**Instructor’s Manual**

to accompany

*Cognition,* First Edition

Chun • Most

**Chapter 6**

***Everyday Memory***

**CHAPTER OUTLINE**

6.1 What Is Memory?

6.2 The Memory Paradox

* Research Focus 6.1: *The World of Memory Sports*

6.3 Making Memory Work

* Encoding
* Think for Yourself 6.1: *Is Google Hurting Your Memory?*
* Encoding Strategies
* See for Yourself 6.1: *Elaboration and Depth of Encoding*
* Retrieval

6.4 Autobiographical Memory

* Memory and Emotion
* Research Focus 6.2: *A Pill to Eliminate PTSD?*
* The Constructive Nature of Memory
* See for Yourself 6.2: *The Deese/Roediger-McDermott Effect*

6.5 Memory Failures

* Transience
* Absent-Mindedness
* See for Yourself 6.3: *Study Phase*
* Blocking
* See for Yourself 6.4: *It’s Right on the Tip of My Tongue!*
* Misattribution
* Suggestibility
* Research Focus 6.3: *Individual Differences in Suggestibility*
* Bias
* See for Yourself 6.5: *Remembering “The War of the Ghosts”*
* Persistence

6.6 Implications for Eyewitness Testimony

**LEARNING OBJECTIVES**

6.1 Define short-term and long-term memory.

6.2 Describe instances of great memory ability and instances of memory failure.

6.3 Distinguish between encoding and retrieval, and discuss strategies and factors that can improve memory.

6.4 Describe how autobiographical memory is constructive.

6.5 Understand how memory failures can affect the way we perceive past experiences.

6.6 Explain how memory distortions can affect eyewitness testimony.

**DISCOVERY LABS**

**The Sperling Partial Report Paradigm: Iconic Memory**

In this experiment, students learn about how much memory can be stored in iconic memory, and how long that information is available by completing several trials where they are shown a 9 × 9 grid of numbers and asked to report the top, middle, or bottom of each row based on one of three tones.

Approximate completion time: 25 minutes.

**The von Restorff Effect**

The phenomenon of remembering unique items in a set with better accuracy was first described by Hedwig von Restorff in 1933. It is often referred to as the von Restorff effect, or the isolation effect.

Approximate completion time: 25 minutes.

**False Memory**

In this experiment, students learn about the phenomenon of creating false memories during recall and recognition tasks. Participants are presented with word lists before being asked to perform a recognition task.

Approximate completion time: 15 minutes.

**Memory Schemas**

In this experiment, students explore the possible role of memory schemas in visual long-term memory. Participants complete trials where they are shown an image, complete a series of math problems, and then attempt to recall the image based on a list of items that may or may not have been visible in the image.

Approximate completion time: 15 minutes.

**LECTURE TOPICS and CLASS DISCUSSION QUESTIONS**

1. Name a memory movie and describe the kind of memory topic that the movie portrays. Is it an accurate depiction of the topic? Explain your answer.

2. Describe an episodic memory from this year. Why did this memory stand out to you? What aspect of it do you think made it special?

3. How do you study for exams? Describe how effective your study habits are in relation to what you have learned in this chapter on spacing effect, testing effect, and generation effect.

4. Name one example of a semantic memory. Why is this semantic and not episodic? How do the two types of memory differ?

5. Can you think of examples of proactive and retroactive interference in your life? Were you able to overcome these interference episodes?

6. Can you apply the levels of processing theory in your life? Think about an example related to studying or other aspects of your life where deep versus shallow processing could lead to different memory outcomes.

7. Do you have any examples of a false memory that you or someone you know experienced? If so, why/how do you think it happened?

**CLASSROOM ACTIVITIES**

1. Play a video in class on a staged crime scene and ask students what they can remember from the video. This shows the reconstructive nature of memory and unreliable nature of eyewitness testimony.

2. Replicate the Deese-Roediger-McDermott paradigm in class by reading out loud a list of words related to the word “sleep.” Have students recall the words and see how many of them exhibit a false memory of the word “sleep.”

3. Have all students bring to class news reports of the same topic and compare the different viewpoints taken by the journalists. This illustrates the reconstructive nature of memory, and also the influence that media has on our memory.

4. Stage a dramatic event in the beginning of the semester (e.g., dropping a book on the floor, or lecturing without audio for a few seconds in an online class), and schedule a private remind to ask students for their recall of the event later on in the semester.

5. Show a movie clip in class and break students into groups to discuss what types of memory or memory problems were depicted in the clip.

6. Show a list of random words in the beginning of the lecture without making any statement about the list. Ask students to complete a word fragment completion task during lecture to illustrate the principle of priming.

**SUGGESTED VIDEOS**

[Endless Memory Part 1](https://youtu.be/oHeEQ85m79I)(60 Minutes)

[Endless Memory Part 2](https://youtu.be/1th1fVIc8Vo)

This is a documentary (in two parts) about hyperthymestic syndrome syndrome (superior autobiographical memory). Students will hear from people who have this condition and learn about the underlying neurological and behavioral bases for this syndrome.

[My Brilliant Mind](https://youtu.be/2wzs33wvr9E) (National Geographic)

This is a documentary about working memory and expertise, featuring chess expert Susan Polgar.

[Nelson Dellis 2012 Memory Champion](https://www.youtube.com/watch?v=O-rnfDmQEcY)(CNN.com)

Nelson Dellis discusses the way he trains for memory competitions and illustrates how working memory capacity can be expanded through strategies and mnemonics.

[Yanjaa Memory Tips](https://www.youtube.com/watch?v=8eRcAaTYfcU) (Ikea)

This video shows memory expert, Yanjaa, explaining the use of mnemonic in remembering a picture from an Ikea catalog within seconds.

[Eyewitness Memory Part 1](https://youtu.be/u-SBTRLoPuo) (60-minutes)

[Eyewitness Memory Part 2](https://youtu.be/I4V6aoYuDcg)

This video (in two parts) clearly documents the case of Ronald Cotton, which is mentioned in the beginning of this chapter. It also shows the work that Dr. Elizabeth Loftus has done in this area of memory research and the recommendations that memory researchers have for law enforcement and eyewitness testimony practices.

[Segment from Memory Hackers](https://www.youtube.com/watch?v=NfPLTtlo2oY) (PBS)

This segment from the documentary Memory Hackers shows the fallibility of memory and ease of implantation of a false, crime-related memory.

**SUGGESTED ONLINE RESOURCES**

[The Memory Institute](http://www.thememoryinstitute.com/index.html)

This webpage contains resources on memory processes and tips on improving memory functioning.

[Cognitive Fun Experiments](http://cognitivefun.net/)

This website contains experiments that students can use to create class experiments and projects.

[Memory Mnemonics](https://www.verywellhealth.com/memory-tip-1-keyword-mnemonics-98466) (verywellhealth.com)

This page contains ideas for useful memory mnemonics for class demonstration purposes or for students to try out.

[Innocence Project](https://innocenceproject.org/)

The Innocence Project website contains information about the work the organization has done in exonerating the wrongly convicted through DNA evidence.

[The Secrets of Sherlock’s Mind Palace](https://www.smithsonianmag.com/arts-culture/secrets-sherlocks-mind-palace-180949567/) (Smithsonian Magazine)

Article and video showing the use of memory mnemonic (method of loci) in remembering a large amount of information.

**ANSWERS TO CHECKPOINT QUESTIONS (from the textbook)**

**CHECKPOINT 6.1**

1. What is memory, broadly defined?

*Answer*: Memory is an umbrella term to describe the processes of encoding, storage, and retrieval (e.g., recall and recognition) of information that we experience. Memory can be prospective (memory for future events) or retrospective (memory for past events).

2. How is short-term memory different from long-term memory?

*Answer*: Short-term memory refers to the process of remembering and processing information that are active and “online”, and just learned a few seconds ago. Long-term memory refers to memory that was obtained and stored from a few minutes ago to years ago. Long-term memory might be likened to a computer hard drive full of documents, which holds a huge amount of information that we only access when necessary.

**CHECKPOINT 6.2**

1. What evidence suggests that the ability to memorize items (e.g., digits) is different from the ability to recall details from one’s life?

*Answer*: We utilize our working memory to memorize items, while the ability to recall details from one’s life relies on our autobiographical memory system. Dr. Alexander Luria studied a man named “S” who has no special memory of everyday life but can remember an exceptional amount of information all at once. Many other superior memorizers also do not have outstanding autobiographical memory.

2. What evidence suggests that the abilities of memory athletes stem from strategies that they use rather than from some naturally superior memory?

*Answer*: Memory athletes are able to remember many items or digits in one sitting because they are able to use chunking to help organize the information they have to memorize. This technique would only work if they could extract meaning from the information to be remembered. For example, memory champions may remember many more words than controls, but when nonwords were used, their memory performance was only slightly better than that of control participants.

**CHECKPOINT 6.3**

1. What is the difference between memory encoding and retrieval?

*Answer*: Encoding is to mentally represent and place information in a cognitive network that could be accessed in the future. It is analogous to clicking the “save” button when typing an essay on the computer. Retrieval is the process of accessing these stored details in one’s long term memory, similar to searching for and opening a computer file that has been stored in a computer’s hard drive.

2. How might you use chunking, hierarchical organization, and elaboration to help you encode information into memory?

*Answer*: Chunking means to break information up into meaningful, small bits, so that encoding becomes less effortful. For example, phone numbers are broken up into area code, first 3 digits, and then last 4 digits, so that each part can be remembered as a chunk. Organizing information into a hierarchical structure could also help with encoding, much like a library organizes books based on disciplines and types of information. For example, to look specifically for a book on dinosaurs, you may go to the children’s book floor, and go to the area that stores books about animals and history. Elaboration is related to the Levels of Processing theory by Craik & Lockhard (1972), which posits that information that is encoded in a deeper, meaning-based way are also better remembered. Linking new concepts to knowledge you already have in your long-term memory will also help with memory.

3. If you were studying for an exam, how might you take advantage of the spacing effect, testing effect, and generation effect?

*Answer*: The spacing effect suggests that people remember material better when they space short study sessions apart. Testing effect suggests that practice in retrieving information leads to better retention of material than does repeated studying. Similarly, memory is enhanced information that a person has generated versus one that a person was simply asked to memorize in the generation effect. Therefore, the most effective ways to study for an exam would be to start revisions early so that learning can be spaced out, use a testing/retrieval format when reviewing materials, and generate examples for new concepts to deepen understanding whenever possible.

**CHECKPOINT 6.4**

1. What is hyperthymestic syndrome? Some people with this syndrome appear to have structural differences in their brains. Why is it not necessarily the case that these structural differences are an underlying cause of a person’s superior autobiographical memory?

*Answer*: Hyperthymestic syndrome or “highly superior autobiographical memory,” describes the exceptional ability to remember details of autobiographical events, even of mundane events. Although brain structural differences have been found between controls and people with hyperthymestic syndrome, these differences could have developed due to the plasticity of the brain and the life-long repeated usage of the pathways to retrieve information. In other words, a lifetime of practice recalling autobiographical events might be contributing these differences in brain structure rather than the reverse.

2. What are flashbulb memories?

*Answer*: Flashbulb memories are personal memories of your experience upon hearing the news of a surprising, novel, and emotional public event, such as 9/11 terrorist attacks, JFK assassination, and Challenger explosion.

3. What is the Deese/Roediger-McDermott effect, and why is it thought to occur?

*Answer*: The Deese/Roediger-McDermott effect involves a false memory of an unpresented word that is meaningfully related to the rest of the items that are being presented. This happens because of how information is semantically organized in our long-term memory and the way our mind fills in information when pieces are missing. For example, if you hear a list of words related to “sweet,” you may end up recalling the word “sweet” even though it was never presented on the list.

**CHECKPOINT 6.5**

1. What makes autobiographical memory different from memory for learned facts and figures?

*Answer*: Autobiographical memory is the memory for personal events from our own lives, which is different from semantic memory, our knowledge system where we store learned facts and figures.

2. What evidence suggests that memory is not like a camera that records everything accurately, but is instead something that we construct?

*Answer:* Memory is a reconstructive process, and every time we bring up a memory of an event, it is being modified and stored once again. Because of this molding and re-molding process, memory can appear to change over time. With our minds’ tendency to fill in the blanks, we are also susceptible to false memories.

3. Describe the seven sins of memory described by psychologist Daniel Schacter, and give some examples of each.

*Answer*: The “seven sins” that Schacter outlines are:

1. Transience: The forgetting of information over time (e.g., seeing people on the street but not remembering everyone’s face).

2. Absent-mindedness: The failure to encode due to inattention (e.g., listening to the radio while cooking and not paying full attention to the segment on the radio).

3. Blocking: The inability to access memories that are intact and encoded (e.g., unable to bring to mind a person’s name because another name is more prominent and preventing retrieval of the target name).

4. Misattribution: The failure to remember the source of a memory (e.g., misremembering how you heard about the news of the 9/11 attacks).

5. Suggestibility: The tendency to reshape one’s memory according to misleading external information (e.g., children are susceptible to suggestibility in that they are more likely to believe in false, implanted memories such as being lost in a mall).

6. Bias: The tendency to reshape memory according to one’s knowledge, beliefs, or feelings (e.g., remembering more news related to one’s cultural and ethnic background).

7. Persistence: The intrusion of memories that we wish we could forget (e.g., flashbacks of traumatic memory can be very persistent).

4. What is the difference between retroactive interference and proactive interference?

*Answer*: Retroactive interference is interference going backwards and proactive interference is interference going forward. If a student learned Spanish last semester and is learning French this semester, her inability to recall Spanish due to her new learning of French is due to retroactive interference. Her inability to learn French words because of her past knowledge of French is due to proactive interference.

**CHECKPOINT 6.6**

1. What are some recommendations for eyewitness testimony that have stemmed directly from cognitive psychology research?

*Answer*: Eyewitness testimony may contribute to wrongful convictions due to the reconstructive nature of human memory. Cognitive psychologists have recommended sequential rather than simultaneous presentation of photos in a lineup. Researchers have also developed the cognitive interview which encourages interviewers to ask mostly open-ended questions at a slow rate. This method allows the witness to recall events more freely as traumatic event recall may require more focused attention.