

5. Perception

Objectives

- Understand what perception is and the psychological and physical factors that influence it
- Identify the different perceptual constancies
- Review theories of how the brain organizes perception
- Discover how the brain and the eye perceive motion and the different aspects of illusions

Vocabulary

binocular cues	figure-ground	induced movement	psychophysics
constructionist view	gestalt	monocular cues	signal-detection theory
difference threshold	illusions	perception	

Background

Like all humans, students depend upon their perceptions to make sense of the world.

Yet despite great advancements in the study of human perception, the complexity of the brain and sensory systems continues to elude scientists, making the natural workings of human perception an ongoing mystery. Nevertheless, scientists have been able to determine that we perceive through receptors in our sensory organs, which pick up and transform stimuli from our environment and send them to the brain in the form of electrical neural impulses which it can “perceive” and make meaningful.

In this chapter, students discover the many psychological and psychophysical factors that affect perception, such as an individual’s uniqueness and varied experiences, memories, tastes, and expectations. They find out that perception also is greatly influenced by prior knowledge of the world, or perceptual constancies—like size, shape, brightness, and color—which continue to help humans to make sense of their physical environments and to survive.

How exactly does the brain form a picture of the world based on the images, sounds, smells, tastes, and other sensations it receives? Students learn about the constructionist view of perception, which

theorizes that the brain constructs a perception from a great many individual sensations. They also evaluate the Gestalt theories of perception, which hold that the brain perceives a stimulus as a whole and not as individual sensations. The Gestalt laws of perceptions are well detailed (and scrutinized) in this chapter.

Students next learn about ways in which people perceive depth through bodily depth cues and pictorial depth cues. They also find out how people perceive motion in the eye and in the brain.

Students next consider illusions and try their luck with graphic presentations of five illusions often used by psychologists—the Muller-Lyer illusion, the Ponzo railroad track illusion, the Necker cube, the Boring figure, and the Ames room. They learn that what they believe they are seeing is not necessarily accurate. Finally, they consider the critical thinking question of whether or not some people have extrasensory perception (ESP).

Further Resources

Heil, J. *Perception and Cognition*. Berkeley, Calif.: University of California Press, 1983.

Rock, Irvin. *The Logic of Perception*. Cambridge, Mass.: MIT Press, 1983.

For Discussion

Review

1. What are the four perceptual constancies?
2. What are the four most important “laws of perception” held by Gestalt psychologists?
3. What are the three bodily depth cues and the seven pictorial depth cues?
4. What are five illusions often used by psychologists?

Critical Thinking

1. In perceptual terms, what explanation can you offer for the difference in how teenagers and older people react to rock music?
2. What do you think that life would be like if the brain did not have perceptual constancies?
3. How and why are three-dimensional films illusions?
4. In what ways is the study of perception helpful or beneficial in the work of psychologists?

Activities

1. Playing with Perceptual Constancies

Divide students into pairs and challenge them to use materials and objects within the class to experiment with size, shape, brightness, and color perceptual constancies. Encourage students to openly discuss the “changes” that occur when moving and manipulating these unchanging objects.

2. Drawing Illusions

Following the chapter examples, challenge students to draw simple pictures that deceive or manipulate our perceptions. Have students present their illustrations to the class for students to consider and figure out. Discuss what is happening in our minds in perceptual terms.

3. Internet: Exploring Perceptions

Direct the students to research Web sites devoted to the study of perceptions. Have students look for new information or studies that will broaden their understanding of perceptual constancies, organization, depth cues, motion, and illusions.

4. Special Sources: Experiments in Perception

Divide students into pairs and research recently published psychological experiments dealing with perception. Have each pair select one experiment to evaluate and present to the class for discussion, scrutiny, and debate.

Name _____

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As you read Chapter 5, write an answer to each question below.

1. How does perception work and what kinds of factors influence it?

2. What do perceptual constancies reveal about the nature and workings of the brain?

3. What are two key theories about how the brain organizes perceptual information?

4. How do the eye and brain work to perceive motion?

5. In the study of illusions, what do experts mean by "believing is seeing"?

Name _____

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Find the best answer for each item. Then circle that answer.

1. What is perception?
 - a. a system made up of the brain, spinal cord, and nerves
 - b. a distortion of the olfactory nerve in response to stimuli
 - c. an experience caused by stimulation of the senses
 - d. a sensation caused by sensory receptor adaptation
2. What is the study of behavioral aspects in response to stimuli, such as absolute and difference thresholds?
 - a. paleontology
 - b. psychophysics
 - c. physiology
 - d. physics
3. What is the degree of change in a stimulus necessary for a person to detect the difference?
 - a. minimum detection
 - b. maximum detection
 - c. difference threshold
 - d. absolute threshold
4. What theory for detecting sensory stimuli takes into account the strength of the stimuli, and elements like one's mood?
 - a. signal-detection theory
 - b. secondary-detection theory
 - c. double-detection theory
 - d. mood-detection theory
5. What does the brain do in the constructionist theory of perceptual organization?
 - a. creates perceptions out of imaginary realities
 - b. blocks certain perceptions considered hurtful
 - c. creates a perception out of many individual sensations
 - d. creates a perception out of stored sensations
6. What do Gestalt psychologists believe?
 - a. the brain perceives a stimulus in parts
 - b. the brain perceives a stimulus as a whole
 - c. the brain perceives a stimulus randomly
 - d. the brain is not part of the sensory process
7. What is the Gestalt view of visual perception that holds that to perceive an object, we must separate it from background?
 - a. figure-ground
 - b. figure-illusion
 - c. ground-figure
 - d. ground-illusion
8. What are binocular cues?
 - a. depth perception cues requiring use of one eye
 - b. depth perception cues requiring use of two eyes
 - c. width perception cues requiring use of one eye
 - d. width perception cues requiring use of two eyes
9. What is the perception of movement of an object that is not moving caused by the movement of nearby objects?
 - a. reduced movement
 - b. deduced movement
 - c. induced movement
 - d. minimal movement
10. What are illusions?
 - a. transformed receptors
 - b. stimulated thresholds
 - c. accurate perceptions
 - d. inaccurate perceptions

Name _____

5. Perception

Read each description, and write the letter of the correct term on the line.

1. In evaluating sensation and perception, the prevailing view of the two is that _____.
 - a. they are the same
 - b. they are different and separate
 - c. the difference between them is unclear
 - d. the difference between them is substantial
2. The psychological reason there is no absolute way to perceive the world is that _____.
 - a. science is unable to measure perception
 - b. absolute thresholds limit perception
 - c. different thresholds make perception difficult
 - d. people often perceive things differently
3. In determining a person's sensitivity to sensory stimuli, _____.
 - a. the lower the threshold, the lower the sensitivity
 - b. the lower the threshold, the greater the sensitivity
 - c. the greater the threshold, the greater the sensitivity
 - d. none of the above
4. A person's ability to perceive an object as retaining its shape despite changes in view is _____.
 - a. size constancy
 - b. size consistency
 - c. shape constancy
 - d. shape consistency
5. The Gestalt theory suggesting that people group together things with common visual characteristics is the _____.
 - a. law of proximity
 - b. law of similarity
 - c. law of continuation
 - d. law of closure
6. This is NOT a Gestalt view of perception: _____.
 - a. perception is formed from the sum of sensations
 - b. to perceive, one has to separate an object from its background
 - c. interaction of parts impacts the whole
 - d. the brain has different thresholds of perception
7. _____ is the body depth cue that suggests that each eye has a slightly different view of the same scene.
 - a. Accommodation
 - b. Convergence
 - c. Monocular disparity
 - d. Binocular disparity
8. The illusion of depth seen in movies is a _____.
 - a. bodily depth cue
 - b. pictorial depth cue
 - c. figure-ground pattern
 - d. reversible figure-ground pattern
9. The pictorial depth cue that makes faraway objects look blurry is _____.
 - a. linear perspective
 - b. relative size
 - c. atmosphere (or aerial) perspective
 - d. relative motion
10. _____ demonstrates that perception is an active process.
 - a. The Muller-Lyer illusion
 - b. The Necker cube
 - c. The Boring figure
 - d. The Ames Room

Essay Question

Do you think ESP exists? Why or why not?