

Memory

4.1 What is Consciousness?

- Consciousness: one's subjective experience of the world, resulting from brain activity.
- Change blindness: a failure to notice large changes in one's environment.
- Subliminal perception: the processing of information by sensory systems without conscious awareness.
 - Advertisers use to this to get customers to buy a product
- Conscious experiences are associated with brain activity
- Most psychologists believe the brain is inseparable
 - The activity of neurons in the brain produces the contents of consciousness
 - For each type of content there is an associated pattern of brain activity
- Conscious experience is usually unified and coherent
- Attention involves being able to focus selectively on some things and avoid focusing on others
- Everyone can do automatic tasks without much attention
- Controlled processing is slower than automatic processing, but it helps people perform in complex or novel situations
- Decisions about what to attend to are made early in the perceptual process. At the same time unattended information is processed at least to some extent.
- Because we cannot attend to everything in the vast array of visual information available we are often "blind" to large changes in our environment
- People with a greater ability to maintain attention in the face of distracting information are less likely to experience a similar type of change blindness.
- A Freudian slip occurs when an unconscious thought is suddenly expressed at an inappropriate time or in an inappropriate social context
- Materials presented subliminally can influence how people think even if it has little or no effect on complex actions
- Scientists can identify objects that you are seeing by looking at your brain activity
 - Some people refer to this as "mind-reading"
- You experience your brain regions' output as conscious awareness
- Persistent vegetative state: people in a coma who open and close their eyes but are not able to respond to their surroundings
- Between the vegetative state and full consciousness is the minimally conscious state
- Brain death is the irreversible loss of brain function.

7.1 What is Memory?

- Memory: the nervous system's capacity to retain and retrieve skills and knowledge.
- Encoding: the processing of information so that it can be stored.
- Storage: the retention of encoded representations over time.

- Consolidation: the neural process by which encoded information becomes stored in memory
- Retrieval: the act of recalling or remembering stored information when it is needed.
- Long-term potentiation (LTP): strengthening of a synaptic connection, making the postsynaptic neurons more easily activated by presynaptic neurons.
 - NMDA receptor is a requirement
- Reconsolidation: neural processes involved when memories are recalled and then stored again for retrieval
 - Happens every time a memory is activated and placed back into storage.
- A person's identity is made up of what that person knows from memories, from their recollections of personal experiences and things learned from others
- All experiences are not equally likely to be remembered
- Memory is distributed through the brain rather than confined to any specific location-equipotentiality
- Engram: the physical site of memory storage
- Potentiate: to strengthen or make something more potent
- A great deal of neural specialization is required for memory
- The middle section of the temporal lobes, medial temporal lobes, are responsible for the formation of new memories.

7.2 How are Memories Maintained over Time?

- Sensory memory: a memory that very briefly stores sensory information in close to its original sensory form.
- Short-term memory: a memory storage system that briefly holds a limited amount of information in awareness.
 - An active processing unit that deals with multiple types of information
- Working memory: an active processing system that keeps different types of information available for current use.
 - Sounds, images, and ideas
- Chunking: organizing information into meaningful units to make it easier to remember.
- Long-term memory: the relatively permanent storage of information.
- Serial position effect: the idea that the ability to recall items from a list depends on the order of presentation, with items presented early or late in the list remembered better than those in the middle.
- Visual sensory information is called an iconic memory
- Auditory sensory memory is called echoic memory
- Our sensory memories enable us to experience the world as a continuous stream rather than in discrete sensations
- Retrieval, transformation, and substitution make distinct and independent contributions to updating the contents of working memory

7.3 How is Information Organized in Long-Term Memory?

- Schemas: cognitive structures that help us perceive, organize, process, and use information.
- Retrieval cue: anything that helps a person recall information stored in long-term memory.
- Encoding specificity principle: the idea that any stimulus that is encoded along with an experience can later trigger a memory for the experience.
- Mnemonics: learning aids, strategies, and devices that improve recall through the use of retrieval cues.
- According to their levels of processing model, the more deeply and item is encoded, the more meaning it has and the better it is remembered.
- Elaborative rehearsal encodes the information in more meaningful ways
- Schemas can bias how information is encoded
- Memory enhancement when the recall situation is similar to the encoding situation, context-dependent memory
 - Based on things such as physical location, odors, and background music
- Memory can be enhanced when a person's internal states match during encoding and recall

7.4 What are the Different Long-Term Memory Systems?

- Implicit memory: the system underlying unconscious memory.
- Explicit memory: the system underlying conscious experiences.
- Declaration memory: the cognitive information retrieved from explicit memory; knowledge that can be declared.
- Episodic memory: memory for one's personal past experiences.
- Semantic memory: memory for knowledge about the world.
- Procedural memory: a type of implicit memory that involves motor skills and behavioral habits.
- Prospective memory: remembering to do something at some future time.
 - Includes both automatic and controlled processes
- Long term memories are composed of several different interacting systems that retain and use information and encode and store different type of information in different ways.

7.5 When Does Memory Fail?

- Transience: forgetting over time
- Proactive interference: interference that occurs when prior information inhibits the ability to remember new information.
- Retroactive interference: interference that occurs when new information inhibits the ability to remember old information.