# *Chapter 9 Lecture Notes: Memory*

* **Memory:** persistence of learning over time via the storage and retrieval of info
* **Flashbulb memory**: clear memory of an emotionally significant moment or event; *San Francisco residents recalling the 1989 earthquake*.
* Human memory like a computer
  + Get info into our brain, **encoding**: processing of info into memory system
  + Retain info, **storage:**  retention of encoded info over time
  + Get it back later, **retrieval:** process of getting out of memory storage
* Humans store vast amounts of info in **long-term memory**: relatively permanent and limitless storehouse of the memory system
* **Short-term memory:** activated memory that holds few items briefly; *phone number just dialed*

Encoding: Getting Information In

* **Automatic processing:** unconscious encoding of incidental info; occurs with little or no effort, without our awareness, and without interfering with our thinking of other things; *space, time, frequency, well-learned info*
* **Effortful processing:** encoding that requires attention and conscious effort; *memorizing these notes for the AP exam.* 
  + After practice, effortful processing becomes more automatic; *reading from right to left for students of Hebrew*
* Can boost memory through **rehearsal**: conscious repetition of info, either to maintain it in consciousness or to encode it for storage
* **Next-in-line effect:** when people go around circle saying names/words, poorest memories are for name/word person before them said
* Retain info better when rehearsal distributed over time -phenomenon called spacing effect: tendency for distributed study or practice to yield better long-term retention than is achieved through cramming
* When given a list of items and ask to recall, people often demonstrate serial position effect: tendency to recall best the last and first items in a list
* Rehearsal will not encode all info equally well because processing of info is in 3 ways
  + **Semantic encoding**: encoding of meaning, including the meaning of words
  + **Acoustic encoding:** encoding of sound, especially the sound of words
  + **Visual encoding:** encoding of picture images
* Fergus Craik and Endel Tulving flashed a word to people, asking question that required processing either visually, acoustically, or semantically; *semantic encoding was found to yield much better memory*
* **Imagery:** mental pictures; powerful aid to effortful processing, especially when combined with semantic encoding; can easily picture where we were yesterday, where we sat and what we wore.
* **Mnemonic:** memory aids, especially those techniques that use vivid imagery and organizational devices
* **Chunking:** organizing items into familiar, manageable units; often occurs automatically
  + Able remember info best when able to organize it into personal meaningful arrangements

Forgetting as Encoding Failure

* Failure to encode info -never entered memory system.
* Much of what we sense, we never notice
* Raymond Nickerson and Marilyn Adams discover most people cannot pick the real American penny from different ones

Storage: Retaining Information

* **Sensory memory:** immediate, initial recording of sensory info in memory system
  + we have short *temporary photographic memory* called **iconic memory**: momentary sensory memory of visual stimuli: photographic/picture-image memory lasting no more than a few tenths of a second; *visual = eye, which sounds like “I” in iconic*
  + also fleeting memory for *auditory sensory images* called **echoic memory**: momentary sensory memory of auditory stimuli: if attention is elsewhere, sounds and words can still be recalled within 3 or 4 seconds; *auditory = ear, which starts with “e” like echoic)*
* **Short-Term Memory** 
  + without active processing, short-term memories have limited life
  + short-term memory limited in capacity to about 7 + or – 2 chunks of info at any given moment, can consciously process only very limited amount of info
* **Long-Term Memory** 
  + capacity for storing long-term memories is practically **limitless**
  + though forgetting occurs as new experiences interfere with retrieval and as physical memory traces gradually decays
* **Karl Lashley** removed pieces of rat's cortex as it ran through maze; found that no matter what part removed, partial memory of solving maze stayed; concluded memories don't reside in single specific spot.
  + - Psychologists then focus on neurons
    - **Long-term potential (L TP):** increase in a synapse's firing potential after brief, rapid stimulation; believed to be neural basis for learning and memory
    - After long-term potential occurs, passing electric current through brain won't disrupt old memories, but wipe out recent experiences; *football player with blow to the head won’t recall name of play before the blow.*
    - Drugs that block neurotransmitters also disrupt info storage; (*The next morning,* *drunks hardly remember previous evening.)*
* Stimulating hormones affect memory as more glucose is available to fuel brain activity, indicating important event- “sears” event onto brain; *remembering the first kiss, first earthquake …*

### Amnesia: Loss of Memory

* Found that people who don't have memories can still learn, indicating 2 memory systems operating
* **Implicit memory:** retention without conscious recollection (of skills and dispositions); *how to do something*
* **Explicit memory**: memory of facts and experiences that one can consciously know and "declare"; *remember it was done before.*
* Through scans, found that **hippocampus**, neural center located in limbic system,

helps process explicit memories for storage

* + Damage to left side of hippocampus produces difficulty in remembering verbal info, but no trouble recalling visual designs and locations
  + Damage to right side produces difficulty in remembering visual designs and locations, but no trouble recalling verbal info
  + When hippocampus removed from monkeys, recent memories were lost, but old memories intact, suggesting hippocampus not permanent storage
* Long-term memories scattered across various parts of frontal and temporal lobes

### Retrieval: Getting Information Out

* **Recall**: measure of memory in which the person must retrieve information learned *earlier; fill-in-the-blank test.* 
  + Once learned and forgotten, relearning something becomes quicker than when originally first learned
* **Recognition:** measure of memory in which the person need only identify items previously learned; *multiple choice test*
* **Relearning:** memory measure that assesses the amount of time saved when relearning previously learned info.
* To retrieve specific memory, need to identify one of the strands that leads to it, process called **priming**: activation, often unconsciously, of particular associations in memory
* **Retrieval cues**: (reminders of info) such as photographs, often prime one's memories for earlier experiences
* Best retrieval cues come from associations formed at time when one encodes memory
* By being in similar context (surrounding), can cause flood of retrieval cues and memories
* Being in similar context as before, may trigger **deja vu**: eerie sense that "I've been here before." or “I’ve seen that person before.”

Cues from current situation may subconsciously trigger retrieval of an earlier experience

* Things we learn in one state (joyful, sad, drunk, sober, etc) are more easily recalled when in same state – phenomenon called **state-dependent memory**
* Moods also associated with memory: easily recall memory when mood of that incident same as present
* **Mood-congruent memory:** tendency to recall experiences that are consistent with one's current good or bad mood

Forgetting as Retrieval Failure

* Learning some items may interfere with retrieving others
* **Proactive interference (forward-acting):** disruptive effect of prior learning on the recall of new info: old *Combination lock numbers may interfere with recalling new combo.*
* **Retroactive interference (backward-acting):** disruptive effect of new learning on the recall of old info:

*Teachers who must learn students’ names from present class have trouble recalling previous class’ names*

* **Repression:** in psychoanalytic theory, the basic defense mechanism that banishes anxiety-arousing thoughts, feelings, and memories from consciousness
* Researchers think repression occurs rarely

***Memory Construction***

* **Misinformation effect:** incorporating misleading info into one's memory of an event; *miss recalling a stop sign when asked about a car crash*
* **Source amnesia:** attributing to the wrong source an event that we experienced, heard about, read about, or imagined

# *CHAPTER 9 ACTIVITIES*

**MEMORY**

***As you read Chapter 9, Memory, complete the following sentences and answer the questions.***

1. Learning that persists over time indicates the existence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for that learning.
2. Memories for surprising, significant moments that are especially clear are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memories. Like other

memories, these memories ***(can / cannot)*** err.

**(circle answer)**

1. Both human memory and computer memory can be viewed as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ systems

that perform three tasks: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. The classic model of memory has been Atkinson and Shiffrin's \_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

model. According to this model, we first record information as a fleeting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

from which is processed into \_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_ memory, where the information is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

through rehearsal into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory for later retrieval.

1. The phenomenon of short-term memory has been clarified by the concept of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory, which

focuses more on the processing of briefly stored information. This form of memory has both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ subsystems, which are coordinated by a \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

processor that, with the help of the \_\_\_\_\_\_\_\_\_\_\_ buffer, allows us to process images and words \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Brain scans show that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are active during complex thinking, whereas areas in

the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_are active when auditory and visual information is in working

memory.

*Encoding: Getting Information In (pgs. 353-361)*

7. Encoding that does not require conscious attention or effort is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Some processing requires effort at first but with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it becomes effortless.

7a. Give an example of material that is typically encoded with little or no effort. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Encoding that requires attention and effort is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. With novel information, conscious repetition, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, boosts memory.

10. A pioneering researcher in verbal memory was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In one experiment, he found that the longer he

studied a list of nonsense syllables, the ***(fewer / greater)*** the number of repetitions he required to relearn it later.

**(circle answer)**

11. After material has been learned, additional repetition, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, usually will increase retention.

12. When people go around a circle reading words, their poorest memories are for the ***(least / most)*** recent informa­tion

heard. This phenomenon is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ effect.

13. Memory studies also reveal that distributed rehearsal is more effective for retention; this is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

14. The tendency to remember the first and last items in a list best is called the \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_.

14a. Following a delay, first items are remembered ***(better / less well)*** than last

15. Encoding the meaning of words is referred to as \_\_\_\_\_\_\_\_ encoding; encoding by sound is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

encoding; encoding the image of words is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ encoding.

16. Craik and Tulving's study comparing visual, acoustic, and semantic encoding showed that memory was best with

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ encoding.

17. Our excellent recall of information that relates to ourselves is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ effect.

18. Memory that consists of mental pictures is based on the use of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Because they tend to be highly

memorable, they aid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

19. Concrete, high-imagery words tend to be remembered  ***(better / less well)*** than abstract, low-imagery words.

20. Memory for concrete nouns is facilitated when we encode them \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

21. Our tendency to recall the high points of pleasur­able events such as family vacations illustrates the phenomenon of

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

22. Memory aids are known as devices. One device involves forming associ­ations between a

familiar series of locations & to-be-remembered words; this technique is called the

" \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.”

23. Using a jingle, ie., "one is a bun," is an example of the “ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” system.

24. Memory may be aided by grouping information into meaningful units called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . An example of this tech­nique involves forming words from the first letters of to-be-remembered words; the resulting word is called

an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

25. In addition, material may be processed into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , which are composed of a few broad concepts

divided into lesser concepts, categories, and facts.

26. Stimuli from the environment are first recorded in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory.

27. Sperling found that when people were briefly shown three rows of letters, they could recall ***(virtually all / about half)***

of them. When Sperling sounded a tone immediately after a row of letters was flashed to indicate which letters

were to be recalled, the subjects were much ***(more / less)*** accurate; suggesting that people have a brief

photographic, or \_\_\_\_\_\_\_\_\_\_\_\_ , memory lasting about a few tenths of a second.

27. Sensory memory for sounds is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory. This memory fades ***(more / less)*** rapidly than

photographic memory, lasting for as long as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

28. Peterson and Peterson found that when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was prevented by asking subjects to count backward,

memory for letters was gone after 12 seconds. Without \_\_\_\_\_\_\_\_\_\_\_\_ processing, short-term memories have a limited life.

29. Our short-term memory capacity is about \_\_\_\_ chunks of information. This capacity was discovered by \_\_\_\_\_\_\_\_\_\_\_\_\_.

30. Short-term memory for random ***(digits / letters)*** is slightly better than for random ***(digits / letters),*** and memory for

information we hear is somewhat ***(better / wors***e) than that for information we see.

31. Both children and adults have short-term recall for roughly as many words as they can speak in \_\_\_\_\_\_ (how many?) seconds.

32. In contrast to short-term memory, the capacity of permanent memory is essentially\_\_\_\_\_\_\_\_\_\_\_\_.

33. Penfield's electrically stimulated patients ***(do / do not)*** provide reliable evidence that our stored memories are precise and durable.

34. Psychologist attempted to locate memory by cutting out pieces of rats' \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ after

they had learned a maze. He found that no matter where he cut, the rats ***(remembered / forgot)*** the maze.

35. It is likely that forgetting occurs because new experiences \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with our retrieval of old information,

and the physical memory trace \_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the passage of time.

36. Researchers believe that memory involves a strengthening of certain neural connections, which occurs at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between neurons.

37. Kandel and Schwartz have found that when learning occurs in the sea snail ***Aplysia****,* the neurotransmitter

\_\_\_\_\_\_\_\_\_\_\_\_\_\_is released in greater amounts, making synapses more efficient.

38. After learning has occurred, a sending neuron needs ***(more / less)*** prompting to fire, and the number

of \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ it stimulates may increase. This phenomenon, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , may be the neural basis for learning and memory. Blocking this process

with a specific \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , or by genetic engineering that causes the absence of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_,

interferes with learning. Rats given a drug that enhances \_\_\_\_\_\_\_\_\_\_\_\_\_\_will learn a maze ***(faster / more slowl*y).**

39. Drugs that boost production of the protein \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or the neurotransmitter \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , may enhance memory.

40. After LTP has occurred, an electric current passed through the brain ***(will / will not)*** disrupt old memories and

***(will / will not)*** wipe out recent experiences.

41. Hormones released when we are excited or under stress often ***(facilitate / impair)*** learning and memory.

42. Two emotion-processing clusters, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , in the brain's \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system increase activity in the brain's memory­-forming areas.

43. Drugs that block the effects of stress hormones ***(facilitate / disrupt)*** memo­ries of emotional events. Stress that is

prolonged, however, may cause an area of the brain (the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ) that is vital for laying down

memories to \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

44. The loss of memory is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Studies of people who have lost their memory suggest that there

***(is/is not)*** a single unified system of memory.

45. Although amnesia victims typically ***(have / have not)*** lost their capacity for learning, which is called

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory, they ***(are / are not)*** able to declare their memory, suggesting a deficit in their

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory systems.

46. Amnesia patients typically have suffered damage to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of their limbic system. This brain

structure is important in the processing and storage of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memories. Damage on the left side of

this structure impairs \_\_\_\_\_\_\_\_\_\_\_\_ memory; damage on the right side impairs memory for \_\_\_\_\_\_\_\_\_\_\_\_\_

designs and locations. The rear part of this structure processes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memory.

47. The hippocampus seems to function as a zone where the brain ***(temporarily / permanently)*** stores the elements of a

memory. However, memories ***(do / do not)*** migrate for storage elsewhere. The hippocampus is active during

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sleep, as memories are processed for later retrieval. Recalling past

expe­riences activates various parts of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and lobes.

48. The cerebellum is important in the processing of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ memories. Humans and lab animals with a

damaged cerebellum are incapable of simple \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ conditioning. Those with

damage to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are incapable of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_conditioning, indicating that this brain

region is important in the formation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_memories.

49. The dual explicit-implicit memory system helps explain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ amnesia. We do not have explicit memories

of our first \_\_\_\_\_ years because the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is one of the last brain structures to mature.

***Retrieval***

50. The ability to retrieve information not in conscious awareness is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

51. Bart found that 25 years after graduation, people were not able to ***(recall / recognize)*** the names of their classmates

but were able to ***(recall / recognize)*** 90% of their names and their yearbook pictures.

52. If you have learned something and then forgotten it, you will probably be able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_it ***(more / less)***

quickly than you did originally.

53. The process by which associations can lead to retrieval is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

54. The best retrieval cues come from the associations formed at the time we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a memory.

55. Studies have shown that retention is best when learning and testing are done in ***(the same / different)*** contexts.

56. The type of memory in which emotions serve as retrieval cues is referred to as \_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_ memory.

57. Our tendency to recall experiences consistent with our current emotional state is called \_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_ memory.

58. People who are currently depressed may recall their parents as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. People who have recovered

from depression typically recall their parents about the same as do people who \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

59. Moods also influence how we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ other people’s behavior.

***Forgetting***

60. Without the ability to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, we would constantly be overwhelmed by information.

61. Memory researcher Daniel Schacter has identified the 7 sins of memory, divided into 3 categories that identify the way

in which our memory can fail: the 3 sins of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the 3 sins of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

and the 1 sin of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

62. The first type of forgetting is caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ failure.

63. This type of forgetting occurs because some of the information that we sense never actually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

64. One reason for age-related memory decline is that the brain areas responsible are ***(more / less)*** responsive in older adults.

65. Studies by Ebbinghaus and by Bahrick indicate that most forgetting occurs ***(soon / a long time)*** after the material is learned.

66. This type of forgetting is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , which may be caused by a gradual

fading of the physical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

67. When information that is stored in memory temporarily cannot be found, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ failure has occurred.

68. Research suggests that memories are also lost as a result of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is especially possible if we simultaneously learn similar, new material.

69. The disruptive effect of previous learning on current learning is called \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_. The

disruptive effect of learning new material on efforts to recall material previously learned is called

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

70. Jenkins and Dallenbach found that if subjects went to sleep after learning, their memory for a list of nonsense syllables

was ***(better / worse)*** than it was if they stayed awake.

71. In some cases, old information facilitates our learning of new information. This is called \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_.

72. Freud proposed that motivated forgetting, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , may protect a person from painful memories.

73. Increasing numbers of memory researchers think that motivated forgetting is ***(less / more)*** common than Freud believed.

74. Emotions and their associated hormones generally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_memories.

75. Research has shown that recall of an event is often influenced by past experiences and present assumptions. The

workings of these influences illustrate the process of memory \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

76. When witnesses to an event receive misleading information about it, they may experience a \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

and misremember the event. A number of experi­ments have demonstrated that false memories ***(can / cannot)*** be

created when people are induced to imagine nonexistent events; that is, these people later experience

"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_.”

People who believe they have recovered memories of alien abduction and child sex abuse tend to have

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

77. Describe what Loftus' studies have shown about the effects of misleading post-event information on eye­witness reports.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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78. At the heart of many false memories is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which occurs when we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

an event to the wrong source.

79. Researchers compare memories to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ , noting that people's initial \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of events influence their memories.

80. The persistence of a memory ***(does / does not)*** reveal whether or not it derives from an actual experience. Whereas

real memories have more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, gist memories are more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

81. Eyewitnesses' confidence in their memories ***(is / is not)*** related to the accuracy of those memories.

82. Memory construction explains why memories "refreshed" under \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are often inaccurate.

83. Research studies of children's eyewitness recall reveal that preschoolers ***(are / are not)*** more suggestible than older chil­dren or adults. For this reason, whether a child produces an accurate eyewitness memory depends heavily on

how he/she is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

84. Children are most accurate when it is a first interview with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ person who asks \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_questions.

85. Researchers increasingly agree that memories obtained under the influence of hypnosis or drugs ***(are/are not)*** reliable.

86. Memories of events that happened before age \_\_\_\_\_ are unreliable. This phenomenon is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

87. Memory construction makes it clear that memory is best understood not only as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and biological

event, but also as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ phenomenon.

***Ch. 8 PsychSim: ICONIC MEMORY***

This activity simulates Sperling’s classic experiments on the duration of visual sensory memory.

**Free Recall Test**

88. What was your score on the free recall test? \_\_\_\_\_\_\_\_\_

**Iconic Memory**

89. What is Sperling’s theory of iconic memory? What is an “icon?”

90. What is Sperling’s partial report task? How does it test his theory of iconic memory?

**Partial Report Test**

91. What was your score on the partial report test? \_\_\_\_\_\_\_\_\_

92. Are your results consistent or inconsistent with typical results? What do typical results suggest?

**Delayed Partial Report Test**

93. What was your score on the delayed partial report test? \_\_\_\_\_\_\_\_\_

94. What does the typical drop in performance tells us about the duration of iconic memory?

***Ch. 9 PsychSim:* Forgetting**

This module deals with the mechanics of human memory, focusing on the factors that can interfere with effective processing and retrieval of information.

95. Define:

a. **Proactive** interference: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. **Retroactive** interference: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Memory Experiments***

As you perform the memory experiments, remember that you are not being evaluated on your aptitude for memory tasks. Just do your best. To ensure the validity of your results, do not write down the words at any time during the experiments. Just follow the instructions in the module.

96. Record the percentage of words on each list you recalled correctly.

List 1:\_\_\_\_\_\_\_\_\_\_\_\_\_

List 2:\_\_\_\_\_\_\_\_\_\_\_\_\_

List 1 (2nd time):\_\_\_\_\_\_\_\_\_\_\_

97. Did you use any special techniques to remember words more effectively? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe these techniques: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Forgetting***

98. After learning the second set of paired words, did you experience *proactive interference*? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If so, how did this affect your performance?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

99. When you were retested on the first set of paired words, did you experience *retroactive interference*? \_\_\_\_\_\_\_\_\_\_\_

If so, how did this affect your performance?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

100. What is the best way to reduce proactive and retroactive interference while studying?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Match the term with its definition.**

101. unusually vivid memory

102. first step in memory

103. process by which encoded information is maintained over time.

104. bring into consciousness information from memory storage.

105. immediate, very brief recording of sensory information in the memory system

106. tendency for items at the beginning and end of a list to be more easily retained than those in the middle.

107. memory aids

108. an increase in a synapse’s firing potential following a brief, rapid stimulation.

109. memories of skills, preferences, and dispositions. Processed by a primitive part of the brain, cerebellum.

110. memories of facts, including names, images, and events. Also called declarative memories.

111. activation, often unconscious, of a web of associations in memory in order to retrieve a specific memory.

112. tendency to recall experiences that are consistent with our current mood.

113. disruptive effect of something you already have learned on your efforts to learn or recall new information.

114. disruptive effect of something recently learned on old knowledge.

115. tendency of eyewitnesses to incorporate misleading information about the event into their memory.

116. refers to misattributing and event to the wrong source.

A. priming I. long-term potentiation

B. misinformation effect J. source amnesia

C. flashbulb memory K. retroactive interference

D. explicit memories L. mood-congruent memory

E. encoding M.storage

F. implicit memories N. spacing effect

G. mnemonics O. serial position effect

H. sensory memory P. retrieval