

Unit VII

Cognition

Overview

Unit VII brings the topics of memory, thought, and language together under the umbrella of cognition. The first half of the unit discusses how memories are encoded, stored and retrieved, as well as theories of retrieval failure and forgetting. Elizabeth Loftus' work on the reliability of eyewitness testimony is presented in the section on memory construction, and tips to improve memory are provided. The unit continues with an overview of how thoughts are derived, how we process and make sense of concepts in our world, and how creativity results from myriad cognitive processes. The aids and detriments to problem solving are reviewed followed by a presentation of the mechanisms of decision making. Finally, the unit closes with a review of language formation and the relationship between language and thought.

Tip #7 Form Study Groups

It is often said that we learn best by teaching others. And nowhere is that truer than in studying for your psychology exams! If you are looking to improve your understanding and retrieval of key psychological knowledge, form a small study group of like-minded students. Include a variety of people because sometimes a classmate may really understand a concept you struggle with and sometimes you are the one who can readily explain a tough concept. Arrange a place to meet and practice quizzing each other on the material. Remember to include applications of the terms and theories, not just definitions. Use the extremely helpful and practical suggestions from Modules 31 and 33 to help you remember key concepts. One group member can make a study outline, one can lead the review, one can develop quiz questions and roles can rotate at the next study session. And of course, don't forget the pizza!

Modules

- 31** Studying and Encoding Memories
- 32** Storing and Retrieving Memories
- 33** Forgetting, Memory Construction, and Improving Memory
- 34** Thinking, Concepts, and Creativity
- 35** Solving Problems and Making Decisions
- 36** Thinking and Language

Module 31

Studying and Encoding Memories

Before You Read

Module Summary

Module 31 offers a definition of memory and explains how psychologists describe the human memory system. The module distinguishes between explicit and implicit memories and explains how sensory, short-term, and working memory function. A section on the difference between effortful processing and automatic processing is presented and a description of the levels of processing and their effect on encoding closes the module.

Before beginning the module, take a moment to read each of the following terms and names you will encounter. You may wish to make vocabulary cards for each.

Key Terms

memory	explicit memory
recall	effortful processing
recognition	automatic processing
relearning	implicit memory
encoding	iconic memory
storage	echoic memory
retrieval	chunking
parallel processing	mnemonics
sensory memory	spacing effect
short-term memory	testing effect
long-term memory	shallow processing
working memory	deep processing

Key Names

Herman Ebbinghaus
Richard Atkinson
Richard Shiffrin
George Miller

While You Read

Answer the following questions/prompts.

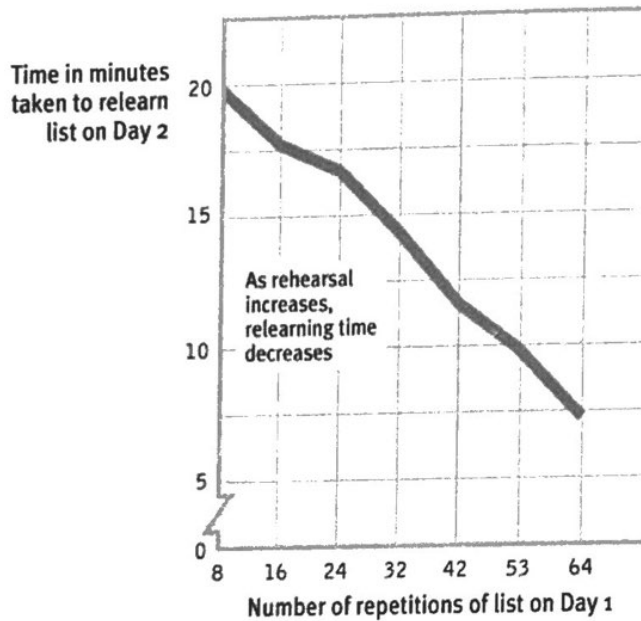
31-1

1. Compare the definition of memory to the definition of learning (from Unit VI).

2. How has research on memory's extremes helped us understand how memory works?

3. The multiple-choice portion of the AP® Psychology exam is a _____ because you simply need to choose the correct answer; the Free Response Section of the AP® Psychology exam is more typical of a _____ test because no answer choices are provided for you.

4. Explain how this graph demonstrates Hebbinghaus's retention curve.



Data from Baddeley, 1982.

31-2

1. The text mentions that you can compare the aspects of memory to a computer. Create your own analogy and explain why each part of the memory system corresponds with the analogy you have selected.

encoding:

storage:

31-5

1. Define *sensory memory*.
2. Discuss how echoic and iconic memory operate in sensory memory. Provide examples of each in your own life.

31-6

1. Compare the capacity of short-term memory to that of working memory.
2. What have we learned about our ability to focus on more than one event at a time? Support your answer with an example from your own life.

31-7

1. Explain how organizing new material into categories helps us recall it.

2. Explain why chunking and mnemonic devices are useful in aiding memory. Provide an example of how you have used each of these in your own experiences.
3. Discuss why it is more advantageous to practice retrieval of information than to reread material.
4. Explain how you can put the principles of distributed practice, the spacing effect and the testing effect to use in studying for the test on this unit.

31-8

1. Explain, using examples and definitions, how shallow processing differs from deep processing.
2. How does *meaning* help aid retrieval or reduce the encoding time and effort?
3. Discuss how the self-reference effect aids recall.
4. View the video mentioned on page 335. What two tips can you take away that will improve your own study strategies?

After You Read

Module 31 Review

Complete the Matching Questions below to see if you have mastered the basics.

Terms

- _____ 1. short-term memory
- _____ 2. working memory
- _____ 3. explicit memory
- _____ 4. effortful processing
- _____ 5. iconic memory
- _____ 6. echoic memory
- _____ 7. long-term memory
- _____ 8. implicit memory
- _____ 9. sensory memory
- _____ 10. automatic processing

Definitions

- A. activated memory that holds a few items briefly before the information is stored or forgotten
- B. a momentary sensory memory of visual stimuli; a photographic or picture-image memory lasting no more than a few tenths of a second
- C. the relatively permanent and limitless storehouse of the memory system
- D. the immediate, very brief recording of sensory information in the memory system
- E. a momentary sensory memory of auditory stimuli; if attention is elsewhere, sounds and words can still be recalled within 3 or 4 seconds
- F. a newer understanding of short-term memory that focuses on conscious, active processing of incoming auditory and visual-spatial information, and of information retrieved from long-term memory
- G. memory of facts and experiences that one can consciously know and "declare"
- H. encoding that requires attention and conscious effort
- I. retention independent of conscious recollection
- J. unconscious encoding of incidental information such as time, space and frequency

11. Explain how chunking could be used to remember this long string of numbers:

17761865191419452001

12. Explain a mnemonic device you have used to remember material in any other course you have taken.

13. Janice, a classmate in your psychology class, wants to improve her memory for the material in the course. She has been staying up late, pulling all-night study sessions the night before tests, and getting up early to reread the chapter before quizzes. Use the concepts of the spacing effect, the testing effect, and deep processing to advise Janice of a better way to study.
14. Katrina is a talkative student in your class. The teacher is halfway through a detailed explanation of the causes of the Civil War when Katrina leans over to tell you about a joke she saw online. The teacher stops in the middle of her explanation and accuses Katrina of not listening. Katrina defensively retorts, "I was listening and I can prove it. You just said the most significant cause of the Civil War was the inequity in wealth between the slave-holding states and the non-slave-holding states." The teacher apologized because that was indeed what she had just said. Katrina smirked in victory, but as a psychology student, you understand that something else occurred. Explain why Katrina was able to repeat word-for-word what the teacher had been saying.

Module 32

Storing and Retrieving Memories

Before You Read

Module Summary

Module 32 describes the capacity of our long-term memories and the roles of various brain structures in memory processing. Also discussed are how emotions and changes at the synaptic level affect our memory processing. The module closes with a description of how external cues, internal emotions, and order of appearance influence memory retrieval.

Before beginning the module, take a moment to read each of the following terms you will encounter. You may wish to make vocabulary cards for each.

Key Terms

semantic memory	priming
episodic memory	encoding specificity principle
hippocampus	mood-congruent memory
flashbulb memory	serial position effect
long-term potentiation (LTP)	

While You Read

Answer the following questions/prompts.

32-1

1. Contrast the limits of short-term and long-term memory.

2. How do we process and store memories?

32-2

1. Are the following likely to be semantic or episodic memories?
 - a. Your tenth birthday party: _____
 - b. The name of the U.S. President: _____
 - c. The capital of Spain: _____

2. Explain how the hippocampus functions in the encoding of explicit memories.

3. Describe the role that sleep plays in memory consolidation.

32-3

1. Discuss how the cerebellum plays a role in memory processing.

2. Explain the role of the basal ganglia in procedural memory.

3. Briefly explain infantile amnesia.

32-4

1. How does the amygdala play a role in memory processing?

2. Give an example from your own life of a flashback memory. Discuss the meaning of the term "flashbulb" in this context. Are flashback memories implicit or explicit? Explain.

3. Are flashback memories more accurate than other memories that may be as old?

32-5

1. Summarize and discuss the importance of the work of Kandel and Schwartz with the sea slug *Aplysia* as it relates to memory processing.

2. Explain the meaning of and list the support for long-term potentiation as a physical basis for memory. Provide an example of how this process may be disrupted.

32-6

1. Discuss the difference between the three measures of retention. Give an example of each from your own life.
2. Use Figure 32.5 and information from the text to provide a new example of priming.
3. In what ways can context aid memory recall?
4. Explain how state-dependent memory differs from context-dependent memory.

4. Which of the following is a typical example of a flashbulb memory?
 - a. the scrambled eggs you had for breakfast this morning
 - b. the daily homework assignment from your psychology teacher
 - c. your first kiss
 - d. the shirt you wore to school yesterday
 - e. the chores your parent asked you to complete after school

5. After brief, rapid stimulation, cells demonstrate an increase in their firing potential. This neural basis for learning and memory is known as:
 - a. mood congruency
 - b. priming
 - c. implicit memory
 - d. explicit memory
 - e. long-term potentiation

6. Jim has just memorized the following list of words for his 3rd grade spelling test: host, most, coast, boast, ghost. When asked by a classmate, "What do you put in a toaster?" Jim replies "Toast!" "No, silly!" said his friend. "You put bread in a toaster!" What psychological process caused Jim to reply incorrectly?
 - a. long-term potentiation
 - b. priming
 - c. serial position effect
 - d. implicit memory
 - e. recall

7. Leila is studying an alphabetical list of thirty African countries. She has a test tomorrow in her 4th grade history class and hopes to remember all thirty. According to the recency effect, it is most likely that Leila will
 - a. remember the countries at the beginning of the list, but not the end.
 - b. recall the countries at the end of the list only.
 - c. remember all thirty correctly.
 - d. recall the countries at the beginning and end of the list, but not as many from the middle.
 - e. remember the countries from the middle of the list, but not as many from the beginning or the end.

8. Danielle has just broken up with her long-time boyfriend and is feeling quite down. Her friends are trying to cheer her up, but are having a hard time. According to the research on memory, in her current emotional state, what memories is Danielle most likely to recall? Why?

9. John robbed three banks, stashed the money in a secret place in the woods, then jumped into the getaway car and raced off. Due to his erratic state, he got into a car accident and has suffered trauma to his brain. After leaving the hospital, John still remembered how to drive a car and find his way home. He did not have memory of the bank robbery or the hiding spot of the loot. Discuss which brain structures may have been damaged and which remained undamaged in John's accident and the reasons for your answer.
10. Jorge is preparing for a psychology test and tells you that he finds multiple-choice tests much harder than FRQ tests. Based on your understanding of measures of retention, how would you respond to Jorge?

Module 33

Forgetting, Memory Construction, and Improving Memory

Before You Read

Module Summary

Module 33 explains how we forget and how misinformation, imagination, and source amnesia distort our recollection and our ability to discern true memories from false. The module discusses Elizabeth Loftus' work on eyewitness testimony and discusses the controversies surrounding claims of repressed and recovered memories. The module concludes with tips on using memory research to improve your studies.

Before beginning the module, take a moment to read each of the following terms and name you will encounter. You may wish to make vocabulary cards for each.

Key Terms

anterograde amnesia	reconsolidation
retrograde amnesia	misinformation effect
proactive interference	source amnesia
retroactive interference	déjà vu
repression	

Key Name

Elizabeth Loftus

While You Read

Answer the following questions/prompts.

33-1

1. Discuss how forgetting can be helpful and efficient.

2. Explain how anterograde amnesia differs from retrograde amnesia, and use personal examples to support your explanation.

3. Why, using material from Module 32, can people with anterograde amnesia still learn new nonverbal tasks?

4. Summarize the theories that address the reasons we forget:
 - a. encoding failure:

 - b. storage decay:

 - c. retrieval failure:

 - d. proactive interference:

 - e. retroactive interference:

 - f. motivated forgetting/repression:

5. By using Figure 33.3, briefly summarize the work of Hermann Ebbinghaus (this is the second module where he has come up!) on the retention and recall of nonsense syllables.

6. Explain the difference between proactive interference and retroactive interference.
7. What is the common opinion of repression? What opinion do memory researchers hold?

33-2

1. Summarize and discuss the importance of Elizabeth Loftus' work on the misinformation effect. How might the misinformation effect impact those testifying as eyewitnesses in crime? How might lawyers use the misinformation effect to their favor in a criminal case?
2. Provide an example of a time in your life when you have fallen victim to the misinformation effect.
3. Explain how source amnesia affects our formation of memory.
4. How does source amnesia help explain déjà vu?

5. What difficulties arise in trying to sort real memories from false memories? Why is it that false memories often seem to be so vivid and strong?

33-3

1. Summarize and discuss the implications of research on children's eyewitness descriptions.
2. In what circumstances have children been shown to be reliable eyewitnesses?
3. Discuss the controversy surrounding repressed or constructed memories of abuse.
4. How have professional psychologists weighed in on the discussion of repressed or constructed memories of abuse?

5. What difficulties arise in trying to sort real memories from false memories? Why is it that false memories often seem to be so vivid and strong?

33-3

1. Summarize and discuss the implications of research on children's eyewitness descriptions.
2. In what circumstances have children been shown to be reliable eyewitnesses?
3. Discuss the controversy surrounding repressed or constructed memories of abuse.
4. How have professional psychologists weighed in on the discussion of repressed or constructed memories of abuse?

33-4

1. Show how the seven tips provided in the text can be applied to your study of psychology. Give specific examples, timeframes, and terminology that support your application.

a. rehearse repeatedly:

b. make the material meaningful:

c. activate retrieval cues:

d. use mnemonic devices:

e. minimize proactive and retroactive interference:

f. sleep more:

g. test your own knowledge:

After You Read

Module 33 Review

Answer the following questions to see if you have mastered the basics.

- Rashad has recently been in a car accident and suffered damage to his brain, which has him hospitalized and involved in rehabilitative therapy. He can recall his childhood and other memories from his past, but is having difficulty learning the names of his nurses, doctors and aides and cannot recall from one day to the next what he did the day before. Most likely Rashad is suffering from
 - the forgetting curve.
 - anterograde amnesia.
 - retrograde amnesia.
 - storage decay.
 - proactive interference.
- Samantha cannot recall her childhood, her name, or most of the events that occurred prior to the trauma that caused her brain damage. She does, however, seem to be making good progress in her therapy and has learned the names of her doctors and nurses. Samantha's condition is likely
 - retroactive interference.
 - anterograde amnesia.
 - misinformation effect.
 - retrograde amnesia.
 - motivated forgetting.
- Which is the best example of Ebbinghaus' research?
 - Kevin learns math facts quickly.
 - Doctor Koretsky is quick to correctly diagnose his patients.
 - Luisa uses many mnemonic devices to help her remember facts.
 - Amelia's knowledge of the French she learned 20 years ago is about the same now as it was 10 years ago.
 - Jeff is unable to remember his locker combination from last year.
- Troy just moved to a new school in the middle of his junior year. He is given a locker combination but keeps entering the combination from his old locker before he remembers his new combination. This occurrence is referred to as
 - retroactive interference.
 - encoding failure.
 - anterograde amnesia.
 - proactive interference.
 - retrograde amnesia.
- The sense that "I've been in this exact situation before" is referred to as
 - reconstructive memory.
 - déjà vu.
 - source amnesia.
 - proactive interference.
 - mood-congruent memory.
- Studies by Loftus and Palmer on the misinformation effect, in which people were quizzed about a film of an accident, indicate that
 - when quizzed immediately, people can recall very little, due to the stress of witnessing an accident.
 - when questioned as little as one day later, their memory was very inaccurate.
 - most people had very accurate memories as long as 6 months later.
 - people's recall may easily be affected by misleading information.
 - people could recall the first and last events of the film, but not the middle.

7. Lindsey has a vivid memory of swimming with dolphins when she was a young girl, but her mother denies that this ever occurred. Her mother explained that Lindsey watched many movies about dolphins and visited them frequently at the aquarium as a toddler, but did not actually swim with them herself. The best explanation for Lindsey's constructed memory is
 - a. retroactive interference.
 - b. source amnesia.
 - c. déjà vu.
 - d. proactive interference.
 - e. retrieval failure.
8. When he was a young boy, Montel lied to people he respected. This caused him a great deal of distress but he felt he had no choice. Years later, when asked if he lied as a child, Montel reported being a pretty honest kid. A psychoanalytic psychologist would likely explain Montel's self-censoring of this painful and anxiety-provoking memory as
 - a. source amnesia.
 - b. proactive interference.
 - c. anterograde amnesia.
 - d. recall failure.
 - e. repression.
9. Caitlin is learning French in college after spending her high school years studying Spanish. Initially, she has difficulty learning the new French words as the Spanish words keep getting in the way. However, over the course of the semester Caitlin becomes much more fluent in French and can no longer even recall the Spanish word for the same item. Which is the best explanation for Caitlin's experience in world languages?
 - a. Initially, her recall of the Spanish terms was blocked through proactive interference and recall of the French words is blocked through retroactive interference.
 - b. In the beginning, Caitlin was not encoding the terms effortfully and later in the semester she began encoding the terms automatically.
 - c. Caitlin was impacted by the misinformation effect in the beginning of the semester but as that passed, she was able to learn the French words.
 - d. Initially, Caitlin's recall of the French was blocked through proactive interference, and eventually, recall of the Spanish vocabulary is blocked through retroactive interference.
 - e. Initially, Caitlin's recall of the French vocabulary was blocked by retroactive interference, but toward the end of the semester, the Spanish vocabulary was blocked by retroactive interference.
10. Bruck and Ceci's work on children's eyewitness descriptions and accuracy of recollection showed
 - a. children's recollections can be easily skewed by suggestive interviewing techniques.
 - b. older children tend to recall events more vividly than younger children.
 - c. preschoolers are the least likely to produce false stories when asked.
 - d. psychologist specializing in interviewing children have tools that help detect real from false memories.
 - e. children were especially accurate when they talked about the incident with adults prior to the interview.

Module 34

Thinking, Concepts, and Creativity

Before You Read

Module Summary

Module 34 defines and reviews the functions of cognition and identifies the factors associated with creativity.

Before beginning the module, take a moment to read each of the following terms and name you will encounter. You may wish to make vocabulary cards for each.

Key Terms

cognition
concept
prototype

creativity
convergent thinking
divergent thinking

Key Name

Robert Sternberg

While You Read

Answer the following questions/prompts.

34-1

1. Discuss how concepts simplify cognition. Provide an example of a concept from the text and one of your own creation.
2. Explain how a prototype aids in the formation of concepts.

3. Discuss the problems that arise when an object, person, or event does not fit our prototype.

34-2

1. Fill in the blanks with convergent or divergent—

Working to solve a long-division problem requires _____ thinking.

Coming up with a list of uses for a paperclip requires _____ thinking.

2. Using Robert Sternberg's five components of creativity, consider whether you self-identify as creative. Support or refute each of the components with a specific example from your life.

3. How do intelligence and creativity co-mingle to impact one's success?

4. Briefly explain the components that make up creativity.

5. Explain, using the material in this module, how it may be possible to increase creativity.

After You Read

Module 34 Review

Complete the questions below to see if you have mastered the basics.

1. In the chart below, create either a concept, a prototype or both

Concept	Prototype

2. Devon is part of a consumer survey group and is being asked to think of as many ways as he can to improve gas mileage in a new line of vehicles. Devon's responses require _____ thinking.
3. In Geometry class, Chantal is asked for the answer to a problem on the board. Her response requires _____ thinking.
4. What are the five components of creativity, according to Robert Sternberg?

Module 35

Solving Problems and Making Decisions

Before You Read

Module Summary

Module 35 describes the cognitive strategies that assist and hinder our problem-solving abilities. The module explains heuristics and algorithms as problem-solving strategies and discusses how overconfidence, belief perseverance, and framing influence our decisions and judgments. The module closes with a description of intuition and the ways in which smart thinkers utilize this ability.

Before beginning the module, take a moment to read each of the following terms and names you will encounter. You may wish to make vocabulary cards for each.

Key Terms

algorithm	intuition
heuristic	representative heuristic
insight	availability heuristic
confirmation bias	overconfidence
fixation	belief perseverance
mental set	framing

Key Names

Wolfgang Köhler
Amos Tversky
Daniel Kahneman

While You Read

Answer the following questions/prompts.

35-1

1. Discuss and give an example of how algorithms and heuristics could be used to figure out how to open a locker whose combination you have forgotten.

2. Briefly summarize and give an example of the representativeness heuristic.

3. Briefly summarize and give an example of the availability heuristic.

35-3

1. Use the chart on page 374 to summarize the reasons we exaggerate our fear of unlikely events.

35-4

1. How does the concept of overconfidence influence your decisions or judgments in both helpful and detrimental ways? Give an example of overconfidence impacting a decision in your life.

2. Define and give an example of belief perseverance. How is it different from confirmation bias? Provide your own example of belief perseverance.

3. Explain the power of framing in influencing our cognitions. Provide an example of how framing could be a powerful persuasion tool in negotiating with your parents for a later curfew.

35-5

1. How does intuition fit into the larger discussion of cognition? What does it mean that intuition is often implicit?

After You Read

Module 35 Review

Complete the questions below to see if you have mastered the basics.

Terms

- _____ 1. algorithm
- _____ 2. heuristic
- _____ 3. insight
- _____ 4. confirmation bias
- _____ 5. mental set
- _____ 6. representative heuristic
- _____ 7. availability heuristic
- _____ 8. overconfidence
- _____ 9. belief perseverance
- _____ 10. framing

Definitions

- A. a tendency to search for information that supports our preconceptions and to ignore or distort contradictory evidence
- B. a tendency to approach a problem in one particular way because the approach has been successful in the past.
- C. the way an issue is posed; how an issue is phrased can significantly affect decisions and judgments
- D. a sudden realization of a problem's solution
- E. a simple thinking strategy that often allows us to make judgments and solve problems efficiently but may sometimes lead to the wrong conclusion
- F. judging the likelihood of things in terms of how well they seem to represent, or match, particular prototypes
- G. clinging to one's initial conceptions after the basis on which they were formed has been discredited
- H. a methodical, logical rule or procedure that guarantees solving a particular problem
- I. the tendency to be more confident than correct, to overestimate the accuracy of our beliefs and judgments
- J. estimating the likelihood of events based on their availability in memory

11. Johanna is told that her history instructor will be mean, rule-focused, and quite loud. When she arrives to class on the first day, Johanna is somewhat surprised to discover her instructor is a woman. Most likely Johanna applied _____ in her vision of her new instructor.
 - a. the representativeness heuristic
 - b. belief perseverance
 - c. confirmation bias
 - d. mental set
 - e. the framing effect

12. Barrett's parents are divorced and several of his friends' parents are divorced as well. In a class discussion about marriage and compatibility, Barrett shares his opinion that the divorce rate is on the rise and that most marriages will not remain intact over time. It is likely Barrett's opinion is influenced by
 - a. overconfidence.
 - b. a mental set.
 - c. the representativeness heuristic.
 - d. belief perseverance.
 - e. the availability heuristic.

13. When Tim and Ali were dating, he learned that she liked to receive flowers after they had a fight. Years later, Tim dates another woman and after having a fight, he stops by the florist to order a bouquet of flowers. Tim is likely affected by which cognitive occurrence?
 - a. confirmation bias
 - b. mental set
 - c. representativeness heuristic
 - d. insight
 - e. availability heuristic

14. The principal holds a faculty meeting to criticize the staff because 15% of the students are not happy with their teachers. The head of the English Department speaks up and asks, "Doesn't that mean that 85% of students are happy with their teachers?" In a huff, the principal ends the meeting. It is apparent from these inclusions, that the department head understands the power of
 - a. confirmation bias.
 - b. overconfidence.
 - c. intuition.
 - d. algorithms.
 - e. framing.

15. How are confirmation bias and belief perseverance different?

Module 36

Thinking and Language

Before You Read

Module Summary

Module 36 concludes Unit VII by tying thought and cognition to language acquisition. The milestones and acquisition processes of language development are reviewed, and the brain areas involved in language processing and speech are identified. The module concludes by describing the relationship between language and thinking and discussing the value of thinking in images.

Before beginning the module, take a moment to read each of the following terms and names you will encounter. You may wish to make vocabulary cards for each.

Key Terms

language	telegraphic speech
phoneme	aphasia
morpheme	Broca's area
grammar	Wernicke's area
babbling stage	linguistic determinism
one-word stage	linguistic influence
two-word stage	

Key Names

Steven Pinker
Noam Chomsky
Paul Broca
Carl Wernicke
Benjamin Lee Whorf

While You Read

Answer the following questions/prompts.

36-1

1. Discuss the various forms of communication that could be considered language.

2. Explain how phonemes differ from morphemes.
3. Can you think of a phoneme that is also a morpheme?
4. Consider the word *incomprehensible*. List the phonemes and morphemes that make up this word.
5. Which sentence below is an example of poor syntax and which exhibits faulty semantics? Explain your answer.
 - a. Sluggish calendars advise immediate butchers.
 - b. Lunch disturbs eaten hastily digestion.
6. Occasionally children will overgeneralize a grammatical rule, such as "I buyed it," instead of, "I bought it." Can you think of another example of this?

36-2

1. Briefly address Noam Chomsky's view regarding how children acquire language.

36-3

1. Explain how infants develop receptive language. How is this different from productive language?
2. List and describe the stages involved in productive language. In your description, include the characteristics and an example of what children can say in each respective stage.
3. What does current research reveal about the importance of the critical period in language development?
4. Based on the research presented in the text, what advice would you give a friend who is hoping to raise her new son to be multilingual?
5. How does deafness affect language development?

36-4

1. Briefly explain aphasia.

4. Describe the interplay between thought and language.

After You Read

Module 36 Review

Circle the correct answers below to see if you have mastered the basics.

1. The concept of linguistic determinism is most closely associated with
 - a. Steven Pinker.
 - b. Carl Wernicke.
 - c. Benjamin Whorf.
 - d. Paul Broca.
 - e. Noam Chomsky.
2. Consider the word *television*. Which of the following is true of this word?
 - a. It has 4 morphemes and 8 phonemes.
 - b. It has 2 morphemes and 9 phonemes.
 - c. It has one morpheme and 10 phonemes.
 - d. It has 4 morphemes and 5 phonemes.
 - e. It has 3 morphemes and 4 phonemes.
3. Carlos was born into a Spanish-speaking household and as an infant he made many babbling sounds that could be identified as Chinese or Swahili, in addition to those that sounded Spanish. Now, as an adult, Carlos cannot distinguish the sounds in any language but Spanish. The explanation for this occurrence is likely that
 - a. he cannot retrieve the sounds due to retroactive interference.
 - b. he wasn't exposed to any other languages but Spanish and lost his innate ability to hear and produce sounds and tones outside his native language.
 - c. Carlos was exposed to too many other languages in school.
 - d. he is missing a portion of his hippocampus, which is essential for memory of words.
 - e. Chinese and Swahili words have too many morphemes and are hard to pronounce.
4. Two-year-old Claudia is finishing dinner in her high chair. She says, "Me, down" to her mother. Her mother understands that Claudia is finished and wants to be taken out of her chair and set down to play. Claudia is displaying
 - a. telegraphic speech.
 - b. receptive language.
 - c. babbling.
 - d. a morpheme.
 - e. a phoneme.

5. Stephanie sustained left temporal lobe damage in an athletic injury and has just returned home from a long stay in the hospital. Her mother asks her to check on the dinner cooking in the oven and Stephanie responds, "The boy didn't jump as fast and the turtle should have known it". Stephanie's misunderstanding of her mother's request and her subsequent meaningless response is most likely caused by
- linguistic determinism.
 - Broca's aphasia.
 - a critical period for language.
 - Wernicke's aphasia.
 - universal grammar constraints.

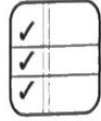
✓ Check Yourself

Now that you have mastered the basics, work through the problems below to see if you can *synthesize*, *evaluate*, and *analyze* what you have learned.

Carly is a social studies teacher at a new school and will be welcoming students into the classroom next week. She has just received her student roster for the course and finds the following students listed:

Short-Term Memory Maria
Hippocampus Damage Holly
Aphasia Annie
Retroactive Interference Inez
Convergent Thinking Carla
Mnemonics Monty
Linguistic Determinism Diego

Using definitions and examples, discuss the specific obstacles and limitations each student will face in Carly's class.



Before You Move On

Use the checklist below to verify your understanding of the unit's main points.

- Do I understand the difference between different types of cognitive processes (for example, effortful versus automatic processing; deep versus shallow processing; focused versus divided attention)?

Can I describe the psychological and physiological systems of memory?

- short-term memory
- working memory
- long-term memory
- explicit memory
- implicit memory
- procedural memory
- semantic memory
- episodic memory

Can I describe the principles that support memory?

- encoding
- storage
- retrieval

Do I understand how biopsychosocial factors facilitate language acquisition, development, and usage?

Can I identify the aids and obstacles to problem solving?

Can I list the characteristics of creative thought and thinkers?

Can I describe the research findings of:

- Noam Chomsky
- Benjamin Whorf
- Hermann Ebbinghaus
- Elizabeth Loftus
- George A. Miller
- Wolfgang Köhler