

Unit 4: Sensation and Perception

Big Question: How do we construct our representation of the external world?

Sensation and Perception Objectives:

- *Contrast the processes of sensation and perception.*
- *Distinguish between absolute and difference thresholds and discuss research findings on subliminal stimulation.*
- *Describe the phenomenon of sensory adaptation and show how it focuses our attention on changing stimulation.*
- *Explain the visual process, including the stimulus input, the structure of the eye, and the transduction of light energy*
- *Discuss the value of parallel processing, especially regarding vision.*
- *Explain the trichromatic and opponent process theories of color vision.*
- *Explain the auditory process, including the stimulus input and the structure and function of the ear.*
- *Discuss the nature and causes of hearing loss and describe the effects of noise on hearing and behavior.*
- *Describe the sense of touch and explain the basis of pain.*
- *Describe the senses of taste, smell, kinesthesia, and equilibrium.*
- *Discuss the effects of sensory restriction.*
- *Describe the debate over the role of nature and nurture in perception and explain how illusions help us to understand perception.*
- *Discuss Gestalt psychology's contribution to our understanding of perception*
- *Discuss research on depth perception involving the use of the visual cliff.*
- *Describe the binocular and monocular cues in depth perception.*
- *Discuss the concept of the adaptability of perception.*
- *State the claims of ESP and explain why most research psychologists remain skeptical.*
- *Discuss the effect of assumptions, expectations, schemas, and contexts on our perception.*

Sensation and Perception Overview

Sensation refers to the process by which we detect physical energy from the environment and encode it as neural signals. This chapter describes the senses of vision, hearing, taste, touch, smell, kinesthesia, and the vestibular sense. It also presents research findings from studies of sensory restriction and subliminal stimulation.

In this chapter there are many terms and several theories you must understand. Many of the terms are related to the structure of the eye, ear, and other sensory receptors. Labeling diagrams and rehearsing the material frequently will help you memorize these structures and their functions. The theories discussed include signal detection, Young-Helmholtz three-color and opponent-process theories of color vision, and the frequency and place theories of pitch. As you study these theories, concentrate on understanding the strengths and weaknesses (if any) of each.

The Perception unit explores how we select, organize, and interpret our sensations into meaningful perceptions. The chapter introduces a wide range of terminology, especially in the Perceptual Organization section. Each of the two sections that follow deals with an important issue. The first issue is the role of experience, as opposed to heredity, in perception. Make sure you understand the results of studies of recovery from blindness, early sensory restriction, adoption to distorted environments, and perceptual set. The second is the possible existence of ESP, or perception without sensation. You should be able to discuss both the claims made for ESP and the criticisms of these claims.

Key Terms

Using your own words, write a brief definition or explanation of each of the following. Feel free to be as succinct as possible as long as the definition makes sense to you. Do this after or while reading the assigned pages for class.

Sensation

1. sensation –
 - a. bottom-up processing -
2. perception -

- a. top-down processing -
- 3. perceptual adaptation-
- 4. psychophysics -
- 5. transduction -
- 6. absolute threshold -
- 7. difference threshold (just noticeable difference or jnd) -
 - a. Weber's Law -
- 8. signal detection theory -
- 9. subliminal messages -
- 10. sensory adaptation -
- 11. the eye -
 - a. visual capture -
 - b. wavelength -
 - c. amplitude -
 - d. pupil -
 - e. iris -
 - f. cornea -
 - g. lens -
 - i. accommodation -
 - h. retina -
 - i. optic nerve -
 - j. blind spot -
 - k. fovea -
 - l. acuity -
 - m. nearsightedness –
 - n. farsightedness -
 - o. rods -
 - p. cones -
 - q. feature detectors –

- r. parallel processing -
- s. trichromatic theory of color vision -
- t. color blindness -
- u. opponent-process theory of color vision -

12. the ear -

- a. wavelength -
- b. amplitude -
- c. decibels -
- d. transduction in the ear -
- e. hair cells -
- f. place theory -
- g. frequency theory -
- h. conduction deafness -
- i. sensorineural deafness -

13. touch -

- a. four skin senses -
- b. gate control theory of pain -

14. taste (gustation) -

- a. papillae -
- b. five taste sensations -

15. smell (olfaction) -

- a. olfactory bulb -

16. kinesthetic sense -

17. vestibular sense -

18. perception -

- a. selective attention -
 - i. cocktail party effect -
- b. inattentional blindness -
- c. change blindness -

- d. Gestalt Psychology -
 - i. figure-ground relationship -
 - ii. proximity -
 - iii. similarity -
 - iv. continuity -
 - v. connectedness -
- e. depth perception -
 - i. visual cliff experiment -
- f. monocular cues -
 - i. linear perspective -
 - ii. interposition -
 - iii. relative size -
 - iv. relative height -
 - v. light and shadow -
- g. binocular cues -
 - i. retinal disparity -
 - ii. convergence -
- h. phi phenomenon -
- i. perceptual constancy -
- j. perceptual set -
- k. human factors psychology -
- l. parapsychology -
- m. extrasensory perception (ESP) -
 - i. telepathy -
 - ii. clairvoyance -
 - iii. precognition -
 - iv. psychokinesis -