

Semantic Memory

Semantic Memory – general knowledge about the world, language knowledge, conceptual knowledge; very organized; we have many different strategies we use to organize information

- allows us to organize objects according to concepts, make inferences, decide which objects are similar

Prototype theory – how we categorize things according to a prototype; prototype – the item that is most typical and representative of the category

- Prototype approach – decide whether an item belongs to a category by comparing that item with a prototype; members of a category differ in prototypicality
- can be applied to social relationships, inanimate objects, nonsocial categories

Schemas – generalized knowledge/expectation about a situation, event, or person; especially helpful when psychologists try to explain how people process complex situations and events

- summary: schemas = top down processing; unique features of each stimulus = bottom-up; both influence memory
- often influence our cognitive processes: in the initial selection of material, in remembering visual scenes, in abstraction, in the final process of integration

Network models of Semantic Memory – propose a netlike organization of concepts in memory, many interconnections, meaning of a concept depends on the concepts to which it is connected

- The Parallel Distributed Processing Approach - cognitive processes can be represented by a model in which activation flows through networks that link together a large number of simple, neuron-like units; there are networks rather than specific locations in the brain

Constructivist approach / Constructivism – we take all the parts and we reconstruct information by integrating what we know so that our understanding of an event is coherent and makes sense; can lead to errors in recognition tasks, false memories

Basic level categories – basic level names are used to identify objects; ex: dog; super-ordinate-level categories=mammal; subordinate-level categories=collie

Embodied Cognition

What are **amodal theories of cognition**?

- we can get computers to understand cognition through abstract symbols, but they don't account for how information is learned, or the relationship between cognition and perception
- when interacting with a person, amodal symbols redescribe the experienced perceptions, actions, and introspections to establish a conceptual representation of the interaction in long-term memory; as our knowledge of such interactions grows, the underlying amodal systems become organized into structures that represents concepts (schemas) extracted from experience; amodal redescriptions of social experience constitute social knowledge

What is the **Chinese room argument**?

- further illustrates the problem with processing symbols alone, gives no meaning
- "Searle describes a system that produces intelligent, meaningful out put, in the absence of true understanding"

What is **embodied cognition (EC)**?

- theory that came out to describe: where does meaning come from? How does meaning explain how embodied cognition works?
- Meaning comes from having a body in the environment, that has needs and a motor/sensation system: these are the things that create meaning for us
- states arise in sensory-motor systems during contact with the physical world; these sensory-motor states are stored in memory to some extent; stored perceptual states later support higher cognitive processes during memory, language, & thought
 - may establish reference back into the physical world

What role does the **body play in EC**?

- embodied cognition theories focus on the body as being central to shaping the mind
 - sensory-motor simulation - cognitive processes are presumed to depend on the sensory-motor system in the brain that reactivates earlier experiences
- people can problem solve better when they can move their body; the body influences cognition

What role does the **environment play in EC**?

- cognition is grounded in simulation
- our bodies and their perceptually guided motions through the world do much of the work required to achieve our goals, replacing the need for complex internal mental representations

What are **affordances**? * important

- if something has an affordance to you, it has meaning to you, that is where meaning comes from

What is the **action compatibility effect**?

- people are mentally simulating the action in the sentence in order to comprehend the sentence; language understanding is grounded in bodily action
 - closing bottle, say turn up faster
 - jokes are funnier when smiling

What does EC say about **language comprehension**?

- we experience senses through action

What do metaphors have to do with **language comprehension according to Lakoff and Johnson**?

- we use metaphors to link abstract concepts to concrete ideas; we link abstract ideas in everyday conversation to metaphors
- Lakoff & Johnson's *Metaphors we live by*
 - we are going around in circles (lack of movement)
 - we are in love (containment)
 - he's way ahead of us (journey)
 - I'm on top of it (position)
 - he needs some direction (journey)

What role does metaphor play in understanding abstract concepts such as "freedom"?

- a direct mapping of an abstract concept, such as democracy, with a sensory-motor domain is problematic; if abstract concepts without a direct representation in the physical world cannot be physically interacted with, how can they ever be represented through simulation?
- many times humans need to simulate through metaphors in order to understand language
- there are concrete experiences that relate to abstract concepts

Language

What is Chomsky's theory of language?

- he proposed we were born with an innate understanding of the abstract principles of language –
 - language acquisition device in the mind which knows what kinds of rules human languages can have; we have innate knowledge of universal grammar
- language abilities can be explained in terms of a complex system of rules and principles represented in the minds of language users
- language learning involves the more superficial characteristics of a particular language
 - language is modular - not processed the same as other cognitive tasks
 - surface structure - actual words, related to syntax (deals with word order)
 - deep structure - meaning we derive from words, related to semantics (deals with meaning)
 - transformational rules - convert deep structure to surface structure to communicate
 - ambiguous sentences - different deep structure for surface structure

What is the **good enough approach** to language comprehension?

- people frequently process only part of a sentence; people usually do not work hard to create the most accurate, detailed interpretation of every sentence they read or hear
- people read quickly, and then try to grasp the general meaning of a sentence; knowledge of language typically leads to an accurate interpretation; this strategy can sometimes lead to errors in language comprehension

What is the **function of Broca's and Wernicke's areas** in the brain?

- Broca's Aphasia – expressive-language deficit; Broca's Area - producing speech
- Wernicke's Aphasia - receptive-language deficit; Wernicke's Area - language comprehension

What is the **whole word approach** to learning how to read?

- reading the whole word and pronouncing the whole word, as opposed to breaking it down by its parts – the approach suggested for learning vocabulary
 - direct access hypothesis - directly recognize words from text, visual info is enough to learn the meaning; pattern of word activates meaning in semantic memory
- argues readers can directly connect the written word, as an entire unit, with the meaning that this word represents; argues that children should not learn to emphasize the way a word sounds; emphasizes context within sentences