final-studyguide

Chapter 3

**Genes, Epigenetics, and the Environment**

* Are abilities such as intelligence and memory inherited through our genes?
  + Partially yes, but not entirely, environmental influences also play a role
* what do epigenetic studies suggest about how early life experiences may influence whether genes are expressed?
  + environmental factors in early life can affect how genes are expressed and are realized later in life

**Investigating the Brain**

* Identify the three main ways that researchers study the human brain
* compare and contrast advantages and disadvantages of techniques used to study the brain in action
* How have brain disorders been central to the study of specific areas of the brain?
* What role does the corpus callosum play in behavior?
* How does the EEG record electrical activity in the brain?
* Compare what can be learned from structural brain imaging with results from functional brain imaging
* what does an fMRI track in an active brain?
* Why should we avoid jumping to conclusions based on fMRI results?

Chapter 4

**Sensation and Perception are Distinct Activities**

* Distinguish between sensation and perception
* Explain what transduction is
* Give examples of how sensation and perception are measured
* Differentiate between sensation and perception using, as an example, a person with healthy eyes, yet who, after brain damage, can no longer make sense of what she reads
* What are the benefits of sensory adaptation?
* By what process do sensory inputs, such as light and sound waves, become messages sent to the brain?
* Why isn’t it enough for a psychophysicist to measure only the physical energy of a stimulus?
* What is an absolute threshold?
* What is the importance of a ratio to the measurement of a just noticeable difference?
* signal detection theory allows us to distinguish what two factors that work together to determine perception?

**Visual Pathways: Connections Between the Eye and the Brain**

* Discuss how the physical properties of light relate to the psychological dimensions of brightness, color, and saturation
* Describe how the eye converts light waves into neural impulses
* Discuss how we perceive color
* Describe what happens once the neural impulses reach the brain
* Describe the functions of the dorsal and ventral visual streams
* What are the physical and psychological properties of light waves?
* What is the importance of the process of accommodation in the eye?
* What is the function of the photoreceptor cells?
* What is the function of retinal ganglion cells? What is the relationship between the right and left eyes and between the right and left visual fields?
* How does color perception depend on relative activity, generated by light of different wavelengths, in the three cone “channels”?
* What happens when the cones in your eye become fatigued?
* What happens in the brain when an object’s shape is perceived?
* What are the main jobs of the ventral and dorsal streams?

**Visual Perception: Recognizing What We See**

* List the factors that allow us to recognize objects by sight
* Describe the visual cues essential for depth perception
* Discuss how we perceive motion and change
* How does the study of illusory conjunctions help us understand the role of attention in feature binding?
* How doe we recognize our friends, even when they’re hidden behind sunglasses?
* What are the Gestalt rules of perceptual organization?
* What does the face-vase illusion tell us about perceptual organization?
* What are perceptual constancy and perceptual contrast?
* How can flashing lights on a casino sign give the impression of movement>
* How can a failure of focused attention explain change blindness?

Chapter 6

**Storage: Maintaining Memories Over Time**

* distinguish sensory memory from short-term memory
* describe the elements of the model of working memory
* explain the interrelationship between memory and the hippocampus
* summarize the role of the neural synapse in long-term memory storage
* what evidence from the iconic memory test suggests that all the letters presented to participants were stored in memory before quickly fading?
* define iconic memory and echoic memory
* why is it helpful to repeat a telephone number you’re trying to remember?
* how does working memory expand on the idea of short-term memory?
* what did researchers learn about the role of the hippocampus and memory from HM?
* define anterograde and retrograde amnesia
* how does the process of recalling a memory affect its stability?
* how does building a memory produce a physical change in the nervous system?

Chapter 7

**Classical Conditioning: One Thing Leads to Another**

* describe the process of classical conditioning
* explain how cognitive, neural, and evolutionary aspects influence our understanding of classical conditioning
* why do some doges seem to know when it’s dinnertime?
* if both an unconditioned and conditioned stimulus can produce the same effect, what is the difference?
* what is second-order conditioning?
* how does a conditioned behavior change when the unconditioned stimulus is removed?
* why are generalization and discrimination “two sides of the same coin”?
* why did little Albert fear the rat?
* how does the role of expectation in conditioning challenge behaviorist ideas?
* what is the role of the amygdala in fear conditioning?
* how has cancer patients’ discomfort been eased by our understanding of food aversions?

**Operant Conditioning: Reinforcements from the Environment**

* describe the process of operant conditioning
* explain how behavioral, cognitive, neural and evolutionary aspects influence our understanding of operant conditioning
* what is the law of effect?
* what do “positive” and “negative” mean in operant conditioning?
* why is reinforcement more constructive than punishment in learning a desired behavior?
* what are primary and secondary reinforcers?
* how does the concept of delayed reinforcement relate to difficulties with quitting smoking?
* what does it mean to say that learning takes place in contexts?
* how is the concept of extinction different in operant conditioning than in classical conditioning?
* how does a radio station use scheduled reinforcements to keep you listening?
* how do ratio schedules work to keep you spending your money?
* how can operant conditioning produce complex behaviors?
* what are cognitive maps? why are they a challenge to behaviorism?
* how do specific brain structures contribute to the process of reinforcement?
* what explains a rat’s behavior in a T maze?