Psychology 212 — Douglas Hintzman

Learning, Thinking & Conditioning — Spring, 1985

Texts: (1) Rachlin, H. *Introduction to Modern Behaviorism* (2nd Ed.)
(2) Howe, M.J.A. *Introduction to the Psychology of Memory*
(3) Mayer, R.E. *The Promise of Cognitive Psychology*

Tentative Schedule:

Week	Readings	Notes
April 4	Rachlin, Ch. 1	Lectures: Simple forms of learning and
April 9, 11	Rachlin, Ch. 2	conditioning. Animal memory and
April 16, 18	Rachlin, Ch. 3	cognition. The evolution of learning.
April 23, 25	Rachlin, Ch. 4,5	
April 30, May 2		EXAM, Fri. May 2 (Lectures & Rachlin 1–5)
May 7, 9	Howe, Ch. 1,2,3	
May 14, 16	Howe, Ch. 4,5,6	Lectures: Encoding, storage and retrieval
May 21, 23	Howe, Ch. 7,8,9	processes in human memory. Thinking,
May 28, 30	Mayer, Ch. 1,2,3	understanding, and decision making.
June 4, 6	Mayer, Ch. 4,5	
Exam Week		EXAM, Fri. June 14 at 8 a.m. (Lectures from May 7 on, & Howe & Mayer books)

Exams: Both exams will be multiple-choice. There will be 50 questions on the midterm and 75 on the final. The course grade will be based on the sum of your scores on the two exams. *Note: University regulations forbid early exams. No exceptions.*

Extra Credit: You may earn extra credit by serving in up to 3 psychology experiments. Each is worth 3 points. Credit can be given only for experiments approved for this course. The procedure for signing up and participating in these experiments will be described in another handout.

Office Hours: Monday 2–4, Wednesday 10–11:30, or by appointment.

Office: 307 Straub (Phone 4906)

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Key concepts from Howes' Book

memory span
serial position curve
stage models of memory
filtering
tachistoscope
Sperling's experiment
peripheral memory
iconic memory
Conrad's experiments
working memory
the Peterson & Peterson experiment
capacity limitations
levels of processing
processing and self reference
intention to remember
trace distinctiveness
maintenance rehearsal
elaborative rehearsal
primacy effect
recency effect
chunking
subjective organization
mediation
rhyme method (peg—word system)
link method
keyword method
method of loci
S.V. Shereshevskii
eidetic imagery
encoding specificity
semantic memory
inference
distortions in memory
accomodative errors
schemes, frames, or scripts
the Collins & Quillian hierarchical model
propositions
structural changes
metamemory

Key Concepts from Mayer's Book

structuralism
behaviorism
gestalt psychology
psychometric approach
the 'information processing system' (IPS)
differences between low—verbal and high—verbal subjects
S—R apprach to procedural skills
process models
'bugs' in children's arithmetic
Bartlett vs. Ebbinghaus
parsing rules
case grammar
story grammar
'level in tree structure' and recall
scripts
heuristics
problem space
General Problem Solver
means—ends analysis
push—down pop—up stack

HOW TO GET EXTRA CREDIT BY PARTICIPATING IN PSYCHOLOGY EXPERIMENTS

This quarter in Psy 212 you will be allowed to earn extra credit by participating in psychology experiments. You can participate in 3 different experiments. For participating in each experiment, you will earn 3 points of extra credit.

To participate in these experiments you must complete three steps. Each of these three steps must be done in a specific way. If you fail to complete these steps in these specific ways, there is a severe penalty: YOU WILL NOT BE ABLE TO RECEIVE ANY EXTRA CREDIT FOR PARTICIPATING IN ANY EXPERIMENTS. That is, you will not be allowed to earn any additional extra credit by participating in experiments and you will be forced to forfeit any extra credit you might already have earned. So, you can see that you must follow these three steps very closely.

First, you must sign up for the experiment. Whenever an experiment is being offered it will be posted on the "Subjects for Extra-Credit Psychology Experiments" sign-up boards. These two boards are located in Straub Hall, outside of room 154. If you enter Straub Hall through its main center doors, the boards will be on your right, past the candy machine. One board is on the west wall; the other is on the east wall. Both boards are sectioned off and each section is labelled with a different day of the week (Mon, Tues, etc.). When an experiment is being offered, the experimenter will post a sign-up sheet in the appropriate section to represent what day of the week the experiment is to occur.

Each sign-up sheet contains the following information: the DATE, TIME, and PLACE when and where that experiment will occur. Each sign-up sheet also contains the experiment's code name. These code names are completely unrelated to the experiment; they are just to help you remember the experiment. Each sign-up sheet also lists who is eligible to sign up for that experiment. Most of these restrictions refer to which classes may sign up for that experiment, for example, "Students from Psy 212 or Psy 215 only." Often other restrictions are listed, for example, "Must be right-handed" or "Must have normal to corrected-normal vision." Do not sign up for any experiment that you are not eligible for. If you do, YOU WILL BE PENALIZED.

You sign up by simply writing in your name, social security number, phone number, and course number (Psy 212) on a blank line. If all the lines are filled, do not write in any new ones. Finally, one last very important thing: You may only do each experiment once. If you do sign up twice for the same experiment, YOU WILL BE PENALIZED.

The second thing that you must do is show up for the experiment. Go to the scheduled room at the scheduled time on the experiment's scheduled date. If you find out that you won't be able to participate, you must cancel. To cancel, go back to the sign-up board. There you will find strips of white tape. Place a strip of white tape over the line that you signed your name on. This is the only way that you may cancel your sign up. If you do not cancel this way -- if, for example, you simply cross out your name or even worse just don't show up -- YOU WILL BE PENALIZED. However, the experimenter is allowed to take down his or her sign-up sheet about five minutes before the experiment begins. So, if you're going to cancel you must do it at least five minutes before the experiment begins.

The last thing you must do is give your instructor your participation credit slip. At the end of each experiment, the experimenter will have you fill out an experiment participation credit slip which s/he will sign and date. It is then your responsibility to turn it in.

To summarize, here are the three major steps for participating in an experiment for extra credit. First, go to the sign-up board and sign up for an experiment. Remember to pay close attention to the restrictions listed on each sign-up sheet. Also remember that you may not participate in the same experiment more than once. If you sign up for an experiment that you are not elegible for or sign up for the same experiment twice, you will be penalized. Second, show up for the experiment. Remember if you cannot participate in an experiment that you are signed up for, you must cancel by placing a strip of white tape over your name. Remember also that if you fail to cancel in this way or you are more than five minutes late you will be penalized. Third, turn in your participation credit slip.

If you have any questions or problems concerning extra-credit experiment participation, please go see the coordinator: Dr. M. Gernsbacher, 205 Straub, 686-4914, or leave a message at 686-4912.

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Final Examination

Indicate the best answer to each question on your answer sheet.

1. In an experiment by Flavell, Friedrichs, and Hoyt, children from 4 to 10 years old were asked how well they would do at remembering sequences of pictures. Which children were more likely to predict they would be able to correctly remember an entire 10-picture list?
(a) the 4-6 year olds (b) the 7-10 year olds (c) the girls (d) the boys

2. According to Howe, rehearsal and repetition are useful primarily in remembering meaningless and unstructured materials.
(a) true (b) false

3. Until fairly recently, it was widely believed that patients with Korsakoff's syndrome were suffering from
(a) an inability to transfer information from the short-term to the long-term store
(b) a combination of hallucinations and deja-vu
(c) retrograde amnesia (d) cryptomnesia

4. The approach to psychology that attempted to analyze the contents of human consciousness was called
(a) ethology (b) trans-personal analysis (c) gestalt psychology (d) structuralism

5. An argument of Behaviorism is that, since mental processes cannot be observed directly, they cannot be the legitimate objects of scientific study.
(a) true (b) false

6. Research on memory in the mentally retarded has shown that
(a) they cannot learn memory strategies
(b) they can be taught memory strategies, but the effects are small and short-lived
(c) they know many memory strategies but are not reinforced for using them
(d) none of the above

7. In a mental arithmetic experiment, a subject is asked to verify as quickly as possible whether or not an addition problem is correct. Which wrong item will subjects take *longest* to reject?
(a) $3 + 4 = 6$ (b) $3 + 4 = 12$ (c) $3 + 4 = 8$ (d) $3 + 4 = 5$

8. Being in the same environment or the same mental 'state' at the time of retrieval as at the time of learning helps
(a) recognition memory (b) recall (c) both a and b (d) neither a nor b

9. A valid criticism of the psychometric approach to the ability problem is that
(a) it ignores the nature of the mechanisms underlying the ability
(b) it uses methods that are unreliable
(c) its techniques have not been shown to be valid
(d) its methods are not objective

10. An indigo bunting, raised under an artificial sky that rotates around the star Betelgeuse, will orient in the Spring
(a) toward Betelgeuse (b) toward Polaris
(c) toward the North magnetic pole (d) in no consistent direction

11. An indigo bunting that is raised under an artificial sky that is stationary will orient in the Spring
(a) toward Betelgeuse (b) toward Polaris
(c) toward the North magnetic pole (d) in no consistent direction

12. What Mayer calls the 'information processing system' corresponds roughly to what Howe calls
(a) the hierarchical model (b) the general problem solver
(c) the metamemory model (c) a stage model of memory

13. Hunt and his colleagues had students who scored high on a test of verbal ability (HV) and students who scored low on the test (LV) perform several cognitive tasks. In a letter–matching task, they found that
(a) HV subjects were faster on physical matches (e.g., BB) than LV subjects
(b) HV subjects were faster on name matches (e.g., Bb) than LV subjects
(c) both a and b (d) neither a nor b

14. Hunt and his colleagues had students who scored high on a test of verbal ability (HV) and students who scored low on the test (LV) perform several cognitive tasks. In a test of short–term memory, they found that
(a) HV subjects made fewer errors than LV subjects did
(b) HV subjects made more errors than LV subjects did
(c) HV and LV subjects made about the same number of errors

15. What Mayer calls the short–term sensory store corresponds to what Howe calls
(a) a peripheral store (b) working memory (c) active memory

16. An ambiguous sentence
(a) has one surface structure and more than one deep structure
(b) has more than one surface structure and one deep structure
(c) has one surface structure and one deep structure
(d) has more than one surface structure and more than one deep structure

17. Studies done on Korsakoff patients show that they can learn to solve the Tower of Hanoi problem. (a) true (b) false

18. In Sperling's experiments, displays of letters were presented briefly in 3 x 4 arrays. In one condition (Whole Report), subjects were asked to recall all 12 letters. In another condition (Partial Report), when the display went off they were immediately presented with a tone (high, medium, or low) indicating which of the three rows of the display to report. Multiplying the number of letters recalled in the Partial Report condition by 3, Sperling determined that immediately after the display went off subjects knew
(a) considerably more letters than they could give in the Whole Report condition
(b) only about 1 more letter than they could give in the Whole Report condition
(c) about the same number of letters they could give in the Whole Report condition

19. Experiments on sleep learning suggest that our ability to learn auditorily presented material during sleep is
(a) very good (b) moderately good (c) negligible
(d) better during non–REM sleep than during REM sleep

20. Three groups of subjects are presented a word list and are later tested for free recall. Group A is warned of the memory test. Group B is not warned of the test, but simply rates each word on a 'pleasantness' scale. Group C is not warned of the test either, and estimates how many letters there are in each word. Which group will recall the most words?
(a) Group A (b) Group B (c) Group C (d) Groups A and B both

21. According to Howe, the evidence suggests that as children grow older their memories get better because of
(a) structural changes in capacities
(b) acquisition of activities and strategies
(c) growth of metamemorial knowledge
(d) both b and c (e) all of these

22. A study by Kintsch (reported in Howe's book) tested people's recall of a 70–word passage containing 25 propositions. Kintsch found that
(a) the longer a subject took to read the passage, the fewer propositions he recalled
(b) the longer a subject took to read the passage, the more propositions he recalled
(c) recall of words was related to reading time but recall of propositions was not
(d) reading time was not related to recall either of words or of propositions

23. In an experiment by Conrad, subjects were shown 6–letter strings, in a memory span task. An analysis of the errors subjects made in recall showed that they were most likely to confuse letter pairs like
(a) X and T (b) E and F (c) X and S (d) B and S

24. A chess board with the pieces arranged on it *at random* is exposed for 5 sec., and then the experimental subject tries to reproduce the positions of all the pieces from memory. In this situation a chess master will perform _____ a fair player.
(a) much better than (b) slightly better than (c) about the same as

25. According to the lectures, under high state of arousal, memory retrieval is generally
(a) enhanced (b) inhibited (c) the same as under low arousal

26. According to the Collins & Quillian hierarchical model of semantic memory, one would confirm the statement, *a canary breathes*, by tracing a pathway from *canary*
(a) through a direct 'property' link to *breathe*
(b) downward until a mediating link is found to *breathe*
(c) upward until a mediating link is found to *breathe*
(d) none of these (the model was not meant to deal with statements of this kind)

27. "John and Ellen went to a movie. The man beside Ellen spilled his soft drink in her lap." On the surface, these two sentences have no connection except repetition of the name *Ellen*. Yet to Americans familiar with movie theaters, they make a coherent 'story'. Psychologists have tried to explain this aspect of comprehension with the notion of
(a) means–ends analysis (b) subjective organization (c) story grammars (d) scripts

28. The traditional explanation of skill acquisition said that children learn to answer arithmetic problems correctly through
(a) means–ends analysis (b) a 'debugging' process (c) the law of effect

29. Three groups of subjects are given a list of adjectives. Group A subjects rate how well the adjectives apply to themselves, Group B subjects rate how well they apply to Jimmy Carter, and Group C subjects are told to study them for a later test of recall. A free recall test is then given. Which group will do best?
(a) A (b) A and B (c) A and C (d) all three will do about the same

30. Our ability to remember the sequence LEARNING THINKING AND CONDITIONING better than LTACEHNO AIDNRNIN KDI ITGINONGGNNI illustrates
(a) subjective organization (b) chunking (c) encoding specificity

31. The BUGGY program is intended to
(a) teach memory skills to mentally retarded children
(b) teach memory skills to elderly people
(c) both a and b
(d) diagnose errors in arithmetic

32. According to the lectures, one well–established difference between the short–term and long–term memory stores is that the short–term store makes use of _____ but the long–term store does not
(a) a phonemic (acoustic or articulatory) code
(b) a semantic code (c) a visual code (d) none of these is correct

33. An *accomodative error* in recall is one that
(a) reveals the kind of memory code that was used
(b) reveals the level of processing that was used
(c) reduces the discord between new and old information
(d) both a and b

34. The match between stored information and information in the retrieval cue is emphasized by the concept of
(a) encoding specificity (b) chunking (c) mediation (d) iconic memory

35. The Stroop effect was used in lecture to illustrate
(a) encoding specificity (b) automatic retrieval
(c) recency effects (d) primacy effects

36. S.F., a college student studied by Chase, practiced the digit span task for a total of about 200 hours over a one–year period. What happened to S.F.'s digit span?
(a) it stayed around 7 (b) it increased from 7 to about 10
(c) it stayed around 24 (d) it increased to about 80 items

37. In order to study 'priming', a psychologist would most likely
(a) hypnotize a person who has amnesia for a traumatic event
(b) precede a digit span test with practice on a letter span task
(c) present related words in a lexical decision task
(d) test a subject's memory in the same room in which the information was learned

38. Person A is similar to you. Person B is dissimilar to you. You know A and B equally well. Someone tells you that X lies and steals money from his roommate. You are most likely to remember this if X is
(a) Person A (b) Person B

39. 'Inference' in language comprehension refers to
(a) locating the boundaries of sentences, phrases, and words
(b) transforming the surface structure of a sentence into its deep structure
(c) the interaction of linguistic input with context and prior world knowledge

40. An experiment by Marcel, discussed in lecture, found that words that were visually 'masked' after so brief a presentation that they were not consciously seen
(a) influenced dream material during REM periods on the following night
(b) produced priming
(c) affected the experimental subject's mood
(d) none of the above

41. Twenty years ago, when Herb was an infant, his mother played the *Iddybiddy Lullaby* to him repeatedly. Herb is now a rock star, and recently released a recording of his own composition, *Hate, Murder, Fib*, which sounds just like *Iddybiddy* (but louder). Herb is being sued for copyright infringement. He may be a victim of
(a) infantile amnesia (b) Korsakoff's syndrome
(c) cryptomnesia (d) stressed eardrum syndrome

42. The 'method of loci' is
(a) an experimental technique used to measure memory for objects in different spatial locations
(b) a way to keep track of a sequence of sub-goals during problem solving
(c) a technique that many children in third-world countries learn for doing 2- to 5-digit mental arithmetic
(d) a mnemonic device in which one associates a body of to-be-remembered information with places on a mental walk through a familiar place

43. Enhanced recall of the last few items of a list is called
(a) the primacy effect (b) the recency effect (c) chunking

44. 'Eidetic imagery' refers to
(a) interacting images (b) bizarre images (c) 'photographic' memory

45. According to Howe, children who have eidetic imagery often put it to practical use in school.
(a) True (b) False

46. The 'keyword' method was developed for learning
(a) sequential orderings (b) multi–digit numbers
(c) foreign language vocabulary (d) rank orderings

47. The conclusion that people make an active 'effort after meaning' derived from the work of
(a) Bartlett (b) Ebbinghaus (c) Thorndike (d) Chomsky

48. Parsing rules are rules for
(a) conducting a means–ends analysis
(b) doing 'inference on demand'
(c) increasing trace distinctiveness through organization
(d) breaking a sentence down into its parts

49. Broadbent's notion of 'filtering' was applied primarily to
(a) memory search (b) levels of processing (c) attention (d) memory scanning

50. Iconic memory is
(a) eidetic imagery (b) peripheral memory (c) a mnemonic device

51. According to Howe, maintenance rehearsal
(a) improves long–term recall (b) does not affect long–term recall
(c) it has not been conclusively shown whether a or b is true

52. A free recall list is presented. Then the subject is occupied with another task for 10 minutes, and then is asked to recall the list. The subject's recall is not likely to show
(a) a primacy effect (b) a recency effect (c) capacity limitations

53. Retrograde amnesia from a blow to the head
(a) very seldom spans more than 3–5 seconds preceding the incident
(b) selectively spares memories of the most important events in the person's life
(c) constitutes good evidence for multi–store models of memory
(d) is of variable duration, and shrinks as the patient recovers
(e) both a and c

54. The experiments by Wickelgren, discussed in lecture, examined forgetting curves over a wide range of retention intervals, from a few seconds to several months. Wickelgren found
(a) one abrupt change in the forgetting rate, at an interval of about 15 seconds
(b) one abrupt change in the forgetting rate, at an interval of about 5 seconds
(c) one abrupt change in the forgetting rate, at an interval of about 15 minutes
(d) no abrupt changes in forgetting rate

55. The work of Bower and others on mood and recall shows that when they are sad, subjects remember
(a) more than when they are happy (b) less than when they are happy
(c) things that happened when they were sad

56. It was suggested in lecture that what may be wrong with Korsakoff patients is that
(a) retrieval from the short—term store is blocked
(b) they are poor at elaborative rehearsal
(c) they are poor at maintenance rehearsal
(d) information is retrieved but the feeling of familiarity is missing

57. A.C. Aitken, the expert mental calculator, apparently differs from ordinary people primarily in
(a) having a large—capacity working memory
(b) knowing a vast number of facts about numbers
(c) having excellent 3—dimensional visual imagery
(d) being able to do exhaustive scanning of the problem space
(e) both b and c

58. Mayer argues that story grammars are useful because
(a) they allow an author or editor to check and correct the structure of a story
(b) they specify the role of each word and phrase in the story
(c) they make more precise the notion of 'effort after meaning'
(d) they can be used to make a computer generate stories

59. Mayer suggests that in addition to story grammars, we have representations of more specific recurring episodes. These representations are called
(a) case grammars (b) tree structures (c) scripts

60. Recall of the elements of a story is related to level in the tree structure
(a) if the elements are presented in their correct order
(b) if the elements are presented in random order
(c) both a and b

61. A tachistoscope is most likely to be used in an experiment on
(a) the serial position curve (b) levels of processing
(c) visual masking (d) subjective organization

62. It was suggested in lecture that the best approach to understanding human comprehension may be one built around the concept of
(a) mental models (b) story grammars (c) case grammars (d) scripts

63. The most difficult obstacle to machine understanding of prose is probably
(a) stating the parsing rules
(b) the requirement of automatic inference
(c) the limited flexibility of scripts
(d) incorporating general world knowledge

64. The sentence, *Time flies like and arrow,* was used in lecture to illustrate
(a) metaphor (b) analogy (c) ambiguity (d) paraphrase

65. The 'peg—word method' makes use of
(a) visual imagery (b) rhymes (c) meaningful transformations (d) all of these

66. According to the lectures, Penfield's observations regarding effects of mild electrical stimulation of the temporal lobes
(a) constitute fairly strong evidence for the permanent memory hypothesis
(b) suggest that verbal memory is in the temporal lobe of the left hemisphere
(c) constitute fairly strong evidence for automatic retrieval
(d) may arise from a combination of hallucination and deja vu

67. A *problem space* consists of
(a) the given state (b) the goal state
(c) all possible operations (d) all intermediate states
(e) all of the above

68. Means–ends analysis is a method of
(a) generating a complete and consistent problem space
(b) generating subgoals
(c) generating a case grammar
(d) organizing and memorizing heuristics

69. According to Howe, the effects of an intention to remember are
(a) large and consistent (b) small or nonexistent

70. The 'critical period' is a characteristic of
(a) problem solving (b) the memory span
(c) the tip–of–the–tongue phenomenon (d) imprinting

71. Studies of food hoarding behavior in certain species of birds suggests that they have
(a) an intricate social structure (b) remarkable problem–solving skills
(c) remarkable spatial memory (c) both a and c

72. Heuristics are
(a) reasoning strategies (b) parsing rules (c) mnemonic devices

73. The solution to the 'biological constraints' controversy that was advocated in lecture was
(a) abandonment of the general process approach
(b) abandonment of the ethological approach
(c) abandonment of experimental studies of animal learning
(d) none of these

74. The memory span is greatest in the
(a) early morning (b) late morning (c) early afternoon (d) late afternoon
(e) none of these––it remains constant throughout the day

75. Laboratory studies of effects of hypnosis on recall indicate that it
(a) increases correct recall with comparatively little increase in errors
(b) increases correct recall with a large increase in errors
(c) increases errors only
(d) has no effect on correct recall or on errors