Chapter 6
Memory

OUTLINE OF RESOURCES

I. ENCODING: TRANSFORMING PERCEPTIONS INTO MEMORIES

Lecture Suggestion 6.1: Memory While Under Anesthesia (p. 6-5)
Classroom Exercise 6.1: Organizational Encoding (p. 6-7)
Classroom Exercise 6.2: Levels of Processing (p. 6-8)
Classroom Exercise 6.3: A Little Context Goes a Long Way (p. 6-10)

Multimedia Suggestions

Worth Video Series:

Video Anthology for Introductory Psychology: Memory – Memory in Everyday Life

Scientific American Introductory Psychology Videos: Models of Memory

II. STORAGE: MAINTAINING MEMORIES OVER TIME

Classroom Exercise 6.4: The Effect of Context on Memory (p. 6-12)
Classroom Exercise 6.5: Sperling’s Memory Task (p. 6-13)

Multimedia Suggestions

Feature Film: Memento (2000, 113 min, rated R) (p. 6-14)
PsychInvestigator: Levels of Processing
PsychSim 5 Tutorials:

Iconic Memory

Short-Term Memory

Worth Video Series:

Video Anthology for Introductory Psychology: Memory – Living Without Memory

Video Anthology for Introductory Psychology: Memory – An Amazing Memory
Video Anthology for Introductory Psychology: Memory – Clive Wearing: Living Without Memory

Video Anthology for Introductory Psychology: Memory – Memory in Everyday Life

Video Anthology for Introductory Psychology: Emotions, Stress, and Health – Brain Fingerprinting: Memory, Recognition, and Lie Detection

Video Anthology for Introductory Psychology: Memory – Aging and Memory

III. RETRIEVAL: BRINGING MEMORIES TO MIND

Lecture Suggestion 6.2: Gifted Mnemonists (p. 6-15)

Lecture Suggestion 6.3: Everyday Memory (p. 6-16)

Classroom Exercise 6.6: Lucky Sevens (p. 6-17)

Classroom Exercise 6.7: Sing-a-long (p. 6-19)

Multimedia Suggestions

Worth Video Series:

Video Anthology for Introductory Psychology: Memory – Retrieval: A Journey Into Memory

Scientific American Introductory Psychology Videos: Memory Retrieval

IV. MULTIPLE FORMS OF MEMORY: HOW THE PAST RETURNS

Lecture Suggestion 6.4: Déjà Vu (p. 6-21)

Lecture Suggestion 6.5: Beyond Déjà Vu (p. 6-22)

Classroom Exercise 6.8: Coding in Long-Term Memory (p. 6-23)

Multimedia Suggestions

Worth Video Series: Scientific American Introductory Psychology Videos: Models of Memory

V. MEMORY FAILURES: THE SEVEN SINS OF MEMORY

Classroom Exercise 6.9: Decay and Interference in Short-Term Memory (p. 6-25)

Classroom Exercise 6.10: Recalling The War of the Ghosts (p. 6-26)

Classroom Exercise 6.11: Misattribution (p. 6-27)
Multimedia Suggestions

Feature Films:

*Capturing the Friedmans* (2003, 107 min, not rated) (p. 6-28)
*Total Recall* (1990, 113 min, rated R) (p. 6-28)
*Eternal Sunshine of the Spotless Mind* (2004, 108 min, rated R) (p. 6-28)
*The Butterfly Effect* (2004, 113 min, rated R) (p. 6-29)
*Away from Her* (2006, 110 min, rated PG-13) (p. 6-29)
*The Stories We Tell* (2012, 108 min, rated PG-13) (p. 6-29)

Web site: Are You a Good Eyewitness?

PsychInvestigator: Gist of Memory

PsychSim 5 Tutorials:

Forgetting

When Memory Fails

Trusting Your Memory

Worth Video Series:

*Video Anthology for Introductory Psychology: Memory – Creating False Memories: A Laboratory Study*

*Video Anthology for Introductory Psychology: Memory – A Pill for Forgetting*

*Scientific American Introductory Psychology Videos: Memory Retrieval*

OTHER FILM SOURCES (p. 6-30)

HANDOUTS

HANDOUT 6.1A Memory for Word Lists

HANDOUT 6.1B Memory for Word Lists

HANDOUT 6.2 Word List for Memory Test

HANDOUT 6.3A Coding in Long-Term Memory

HANDOUT 6.3B Coding in Long-Term Memory
CHAPTER OBJECTIVES

After studying this chapter, students should be able to:

1. Provide an accurate and appropriate definition of memory, encoding, storage, and retrieval.

2. Discuss the distinctions between semantic encoding, visual imagery encoding, organizational encoding, and encoding of survival-related information.

3. Describe sensory memory storage, and distinguish between iconic memory and echoic memory.

4. Distinguish the short-term memory store from working memory, and describe how rehearsal and chunking contribute to the success of retaining information in short-term memory.

5. Describe the capacity of long-term memory storage.

6. Contrast anterograde amnesia and retrograde amnesia, and describe the involvement of the hippocampus in long-term memory.

7. Discuss memory consolidation, reconsolidation, and the function of sleep in the consolidation of memories.

8. Describe the process of long-term potentiation (LTP) and how it contributes to the formation of memories.

9. Discuss why and how the encoding specificity principle, state-dependent retrieval, and transfer-appropriate processing are all aspects of retrieving information from memory.

10. Describe several ways in which retrieval of a memory affects subsequent memory.

11. Discuss the brain structures and functions underlying memory retrieval.

12. Distinguish among explicit memory, implicit memory, and a special type of implicit memory termed procedural memory, giving examples of each type.

13. Define priming, discuss how priming is useful, and describe the brain mechanisms underlying priming.

14. Distinguish between semantic memory and episodic memory, provide an example of each, and discuss the role of episodic memory in mental time travel.

15. Discuss the social influences on memory in the context of collaborative memory.

16. Describe how the memory “sins” of transience, absentmindedness, and blocking all involve elements of forgetting.
17. Discuss the **curve of forgetting** and how **retroactive interference** and **proactive interference** each contribute to the loss of information over time.

18. Describe how the memory “sins” of **memory misattribution** and **suggestibility** involve elements of distorting remembered information; discuss how **source memory** and **false recognition** might contribute to faulty eyewitness accuracy.

19. Define **bias** and compare the memory distortions created by **consistency bias**, **change bias**, and **egocentric bias**.

20. Explain why persistence is considered a failure of memory when it involves an enhanced memory for some events.

21. Discuss whether the **seven sins of memory** are virtues or vices.

**I. Encoding: Transforming Perceptions into Memories**

(Chapter Objectives 1–2)

**Memory** is the ability to store and retrieve information over time and is the result of the processes of encoding, storage, and retrieval. Memory plays a role in the most mundane activities, such as remembering where the car keys are, and the most elaborate of processes, such as forming a personal identity or establishing neural connections.

Memories are not passive recordings of the world, but instead result from combining incoming information with previous experiences. **Encoding** is the process of linking new and old information together and turning that information into lasting memories. Memory is influenced by the type of encoding we perform regardless of whether we consciously intend to remember an event, fact, or experience. **Semantic encoding** (actively linking incoming information to existing associations and knowledge), **visual imagery encoding** (converting incoming information into mental pictures), and **organizational encoding** (noticing relationships among items to be encoded) all enhance memory. Different regions within the frontal lobes play important roles in semantic encoding and organizational encoding, whereas the occipital lobes are important for visual imagery encoding.

**Lecture Suggestion 6.1**

Memory While Under Anesthesia

Although most people undergoing surgery wake up afterward without remembering anything about the surgery, there is growing evidence that memory during anesthesia can take place. Under general anesthesia the patient is totally “knocked out”; however, memories may be formed at an implicit, nonconscious level. This possibility that memories can be formed at the nonconscious level suggests that statements made during surgery can affect the patient’s well-being. Moreover, there is some evidence that positive statements made during surgery can improve recovery rates.
You can use the following case studies to illustrate these findings and help spark debate. Or you can distribute copies of the published studies ahead of class time for assigned reading so that your students will come into the classroom well informed and ready to discuss the research.

Under general anesthesia, sometimes memories may be formed at an implicit, nonconscious level:

Goldmann (1986) asked patients who were about to undergo surgery a series of bizarre questions (e.g., “How many teeth does an elk have?”). Under anesthesia half the patients heard the correct answers to these questions and the other half did not. Patients were retested on these same questions within a few days of the surgery. Although none of the patients could recall hearing anything during surgery, there was significant improvement on the test scores of those who had heard the answers compared to the other group.

The “fat lady syndrome”—the possibility of memory formation during anesthesia—suggests that statements made during surgery can affect the patient’s well-being. Ample anecdotal (and some experimental) evidence attests to this type of “memory without awareness”:

As illustrated by Bennett (1988), several years ago a rather large woman brought a lawsuit against her surgeon, who had derisively referred to her during surgery as “a beached whale.” The woman suffered postoperative complications for several days and eventually snapped at her nurse, “That bastard called me a beached whale” (Bennett, 1988, p. 204). The matter was settled out of court.

Positive statements made during surgery can improve recovery rates:

Two audiotapes were randomly selected to be played to 39 women under anesthesia during hysterectomies (Evans & Richardson, 1988). The first tape described normal postoperative procedures, contained direct therapeutic suggestions like “You will not feel any pain,” and presented positive statements such as “Everything’s going quite well.” The second tape that was played was blank. The women who listened to the first tape spent less time in the hospital, had fewer gastrointestinal problems, and were rated by nurses as having a significantly better recovery. An interesting note: None of the women in either group could recall any events that occurred during the operation; however, all but one of the women in the positive statement group correctly guessed that they heard the “statement tape,” whereas only 50 percent of the “no tape” women correctly guessed their experimental condition.

Sources:


**Classroom Exercise 6.1**

Organizational Encoding

Here is a simple exercise to demonstrate to your students the importance of organization in memory.

- Make copies of **Handouts 6.1A and 6.1B**.
- Randomly distribute an equal number of these two handouts (face down) so that half of your students have one version of the word list and half have the other. Do not mention that the lists are different!
- **Handouts 6.1A and 6.1B** each contain the same list of 12 words, but in different order.
  - The words in **Handout 6.1A** are arranged randomly.
  - The same words in **Handout 6.1B** are arranged so that each word has some natural association with the word that precedes it.
- When everyone is ready, have all the students turn their papers over and briefly study their lists; give them about 30 seconds for this task.
- Now have them put the lists away.
- Next, distract your students for about a minute (e.g., by having them count backward from 100, by talking to them about some other issue, or by drawing attention to some current event).
- Have them now take out a clean sheet of paper. Allow them to write down all the words they can recall for 45 seconds, then stop them.
- Score their results (by comparing their list with the original word list).
- Explain that there were different versions of the word lists and ask your students which group they would expect to have superior recall. Most groups will agree that those students with the organized word list should perform better.
- Verify the hypothesis by creating a frequency distribution on the board (and listing the number of correctly recalled words for each student in both groups). Then discuss the results with your students.
Discussion:

What are the implications of this exercise for improving recall on exams? What techniques do the students currently use to take advantage of this principle? Can they think of new ways to increase recall through better organizational encoding?

Source:


**Classroom Exercise 6.2**

**Levels of Processing**

This exercise does an excellent job of demonstrating that our memory of information is greater when we process the information more deeply. Be sure to include this exercise after short- and long-term memory have been studied, but before discussing specific encoding strategies such as visual imagery encoding or semantic encoding.

*Instructor’s Note: Do not tell your students that this is a memory experiment or that they will be asked to recall words later.*

1. Have your students number a clean sheet of paper from 1 to 30.
2. Tell students that you will be calling out a series of words and that they will be making a judgment for each of the words.
3. Explain that for each word you read aloud to them, they are to either write down the number of syllables that is in the word or write down whether the word is a pleasant or an unpleasant word (by writing “P” for pleasant and “U” for unpleasant).
4. Explain that for each word, you will call out a letter name directly before you call out the word and that letter name will tell them which judgment you want them to make. Specifically, if you call out the letter “A,” you want them to write down the number of syllables that are in the word that follows, and if you call out the letter “B,” you want them to judge whether it is a pleasant or an unpleasant word (by writing “P” for pleasant and “U” for unpleasant).
5. You should write these instructions on the board and encourage your students to write this information at the top of their papers as a reminder.
6. Stress that they should make their judgments relatively quickly and without hesitation.
7. Then, slowly and clearly read the following list of words at a rate of about one word every 4 seconds (you can either count to yourself or use a stopwatch). For example, you would begin by saying, “A” (short pause), “tricycle” (pause for 4 seconds), “B” (short pause), “decade” (pause for 4 seconds), and so on.
| 10. A poker    | 20. A kitchen | 30. A dive  |

_Instructor’s Note: If you wish, you can change the above list or generate a new one for this exercise. Use any set of common nouns and, to generate a true random sampling, do the following: Make notecards for each of the words, shuffle them, and then randomly sort them into two piles (one for A, the other for B). After writing “A” or “B” on each card next to the word (according to which pile it landed in), shuffle all the cards thoroughly to get a new order._

- After you’ve read the list of words, ask students to quickly write on the bottom of their sheets as many states of the United States as they can in 1 minute.

- Then, ask students to turn their papers over and write down, in any order, as many of the words that they can recall.

- After giving them 3 or 4 minutes for this task, have the students score their answers by comparing them to a transparency of the word list (use Handout 6.2).

- Have the students write an “A” or a “B” next to each word they recalled according to the scoring sheet (they should cross out any words they wrote that were not on the original list), and then have them count the total number of A and B words recalled.

- Next, tally the results by making a frequency distribution on the board (i.e., writing down for each person the number of A and B words remembered) and calculating (or eyeballing) average scores for each condition. If you’re pressed for time or have a large class, poll the students by having them raise their hands as to who remembered more A words and who remembered more B words. Then compare the numbers.

- Regardless of your scoring method, B-prompted words should receive the highest score.
Summary:

After scoring, see if your students can explain the results. Most will see that the B words required greater mental activity in order to make a judgment on their pleasantness and thus were more memorable, whereas making the A judgment (i.e., counting the number of syllables) required simply thinking the word rather than thinking about what it meant. Thus, coding semantically (i.e., by meaning) is superior to coding phonologically (i.e., by sound); that is, information is more likely to be recalled if it is deeply and elaborately processed.

Discussion:

Have students explain the purpose of listing the states (it was a distracter task to prevent any of the words from being held in short-term memory). Discuss the implications of this exercise for your students’ study habits. By studying actively and attaching meaning to the important concepts in their courses (rather than merely rehearsing them), students will enjoy effective recall and good grades on exams.

Sources:


Classroom Exercise 6.3

A Little Context Goes a Long Way

This entertaining exercise shows how a little context can go a long way.

- Elicit help from some students during the class period that precedes the one you choose for conducting this exercise. Dismiss class several minutes early that day. When about half the students have left the room, ask the remaining ones to stay for a few minutes to help.

- Instruct these “accomplices” that you will display a set of digits as well as some French words at the beginning of the next class, all of which need to be memorized.

- Explain that although the digits and French words seem arbitrary and difficult to memorize, there is a key that will help them (the experimental group) succeed: The digits are the squares of the numbers 1 through 9, and the French phrase sounds like the English phrase, “Paddle your own canoe.” Write the following sequence of digits on the board at the next class meeting, making sure the digits are evenly spaced so that the uninformed students (the control group) don’t catch on:
1 4 9 1 6 2 5 3 6 4 9 6 4 8 1

- Also write the following French phrase on the board:

Pas de l’y a Rhône que nous

- Next, give your students 60 seconds to memorize everything on the board. Then, after 1 minute, erase the board and continue class.

- Ask all students to write down all the digits and all the French words in the phrase they can remember about 20 minutes before class ends, giving them 2 or 3 minutes to do so.

- Now, rewrite the number list and French phrase on the board just as you did before.

- Have your students score their performance by counting the number of digits and French words they correctly recalled. At this point, you can let the whole class know about the secret experimental group and about the contextual cues.

- Compare the amount of recall between the experimental and control groups. Report to the class the mean number of items recalled (both digits and French words), which should be higher for the experimental group.

Summary:

This exercise should clearly demonstrate for students the importance of attaching meaning to material to be learned, rather than trying to blindly memorize it. Michael Wertheimer created this exercise, based on William James’s (1890) example of the French phrase, which was adopted by Gestalt psychologists (during their heyday) as a case of reorganization in perception. The translation is, roughly, “Not of there is Rhône [a river] than we,” nonsense in French or English!

Source:


Multimedia Suggestions

See the Preface for product information on the following items:

Worth Video Series

Video Anthology for Introductory Psychology: Memory – Memory in Everyday Life

Scientific American Introductory Psychology Videos: Models of Memory
II. Storage: Maintaining Memories over Time

(Chapter Objectives 3–8)

Three major forms of memory storage hold information for different amounts of time: sensory memory (a second or two), short-term memory (less than a minute), and long-term memory (several minutes to several years). The hippocampus and surrounding structures are critical for transferring information into long-term storage, as shown by the severe anterograde amnesia of patients such as HM. At the cellular level, memory storage depends on changes in synapses, and long-term potentiation (LTP) is a process that increases the strength of a synaptic connection.

Classroom Exercise 6.4

The Effect of Context on Memory

This classroom exercise illustrates the effect of meaningfulness on memory through the use of a contextual statement made prior to the memory exercise.

- Before reading the following passage, pass out to half the class a piece of paper with this statement written on it: “The context is kite flying.” Tell those receiving this contextual statement not to blurt it out, tell a neighbor, or otherwise discuss it!

- Now, slowly and clearly read this excerpt:

  A newspaper is better than a magazine. A seashore is a better place than the street. At first it is better to run than to walk. You may have to try several times. It takes some skill but is easy to learn. Even young children can enjoy it. Once successful, complications are minimal. Birds seldom get too close. Rain, however, soaks in very fast. Too many people doing the same thing can also cause problems. You need lots of room. If there are no complications it can be very peaceful. A rock will serve as an anchor. If things break loose from it, however, you will not get a second chance.

- When you’ve finished reading, ask all the students to write down as much of the excerpt as they can recall on a clean sheet of paper.

- Next, collect all the papers. Make sure to tell the students who received the contextual statement to mark their paper with a CS in the top right corner so that they can be identified.

- Now, either (1) read aloud a sample of papers to immediately compare the responses of both groups, or (2) score the responses after class and bring a data summary to the next session.

Summary:

In this demonstration, meaningfulness is manipulated by presenting the same passage with and without a contextual statement. You should find that those students who were
provided with context outperformed those who were not. Klein suggests using these results to discuss the importance of context and how it relates to study strategies.

Here is another example you can use, provided by Bransford & Johnson (1972, p. 722). The context for this story is “washing clothes.”

The procedure is actually quite simple. First you arrange things into groups. Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities, that is the next step; otherwise you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than too many. In the short run this may not seem important, but complications can arise. A mistake can prove expensive as well. At first the whole procedure will seem complicated. Soon, however, it will become just another facet of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but one can never tell. After the procedure is completed, one arranges the materials into different groups again. Then they can be put into their appropriate places. Eventually they will all be used once more, and the whole cycle will have to be repeated. However, that is part of life.

Sources:


**Classroom Exercise 6.5**

Sperling’s Memory Task

This demonstration can be done with an overhead projector or with PowerPoint. The point of the exercise is to demonstrate George Sperling’s research on iconic memory. Sperling devised the partial report technique in order to determine whether his subjects had seen only some of the letters he briefly presented or whether they had seen all the letters but forgot them before they could report them all. Tell your students that you will briefly present an array of letters that you would like them to try to remember. Once the display has been terminated, they should write down all the letters that they recall. Present the following array briefly, that is, less than a second.

```
K S M R V
X D Q G C
B Z O H A
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When the students have finished writing their answers, ask for a show of hands indicating how many recalled 1, 2, 3, 4, 5, 6, 7, 8, etc. letters. You’ll probably find that the modal response is 5. This is comparable to what Sperling observed. Now ask students to report the letters that they recalled, and you will find that as a class they were able to identify most of the letters in the array (along with one or two that weren’t there). You can explain that this is because students began their recall of letters at different points in the array, just like Sperling had his subjects report different rows in the array with the partial report technique.

**Multimedia Suggestions**

**Feature Film: Memento (2000, 113 min, rated R)** Guy Pearce stars in this unusual murder mystery told entirely in reverse. In the first scene we see Pearce’s character gunning down his wife’s murderer, and each subsequent scene shows the events that took place right before the previous scene. Complicating matters is the fact that Pearce’s character suffers from the inability to form short-term memories. This leads him not only to develop novel ways of keeping track of information, but also hinders his ability to remember who he’s after, whom he can trust, and why he’s doing whatever he’s doing at a given moment.

See the Preface for product information on the following items:

**PsychInvestigator** Levels of Processing

**PsychSim 5 Tutorials**

Iconic Memory

Short-Term Memory

**Worth Video Series**

Video Anthology for Introductory Psychology: Memory – Living Without Memory

Video Anthology for Introductory Psychology: Memory – An Amazing Memory

Video Anthology for Introductory Psychology: Memory – Clive Wearing: Living Without Memory

Video Anthology for Introductory Psychology: Memory – Memory in Everyday Life

Video Anthology for Introductory Psychology: Emotions, Stress, and Health – Brain Fingerprinting: Memory, Recognition, and Lie Detection

Video Anthology for Introductory Psychology: Memory – Aging and Memory
Recall of past experiences depends critically on retrieval cues, which trigger recall by reinstating what we thought or how we felt during the encoding of an experience. Information or experiences we can’t recall on our own are sometimes only temporarily inaccessible and can be brought to mind with appropriate retrieval cues. Moods and inner states can serve as powerful retrieval cues. Retrieval can be separated into the effort we make while trying to remember what happened in the past and the successful recovery of stored information. Several studies suggest that trying to remember something activates the right frontal lobe, whereas successful recovery of stored information activates the hippocampus and the sensory regions of the brain associated with the aspects of the experience being remembered.

Lecture Suggestion 6.2

Gifted Mnemonists

People who possess prodigious memories are astonishing, albeit sometimes annoying. Perhaps it is their sometimes smarty-pants attitude that they, the geniuses, can remember the details of an event that somehow seem to escape us, the common man. Their smugness soon fades, however, in the face of truly extraordinary memory.

Here are some examples of rare gifted mnemonists, sure to generate interest with your students. You can assign groups to research these names ahead of class time, or to search for other people with similar gifts, and then to report their findings in class.

S., also known to his mother as Solomon Veniaminovich Shereshevskii, relied on mnemonics to recall even the most meaningless trivia with great accuracy and sometimes years after learning it. He used visualizing information, forming elaborative associations, and capitalizing on synesthetic experiences. There are several people who have demonstrated similar abilities over the years.

V. P. (Viktor Pupols), a Latvian born in 1935 in a small town coincidentally close to Shereshevskii’s birthplace, read at age 3½, memorized the street map of a large city at 5, and committed 150 poems to memory at age 10. His short-term and long-term memory are both impressive. When taking the short-term memory tasks, the Brown-Peterson task (recalling three consonants over an 18-second interval while counting backward by three), V. P. shows virtually no disruption. In addition, he could remember Frederick Bartlett’s War of the Ghosts with the same extraordinary accuracy after 1 hour and after 1 year. V. P.’s strategy, unlike that of S.’s, is based on quickly forming verbal associations to information using any of the several languages that he speaks (Latin, English, Estonian, Latvian, Russian, Spanish, Hebrew, French, German). Information that would perplex most of us might stir up a memory of a bawdy Latin verse for V. P., thus contributing to his memorization. When V. P. is not perplexing and astonishing, he can be found participating in (and winning) chess championships.
Although Rajan Mahadevan’s memory feats occurred regularly as a young boy, he and his specialty, numbers, came to the public’s attention while he was a graduate student in psychology. People from his home in Mangalore, India, were astounded by his ability to remember anything numerical. So were the folks at the Guinness Book of World Records; in 1981, Rajan was able to recite the first 31,811 digits of pi. Like V. P., Rajan relies on idiosyncratic associations drawn from a vast knowledge base: He remembers “111” because Admiral Nelson had 1 eye, 1 arm, and 1 leg.

S. F. represents a “manufactured memorist,” a role he embarked on as an undergraduate at Carnegie-Mellon University in 1978. During a laboratory project initiated by K. Anders Ericsson and his colleagues that lasted 2 years (Chase & Ericsson, 1981), S. F. would read a sequence of random digits at one per second, then recall them in the correct order. The next group would be increased by one digit when he was successful, and it would be reduced by a digit when he was not successful. By the end of the training session S. F. had mastered a sequence of some 80 digits, compared to most people’s typical performance of about 7. S. F.’s avocation was the secret to his success. As a long-distance runner he formed meaningful chunks from the digits he read, such as 1076 for an important race in October 1976, or other sets of digits for best times, typical distances, and so on. Sadly, S. F. died in 1981 from a chronic blood disorder, although others (such as D. D., also a long-distance runner, who commands a digit span of 106) have continued this project.

Sources:


**Lecture Suggestion 6.3**

**Everyday Memory**

Well-designed, somewhat exotic or elegant laboratory experiments can reveal the inner workings of memory. However, much like other areas of psychology, we can experience the phenomena of memory for ourselves in our everyday lives. In fact, there is a case to be made for taking memory research out of the laboratory.

Discuss with your students some of the pros and cons of this approach, which are listed below (see Baddeley & Wilkins, 1984).

Advantages of studying memory in real-world situations include:

- Using everyday memory as a source for new investigations. Greater attention should be given to the phenomena of memory (i.e., what people actually do), rather than testing aspects of a procedure (e.g., experiments designed to test other experiments).
For example, information gained by studying how children approach a memory task in a classroom environment could supplement and extend information gained from studying memory performance while in an MRI machine.

- **Giving theories a dry run before applying them.** It is more prudent to test theories under fully realistic conditions than to make practical decisions based solely on theory. Predictions for memory performance that may work well in theory may prove cumbersome, inefficient, or diluted during day-to-day applications.

- **Establishing the generality of memory findings.** The goal of applying findings can only be achieved by broadening the research scope to include natural settings.

Some practical considerations in leaving the laboratory in the research design include:

- **Controlling learning.** Little or no information may be gained about the amount of prior learning that has taken place when assessing the present memory capabilities of a real-world research participant. Variables, such as differences in amount or type of learning across participants, can cloud the interpretation of results.

- **Controlling the retention interval.** The time elapsed between learning and retrieval may vary in natural settings, or may be altogether unknown.

- **Controlling the retrieval process.** Any study that requires remembering to do things in the future (called **prospective memory**, which is quite a realistic memory task) may not allow the researcher any control over or measure of the retrieval process.

Source:


**Classroom Exercise 6.6**

Lucky Sevens

This exercise challenges your students to think outside the box while analyzing sets of seven in our everyday lives.

A casual glance at the world reveals that an inordinate number of things seem to conform to the $7 \pm 2$ rule made famous by George Miller in 1956, who found that the capacity of short-term memory was 7, plus or minus 2, chunks of information. The creations of ZIP codes, telephone numbers (with or without area code), Social Security numbers, and 5-, 7-, or 9-point Likert scales all suggest that people have difficulty keeping track of information that goes beyond 9 or so chunks, or discriminations. Furthermore, in 1961 anthropologist Anthony Wallace studied vastly different cultures ranging enormously in size and still found a striking similarity: In each case the number of dimensions needed to account for kinship terms (“aunt,” “cousin,” “father”) was
relatively invariant, ranging from about 5 to 9. It seemed to Wallace that the development of language, even across cultures, obeyed the constraint found in human cognitive processing.

- Ask your students to generate examples of people, events, or things in the world that can be packaged within this $7 \pm 2$ range. This fun exercise should promote creative thinking such as whimsy, inventiveness, and the recall of trivial expertise among your students.

- Challenge your students to decide if individual examples of “sets of seven” represent simple numerology and coincidence or were designed specifically to better accommodate the human memory. For example, a 7-digit phone number suggests a certain planned utility, whereas drinking a Seagram’s 7 with 7-Up on July 7th suggests serendipitous silliness.

- Some examples to get you started include:

  “lucky number 7”

  “The Seven Ages of Man” (Shakespeare)

  7 and 7 (cocktail)

  7 basic emotions

  *Seven Brides for Seven Brothers*

  7 days a week

  7 deadly sins

  7 dwarfs

  *7 Habits of Highly Effective People*

  7 hills of Rome

  *The Magnificent Seven*

  7 notes of a Western musical scale

  7 openings in the human head

  7 sacraments of Catholicism

  7 seas

  7 sins of memory
7 sisters (stars and colleges)
7 virtues
7 wonders of the ancient world
7th inning stretch
7th son of a 7th son

Summary:

Since the time of Miller, we’ve learned a great deal about the physical and temporal limitations of short-term memory, and we have redefined a “chunk” of information—numerous experiments have demonstrated how more information can be packed into a limited number of placeholders in short-term memory and how the process of transferring information from short-term to long-term memory takes place.

Sources:


Classroom Exercise 6.7

Sing-a-long

This fun demonstration illustrates retrieval processes in action. Use this to demonstrate serial learning and the reinstatement of retrieval cues.

- Ask the class to sing together the first stanza of “The Star-Spangled Banner” from memory (see below).

- When they finish singing, ask, “What is the line after ‘through the perilous fight’?”
  Most students will pause and inevitably sing the anthem to themselves again to find the next line.

*The Star-Spangled Banner*

(1814)

lyrics by Francis Scott Key
Oh, say, can you see,
By the dawn’s early light,
What so proudly we hailed
At the twilight’s last gleaming,
Whose broad stripes and bright stars,
Through the perilous fight,
O’er the ramparts we watched
Were so gallantly streaming.
And the rockets’ red glare,
The bombs bursting in air
Gave proof through the night
That our flag was still there.
Oh, say, does that Star-Spangled Banner yet wave
O’er the land of the free
And the home of the brave.

For variations on this exercise, ask students, “How many days are in the month of November?” or “What letter comes before ‘L’ in the English language alphabet?” You will most likely see many if not all of your students silently mouthing, “Thirty days has September . . . April, June, and . . .” or sing-singing “A-B-C-D-E-F-G, H-I-J-K-L-M”—oh! It’s K!”

Multimedia Suggestions

See the Preface for product information on the following items:

Worth Video Series

Video Anthology forIntroductory Psychology: Memory – Retrieval: A Journey Into Memory

Scientific American Introductory Psychology Videos: Memory Retrieval
IV. Multiple Forms of Memory: How the Past Returns

(Chapter Objectives 12–15)

Long-term memory can be broadly divided into explicit memory, involving conscious, intentional retrieval of previous experiences, and implicit memory, which is the nonconscious influences of past experiences on later behavior and performance, such as procedural memory and priming. Procedural memory involves the acquisition of skills as a result of practice, and priming is a change in the ability to recognize or identify an object or word as the result of past exposure to it. People who have amnesia often retain implicit memory, including procedural memory and priming, but often lack explicit memory, particularly episodic memory. Episodic memory is the collection of personal experiences from a particular place and time, whereas semantic memory is a networked, general, impersonal knowledge of facts, associations, and concepts.

Lecture Suggestion 6.4

Déjà Vu

Students are fascinated by the topic of déjà vu, or the feeling that one is reliving some prior experience. Explanations for this phenomenon have been offered throughout the history of psychology, invoking neurological, supernatural, and pathological forces. Investigations of déjà vu eventually trickled to a minimum, as researchers came to regard it as a mental curiosity lacking a satisfactory explanation.

Psychiatrist Herman Sno helped revive interest in déjà vu in recent years. Sno and his colleagues argue that the déjà vu experience can be understood using the hologram as a model. In holographic photography, each segment of an image contains the full information necessary to reproduce the entire image, a property that gives holographic photos their three-dimensional qualities. The smaller the fragment, however, the fuzzier the image will be when reproduced. Although it’s not directly analogous, imagine trying to enlarge a low-resolution image copied from a Web site versus a high-resolution image taken directly from a 6-megapixel camera. The information is contained in either original source, but one will produce a blurrier image open to greater interpretation (“Is that cousin Jake . . . or a fire hydrant?”).

Sno suggests that memory storage may operate in a similar fashion, with bits and pieces of a particular memory scattered across various locations in the brain. When a fragment of a current perception is highly similar to a fragment of a previously stored memory, the déjà vu experience will take place. Traced to their original forms the two memories may be quite different, although based on a mismatch of fragments from each memory they might appear so similar as to be perceived as a relived experience. This idea is in contrast to other explanations, such as that déjà vu results from a micromomentary hesitation in transmitting information across the corpus callosum, or Freud’s notions that déjà vu is a manifestation of the unconscious or a type of defense mechanism.
Lecture Suggestion 6.5

Beyond Déjà Vu

The déjà vu experience is perhaps the best-known mindbug of memory, but it is by no means the only one. Like déjà vu, the following quirks are relatively harmless (unless they occur quite frequently) and are usually experienced by most people at some point in their lives.

- **Jamais vu.** Jamais vu refers to a lack of familiarity with a particular experience when this should clearly not be the case. For example, someone who insists that they have never before met a fairly well-known acquaintance might be having a jamais vu experience. Jamais vu is distinguished from the memory disruptions found among Alzheimer’s patients (who often fail to recognize familiar objects, people, or settings), from the effects of amnesia, or from simply having a faulty memory (such as inadequately encoding information about an event in the first place). A defining quality of jamais vu, then, is the feeling of astonishment or incredulity at encountering the object (“Are you sure we’ve met before?!”). Conceptually, jamais vu is the opposite of déjà vu and can be linked to the broader phenomenon of memory misattribution.

- **Time-gap experience.** “I left home, and then I arrived at work. I’m not sure what happened in between.” Most of us have had the experience of doing a fairly complicated task (such as driving a car) and upon completion realizing that we have no recollection of the task at all (such as when we stopped, where we turned, the route we took, and so on). This time-gap experience can be explained using the distinction between automatic and effortful processing. An effortful task, such as one that is new or unfamiliar, demands the focused expenditure of cognitive resources for its completion. Even a fairly intricate task, however, once it has become automatic, can be performed outside of conscious awareness. The time-gap experience can be linked to the memory “sin” of absentmindedness.

- **Cryptomnesia.** Cryptomnesia can be thought of as unintended plagiarism: A person honestly believes that some thought, publication, composition, or other work is an original creation when in fact it is not. Many musicians, for example, have fallen prey to this memory anomaly. The most celebrated case involved George Harrison’s song “My Sweet Lord.” After its release in 1971, Harrison was sued for copyright infringement by the publishers of the Chiffons’ “He’s So Fine” (Brown & Murphy, 1989). In 1976 a court ruled that Harrison’s song was unintentionally based on the
Chiffons’ earlier hit, and he was ordered to surrender the majority of his royalties from that song. In 1984, Huey Lewis sued Ray Parker, Jr., over the similarities between Parker’s hit “Ghostbusters” and the Huey Lewis and the News hit “I Want a New Drug.” Parker paid Lewis in 1995, but later filed a countersuit that Lewis was in violation of a confidentiality order surrounding the case. Aerosmith came under fire for lifting the line “Mister, you’re a better man than I” from the Yardbirds song of the same name, and including it in their hit “Livin’ On the Edge.” Drug-addled rock star mistakes, or intentional appropriation of the fruits of someone else’s labor? In each case the similarities were determined to be unintentional, suggesting that cryptomnesia was at work. Cryptomnesia can be linked to the memory sins of suggestibility, bias, and transience.

Sources:


The “My Sweet Lord / He’s So Fine” plagiarism suit:
http://abbeyrd.best.vwh.net/mysweet.htm


**Classroom Exercise 6.8**

Coding in Long-Term Memory

This simple exercise, suggested by Alan Searleman and Douglas Herrmann and adapted from Sachs, 1967, demonstrates how information in long-term memory is typically coded by meaning rather than by literal content.

- Ask your students to carefully read the story presented in **Handout 6.3A**. (You can make a transparency from this or otherwise project it so that the entire class can see, or you can conduct the exercise orally.) Students should be prepared to have their memory tested on one of the sentences in the passage.

- Next, remove the story after students have had time to read but not study it.

- Now, present the sentences given in **Handout 6.3B**. Students should choose which sentence was presented in the story.
Summary:

This exercise illustrates that people quickly forget verbatim information while retaining its general meaning. Most students will quickly eliminate choice C (which has a different meaning than the other sentences) but will have difficulty choosing among the other three options (which differ in form and structure but not meaning).

Our encoding process, in actuality, is a quite flexible and adaptive one. When the need arises, we can code verbatim information into long-term memory (e.g., when we must memorize a poem, extract, or quotation). Much of the time, however, we encode the gist of information since so many times it is more important that we remember the meaning of events than their verbatim content.

Sources:


Multimedia Suggestions

See the Preface for product information on the following items:

*Worth Video Series* *Scientific American Introductory Psychology Videos: Models of Memory*

V. Memory Failures: The Seven Sins of Memory

(Chapter Objectives 16–21)

There are seven major ways that memory can be problematic: transience, absentmindedness, blocking, memory misattribution, suggestibility, bias, and persistence. The first three “sins” all involve different types of forgetting, the next three involve different types of distortion, and the final “sin” involves remembering what we wish we could forget.

**Transience** is reflected by a rapid decline in memory followed by more gradual forgetting. With the passing of time, memory switches from being detailed to being more general. Both decay and interference contribute to transience. **Absentmindedness** results from failures of attention, shallow encoding, and the influence of automatic behaviors, and it is often associated with forgetting to do things in the future (i.e., failures of **prospective memory**). **Blocking** occurs when stored information is temporarily inaccessible, as when information is on “the tip of the tongue.”

**Memory misattribution** happens when we experience a sense of familiarity but don’t recall, or mistakenly recall, the specifics of when and where an event occurred.
Misattribution can result in eyewitness misidentification or false recognition. **Suggestibility** gives rise to implanted (false) memories of small details or entire episodes. Suggestive techniques such as hypnosis or visualization can promote vivid recall of suggested events, and therapists’ use of suggestive techniques may be responsible for the “recovered memories” of childhood traumas that some patients recall during therapy. **Bias** reflects the influence of current knowledge, beliefs, and feelings on memory or past experiences. Bias can lead us to make the past consistent with the present, exaggerate changes between past and present, or remember the past in a way that makes us look good.

**Persistence** is often the result of enhanced memories for emotionally charged events, which lead to obtrusive thoughts related to those memories. Persistence is partly attributable to the activation of hormonal systems via the amygdala.

Each of the seven “sins” has adaptive features, so it is useful to think of these memory failures as prices we pay for the benefits of a memory system that usually serves us well. Examining these memory mindbugs helps psychologists better understand the normal operations of memory.

**Classroom Exercise 6.9**

Decay and Interference in Short-Term Memory

This simple exercise demonstrates the effects of decay and interference on short-term memory.

- Tell your students that you want them to try to remember a sequence of three consonant letters while counting backward by threes from a number you provide.

- When the students are ready, say, “W T K” and then “701.” Their response should be “701, 698, 695, 692, 689, 686” and so on.

- After about 18 seconds have elapsed, say “write” as a signal to students to recall the three letters, “W T K.”

Summary:

According to Peterson & Peterson (1959), students should have considerable difficulty performing this exercise that uses the Brown-Peterson distracter technique because the counting task prevents them from rehearsing the letters and thus allows the memory trace to decay. Keppel & Underwood (1962) later argued that the forgetting produced by the Brown-Peterson task was primarily due to the buildup of proactive interference; that is, that students could often remember the letters during the first couple of trials, but on subsequent trials, had much greater difficulty remembering letters because proactive interference would develop. In other words, students ought to have trouble remembering letters presented earlier rather than later in the current trial.
Option: This effect can be proved by conducting several trials with your students. You may use the following letter/number combinations or make up your own: PZX 317, BVQ 421, LFC 991, JHG 187, and SRN 275. Your students will be astonished (and chagrined) at their miserable performance, which is typically about 1 in 10 correct recalls after only 18 seconds of the distracter task!

Sources:


**Classroom Exercise 6.10**

Recalling *The War of the Ghosts*

To demonstrate several principles of memory, re-create Sir Frederick Bartlett’s (1932) famous experiment.

Bartlett asked some British research participants to read *The War of the Ghosts* and try to recall it after varying time periods. Because of the odd imagery and unusual plots in this Native American folktale, the readers made many errors in recall, like eliminating details that didn’t make sense to them or adding elements to make the story more coherent. As time went by, the specifics of the story slipped from memory. The general meaning of the events, however, stayed in memory but usually with elaborations and embellishments that were related to the readers’ worldviews. To remember the story as a cohesive whole, the participants had to raid their stores of general information because the story was unfamiliar. As a result, they came up with a reasonable recollection of what probably happened. However, in doing so they revealed the operations of bias, schemas, and transience in the memory process.

You can replicate Bartlett’s experiment using the same story, which is reprinted here:

**THE WAR OF THE GHOSTS**

One night two young men from Egulac went down to the river to hunt seals, and while they were there it became foggy and calm. Then they heard war-cries, and they thought: “Maybe this is a war party.” They escaped to the shore, and hid behind a log.

Now canoes came up, and they heard the noise of paddles, and saw one canoe coming up to them. There were five men in the canoe, and they said:
“What do you think? We wish to take you along. We are going up the river to make war on the people.”

One of the young men said, “I have no arrows.”

“Arrows are in the canoe,” they said.

“I will not go along. I might be killed. My relatives do not know where I have gone. But you,” he said, turning to the other, “may go with them.”

So one of the young men went, but the other returned home.

And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water, and they began to fight, and many were killed. But presently the young man heard one of the warriors say: “Quick, let us go home: that Indian has been hit.”

Now he thought: “Oh, they are ghosts.” He did not feel sick, but they said he had been shot.

So the canoes went back to Egulac, and the young man went ashore to his house, and made a fire. And he told everybody and said: “Behold I accompanied the ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick.”

He told it all, and then he became quiet. When the sun rose he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried.

He was dead.

Source:


**Classroom Exercise 6.11**

**Misattribution**

Schemas play an important role in memory because they help us organize information, and we can use schemas to create false memories. Daniel Schacter likes this exercise devised by Drew Appleby, which you can use with your class to demonstrate the phenomenon of misattribution, showing that we can create false memories.

Tell your students that you will present a list of 12 words to them and they should try to remember these words. Then slowly read the following list of words:
After reading this list of words, distract your students briefly by asking them to do a math problem: “What number multiplied by three equals 51?” Then ask your students to write down all of the words they recall. After a minute or so, ask for a show of hands if they wrote down the word BED, which most will have remembered. Next ask them if AARDVARK was on their list, and of course, no one will respond. Then ask if SLEEP was on their list, and you will find that a large proportion of the class will report remembering it. The reason why this happens is that all of the words on the list are associated with sleep. This results in the activation of the schema for “sleep” and leads your students to “remember” the word SLEEP as being one of the words they heard. The impact of this exercise is even greater if you present the words via PowerPoint because you can then scroll back through the slides and show the class that the word SLEEP was not presented.

If you want to use a different collection of words, you can use these 12 words to create a false memory for the word DRINK: WATER, THIRST, SODA, BEVERAGE, GLASS, COOL, BEER, WET, REFRESHING, MILK, SIP, ALCOHOL,

Source:


Multimedia Suggestions

Feature Film: Capturing the Friedmans (2003, 107 min, not rated) In 1984, Professor Arnold Friedman and his 18-year-old son Jesse were arrested on charges of multiple counts of child molestation. This documentary looks at the trial and its aftermath, with particular focus on the impact these events had on the Friedman family and their larger community in Long Island, NY. Issues of false memory, suggestibility, eyewitness testimony, consistency bias, and memory misattribution shroud the details of this case.

Feature Film: Total Recall (1990, 113 min, rated R) Arnold Schwarzenegger and Sharon Stone star in this science fiction tale of a construction worker who takes a “fantasy vacation” to Mars, courtesy of an implanted memory chip. When other, darker memories begin to haunt him, however, he discovers that he was once a secret service agent and that memories of that time period have been stolen from him.

Feature Film: Eternal Sunshine of the Spotless Mind (2004, 108 min, rated R) Jim Carrey and Kate Winslet star as a romantic couple who have lost their romance. They also hope to lose all memory of their time together, so they seek the assistance of scientists at Lacuna, Inc., to scrub their minds clean of any thoughts of one another. As
their memories disappear, both partners come to realize how special their relationship was.

**Feature Film: The Butterfly Effect (2004, 113 min, rated R)** Ashton Kutcher stars in this story of a young man who experiences memory blackouts. His episodes decrease with age, until it appears he has recovered from the debilitating effects of not knowing where he is, how he got there, or what he’s done during his memory lapses. While at college he finds his diary, started as a child, which documents his behavior during his blackouts, and the hijinks ensue.

**Feature Film: Away from Her (2006, 110 min, rated PG-13)** Alice Munro’s short story, *The Bear Came over the Mountain*, has been adapted by actress Sarah Polley into this feature film starring Julie Christie, Michael Murphy, Gordon Pinsent, and Olympia Dukakis. The film offers a compelling look at one woman’s descent into the darkness of Alzheimer’s disease and how her loved ones cope with the changes in all of their lives.

**Feature Film: The Stories We Tell (2012, 108 min, rated PG-13)** This documentary from actress and filmmaker Sarah Polley uses a combination of interviews, old film footage, and re-creations of family events filmed in Super-8 to look like home movies. Polley’s goal is to better know her mother, who died tragically the week of Polley’s 11th birthday, and to illuminate her parent’s relationship. As she interviews a diverse cast of friends, family members, and acquaintances of her mother, we discover that truth is elusive and not everyone agrees on the past. The filmmaker also uncovers some family secrets about herself as the film progresses.

**Web site: Are You a Good Eyewitness?**

This Web site [http://www.youramazingbrain.org/testyourself/eyewitness.htm](http://www.youramazingbrain.org/testyourself/eyewitness.htm) provides a short demonstration on the reliability of eyewitness testimony. Viewers watch a one-minute video clip and are then asked four questions about what happened. You can use this in class or assign the activity to be done outside and discuss the results afterward.

See the Preface for product information on the following items:

**PsychInvestigator** Gist of Memory

**PsychSim 5 Tutorials**

- Forgetting
- When Memory Fails
- Trusting Your Memory

**Worth Video Series**

- Video Anthology for Introductory Psychology: Memory – Creating False Memories: A Laboratory Story
Video Anthology for Introductory Psychology: Memory – A Pill for Forgetting

*Scientific American Introductory Psychology Videos: Memory Retrieval*

**Other Film Sources**

*The Brain* (1997, ANN/CPB). This series of teaching modules contains several segments relevant to memory. These include:

**Program 16: The Locus of Learning and Memory.** The classic work of Karl Lashley, Donald Hebb, and Wilder Penfield is reviewed, followed by a segment on how MRI technology is providing an increasingly sophisticated glimpse into the brain.

**Program 17: Learning as Synaptic Change.** As the name suggests, the focus of this segment is how synaptic changes take place when learning and memory are acquired.

**Program 18: Living with Amnesia: The Hippocampus and Memory.** A case study of an amnesic patient is presented, followed by an overview of hippocampal cell replacement surgery in rats.

**Program 19: Alzheimer’s Disease.** The current state of knowledge (in 1997) of Alzheimer’s disease is shared, using a case study of a relatively young woman (Eleanor, age 51) and her progression through the disease.

**Program 20: A Super-Memorist Advises on Study Strategies.** Rajan Mahadevan can recall all 49 digits in a 7 3 7 matrix after a brief glance. You want them in row order? Columns? Backward, forward . . . no problem.

*Developing a Great Memory* (2002, 27 min, IM). This film is a “how to” that, one hopes, will be old news to your students. If it isn’t, you might want to share these tips for effective learning strategies, memorization, and information retention.


*Eyewitness—48 Hours, CBS News* (1998, 400 min, CBS News). Dan Rather narrates this four-part special on the fragility of eyewitness memory.

1. *I Saw Their Faces*: Two brothers spent 14 years in prison on kidnapping and rape charges, based solely on eyewitness testimony, only to have DNA evidence finally exonerate them. This is their story.

2. *To Catch a Thief*: The often-flawed procedures used to gather eyewitness testimony are reviewed, including the construction of photo lineups.
3. **Before Your Eyes**: Law school students serve as eyewitnesses in this cautionary tale of susceptibility to misinformation. Marvel as they confidently cling to their initial perceptions, only to be disabused of their inaccurate accounts of the facts.

4. **Reasonable Doubt**: Social psychologist Gary Wells offers insights on eyewitness testimony from his considerable experience in the laboratory and in the field.

*Eyewitness—Dateline NBC* (2001 [April 16], 20 min, NBC News). Eyewitness testimony can be frighteningly fallible. See some examples in this *NBC News* segment.

*False Memories* (2000, 51 min, FHS). This *Discovery Channel* production highlights brain research to address the complex issues surrounding recovered memories and the general malleability of the human memory system. Elizabeth Loftus and others share their views and data on these topics.

*Fragments of Genius: Understanding Savants* (2000, 50 min, FHS). The memory skills of savants offer a unique yet perplexing glimpse into the workings of the mind. How can often severe impairments in some cognitive areas be coupled with prodigious skills in other areas? Several theories about savant skills are discussed in this film.

*From the Mouths of Babes—20/20, ABC News* (1993, 16 min, ABC News). Psychologist Stephen Ceci is featured in this examination of the accuracy of children’s reports of sexual abuse. Kelly Michaels, a preschool teacher accused of molesting several children in her care, is also interviewed. She served five years in prison before her conviction was overturned.

*Growing Old in a New Age, Part 5: Learning, Memory, and Speed of Behavior* (1993, 60 min, ANN/CPB). Several seasoned citizens share their insights on how to remain sharp as the years go passing by. Their remarks are bolstered by research evidence on the changes that take place in learning and memory as we age.

*Human Memory* (1978, 25 min, HBJ). Gordon Bower narrates this look at memory and memory distortions. Tips for improving one’s memory are also offered.

*Human Memory* (1998, 17 min, IM). This short video covers a lot of ground: the biological basis of memory, short- and long-term memory processes, memory loss, déjà vu, the ability to learn, and so on. It provides a quick overview of the main topics surrounding memory.

*Information Processing* (1971, 29 min, PENN). The basic principles of human information processing, such as long- and short-term memory, storage and retrieval, problem solving, and mnemonics, are discussed using the setting of a cocktail party. Cheers!

*It’s Not a Memory Trick; It Really Works* (1998, 30 min, IM). Really? It really works? Show me! Mnemonics take center stage in this film, and by the end of it we’re all convinced that they’re an effective way to improve the memory process.
Learning and Memory (1984, 55 min, PBS). This film focuses on the brain changes that take place as memory is consolidated.

Memories Are Made of Chips (1996, 40 min, FHS). This film, part of the Futurewatch series, speculates on the promise of memory-enhancing drugs and computer chips to aid in the human memory process. Could we be approaching an era in which artificial devices interact with brain systems to improve memory?

Memory (2001, 30 min, IM). This video examines a range of memory phenomena, such as disturbances related to disease or accidents, flashbulb memories, and eyewitness testimony.

Memory (1998, 57 min, FHS). This film presents an overview of memory, from acquisition to storage to retrieval to memory failures. Discussants include members of the Harvard Medical School, the Howard Hughes Medical Institute, and Daniel Schacter.

Memory: Fabric of the Mind (1988, 28 min, FHS). The biochemical basis of memory and the centers of memories in the brain are highlighted in this film. Other topics include long-term versus short-term memory, the causes of forgetting, and memory improvement techniques.

Memory: The Past Imperfect (1994, 46 min, IM). A range of topics is considered, such as long- and short-term memory, amnesia, eyewitness accuracy, retrieval, and memory skills of babies.

Memory Masters: How Savants Store Information (2006, 53 min, FHS). How can a person recite passage and verse from books read over a decade ago? How can someone correctly predict a date and day of the week thousands of years in the future? How can the brain perform complex arithmetic operations in the wink of seconds? Find the answers to these and other eerie questions in this exploration of prodigious memory skills and the people who possess them. Part of the Beautiful Minds: The Psychology of the Savant series.

Memory Skills: Power Learning (1991, 25 min, LS). This video is very well produced, although the pacing and level of presentation may make it more appropriate for use in a high school or community college course. Memory techniques such as visualization and mental “pegboards” are explored, and tips for improving one’s memory are offered using short vignettes and examples.

Memory, Suggestion, and Abuse (1994, 60 min, IM). Reconstruction, rather than reproduction, guides the memory process. The pitfalls of therapeutic techniques that suggest, implant, or otherwise distort memory are considered.

The Mind (2nd Ed.): 10. Life without Memory: The Case of Clive Wearing, Part I (1999, 12 min, ANN/CPB). “Hello, I’m Clive; good to see you.” “Hello, I’m Clive; good to see you.” “Hello, I’m Clive; good to see you.” Imagine a life in which every few seconds you felt that all your experiences were new, and all of the people you met you were meeting for the first time. Clive Wearing, who is incapable of making new memories due to the
aftermath of viral encephalitis, feels like that a lot. This film offers a brief glimpse into
his world.

ANN/CPB). Clive Wearing returns to the small screen 13 years after his appearance in
Part 1. Find out what he’s been up to, and why he can’t remember it all to tell you about
it himself.

*The Mind (2nd Ed.): 17. Aging and Memory* (1999, 11 min, ANN/CPB). One of the seven
sins of memory is absentmindedness, particularly in the form of lapses in prospective
memory. This short segment illustrates how forgetting future intentions can be studied in
the laboratory.

The study of memory is also many times, by default, the study of forgetting. Throw some
neuroscience into the mix, and you’ve got the makings for a survey of Alzheimer’s
disease, as depicted in this brief segment.

*Mind Games* (1995, 30 min, IM). The spooky secrets of the mind are explored, such as
near-death experiences and hypnosis. Déjà vu is also considered.

*The Mind’s Storehouse: Memory* (2006, 30 min, IM). The reliability of memory comes
under close scrutiny in this film. Experts such as Elizabeth Loftus and others explain the
pitfalls of assuming that memory is infallible, veridical.

*Mystery of Memory* (1989, 30 min, COR/MTI). What’s the mystery? I’m not telling. But
this program does examine the (then) current knowledge of how the brain stores and
retrieves information and how this ability decreases over time.

*The Nature of Memory* (26 min, FHS). A little bit of everything here: computer models
that mimic memory processes, the role of emotion in memory, research on amnesiacs,
and how memories can become altered through time and suggestion.

*Persistence of Memory* (1980, 58 min, PBS). Carl Sagan explores the evolution of the
brain as an information storage device. External information storage, as an extension of
human memory, is also considered. Part of the critically acclaimed *Cosmos* series.

*Quantum Memory: Working Magic with Your Memory* (2000, 34 min, IM). Decreasing
study time while increasing retention sounds like a pretty good deal. This film offers
some tips on how to accomplish that.

*Scientific American Frontiers: Season VII: Pieces of Mind, Segment 2—Remembering
emotionally significant experiences.

*Scientific American Frontiers: Season VII: Pieces of Mind, Segment 3—True or False?*
(1996, 9 min, PBS). Daniel Schacter quickly reviews false memories.
**Scientific American Frontiers: Season XI: Changing Your Mind, Segment 2—Grow Your Own Brain** (2000, 7 min, PBS). London taxicab drivers show changes in their hippocampal functioning based on their elaborate cognitive maps of London city streets. This is a nice way to link memory and the brain.

**Scientific American Frontiers: Season XI: Changing Your Mind, Segment 2—Memory Marathon** (2000, PBS). Takes a look at the 2000 Memoriad—the Memory Olympics, so to speak. Memory consultant Frank Felberbaum is shown and interviewed, but do his expensive training sessions really work? Watch and see.

**The Study of Memory** (1996, 74 min, FHS). Diagrams and real-life examples are used to explain basic memory terminology.

**Thanks for the Memories** (2002, 60 min, FHS). Can our brains store experiences from the first few months of life? How do traumatic events that happen in childhood get registered in memory, and how might they affect us later in life? This film, part of the BBC series Child of Our Time, examines these and related issues.

**Understanding the Mysteries of Memory** (1998, 53 min, IM). This Discovery Channel production runs the gamut of implicit and explicit memory, savant syndrome, traumatic memories, mistaken identification, flashbulb memory, amnesia, and short-term memory damage. A little something for everyone here.

**What Jennifer Saw—Frontline, PBS** (1997, 60 min, PBS). Jennifer Thompson was the victim of both rape and memory disruptions. On the basis of her eyewitness testimony, and no solid physical evidence, Ronald Cotton was convicted of her rape and served 11 years in prison, only to be released later based on DNA evidence showing he was not the offender. Psychologists Reed Hunt and Elizabeth Loftus describe some reasons for Jennifer’s memory that Ronald Cotton was the man who she believed raped her.

**You’ve Got a Great Memory** (1999, 30 min, IM). This video outlines strategies for improving and refining memory.

*Due to loss of formatting, Handouts are only available in PDF format.*