you were not paying attention**
12. What is the difference between maintenance rehearsal and elaborative rehearsal? **Maintenance rehearsal is when you continuously go over information to try and keep it in your working memory (shallow processing) While elaborative rehearsal is when you make associations between information you already know and information you are trying to learn (deep processing)**
13. Complete the table below.

Individual	Contributions
Noam Chomsky	<b>Believed that individuals were born with universal grammar and that individuals naturally learn to speak. He called the process of learning the language acquisition device</b>
Hermann Ebbinghaus	<b>Conducted an experiment where he took random syllables and spent time trying to memorize them. He expanded our understanding of how memory and relearning work</b>

**Topic 5.1 – Introduction to Memory (Continued)**

13. Complete the table below. (Continued)

Individual	Contributions
Wolfgang Kohler	Helped create gestalt psychology and was one of the first individuals to explore insight learning
Elizabeth Loftus	Focused on understanding memory. Researched the idea that memories were not always accurate and looked into how the brain could create false memories
George A. Miller	Proposed that people can store about 1 to 7 pieces of information in their short-term memory

**Topic 5.2- Encoding**

1. What encoding and how does it work with memory? Encoding is the initial learning of information. This is when information is being moved from your working memory into your long term memory

2. Complete the table below.

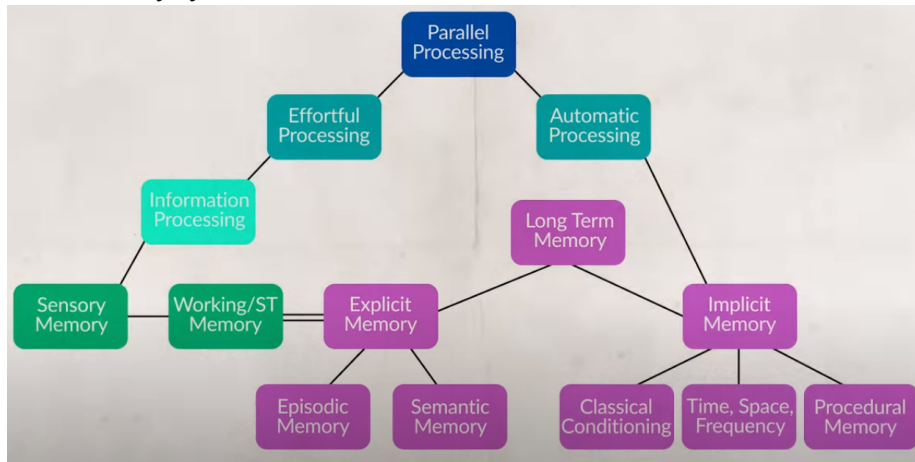
Type of Encoding	Description	Example
Visual	Visual information that is observed	When reading a book you notice different fonts
Acoustic	Different sound elements	Remembering information by using rhymes
Tactile	The feeling of touch	Connecting information with different textures
Organizational	Information is learned in terms of a specific sequence	Learning information on a list or order in which it happened
Elaborative	Pairing new information with prior information	Remembering a person's birthday by connecting it with other life events on that date
Semantic	Focus on the meaning or context of the information	Type of deep processing and is one of the most effective encoding methods

3. Complete the table below.

Type of Practice	Description
Mass Practice	Encode information all at once
Distributed practice (Spacing effect)	Encoding is distributed over period of time
Testing Effect	When an individual takes an assessment it helps improve their memory and shows their understanding of the material
Rote Rehearsal	When an individual continuously repeats information to remember the information
Chunking	Organizing information into meaningful groups (example: acronyms)
Mnemonic devices	When an individual uses a technique to link information they are trying to learn with information they already know so that it is more easily retrieved

### Topic 5.3- Storing

1. What memories make up the explicit memory system? **Semantic and episodic memories**
2. Identify which part of the brain processes explicit memories. **Hippocampus**
3. What memories make up unconscious memory or automatic memory? **Implicit memories**
4. Identify which part of the brain forms unconscious memories. **The cerebellum and basal ganglia**
5. Explain how an individual's emotion impacts their memory. **When people are excited or stressed hormones are released that promote memory formation. Events that are extremely stressful, traumatic, or emotional can form flashbulb memories. Which are memories that are very specific and clear.**
6. What is an example of a flashbulb memory? **A person describing where they were on 9/11**
7. Draw the dual-track memory system.



8. Which parts of the memory system are located in the long-term memory? **1) Explicit (declarative) memory, including episodic and semantic memories. 2) Implicit (non-declarative) memory, including classical conditioning, space, time, frequency, and procedural memory**

### Topic 5.4- Retrieving

1. What is the difference between recall and recognition? **Recall is when you are coming up with the information without any prompts. Recognition you can see the information and you are identifying the correct answer**
2. Identify one way in which an individual can improve the retrieval process. **The more a person studies and reviews information the easier it is to recall the information**
3. Explain what retrieval cues are and how they impact the retrieval process. **Retrieval cues are information that is previously learned that is paired with new information. These cues help improve the retrieval process and access information**
4. Provide an example of how you can use retrieval cues. **When trying to learn the names of your classmates you can connect their name to where they sit in class, their hair color, or to different interests you and them share**
5. How do memory associations work? **These are cues that are formed when a memory is encoded, things like smell, taste, and sight which can help retrieve memories in the future. Often times these are formed without a conscious effort**
6. Describe the encoding specificity principle. **This is when certain memories are linked to the context in which they are created**
7. Explain the difference between mood-congruent and state-dependent memories. **Mood-congruent memory is the consistency between one's mood and the emotional context of the memories recalled. State-dependent memories are memories that are created in one state, such as being healthy or sick, and can be easily remember when in that state**
8. Describe the serial position effect and how our memory is affected by the order of the information. **When studying you are more likely to remember the information you first started studying and the information you last studied, this is due to the primacy and recency effect. The information in the middle is most likely to be forgotten**
9. How can distributed practice impact a person's ability to remember more information? **By spacing studying out you will be able to improve your retention of information and boost your ability to retrieve information. When studying is spaced out you will better understand which information needs to be reviewed and you can counter the serial position effect**

### Topic 5.5- Forgetting and Memory Distortion

1. What part of the information-processing model can we see impact our ability to remember information?  
1) Encoding process 2) Long-term memory itself 3) Retrieval process
2. What happens if there is an error with the encoding process and what happens to the encoding process as a person ages? If information is not correctly encoded it will be difficult to recall the information. As we get older the encoding process slows down and can be more difficult to efficiently encode new information
3. What happens to stored memories in the long-term memory if they are not used? Over time certain stored memories can decay. If information is not reviewed or used the memory will start to decay
4. What is reconsolidation? This is when an individual's memories are retrieved and are altered before they are stored again
5. How can the misinformation effect impact a person's memory? When an individual accesses a memory they may change or alter the memory with misleading information which distorts the original memory
6. Describe Ebbinghaus' forgetting curve. At first individual's will forget quite a bit of information, however, when an individual uses distributed practice they would see the amount of time they need to learn something decrease
7. What does retrieval failure mean? This is when a person has a stored memory in their long-term memory but are unable to properly retrieve the memory
8. What is an example of a retrieval failure? When a person asks you for the name of a movie that you know and the information seems just out of reach
9. Describe the difference between proactive and retroactive interference. Proactive interference is when new information is hard to access because of previously learned information. (forward acting) While retroactive interference is when new information replaces or disrupts the ability to recall old information. (backward acting)
10. Complete the table below.

Type of Amnesia	Description
Anterograde	When a person can no longer form new memories, this type of amnesia almost always involves something happening to the hippocampus
Retrograde	When a person can no longer retrieve past information, this could happen because of a blow to a person's head
Source	When a person can not remember where they heard the information from

### Topic 5.6- Biological Bases of Memory

1. Describe what happens when you learn new information. Neurons in the brain fire and send chemical neurotransmitters into the synapse. When this repeatedly happens the same neurons continuously send messages between each other it leads to stronger connections between those neurons (This improves their efficiency)
2. What is long-term potentiation? This is when repeated stimulation of one nerve cell triggers the stimulation of the next cell, which leads to memory formation
3. How does glutamate and acetylcholine impact memory? Glutamate helps with memory creation, by strengthening synaptic connections. Acetylcholine helps with working memory and memory function
4. If there are low levels of acetylcholine what may happen? If levels are low it could be a sign of aging-related dementia such as Alzheimer's disease, a person may experience memory deterioration
5. Which areas of the brain work with explicit and implicit memory? Explicit memory: Hippocampus and frontal lobe. Implicit memory: Cerebellum and basal ganglia
6. How does the amygdala impact memory? It can lead to the creation of memories. Different emotional reactions from situations can help create strong memories, such as flashbulb memories

**Topic 5.7- Introduction to Thinking and Problem Solving**

1. What is cognition, according to the APA? Cognition is all forms of knowing and awareness, such as perceiving, conceiving, remembering, reasoning, judging, imagining, and problem solving
2. Complete the table below.

Term	Description	Example
Prototype	Mental images to illustrate different concepts	Concept of a ball: basketball, baseball
Anchors	Information that can be used to make judgments about new information	If you see a book that costs 2,000 and then see a second book that only costs 200 dollars, you will most likely think the second book is cheap
Informal reasoning	Extremely fast thinking, where the brain uses shortcuts to speed up processing	Heuristics, top-down processing, schemas, mental sets
Formal reasoning	Slower thinking, that focuses on more details	Algorithm, bottom-up processing, syllogism, diagnosis

3. What is heuristics? Mental shortcuts, based on past experiences.
4. Identify an example of a person using heuristics. An individual who lost their phone will retrace their steps and only search the spots they think they had their phone last
5. Explain the difference between a schema and a mental set. Schemas are a cognitive framework that helps a person organize information and understand the world around them. These are based on a person's experiences and guide their perceptual sets. While mental sets are when a person focuses on solutions that have worked in the past. Those solutions will then be applied to similar situations in the future
6. Explain when a person would use algorithmic problems solving and syllogism. Algorithmic problem solving is when a person approaches a problem by taking things one step at a time. While syllogism is when a person will use logic to try and solve a problem
7. Describe diagnosis. When a person focuses on eliminating different wrong answers to leave just the correct answer
8. What is the difference between convergent thinking and divergent thinking? Convergent thinking is when a person takes a problem and narrows down the possible solutions to the single best solution. Divergent thinking is when a person considers a variety of different possibilities and expands on the number of solutions to a problem
9. What five components to creativity did Robert Sternberg identify? 1) Expertise 2) Imaginative thinking skills 3) A venturesome personality 4) intrinsic motivation 5) A creative environment

**Topic 5.8- Biases and Errors in Thinking**

1. How can informal thinking lead to biases and errors in thinking? When the brain uses shortcuts and informal thinking, it misses details of information and uses generalizations and past experiences to understand information. This can cause errors in thinking to occur
2. Describe a cognitive bias. This is an error in thinking that happens when the brain tries to simplify the different information it is processing
3. Explain the difference between availability and representativeness heuristics. Availability heuristics is when a person uses the information that is accessible right away. Representativeness heuristics is when new information does not match with a schema so the information is put into an existing prototype that may not match every aspect of the topic or item
4. What is the difference between confirmation and hindsight bias? Confirmation bias is when a person seeks information that aligns with their point of view and dismisses information that challenges their beliefs. Hindsight bias is the tendency to think that one could have anticipated the outcome of an event or experiment after it already occurred
5. How can anchors cause you to have bias? If the anchor is not accurate it may skew your answers in a particular direction, causing you to have anchoring bias
6. Explain how framing can lead to biases to form. When information is presented to an individual in a particular way that impacts their opinions, thoughts, or decisions it can cause them to have biases. This is often done by limiting conflicting information, wording information in a way that skews a topic, or misleading a person

**Topic 5.8- Biases and Errors in Thinking (Continued)**

7. Complete the table below.

Term	Description
Fixedness	When a person is not able to see a problem, information, or topic from a different perspective
Belief perseverance	Even when a person is presented with information that contradicts a person's thoughts they still cling to their original beliefs
Illusory correlation	When different events or items happen near each other and a person instinctively thinks that are connected
Functional fixedness	When a person can only see certain items or objects in a specific way

**Topic 5.9- Introduction to Intelligence**

1. Complete the table below.

Term	Description
Intelligence	The ability to learn from experience, solve problems, and use knowledge to adapt to new situations
Fluid intelligence	The ability to quickly reason and breakdown abstract problems, decreases as we age
Crystallized intelligence	Accumulated knowledge and verbal skills, increases as we age

2. Complete the table below.

Individual	Contributions
Charles Spearman	Believed people have one general intelligence. Which can be measured with a single score
Howard Gardner	Identified eight different intelligences. Believed that there are different types of intelligence
Robert Sternberg	Agreed with Gardner about there being multiple intelligences, but thought that there was more than just traditional intelligences. Broke different intelligences into three categories
Alfred Binet	Expanded our understanding of intelligence and laid the groundwork for the education system
Francis Galton	Believed that people were naturally born with a high ability. He is credited with being one of the first people to believe that we can quantify intelligence
Lewis Terman	Modified the work of Binet to determine the level of intelligence people had. Created the Stanford-Binet intelligence scale
David Wechsler	Created the Wechsler Adult Intelligence Scale. His test would provide an individual with an overall intelligence score and also an individual score

**Topic 5.9- Introduction to Intelligence (Continued)**

3. What is the stereotype threat? This occurs when people are put into an environment that treats them differently from other individuals. This can impact a person's ability to perform
4. Describe what the Flynn effect says about the average IQ score. IQ scores will rise over the course of many years, what once was considered to be a high score will no longer be high in the future.
5. What is Savant syndrome? A condition where a person is limited in a variety of mental abilities, and have exceptional specific skills in a few areas.

**Topic 5.10- Psychometric Principles and Intelligence Testing**

1. Describe psychometric. A branch of psychology that focuses on the quantification of mental attributes
2. Explain why it is important for an intelligence test to be standardized. It allows scores of individuals to be compared with other individuals who have taken the test
3. How does the split-in-half method help check the reliability of an intelligence test? This method allows researchers to see if test takers do better on one part of the test compared to the other part. Ideally there should be a high correlation between the two parts of the test, which would show that the test is correlated with itself
4. Complete the table below.

Type of Validity	Description
Content	The extent to which a test inquires about the information or behaviors that are of interest
Construct	The degree in which a test can actually measure a specific trait or concept
Criterion	Checks to see if the test correlates with any outside variables or measures (If low the test may not be valid)
Predictive	Predicts future performance, this validity only can be used when there is a large data set (used to predict trends and patterns)

5. What type of curve can we use to visualize an intelligence test such as the Wechsler Adult Intelligence Scale? A bell curve, or normal curve
6. What is the standard deviation of a standard intelligence test? 15
7. What does it mean if you are more than 2 standard deviations below or above the mean? If you're 2 below you may have an intellectual disability and if you are 2 above you may be gifted

**Topic 5.11- Components of Language and Language Acquisition**

1. Complete the table below.

Term	Description	Example
Phonemes	Basic sounds, often first sounds an infant makes	The M in mom, or SH in shut
Morphemes	Smallest unit of meaning, contain at minimum 2 phonemes	Root words, prefixes, or suffixes (Car, or bird)
Grammar	Set of rules that the language follows	This is what enables people to communicate and understand the meaning from different sentences
Syntax	Rules used to order words in a sentence	English the syntax tells people to put adjectives before nouns, but in Spanish the syntax tells people to put adjectives after nouns

**Topic 5.11- Components of Language and Language Acquisition (Continued)**

- 2. Explain the difference between surface structure and deep structure semantics. Surface structure semantics is the literal meaning of the words. Deep structure semantics is the underlying meaning of a sentence
- 3. What did Noam Chomsky argue about language? He believed that there was universal grammar and that people naturally learn to speak
- 4. How did Skinner’s idea differ from Chomsky about language? Skinner believed that languages is learned through association, imitation, and reinforcement and is not something we are born with
- 5. What did Edward Sapir believe about language and an individual? He believed that whatever language we are raised with will determine how we think and process information
- 6. Explain the difference between linguistic determinism and linguistic relativism. Linguistic determinism is the idea that the structure of a particular language determines how the mental categories of the language are structured. Linguistic relativism is how language differs depending on the context. Language shapes an individual’s thoughts and understanding of concepts
- 7. What is a crucial and sensitive period and how does it connect with language development? A crucial period is a time in which an individual must learn specific information, if they do not learn it by that window, plasticity is severely limited. Sensitive periods are times where the brain is best able to do something. For example the sooner a child is exposed to a particular language the easier it is for them to master the language
- 8. Complete the table below.

Stage	Description	Sounds/Words
Babbling	Infants start their speech development. Start making consonant vowel sounds	Ma ma, Da Da
Holophrase	Child is able to say one word but the word has a larger meaning	Child says food, which is the child saying I want to eat
Telegraphic speech	Child starts to use two-word phrases	Toy feel, milk spill

- 9. What is fast mapping? This is when a child starts to learn more words and understand how different words are used in different contexts
- 10. Explain why overgeneralization occurs. Children are still learning grammar and how to format their thoughts. This causes them to take new information and words and apply them to broad topics incorrectly