

University of California, Berkeley

Department of Psychology

Psychology W1

Summer 2015

**KEY**

Correct answers marked  
with a double asterisk (\*\*)

### Midterm Examination 1

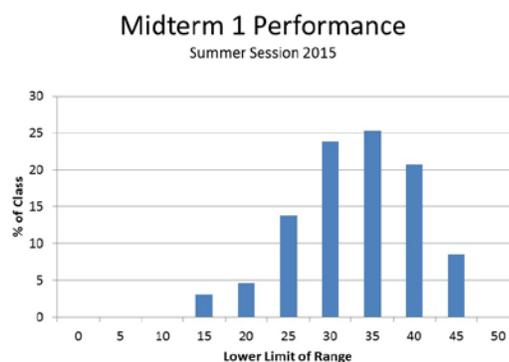
#### Scoring Key and Item Analysis

In the scoring key that follows, correct answers are marked with a double asterisk (\*\*).

Before rescoring, the mean score on the exam was 33.87 (68%),  $SD = 7.31$ . This is pretty right in the center of the usual range for my exams, which is 65-70% correct (again, see the Exam Information page). The reliability of the exam was .85, which is excellent by psychometric standards.

Following the statistical analysis of the exam (see the Exam Information page for details), two items were rescored due to a combination of low pass percent and low item-to-total correlation: #18 and #44. Both items were rescored correct for all responses.

After rescoring the mean score rose to 34.95 (70%),  $SD = 7.36$ s. Most students saw their scores increase by 1 or 2 points, compared to the score that was posted when they originally submitted their exam. The figure shows the distribution of scores.



The Gradebook in Canvas now shows students' corrected scores for Midterm 1.

In this feedback, I provide the percentage of the class that got each item correct and the item-to-total correlation ( $r_{pb}$ ) for each item, as well as commentary on why the right answer is right, and the others wrong.

Choose the *best* answer to each of the following 50 questions. Questions are drawn from the text and lectures in roughly equal proportions, with the understanding that there is considerable overlap between the two sources. Usually, only one question is drawn from each major section of each chapter of the required readings; again, sometimes this question also draws on material discussed in class. Read the entire exam through before answering any questions: sometimes one question will help you answer another one.

Most questions can be correctly answered in one of two ways: (1) by fact-retrieval, meaning that you remember the answer from your reading of the text or listening to the lecture; or (2) inference, meaning that you can infer the answer from some general principle discussed in the text or lecture. If you cannot determine the correct answer by either of these methods, try to eliminate at least one option as clearly wrong: this maximizes the likelihood that you will get the correct answer by chance. Also, go with your intuitions: if you have actually done the assigned readings and attended the lectures, your "informed guesses" will likely be right more often than they are wrong.

A provisional answer key will be posted to the course website tomorrow, after the window for the exam has closed. The exam will be provisionally scored to identify and eliminate bad items. The exam will then be rescored with bad items keyed correct for all responses. Grades on the *rescored* exam will be posted to the course website. A final, revised, answer key, and analyses of the exam items, will be posted on the course website after grades are posted.

***This is a closed-book, closed-notes exam.***

1. Which of the following (if true) would most seriously contradict the assumptions of determinism?

- A. Some behaviors are controlled mostly by heredity and others mostly by environment.
- B. Two parts of the brain control the same aspects of behavior.
- C. Some people with high motivation to succeed nevertheless fail.
- D. Certain behaviors are completely unpredictable. \*\*

**74% of the class answered this question correctly; item-to-total  $r_{pb} = .39$ .** Chapter 1. Determinism is "the idea that every event has a cause, or determinant, that one could observe or measure." Determinism implies that everything we do has a cause, the idea of free will, in which behavior is caused by a person's independent decisions. Psychological research is dependent on the idea that determinism exists.

2. The primary concern in the field of human factors (ergonomics) is to

- A. understand the attitudes of people at work.
- B. improve the design of machines so that people can use them more effectively. \*\*
- C. choose the people who can most effectively learn how to operate machines.
- D. redesign jobs so that more work can be done automatically and by fewer employees.

**70% correct, item-to-total  $r_{pb} = .32$ .** Chapter 1. Ergonomists study human operation of machinery so that ordinary people can use machines effectively and safely. They focus their work on everything from military machines to cell phones, and the field combines psychology, engineering, and computer science. Industrial/Organizational (I/O) psychologists would be responsible for researching choices A and D. Choice C also does not fit because ergonomics is about studying machines so that all people can use them effectively, not choosing the best people to do so.

3. Wundt's research focused mainly on the question

- A. "What are the basic components of mental experience?" \*\*
- B. "Are the mind and body separate?"
- C. "Do early childhood experiences shape personality?"

D. "How do consequences shape behavior?"

**86%, .26.** Chapter 1. Wundt was the first researcher to set up a laboratory focused primarily on psychological research, geared mainly toward discovering the elements of experience. His beliefs were that mental experiences were made up of sensations and feelings that humans experience, which come together into a compound mental experience that is also partly under voluntary control. In his research, he presented people with different stimuli, asked them to introspect about their experience, and recorded it, and in doing so observed their mental experiences.

4. In the earliest days of psychology (1880-), what was the main research emphasis?

- A. helping people with emotional disorders
- B. understanding sensation and perception \*\*
- C. helping people recover from brain damage
- D. understanding the difference between conscious and unconscious motives

**83%, .38.** Chapter 1. The main research emphasis in the early days of psychology was on sensation and perception because these are part of the mental experience, which early psychologists aimed to understand. Psychological researchers at this time developed questions that could be easily answered through the scientific process (as opposed to more challenging ones, such as why people suffer from emotional disorders or what makes up personality). Answer choices A, C, and D became more prominent in the later years of psychology.

5. What did early comparative psychologists discover about animal intelligence?

- A. Only humans show intelligent behavior.
- B. Animal intelligence is directly related to average amount of daily activity.
- C. Animal intelligence is directly related to brain size.
- D. It is pointless to try to rank-order animals by their intelligence. \*\*

**59%, .32.** Chapter 1. Because Darwin argued that humans and other species shared a common ancestor, comparative psychologists aimed to measure animal intelligence by rank-ordering them. They used delayed-response and detour problems and found that many animals were able to excel at some of these tasks but performed poorly in others, making rank-ordering them a pointless feat.

6. A psychologist explains behavior in terms of:

- A. mental states. \*\*
- B. unconscious emotion.
- C. brain states.
- D. the interaction of heredity and environment.

**68%, .34.** Lecture 1. William James, an early American psychologist, defined psychology as “the science of mental life.” In line with this definition, the aim of psychology is to explain and describe states of mind, or mental states. Psychology often involves changes in brain states, unconscious emotion, or the interaction of heredity and environment, but these are relevant within psychology only in terms of how they may be responsible for or relate to differing mental states.

7. What is the correct sequence for the development of scientific theory in psychology?

- A. Emotion – Motivation – Cognition.
- B. Sensation and Perception – Learning and Memory – Social Behavior. \*\*
- C. Personality – Emotion – Cognition
- D. Mental Illness – Emotion and Motivation -- Behavior

**63%, .27.** Lecture 1. Psychological scientific theory has progressed over time. In the 19<sup>th</sup> century, Weber, Fechner, and Helmholtz demonstrated that sensation and perception could be subject to scientific analysis. By the mid 19<sup>th</sup> century, Ebbinghaus and others showed this was also true for memory and learning. Around the same time, August Comte showed that scientific analysis could also be applied to groups, and thus social behavior.

8. Of the various parts of a neuron, the part that receives information from other neurons is the \_\_\_\_\_ and the part that sends messages to other cells is the \_\_\_\_\_.

- A. dendrites... axon \*\*
- B. axon... cell body
- C. cell body... dendrites
- D. axon... dendrites

**96%, .04.** Chapter 3. Neurons are cells in the brain that consist of three parts: the cell body, the dendrites, and the axon. The cell body contains the nucleus, the dendrites are widely branching structures that receive input from other neurons, and the axon is a single, long, thin fiber with branches at the tip that sends messages.

9. What is the advantage of an action potential over electrical conduction in the nervous system?

- A. An action potential is faster.
- B. An action potential spreads to the entire brain.
- C. An action potential does not diminish in strength. \*\*
- D. An action potential can travel both forward and backward.

**80%, .38.** Chapter 3. While electrical conduction conveys information quickly, human bodies are poor conductors of electricity. If axons did conduct electrically, impulses would get weaker, losing strength, as they traveled. An action potential is an excitation that travels along an axon at a constant strength, no matter the length it travels, but it is slower than electrical conduction.

10. Nearly all medical and recreational drugs that modify people's experiences exert their effects at

- A. synapses. \*\*
- B. blood vessels.
- C. hormonal glands.
- D. sensory receptors.

**79%, .40.** Chapter 3. A synapse is the specialized junction between one neuron and another, where one neuron releases a chemical that can either excite or inhibit the next neuron. More specifically, on the axon of one neuron is a terminal button (or presynaptic ending) that releases chemicals, called neurotransmitters, which bind to receptors on the postsynaptic neuron. Drugs, both medical and recreational, increase or decrease the release of these neurotransmitters or decrease reuptake (the return of the transmitters to the neuron that released them).

11. What does the autonomic nervous system do?

- A. It controls all the muscles of the body.
- B. It conveys information from the skin receptors to the spinal cord and the brain.
- C. It is responsible for people's sense of the time of day.
- D. It controls the heart, stomach, and other organs. \*\*

**93%, .22.** Chapter 3. The autonomic nervous system is part of the peripheral nervous system (which consists of the nerves connecting the spinal cord with the body). It is responsible for the heart, stomach, and other organs. The somatic nervous system, also part of the peripheral nervous system, is responsible for skin and muscles.

12. What is difficult for a split-brain person to do?

- A. describe in words what the left hand feels \*\*
- B. perceive that something heard, seen, and felt is the same object
- C. visually perceive the movement of an object
- D. walk and talk at the same time

**84%, .33.** Chapter 3. Split-brain people have had their corpus callosum (the axons that connect the right and left hemispheres of the cerebral cortex) severed. The left hemisphere experiences the world through the right side of the body, and the right does so through the left side. For most people, the left hemisphere in the brain also controls speech. Those with a split-brain that feel something in their left hand will interpret it with their right hemisphere. They are able to point to the object with that hand, but since the hemispheres are no longer connected, the speech area of the brain is not aware of the object and therefore the person will not be able to verbally describe it.

13. Compared to the parasympathetic nervous system, the sympathetic nervous system:

- A. acts discretely, on one organ at a time.
- B. has slow onset and fast offset.
- C. has fast onset and slow offset.
- D. depletes bodily resources. \*\*

**60%, .55.** Lecture 2. The parasympathetic (PNS) and sympathetic nervous systems (SNS) are part of the autonomic nervous system, which consists of the nerves running to and from the glands and other internal organs. The parasympathetic nervous system controls vegetative bodily functions, including digestion, elimination, and reproduction. The sympathetic nervous system controls the body's "fight or flight" response in stressful situations, in which adrenalin and noradrenalin are released to promote emotional arousal and physical activity. These systems work against each other, the SNS depletes the body's resources, and the PNS restores them.

14. The midbrain reticular formation:

- A. serves as a sensory relay station.
- B. regulates emotional experience.
- C. mediates cortical arousal. \*\*
- D. coordinates sensory inputs with motor outputs.

**71%, .39.** Lecture 3. The reticular formation (also known as the mesencephalon) regulates cortical arousal (choice C). The thalamus functions as a sensory relay station (choice A), the amygdala regulates emotional experience (choice B), and the reflex arc (the sequence of the afferent neuron, interneuron, and efferent neuron) coordinates sensory inputs with motor outputs (choice D).

15. Neurotransmitters come in two basic forms:

- A. afferent and efferent.
- B. amines and monoamines.
- C. amino acids and peptides.
- D. excitatory and inhibitory. \*\*

**84%, .33.** Lecture 3. Neurotransmitters are differentiated as either excitatory or inhibitory. Excitatory neurotransmitters depolarize a postsynaptic neuron, making it more likely to discharge, while inhibitory neurotransmitters hyperpolarize it, making it difficult to discharge.

16. What is the consequence of lesions in the hippocampus?

- A. The “locked-in” syndrome.
- B. Aphagia or hyperphagia, depending on the precise location of the damage.
- C. Anterograde amnesia. \*\*
- D. Loss of fear response.

**92%, .32.** Lecture 4. Lesions in the hippocampus are associated with anterograde amnesia, the inability to remember new experiences. The hippocampus is involved in memory function and is part of the medial temporal-lobe memory system, which is a brain circuit involved in encoding new memories. Damage to the hippocampus interrupts this circuit and therefore prevents new memories from being encoded.

17. A neurological patient has difficulty understanding other people’s speech. His brain damage is probably centered on the:

- A. frontal lobe.
- B. parietal lobe.
- C. temporal lobe. \*\*
- D. occipital lobe.

**65%, .33.** Lecture 4. This patient likely has Wernicke’s aphasia, characterized by nonsensically worded speech, and issues in understanding others’ speech and being able to write. Wernicke’s aphasia is associated with lesions in Wernicke’s area, located in the lateral temporal lobe. The temporal lobe is the main area for hearing and certain parts of vision. Broca’s aphasia is another speech issue associated with brain lesions. Patients with Broca’s aphasia do not have issues understanding speech or writing, and the lesions are in Broca’s area, in the lateral frontal lobe.

18. A patient has difficulty orienting to objects in space. Her brain damage is probably centered on the:

- A. anterior cingulate gyrus.
- B. fusiform area.
- C. extra-striate cortex.
- D. temporoparietal junction. \*\*

**49%, .11, a bad item, rescored correct for all responses.** Lecture 4. This patient likely has hemispatial neglect. Hemispatial neglect is associated with issues in orienting to the space of an object, and patients with it will struggle with space issues such as bisecting a horizontal line, instead intersecting it  $\frac{1}{4}$  of the way through. This issue is due to lesions in the temporoparietal junction, a portion of the parietal lobe. Excessive control processes, such as error correction, are controlled by the anterior cingulate gyrus (choice A). The fusiform gyrus is responsible for facial recognition and is often referred to as the fusiform face area (choice B). Other visual functions are associated with the extra-striate cortex (choice D).

19. Lashley's Law of Mass Action states that:

- A. intelligence is a function of the density of transcortical connections in the corpus callosum.
- B. neurogenesis does not occur in mammalian neocortex.
- C. individual memories are distributed throughout the cerebral cortex. \*\*
- D. the brain is plastic, and can reshape itself in response to experience.

**72%, .22.** Lecture 5. Lashley's Law of Mass Action states that any specific memory is part of an extensive organization of other memories, thus individual memories are represented by neurons distributed widely across the cerebral cortex. This results in the degree of memory impairment being correlated with the extent of cortical damage, as opposed to the exact site of cortical damage.

20. To determine whether a theory is parsimonious, psychologists pay attention to whether

- A. its assumptions are simple and consistent with those of other theories. \*\*
- B. the results on which it is based are statistically significant.
- C. it has the potential to lead to practical applications.
- D. investigators have replicated the results on which it is based.

**78%, .32.** Chapter 2. Parsimony is the principle that when given a choice among explanations that seem to fit the facts, we tend to prefer the one whose assumptions are fewer, simpler, or more consistent with other well-established theories.

21. Which of the following is an operational definition of "high self-esteem"?

- A. thinking highly of yourself and your abilities
- B. tending to remain confident in the face of setbacks and disappointments
- C. the opposite of depression
- D. how frequently you describe yourself in ways that other people rate as favorable \*\*

**46%, .49.** Chapter 2. An operational definition of a variable is a definition that specifies the operations used to measure it. This is a way to give it numeric value to make it measurable. In this case choice D is a numeric way to measure self-esteem (i.e. I describe myself in ways that other people rate as favorable 75% of the time), whereas choices A, B, and C are not defined in a way that specifies measurability.

22. It is found that children with many friends are generally happier than children with fewer friends. What kind of research design was probably used in this study?

- A. correlation \*\*
- B. anecdote
- C. case history
- D. experiment

**80%, .33.** Chapter 2. This study describes a correlational study, a study demonstrating a relationship between two measured, uncontrolled variables without addressing cause and effect. In this case children's number of friends is one uncontrolled variable, and their happiness is the other. The study shows the correlation that as children's friends increase, their happiness also increases. This is different from an experimental study that could determine cause and effect by controlling one variable and measuring its effect on another. It is also not a case history, which is a detailed description of a single individual, and not an anecdote, which is a story, not a scientific study.

23. Some people believe that genius is associated with insanity, although they have no scientific evidence to support their claim. This is an example of

- A. a demand characteristic.
- B. an illusory correlation. \*\*
- C. a normal distribution
- D. a negative correlation.

**89%, .32.** Chapter 2. An illusory correlation is an apparent relationship based on casual observations of unrelated or weakly related events. In this case the false relationship is between genius and insanity, when there is no evidence to support it. It is not an example of a demand characteristic (a cue that tells study participants what the experimenter hopes to find), a normal distribution (a symmetrical frequency of data scores clustered around the mean), or a negative correlation (a relationship where one variable increases as the other decreases).

24. What characterizes the control group in an experiment?

- A. It gets to choose which procedure to receive.
- B. Its members have some control over the independent variable.
- C. The dependent variable controls its behavior.
- D. It is treated like the experimental group except for the treatment the experiment is designed to test. \*\*

**89%, .40.** Chapter 2. Experiments divide people into different groups – an experimental group that gets the treatment that an experiment is designed to test, and a control group that is treated in the same way as the experimental group except for the procedure that the experiment is designed to test. For example, in a test of a new medical treatment, the experimental group will get the actual medicinal pill, while the control group will get a placebo (a sugar pill).

25. A certain distribution has a mean of 100 and a standard deviation of 20. This means that:

- A. 95% of the population has scores between 60 and 140. \*\*
- B. 68% of the population has scores between 60 and 140.
- C. 68% of the population has scores between 90 and 110.
- D. 95% of the population has scores between 90 and 110.

**73%, .52.** Lecture 6. Assuming a relatively normal distribution, a confidence interval of 95% will be within 2 standard deviations on either side of the mean. That is, we can be 95% confident that the true mean of the population lies somewhere between 2 standard deviations below and above the mean. In this case  $100 - (2 \times 20) = 60$  and  $100 + (2 \times 20) = 140$ , so answer A is correct.

26. An envelope drawn around a scatterplot has an oval shape which points from the upper left quadrant to the lower right. This means that:

- A. the correlation between the two variables is positive and moderately high.
- B. the correlation between the two variables is negative and moderately high. \*\*
- C. no conclusions can be drawn without knowledge of the means of the two variables.
- D. no conclusions can be drawn without knowledge of the standard deviations of the two variables.

**92%, .32.** Lecture 6. This scatterplot shows us the correlation between the variables. The oval envelope surrounding the data shows that this is a moderately high correlation because most of the variables are close to a correlation line that could be drawn from one long end of the oval to the other. A weaker correlation would be a more circular envelope. The top of the oval is in the upper left quadrant and the bottom in the lower right, which shows that as the x variable increases, the y variable decreases, therefore sharing a negative correlation. If they both increased together, this would be a positive correlation.

27. In a classical conditioning experiment, what (if anything) occurs on the first trial?

- A. a conditioned response
- B. an unconditioned response \*\*
- C. both a conditioned response and an unconditioned response
- D. neither a conditioned response nor an unconditioned response

**85%, .24.** Chapter 6. Classical conditioning is the process by which an organism learns a new association between two stimuli: a neutral stimulus and one that already evokes a reflexive response. Within classical conditioning there must be an unconditioned stimulus (such as food) that automatically elicits an unconditioned response (such as dog salivation). A neutral stimulus (such as a bell) is then paired with the unconditioned stimulus to produce the same response (salivation). Eventually the organism will produce this response to just the neutral stimulus (bell), which is now called the conditioned stimulus because it results in a conditioned response (salivation). Using this method, on the first trial an unconditioned stimulus will produce an *unconditioned response*.

28. If you give a dog food when it hears one tone but not after another tone, what happens?

- A. stimulus generalization
- B. spontaneous recovery
- C. backward conditioning
- D. discrimination \*\*

**75%, .57.** Chapter 6. In this case the dog is learning to expect food from one tone, but not another. This is called discrimination, in which one learns to respond differently to stimuli that predict different outcomes. This is not an example of stimulus generalization (the extension of a conditioned response from the training stimulus to a similar stimuli), spontaneous recovery (a temporary return of an extinguished response after a delay), or backward conditioning (when the onset of the conditioned response follows the onset of the unconditioned response).

29. Thorndike's cats improved their ability to escape his puzzle boxes gradually, not suddenly. What conclusion did he draw from this observation?

- A. Learning is based on strengthening responses, not on insights. \*\*
- B. Some animal species are more intelligent than others.
- C. Behaviorist assumptions do not apply to operant conditioning.
- D. Learning depends on both classical conditioning and operant conditioning.

**82%, .41.** Chapter 6. Thorndike put cats in cage and observed them as they attempted to escape through trial and error. Upon being locked into the cages, the cats would go through a series of responses such as pawing the door, scratching the walls, pacing, etc., and eventually would hit the lever that led to their escape. If insight had occurred the first time the cat had hit the lever, the next time they were in the cage, they should have been able to escape immediately. Instead, over time, they would repeat their initial responses that led to them opening the door (pawing, scratching, etc.). In doing so, these responses were being strengthened because they eventually led the door to open, and this reinforcement led them to learn to escape.

30. What do positive reinforcement and negative reinforcement have in common with each other?

- A. They both depend on the presentation of a desirable stimulus.
- B. They both depend on the presentation of an undesirable stimulus.
- C. They both weaken a behavior.
- D. They both strengthen a behavior. \*\*

**83%, .38.** Chapter 6. Reinforcement is the process of increasing a future probability of the most recent response. Put more simply, it strengthens a behavior. Positive reinforcement does so by rewarding the behavior with something good, while negative does so by rewarding the behavior by taking away something bad. Both strengthen the conditioned behavior.

31. What is unusual about birdsong learning?

- A. It occurs rapidly but is also forgotten rapidly.
- B. It occurs while the individual makes no response and receives no reinforcement. \*\*
- C. It does not begin to occur until a bird reaches reproductive age.
- D. It occurs more rapidly in females than in males.

**81%, .7.** Chapter 6. Male birds typically learn birdsong during the first year of their life (a sensitive period). This learning is unlike other types of conditioning in that during this period, the bird just listens without a response or reinforcement. After this time, they begin singing through trial and error and their only reinforcement is internal recognition they have sung it correctly.

32. Instincts, or fixed-action patterns:

- A. are gross orientation responses shown primarily by invertebrate species.
- B. are learned only during a critical period early in life.
- C. allow vertebrate species to respond to novel stimuli with innate behaviors.
- D. do not permit individual organisms to adapt to changed circumstances. \*\*

**34%, .41.** Lecture 7. Instincts or fixed-action patterns are complex, stereotyped patterns of action that are innate, rigidly organized, unmodified by learning, species-specific, and universal within the species. Because these are innate and unchanging, they do not allow organisms to adapt to changing circumstances. Vertebrates have instincts (not choice A), they are not learned (not choice B), and they are not a result of exposure to novel stimuli (not choice C).

33. In a classical conditioning situation, a light is paired with a bell for several trials, and then the bell is paired with food for several trials. When tested, the organism will respond:

- A. only to the bell.
- B. only to the light.
- C. to both the light and the bell. \*\*
- D. to neither the light nor the bell.

**65%, .34.** Lecture 8. This is an example of sensory preconditioning. In sensory preconditioning phase 1, two neutral stimuli, conditioned stimulus 1 (CS1, a light) and CS2 (a bell), are presented together with no reinforcing unconditioned stimulus (US, food), and thus exhibit no unconditioned response (UR, salivation) or conditioned response (CR, salivation in as a result of a CS). In phase 2, the CS2 is reinforced by pairing it with a US until a CR appears. In Phase 3, CS1 is tested and the CR will also appear in response, thus the organism will respond to both the bell and the light.

34. In an instrumental conditioning experiment, partial reinforcement:

- A. facilitates acquisition.
- B. retards generalization.
- C. facilitates discrimination.
- D. retards extinction. \*\*

**54%, .44.** Lecture 8. Instrumental conditioning is a theory of learning in which adaptive behavior is learned through the experience of success and failure. Partial reinforcement (when reinforcement is occasionally withheld) used with instrumental conditioning retards acquisition but increases resistance to extinction.

35. Compared to classical conditioning, in instrumental conditioning:

- A. reinforcement is not contingent on behavior.
- B. responses are freely emitted by the organism. \*\*
- C. conditioning is limited to reflexive responses.
- D. requires that a response be reinforced.

**47%, .40.** Lecture 9. In instrumental conditioning, the response to be conditioned is voluntarily emitted by the organism, whereas in classical conditioning, the response to be conditioned is elicited involuntarily by the unconditioned stimulus. Also in instrumental conditioning, reinforcement is contingent upon the behavior made by the organism (not choice A) and conditioning is based on voluntary, not limited responses (not C). In both types of conditioning, the response must be reinforced (not D).

36. Blocking occurs because the redundant CS:

- A. extinguishes the CR.
- B. provides no information about the US. \*\*
- C. prevents generalization of the CR.
- D. serves as a discriminative CS- (CS minus).

**52%, .51.** Lecture 9. Blocking is exhibited in the following procedure: In phase 1, conditioned stimulus 1 (CS1, a noise) is paired with an unconditioned stimulus (US, a shock) to produce a conditioned response (CR, fear). In phase 2, CS1 is paired with CS2 (a light) and again the US. Upon testing the CSs, experimenters find that CS1 alone, and CS1 and CS2 together, will produce the CR, but CS2 alone will not. The organism is already conditioned to produce the CR after the CS1; introducing CS2 is redundant and provides no additional information about the US. Therefore conditioning of CS2 is blocked.

37. Learned helplessness occurs because:

- A. the US is unpredictable.
- B. the US is uncontrollable. \*\*
- C. the CS is unpredictable.
- D. the CS is uncontrollable.

**33%, .41.** Lecture 10. In classical fear conditioning, in which a tone is followed by a shock, the organism will always receive a shock because reinforcement is not contingent upon behavior, but upon the conditioned stimulus. In this type of learning, the organism acquires a negative expectation that nothing can be done to avoid the shock. Upon being put into a situation in which it can avoid the shock, it will exhibit learned helplessness and will not try to avoid it at all due to the prior learning. In this case, the organism believes the US is unavoidable and uncontrollable.

38. Observational learning undercuts which assumption of stimulus-response learning theory?

- A. Reinforcement is necessary for learning to occur. \*\*
- B. Associations are formed based on contiguity.
- C. Associations are formed based on contingency.
- D. The organism is passive during learning.

**57%, .11.** Lecture 10. Stimulus-response (S-R) learning theory asserts that learning is due to an association between a stimulus and a response. In classical conditioning, this is easy to understand – pairing the conditioned stimulus and the unconditioned stimulus leads to a conditioned response. In instrumental conditioning, the reinforcement is seen as the stimulus that increases the likelihood of the conditioned response. Both types of learning depend on reinforcements. Observational learning is the idea that behavior can be learned from watching the experience of other animals, which goes against the concept that reinforcement is necessary for learning.

39. To see a faint star, it is best to focus it \_\_\_\_\_, because that area has \_\_\_\_\_.

- A. on the fovea... the highest concentration of cones
- B. on the fovea... a mixture of cones and rods
- C. to the side of the fovea... the highest concentration of rods \*\*
- D. to the side of the fovea... a mixture of cones and rods

**56%, .40.** Chapter 4. The retina is a layer of visual receptors covering the back surface of the eyeball, and the central area of it is called the fovea. The fovea is made up only of cones, visual receptors adapted for color, daytime, and detailed vision. Outside the fovea are the rods, visual receptors adapted for vision in dim light, such as the night sky.

40. According to the opponent-process theory of color vision, how do we perceive color?

- A. by different frequencies of impulses in each receptor in the retina.
- B. by varying levels of activity by three types of cones.
- C. by a red-green system, a yellow-blue system, and a black-white system. \*\*
- D. by comparing the light patterns in different parts of the retina.

**80%, .40.** Chapter 4. The trichromatic theory of color vision proposes that we see color based on the response rates of three kinds of cones, those sensitive to differing light wavelengths that our eyes associate with either blue, green, or red. Opponent process theory is similar but makes note that if you stare at something green, yellow, or white, you see a red, blue, or black afterimage, respectively. Therefore, it proposes we see color in terms of paired-opposites: red-green, yellow-blue, and black-white.

41. When you hear a 5000 Hz tone, hair cells at one point on the basilar membrane become active. What happens when they double their rate of activity?

- A. The tone sounds one octave higher.
- B. The tone sounds one octave lower.
- C. The tone is the same, but louder. \*\*
- D. The tone is the same, but softer.

**57%, .21.** Chapter 4. If the hair cells on the basilar membrane double their activity, we still hear a tone at 5000 Hz, but it is louder than before. Because this is a high-frequency tone, the pitch (described in octaves) we hear depends on which hair cells are the most active, in line with the place principle, not how many fired impulses per second.

42. Tickling yourself is difficult because

- A. certain parts of your brain build up an anticipation response before the tickle. \*\*
- B. several cutaneous receptors must act in concert in order to prevent pain.
- C. deep pressure is needed in order to reach the "laughing" receptors.
- D. skin stretches.

**98%, -.02.** Chapter 4. Tickling is a cutaneous sense, or a skin sense and requires a surprise. When you touch yourself, certain parts of your brain build up an anticipation response that is similar to the actual stimulation, so that when you actually tickle yourself the sensation is not a surprise.

43. According to Hubel and Wiesel's research on the visual cortex of cats and monkeys, each feature detector neuron responds to the sight of a particular

- A. shape. \*\*
- B. color.
- C. size.
- D. speed.

**76%, .44.** Chapter 4. Hubel and Wiesel recorded the activity of the neurons in the visual cortex of cats and monkeys. They found that the neurons respond best in the presence of a particular in a given shape. Some cells became active when seeing a vertical bar of light, others when it was horizontal. These neurons are called feature detectors and respond not only to shapes, but also movements in a particular direction.

44. Which sensory modality does not belong with the others?

- A. Vision
- B. Audition \*\*
- C. Gustation
- D. Olfaction

**15%, -.16, a bad item, rescored correct for all responses.** Lecture 11. Sensory modalities are general domains in which sensation occurs. Vision (seeing) and audition (hearing) are distance senses, while gustation (taste) and olfaction (smell) are chemical senses. But vision is also mediated by a chemical reaction, when light falls on the rods and cones in the retina. So vision, gustation, and olfaction are all mediated by chemical reactions. However, in audition, the mediation is mechanical, as the vibrating basilar membrane strikes hair cells in the cochlea...

45. Of the four defining features of a sensory modality, by far the most important is the:

- A. proximal stimulus.
- B. receptor organ.
- C. afferent (sensory) tract.
- D. cortical projection area. \*\*

**54%, .56.** Lecture 12. In the sensory modalities, transduction is used to convert physical energy into a neural impulse. In doing so, there is distal stimulus that becomes a proximal stimulus energy which leads sensory receptors to respond. This physical energy is then converted into a neural impulse, and carried via the sensory tract to through the thalamus to the part of the brain called the sensory (or cortical) projection area where it is perceived. Because perception occurs in this region, it is the most important part.

46. According to the duplex theory, low pitches (below 4000 cycles per second) are coded by:

- A. the place principle alone.
- B. both place and frequency principles.
- C. both place and volley principles.
- D. both frequency and volley principles. \*\*

**36%, .30.** Lecture 12. The duplex theory of pitch perception employs the frequency, place, and volley principles. The frequency principle applies at low frequencies, below 1000 cps, in which the frequency of the sound wave is directly translated to the frequency of the vibration of the basilar membrane, and then pitch is coded by the subsequent neural impulse. The volley principle is used between 1000-4000 cps, in which pitch is coded by the frequency of the aggregate firing of the neural impulses (by volleys). Both code pitch at frequencies lower than 4000.

47. According to Fechner's Law:

- A. Sensation grows more slowly than stimulation. \*\*
- B. Sensation grows more quickly than stimulation.
- C. High base rates of stimulation induce a liberal bias toward responding.
- D. High base rates of stimulation induce a conservative bias away from responding.

**65%, .48.** Lecture 13. Fechner's law is  $S=k(\log I)$ , where  $S$ =sensory intensity,  $I$ =physical intensity, and  $k$ =a constant. In line with this function, sensation changes more slowly than stimulation. As stimulation grows from 1-200 units, sensation grows only from 0-2.3 units.

48. Which cue for depth or distance does not belong with the others?

- A. Convergence. \*\*
- B. Relative size.
- C. Texture gradients.
- D. Motion parallax

**48%, .45.** Lecture 14. Convergence is a depth cue in which the eyes turn toward each other. This is ocular in nature in that the muscles in the eyes provide the distance information. Relative size, texture gradients, and motion parallax are all optical in nature, in that distance information is provided by light falling on the retina.

49. Learning the orthography of a new language like Greek or Hebrew involves:

- A. overcoming automatic responses.
- B. pattern-recognition processes. \*\*
- C. feature-detection processes.
- D. acquiring a new set of phonemes.

**62%, -.07.** Lecture 15. Orthography is the spelling system of a language, and Greek and Hebrew have different alphabets than the English language. Our brains are pre-wired for spoken language, but not for written, and therefore our brain needs to make use of pattern-recognition processes in interpreting it. Pattern recognition processes synthesize a mental representation of a distal stimulus using the output from feature detectors.

50. According to the constructivist view, perception often involves:

- A. extracting information provided by the distal stimulus.
- B. application of Gestalt principles.
- C. top-down but not bottom-up processing.
- D. unconscious inferences. \*\*

**32%, .24.** Lecture 16. The constructivist view of perception is the idea that perception isn't given by the stimulus, but is actively construed by the perceiver. Hermann von Helmholtz, a 19<sup>th</sup> century constructivist psychologist, argued that this meant that perception was mediated by the unconscious inferences of the perceiver. The constructivist principle asserts that perception is about the interplay of both bottom-up and top-down processing.