Health Psychology 10th edition Taylor Solutions Manual

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Chapter 2
The Systems of the Body

Chapter Outline

I. The Nervous System
  A. Overview
  B. The Brain
  C. The Role of Neurotransmitters
  D. Disorders of the Nervous System
II. The Endocrine System
  A. Overview
  B. The Adrenal Glands
  C. Disorders Involving the Endocrine System
III. The Cardiovascular System
  A. Overview
  B. The Heart
  C. Disorders of the Cardiovascular System
  D. Blood Pressure
  E. The Blood
IV. The Respiratory System
  A. Overview
  B. The Structure and Functions of the Respiratory System
  C. Disorders Associated with the Respiratory System
  D. Dealing with Respiratory Disorders
V. The Digestive System and the Metabolism of Food
  A. Overview
  B. The Functioning of the Digestive System
  C. Disorders of the Digestive System
VI. The Renal System
  A. Overview
  B. Disorders of the Renal System
VII. The Reproductive System
  A. Overview
  B. The Ovaries and Testes
  C. Fertilization and Gestation
  D. Disorders of the Reproductive System
VIII. Genetics and Health

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A. Overview
B. Genetics and Susceptibility to Disorders

IX. The Immune System
A. Overview
B. Infection
C. The Course of Infection
D. Immunity
E. Disorders Related to the Immune System

Learning Objectives

1. Identify and describe the structure of the nervous system.
2. Identify and describe the structure and function of the peripheral and autonomic nervous systems.
3. Differentiate between the sympathetic and parasympathetic nervous systems, and describe their functions.
4. Differentiate between the medulla, pons, and cerebellum, and describe their functions.
5. Describe the functions of the midbrain.
6. Describe the structure of the forebrain.
7. Differentiate between the thalamus and the hypothalamus, and describe their functions.
8. Describe the structure and functions of the four lobes that make up the cerebral cortex.
9. Describe the structure and functions of the limbic system.
10. Describe the nature and functions of neurotransmitters.
11. Identify and describe the common disorders of the nervous system.
12. Describe the structure and functions of the endocrine system.
13. Describe the functions of the adrenal glands and their role in the endocrine system.
14. Describe the nature of diabetes, differentiating between Type I and Type II diabetes.
15. Describe the structure and function of the cardiovascular system.
16. Describe the structure and function of the heart, and identify common disorders of the cardiovascular system.
17. Describe the factors that influence blood pressure.
18. Describe the composition of blood, and identify clotting disorders.
19. Describe the structure and function of the respiratory system, and identify common respiratory system disorders.
20. Describe the structure and function of the digestive system, and identify common digestive system disorders.
21. Describe the structure and function of the renal system, and identify common disorders of the renal system.
22. Describe the structure and function of the male and female reproductive systems.
23. Explain the processes of fertilization and gestation.

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24. Identify common disorders of the reproductive system.
25. Explain the inheritance of susceptibility to disease.
26. Explain the role of the health psychologist in genetics, and discuss genetic counseling.
27. Describe the structure and function of the immune system.
28. Describe the routes of disease transmission and the course of infection.
29. Describe the nature of immunity, and differentiate between nonspecific and specific immune mechanisms.
30. Differentiate between humoral and cell-mediated immunity.
31. Describe the role of the lymphatic system in immunity.
32. Identify common disorders of the immune system.

Lecture Suggestions

1. **Definition of Systems**

   One important concept for students to study from this chapter is that each of our body systems is interconnected and dependent on each other. For example, the heart will not beat unless the nervous system sends the proper signals. The skeletal system depends on the digestive system for an increase in size and strength; so if a child does not get the proper nutrients, the bones and muscles may not develop properly. The muscular system needs the respiratory and circulatory systems to supply energy in the form of blood flow distribution of oxygen and nutrients. Julian F. Thayer, Shelby S. Yamamoto, and Jos F. Brosschot (2010) talk about how the sympathetic and parasympathetic system is associated with various pathological conditions, including cardiovascular diseases, in their article "The relationship of autonomic imbalance, heart rate variability, and cardiovascular disease risk factors." The body is thus viewed as a system or a collection of interrelated entities that work together.

2. **Genetic Counseling**

   Another area of interest for students studying health psychology is genetic testing. The decision to undergo genetic testing is viewed as a way to manage diseases such as Huntington's disease, Alzheimer's disease, hereditary breast/ovarian cancer, or hereditary colorectal cancer. Yet, getting tested and the prospects of being identified as having a harmful mutation can be stressful, despite some benefits. Gooding and colleagues (2006) propose a reduction in uncertainty and an increase in control over the risk of getting a specific disease as benefits. For instance, coping with the stress can be better managed with positive coping role models, accurate empathy from family or friends, use of humor, and benefit finding. Baum and colleagues (1997) describe the benefits and the potential for psychological distress that may accompany risk analysis. Serretti and others (2007)

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examine biological processes and discuss the effects of drugs and environmental factors in moderating the effects of genes on psychiatric disorders. MacBrayer (2007) reviews relevant literature and discusses her personal experience with the process.

Rolland (2006) provides an overview of the family systems genetic illness (FSGI) model and highlights the importance of multicultural issues in genetic screening and testing and the need for further research in this area. Schwartz and colleagues (2005) believe that genetic testing will transform how health professionals approach disease prevention strategies. Cunningham-Burley and Boulton's (2000) handbook provides a sociohistorical overview of the growth of genetics, with particular emphasis on genetics' early association with the eugenics movements. The second part examines the gap between genetic information and treatment interventions, with an emphasis on lay knowledge and responses to genetic screening. Finally, Napolitano and Ogunseitan (1999) provide an overview of the possibilities and problems associated with the ethics of the application of genetic engineering techniques. Their study examines the gender differences in attitudes toward genetic engineering as applied to human reproduction and thus provides an interesting set of questions for discussion. Dar-Nimrod and Heine (2011), in their article "Genetic Essentialism: On the Deceptive Determinism of DNA," talk about the fact that many people think that genetic risks are immutable and that any efforts they might undertake to affect their health would be fruitless if genes are implicated.

Recommended Reading

1. Noble, Mark I. M. (2002) *Cardiovascular System in Health and Disease.* London: World Scientific Publishing Company.

   This book explains the basic aspects of the cardiovascular system. This book also explains the disorders of the cardiovascular system, using a series of case descriptions.

2. Peter S. Harper. (2010). *Practical Genetic Counselling*. Taylor and Francis.

   This book contains up-to-date information on the impact of genetic components in common disorders. It also contains information on the associated psychosocial and ethical considerations and concerns.

Activities

1. **Carriers**

   Carriers are people who transmit a disease to others without actually contracting that

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disease themselves. They are especially dangerous because they are not ill, and so they can infect dozens, hundreds, or even thousands of people while going about the business of everyday life. Ask the students to read the two cases given in Box 2.2 in this chapter, and ask them to share their knowledge of such carriers with the class.

2. **Clotting Disorders**

   One way to get the students to understand hemophilia better is by watching this video: *Understanding Hemophilia.* After they watch the video, ask them to write a report on the types of clotting disorders.

Videos

1. American Psychological Association, available at http://www.apa.org/

   - *Breathing Easy: What Home Buyers and Sellers Should Know about Radon* (2003)
     Radon is the second leading cause of lung cancer in the United States. Radon is also an environmental problem that is responsive to a simple behavioral change. The students can gain more knowledge on testing for and repairing problems by watching this video available at Government Document Depositories.

2. Bullfrog Films, available at http://www.bullfrogfilms.com/

   - *Gene Blues: Dilemmas of DNA Testing* (1997)
     It addresses problem areas associated with genetic testing. The video discusses issues such as loss of privacy, insurance, employment discrimination based on DNA information, and loss of respect for persons with disabilities.

3. Fanlight Productions, available at http://www.fanlight.com/

   - *Deadly Inheritance* (1998)
     This documentary follows a 38-year-old woman during the 38 days from her genetic test until she learns the results.
   - *The Burden of Knowledge* (1994)
     This powerful video explores difficult ethical issues arising from advances in biotechnology that make it possible to identify genetic defects during pregnancy. Seven couples who were offered prenatal testing, along with caregivers and people with disabilities, are interviewed.

4. Films for the Humanities and Sciences, available at http://ffh.films.com/

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- *Anatomy of the Human Brain* (1997)
  This video shows neuropathologist Dr. Macro Rossi examining a human brain.
- *Blood* (1995)
  Using sickle-cell anemia, blood and circulation are explained. New technology used to improve diagnosis and treatment is presented.
- *Circulatory System: The Plasma Pipeline* (1998)
  Using the analogy of a big-city transportation system, this program covers the structure and function of the heart, the lymphatic system, and blood pressure. It uses a news report format.
- *Digestive System: Your Personal Power Plant* (1998)
  Using the analogy of a power plant, this program examines the structure and processes of the digestive system. It uses a news report format.
- *Respiratory System: Intake and Exhaust* (1998)
  Using a news report format, this program examines the structure and functions of the respiratory system. It compares the respiratory system to an automobile's fuel intake and exhaust system.
- *Genetic Testing for Breast Cancer Risk: It's Your Choice* by National Action Plan on Breast Cancer (1997) (VHS, National Action Plan on Breast Cancer, U.S. Public Health Service's Office on Women's Health, U.S. Department of Health and Human Services, c/o R.O.W. Sciences, Inc., 1700 Research Blvd., Suite 400, Rockville, MD 20850, 14 min., color)

5. Oregon Public Broadcasting, available at http://www.opb.org/

- *A Question of Genes: Inherited Risks* (1998)
  This video uses seven cases to explore issues of genetic testing. A discussion guide is available from the Oregon Public Broadcasting (OPB).

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