3

HEALTH PSYCHOLOGY

CATHERINE A. SANDERSON

Health Psychology

Third Edition

Sara Miller McCune founded SAGE Publishing in 1965 to support the dissemination of usable knowledge and educate a global community. SAGE publishes more than 1000 journals and over 800 new books each year, spanning a wide range of subject areas. Our growing selection of library products includes archives, data, case studies and video. SAGE remains majority owned by our founder and after her lifetime will become owned by a charitable trust that secures the company's continued independence.

Los Angeles | London | New Delhi | Singapore | Washington DC | Melbourne

Health Psychology

Understanding the Mind–Body Connection

Third Edition

Catherine A. Sanderson
Amherst College

SAGE

Los Angeles | London | New Delhi
Singapore | Washington DC | Melbourne

FOR INFORMATION:

SAGE Publications, Inc.
2455 Teller Road
Thousand Oaks, California 91320
E-mail: order@sagepub.com

SAGE Publications Ltd.
1 Oliver's Yard
55 City Road
London EC1Y 1SP
United Kingdom

SAGE Publications India Pvt. Ltd.
B 1/I 1 Mohan Cooperative Industrial Area
Mathura Road, New Delhi 110 044
India

SAGE Publications Asia-Pacific Pte. Ltd.
3 Church Street
#10-04 Samsung Hub
Singapore 049483

Printed in the United States of America

Library of Congress Cataloging-in-Publication Data

Names: Sanderson, Catherine Ashley, 1968- author.

Title: Health psychology : understanding the mind-body connection / Catherine A. Sanderson, Amherst College, Massachusetts.

Description: Third edition. | Thousand Oaks, California : SAGE, [2019] | Includes bibliographical references and indexes.

Identifiers: LCCN 2017049103 | ISBN 9781506373713 (hardcover : alk. paper)

Subjects: LCSH: Clinical health psychology. | Health—Psychological aspects. | Medicine and psychology.

Classification: LCC R726.7 .S26 2019 | DDC 616.001/9—dc23
LC record available at https://lccn.loc.gov/2017049103

Acquisitions Editor: Lara Parra
Content Development Editor: Emma Newsom
Editorial Assistant: Zachary Valladon
Production Editor: Tracy Buyan
Copy Editor: Rachel Keith
Typesetter: C&M Digitals (P) Ltd.
Proofreader: Rae-Ann Goodwin
Indexer: Beth Nauman-Montana
Cover Designer: Michael Dubowe
Marketing Manager: Katherine Hepburn

This book is printed on acid-free paper.

18 19 20 21 22 10 9 8 7 6 5 4 3 2 1

BRIEF CONTENTS

CONTENTS

LIST OF FEATURES

Research in Action

Focus on Development

Focus on Neuroscience

Focus on Diversity

Test Yourself

PREFACE

When I agreed to write the first edition of this textbook in 2001, I was in my fourth year as an assistant professor, had a two-and-a-half-year-old son, and was in my eighth month of pregnancy with my second son. As I now complete the third edition of this book, I am struck by the changes that have occurred in the field of health psychology during this time, such as growing awareness of how genes impact virtually all aspects of health-related behavior, how chronic pain and pain medication contribute to the opioid epidemic, and how behavioral choices—from texting and driving to intentional self-harm—cause many injuries and fatalities each year. I am also vividly aware of how changes in my own life influence my perspective on health-related issues. My two sons are now teenagers, and thus I write about alcohol-related injuries and car accidents with considerable understanding of the prevalence of such behaviors in teenage boys. My daughter just turned 13, and thus I'm mindful of the pressures related to body image and disordered eating facing many teenage girls. Since writing the first edition of this book, I've also experienced the death of my mother, from cancer, and my mother-in-law, from a stroke, and thus I now view the leading causes of mortality and the challenges families face in confronting terminal illness and bereavement from a very personal perspective. On a national level, as I'm finishing this third edition, Congress is debating various revisions to the Affordable Care Act, which could have a lasting impact on Americans' access to health care. I therefore approach the material described in this book from both a professional and personal perspective.

THE GOALS OF THIS TEXT

I have several goals for this third edition. First, I want students to understand the methods that researchers use to test particular questions within this field and the importance of critically thinking about how a specific research method could influence the conclusions we draw. In turn, the second chapter includes a comprehensive review of research methods used in this field to help students understand the strengths and weaknesses of different approaches to conducting research (e.g., sometimes people overreport their exercise behavior and underreport their smoking, which is a concern with using self-report surveys). In addition, each chapter will include a Research in Action box that describes the methods and findings of a recent study in health psychology to help students understand how research questions are tested using the scientific methods. The research reviewed in each box was specifically chosen to be of interest to students, such as how an alcohol tax reduces rates of STDs, why later school start times reduce car crashes, and why women forget the pain of childbirth. Each chapter will also include two data figures that illustrate specific research findings to help students understand how scientific findings are presented.

Second, the third edition of this book includes a larger, and more inclusive, focus on the role of diversity in influencing health-related behavior. Each chapter will include a specific box that describes how ethnicity/race and/or culture influence that particular topic in some way. Once again, the material presented in these boxes will be chosen specifically to be engaging to students, such as differences between cultures in their preference for the thinness norm in women, the impact of patients' race on doctors' nonverbal communication, and the role of acculturation in predicting rates of smoking in Latinos. In addition, each chapter will describe how race/ethnicity, gender, culture, and/or sexual orientation are associated with that particular health-related topic.

The third edition of this book also adds a new feature called Focus on Neuroscience, in which cutting-edge information on the role of genes, hormones, and the brain on health will be described in a clear and accessible way. This distinct feature is not present in any of the current health psychology books, although a growing amount of research points to the substantial impact of biological factors—including genes, hormone levels, and patterns of brain activity—on health as well as responsiveness to health-related messages and interventions. These boxes will include a number of highly engaging topics, including how mindfulness meditation changes the brain, why the presence of moms improves teenagers' driving (by activating a particular part of the brain), and how genetic screening can save people's lives.

Finally, because ultimately this book is designed to be read by students, I have included a number of features to help students understand how the theories and findings described apply directly to their own lives. These features include the Test Yourself measure (so that students can examine their own scores on the same measures used by researchers) and an Information YOU Can Use feature at the end of each chapter (that provides a specific and relatively easy way for students to use the information presented in their own lives). This book also includes updated real-world examples and photos, such as the prevalence of drug overdose deaths in celebrities such as Prince, Brittney Maynard's decision to end her life following diagnosis with cancer (and the right-to-die movement), the lasting consequences of concussions among NFL players, and the serious impact of PTSD among survivors of mass school shootings. My hope is that students will enjoy reading this textbook, in part because they will see its relevance for helping them live long and healthy lives. The third edition of this book will also maintain traditional features to help students master the material in each chapter. These include key terms in bold, an outline with two levels of heading at the start of each chapter, and, at the end of the chapter, a bulleted chapter summary.

SAGE edge™

Give your students the SAGE edge!

SAGE edge offers a robust online environment featuring an impressive array of free tools and resources for review, study, and further exploration, keeping both instructors and students on the cutting edge of teaching and learning. Learn more at **edge.sagepub.com/sandersonhealthpsych3e**.

ACKNOWLEDGMENTS

Writing a book is a long and sometimes lonely process, and this book is substantially better thanks to the assistance of many people. I am particularly grateful to the numerous reviewers commissioned by SAGE, who shared with me their thoughts on the challenges they face in teaching health psychology and made numerous (large and small) suggestions for improving this book. Their wise suggestions were extremely helpful in guiding my revisions, and I am particularly grateful that they took time out of their own teaching and research activities to provide such thoughtful feedback. These reviewers include the following:

- Jane Austin, William Paterson University
- Karen Linville Baker, University of Memphis—Lambuth
- Michael Berg, Wheaton College
- Walter Chung, The Chicago School of Professional Psychology
- Marie-Joelle Estrada, University of Rochester

- Erin M. Fekete, University of Indianapolis
- Kristel Gallagher, Thiel College
- Olya Glantsman, DePaul University
- Erica Hart, American University
- Kristin Hoffner, Arizona State University
- Joel Hughes, Kent State University
- Dulcinea Kaufman, Great Bay Community College
- Lorna London, Midwestern University
- Shannon Lupien, Daemen College
- Angie MacKewn, University of Tennessee at Martin
- Deborah Majerovitz, York College, City University of New York
- Saadia McLeod, California State Polytechnic University, Pomona
- Erin L. Merz, California State University, Dominguez Hills
- Tamara J. Musumeci-Szabo, Rider University
- Dorie Richards, University of La Verne
- Sarah Savoy, Stephen F. Austin State University
- Sangeeta Singg, Angelo State University
- Cinnamon Stetler, Furman University

I also need to acknowledge the considerable assistance from numerous people at SAGE, who worked diligently to bring this book to fruition. First, my editor, Lara Parra, deserves substantial credit for convincing me that SAGE was the right publisher for this third edition and then providing prompt advice and guidance at virtually every stage of this process. I feel fortunate to have worked under the direction of such a supportive, thoughtful, and patient editor. I also appreciate the considerable efforts of Zachary Valladon, who helped me stay on track for assorted deadlines, assisted with gathering and summarizing reviews, and provided consistent editorial support throughout. Thanks also go to Emma Newsom, who provided helpful guidance on preparing the final manuscript, and Rachel Keith, who worked diligently to copyedit the manuscript and ensure stylistic consistency throughout. Finally, I want to acknowledge Danny Meldung's assistance with locating photographs to really bring the material alive as well as Michael Dubowe's design and creation of the fabulous new cover.

I also want to thank several student research assistants who contributed to this book in various ways. Nicholas Marsh, JP Miller, Chris Roll, and Olivia Vayer all provided valuable assistance in gathering articles, providing updated statistics, and compiling references. Their work over two summers helped me stay (mostly) on deadline, and is much appreciated.

Finally, I want to thank the professors who have chosen to use this text for their own classes and, especially, the students who have made the wise decision to take a health psychology class. One of the most rewarding aspects of teaching health psychology is the opportunity to give students information they will really use: perhaps they will turn off their phone before driving, learn effective strategies for managing stress, and/or decide to adopt healthier eating and exercise habits. My hope in teaching health psychology—and now in writing a health psychology textbook—is that students will not only learn the essential theories and research in this field but will also learn practical skills and strategies they can put to use in their own lives.

Best wishes for the semester,

Catherine A. Sanderson
Amherst College

ABOUT THE AUTHOR

Catherine A. Sanderson is the Manwell Family Professor of Life Sciences (Psychology) at Amherst College. She received a bachelor's degree in psychology, with a specialization in Health and Development, from Stanford University, and received both master's and doctoral degrees in psychology from Princeton University. Professor Sanderson's research examines how personality and social variables influence health-related behaviors such as safer sex and disordered eating, the development of persuasive messages and interventions to prevent unhealthy behavior, and the predictors of relationship satisfaction. This research has received grant funding from the National Science Foundation and the National Institute of Health. Professor Sanderson has published over 25 journal articles and book chapters in addition to four college textbooks, middle and high school health textbooks, and a popular press book on parenting. In 2012, she was named one of the country's top 300 professors by the *Princeton Review*. Professor Sanderson speaks regularly for public and corporate audiences on topics such as the science of happiness, the power of emotional intelligence, the mind–body connection, and the psychology of good and evil. You can watch the talks (for free!) on her website: SandersonSpeaking.com.

1

INTRODUCTION

Learning Objectives

1.1 Describe how psychological factors influence health, pain, disease, and health care utilization

1.2 Summarize the history of the field of health psychology

1.3 Explain factors leading to the development of health psychology

1.4 Describe the influence of health psychology on other fields

1.5 Compare different training pathways and careers in health psychology

What You'll Learn

1.1 How getting daily hugs helps prevent colds

1.2 Why having support shortens pain during childbirth

1.3 Why happy teenagers become healthy adults

1.4 How doctors' rudeness hurts medical care

1.5 Why slamming doors may be good for health (at least in Japan)

Preview

Have you ever snacked on junk food when feeling stressed about a romantic relationship, checked your phone for a text while driving, or tried to distract yourself while receiving a shot at the doctor's office? These are all examples of how psychological factors influence physical well-being, for better or for worse. In this first chapter, you'll learn about the field of health psychology, how it has changed over time, and its link to other disciplines. You'll also learn about training pathways and career options in this exciting field.

UNDERSTANDING HEALTH PSYCHOLOGY

LO 1.1

Describe how psychological factors influence health, pain, disease, and health care utilization

The field of **health psychology** examines how biological, social, and psychological factors influence health and illness. This field developed in part due to a growing recognition of the substantial role psychological factors play in influencing health. As described in Table 1.1, every 10 years the surgeon general of the United States sets specific goals for improving health (Friedrich, 2000). Health professionals then work toward achieving these goals and researchers measure progress. As you can see, many of these goals involve people's behavioral choices, such as whether they engage in physical activity, use tobacco, or drive safely.

The field of health psychology uses theory and research in psychological science to promote health, prevent illness, and improve health care systems. Specifically, and as described in this first section, health psychology examines how psychological factors influence

Table 1.1 Examples of Healthy People 2020 Goals

Physical Activity
Increase the proportion of adults who engage in aerobic physical activity of at least moderate intensity for at least 150 minutes/week.
Increase the proportion of the nation's public and private schools that require daily physical education for all students.
Overweight and Obesity
Reduce the proportion of adults who are obese.
Reduce the proportion of children and adolescents who are considered obese.
Tobacco Use
Reduce the initiation of tobacco use among children, adolescents, and young adults.
Increase smoking cessation attempts by adult smokers.
Substance Abuse
Decrease the proportion of adults reporting any use of illicit drugs during the past 30 days.
Reduce the proportion of adolescents engaging in binge drinking during the past month.
Responsible Sexual Behavior
Increase the proportion of sexually active persons aged 15 to 19 years who use condoms and hormonal or intrauterine contraception to both effectively prevent pregnancy and provide barrier protection against disease.
Increase the proportion of adolescents aged 17 years and younger who have never had sexual intercourse.
Injury and Violence
Reduce motor vehicle crash–related deaths.
Reduce homicides.

Immunization

Increase the proportion of children aged 19 to 35 months who receive the recommended doses of DTaP, polio, MMR, Hib, hepatitis B, varicella, and PCV vaccines.

Increase the proportion of children and adults who are vaccinated annually against seasonal influenza.

Access to Health Care

Increase the proportion of persons with health insurance.

Increase the proportion of pregnant women who receive early and adequate prenatal care.

health-related behaviors and physiological reactions, the management of pain and disease, and health care utilization (Matarazzo, 1980).

Impact on Behavior and Physiology

Psychological factors have a substantial impact on health behaviors and on health outcomes. As shown in Figure 1.1, these psychological factors include environmental stressors, personality factors, and social influences, which in turn influence illness and disease through their impact on physiological responses in the body as well as health-related behaviors (Adler & Matthews, 1994).

Figure 1.1 The Impact of Psychological Factors on Health

Psychological factors, including stress, personality, and social influences, impact people's physiological responses as well as their health behaviors, which in turn impact incidence of illness and disease. However, the relationship between psychological factors and physical health is bidirectional: physiological responses, health behaviors, and disease can also influence psychological factors.

Source: Taken from p. 231 of Adler, N., & Matthews, K. (1994). Health psychology: Why do some people get sick and some stay well? *Annual Review of Psychology*, 45, 229–259.

First, people who experience higher levels of stress are at greater risk of experiencing both minor and major illnesses, in part because stress weakens the immune system (Cohen & Herbert, 1996). For example, after exposure to a cold virus, people who experience higher levels of stress are more likely to develop a cold than those who are experiencing less stress (Cohen, Tyrrell, & Smith, 1991). Long-term stress can therefore lead to more severe health-related problems. In line with this view, people who reported feeling high work stress—meaning feeling overwhelmed by job demands; or low work stress—meaning feeling bored and unchallenged—were more likely to develop diabetes, even when researchers took into account other risk factors, such as age, family history, and BMI (Toker, Shirom, Melamed, & Armon, 2012). However, people who are able to see stress as a challenge—and have resources to manage stress—experience fewer health problems than those who find such experiences overwhelming.

People who are under stress also tend to engage in behaviors that weaken the body's ability to fight off infections. Just think about the typical behaviors of a college student during exam period. Many students stop exercising, eat more junk food, drink more caffeine, and get less sleep. In other words, the stress of exams leads people to engage in unhealthy behavior, which in turn decreases the body's resistance to illness. For example, and as shown in Figure 1.2, people who get less sleep are more likely to develop a cold (Prather, Janicki-Deverts, Hall, & Cohen, 2015).

Personality traits, such as optimism, hostility, and conscientiousness, are also associated with people's physiological responses to various situations as well as their health-related behaviors (Winett, 1995). For example, people who are high in hostility exhibit higher blood pressure and heart rate when they are in virtually any type of "competitive situation" (which could include even a game of Ping-Pong with a friend) (Miller, Smith, Turner, Guijarro, & Hallet, 1996). Over time, experiencing constant high levels of physiological arousal leads

Figure 1.2 Data From Prather et al., 2015

Researchers measured people's sleep habits, and then exposed them—through nasal drops—to a cold virus. People who slept on average less than six hours a night were more than four times as likely to develop a cold as those who got more than seven hours of sleep a night, even when researchers took into account factors that could predict susceptibility to a cold, such as stress, education, and income.

Source: Data from Prather, Janicki-Deverts, Hall, & Cohen (2015).

to cardiovascular damage, which may explain why people who are hostile are more likely to experience heart disease. On the other hand, people who are high in positive emotions, such as happiness, joy, enthusiasm, and optimism, experience better health, including lower rates of getting the common cold, experiencing a stroke, and having an accident, than those with lower levels of such emotions (Boehm & Kubzansky, 2012; Lyubomirsky, King, & Diener, 2005; Scheier & Carver, 1987). You can test your own level of optimism using **Table 1.2: Test Yourself**. Personality variables also influence the types of health-related behaviors people engage in on a regular basis. People who are high in hostility, for example, may ignore doctor recommendations for treatment and thereby fail to recover—or at least recover more slowly—from illnesses, whereas those who are conscientious tend to engage in health-promoting behaviors, such as eating a healthy diet, engaging in regular physical activity, and avoiding substance use.

Similarly, social factors are associated with individuals' physiological reactions and health-related behaviors. Individuals with high levels of social support have lower blood pressure and a more active immune system compared to those with less support (Cohen & Herbert, 1996; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). In turn, people who have more social support may be better able to fight off minor illnesses and avoid major ones. In line with this view, researchers in one study first asked people how many hugs they received each day over a two-week period, and then—with the people's permission—exposed them to a cold virus (S. Cohen, Janicki-Deverts, Turner, & Doyle, 2015). As predicted, people who reported receiving more frequent hugs were less likely to show signs of infection and illness. Why? Researchers believe that a hug by a trusted person may be a strategy for conveying support, which in turn helps reduce feelings of stress. People who have high levels of social support may also engage in more health-promoting behavior (e.g., eating nutritiously, exercising regularly), in part because their loved ones encourage such activities. Moreover, because people learn about health behaviors from watching others' behavior, the attitudes and behaviors of family members and friends also influence health-related behavior. Children who have a parent, sibling, or friend who smokes, for example, are much more likely to start smoking themselves later on.

What You'll Learn 1.1

Table 1.2 Test Yourself: Are You an Optimist?

The following statements express how you may generally feel. Respond to these statements using a scale of 1 (strongly disagree) to 5 (strongly agree).

In uncertain times, I usually expect the best.

If something can go wrong for me, it will.

I'm always optimistic about my future.

I hardly ever expect things to go my way.

Overall, I expect more good things to happen to me than bad.

I rarely count on good things happening to me.

First, reverse your answers on items 2, 4, and 6 (meaning you give yourself a 5 if you put a 1, 4 if you put a 2, 3 if you put a 3, 2 if you put a 4, and 1 if you put a 5). Then sum up your answers using the new score for items 2, 4, and 6 and the original score for items 1, 3, and 5. Higher numbers indicate greater optimism.

Source: Scheier, Carver, & Bridges (1994).

Mazur/WireImage/Getty Images

Even people we don't know, such as movie stars or professional athletes, can serve as models that influence our health-related behavior. After the announcement that singer Beyoncé would receive $50 million to promote Pepsi products, public health researchers expressed concern that her endorsement would increase soda consumption, a leading contributor to today's obesity epidemic.

What You'll Learn 1.2

Impact on Pain and Disease

Psychological factors, including environmental stress, personality, and social support, influence the development and treatment of pain (Winett, 1995). Have you ever developed a severe headache or felt nauseous before taking an important exam? This is a simple example of how stress can create physical pain. Pain is also influenced by other psychological factors, such as the rewards received for experiencing pain (e.g., a child who complains about a stomachache gets to miss school), people's thoughts about the results of the pain (e.g., a tattoo or body piercing may feel less painful than immunizations), and modeling (e.g., cultural norms about expressing pain vary substantially).

Psychological factors can also help reduce the experienced of pain. For example, considerable research points to the benefits of having support during labor in reducing pain and medical complications. For example, women who receive support during labor experience fewer complications, are less likely to undergo a cesarean section, require fewer drugs, and have a shorter labor (Kennell, Klaus, McGrath, Robertson, & Hinckley, 1991; Sosa, Kennell, Klaus, Robertson, & Urrutia, 1980). On the other hand, women who are more afraid of childbirth experience a longer labor, regardless of whether or not they choose epidural pain relief (Adams, Eberhard-Gran, & Eskild, 2012).

Psychological factors contribute to the development of many types of chronic and life-threatening diseases, such as coronary heart disease, cancer, and AIDS. Many of these diseases are influenced at least in part by behavioral choices that people make, such as whether to smoke, exercise, maintain a healthy weight, engage in unsafe sex, or drink alcohol. Other psychological factors, including personality and coping style, also impact whether people develop particular chronic and life-threatening illnesses as well as the progression of such diseases. For example, people who are depressed have an increased risk of developing diabetes and experiencing a heart attack or stroke, and among those with diabetes or coronary heart disease, higher levels of depression are associated with an increased risk of mortality (Herbert & Cohen, 1993; Pan, Sun, Okereke, Rexrode, & Hu, 2011).

Finally, the link between psychological factors and both pain and illness is clearly bidirectional. A person who is constantly in physical pain, for example, may feel depressed and anxious, avoid many social settings, and even withdraw from close family members and friends. People who experience chronic diseases, such as diabetes, cancer, and coronary heart disease, may experience similar negative emotions. Finally, and not surprisingly, many people who are diagnosed with a terminal illness experience depression and anxiety, and survivors often experience lower levels of psychological and physical well-being.

Impact on Health Care Utilization

Health psychology also examines how psychological factors influence whether people take steps to identify and treat illnesses early, whether they adhere to medical recommendations, and how they respond to health-promotion messages (Winett, 1995). Behavior that involves detecting illness at an early stage as a way of reducing the illness's potential effects is called **secondary prevention** and can include checking cholesterol, having a mammogram, and following an insulin-taking regimen in the case of diabetes. Secondary prevention is very important because in many cases people have more treatment options and a better likelihood of curing their problem if it is caught early. For example, detecting a small cancerous lump in the breast during a routine mammogram may allow a woman the option of having this lump

removed in a simple operation before cancer spreads to other parts of her body, whereas a woman who is found to have a lump in her breast only after the cancer has spread has unknowingly delayed treatment, has decreased her treatment options, and will undergo much more difficult treatment, such as invasive surgery (possible removal of both breasts), chemotherapy, and/or radiation. However, psychological factors such as fear and anxiety influence whether someone engages in prevention and health-promotion behavior. For some people, getting tested for HIV is simply too frightening to contemplate.

In addition, psychological factors influence the effectiveness of various treatments to manage pain as well as chronic and terminal disease. Treatments that can help minimize or slow the damage caused by a disease are known as **tertiary prevention** actions and can include taking medicine, engaging in regular physical therapy, and following a recommended diet (Winett, 1995). Patients with chronic conditions, such as cancer, AIDS, and heart disease, need to regularly manage their illnesses, cope with pain, and comply with medical regimens. However, some studies suggest that as many as 93% of patients fail to adhere to recommended treatments (Taylor, 1990). Why do some people follow doctor recommendations and others ignore these messages? Psychological factors, including people's thoughts about their symptoms and illnesses as well as interactions with health care providers and the medical system in general, influence how people react to treatment plans, and thus whether they recover from illness. Psychosocial factors even influence how quickly people are diagnosed with cancer, how they manage this diagnosis, and even how long they live following the diagnosis (Antoni & Lutgendorf, 2007). For example, and as you'll learn more about in ***Chapter 11: Leading Causes of Mortality***, early-stage breast cancer patients who write about their feelings regarding their diagnosis later report fewer physical symptoms and have fewer medical appointments than those who write simply about the facts of their illness (Stanton et al., 2002). This research suggests that writing about positive feelings may lead to better health outcomes even in patients who have been diagnosed with cancer, revealing a powerful mind–body connection.

THE HISTORY OF HEALTH PSYCHOLOGY

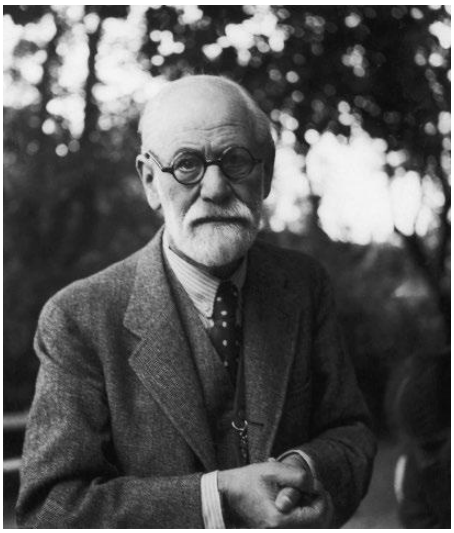
LO 1.2

Summarize the history of the field of health psychology

Health psychology is a relatively new field. In 1973, a task force was created by the American Psychological Association (APA) to study the potential for psychology's role in health research. Although the final report of this task force in 1976 found little evidence that psychologists were examining health-related issues, the task force noted that the potential for psychological factors to influence health was clear (American Psychological Association, 1976). In turn, this report led to the creation in 1978 of a Health Psychology division with the goal of providing "a scientific, educational, and professional organization for psychologists interested in (or working in) areas at one or another of the interfaces of medicine and psychology" (Matarazzo, 1984, p. 31). The development of this division was followed in 1982 by the creation of the journal *Health Psychology*, in which many research articles on issues in health psychology are published. This section examines various factors that led to the development of the exciting new field of health psychology.

Early Views on the Mind–Body Connection

Although health psychology is a relatively new discipline, the idea that the mind influences the body is a very old one—in fact, historically, most cultures have recognized some type of a connection between how we think, feel, and behave and our health (Ehrenwald, 1976). Many early cultures viewed illness and disease as caused by evil spirits—and there is some evidence



Hans Casparius/Hulton Archive/Getty Images

Freud's theory about the role of unconscious conflict in leading to physical symptoms, including paralysis, sudden loss of hearing and sight, and muscle tremors, is clearly based in the theory that physical problems may represent manifestations of unconscious symptoms as opposed to a true medical disorder.

that early medical procedures, at least in some cases, involved such methods as drilling holes in people's skulls to "let out the evil spirits." As early as 400 B.C., Hippocrates described health as the interaction between mind and body, stating, "Health depends on a state of equilibrium among the various internal factors which govern the operation of the body and the mind; the equilibrium in turn is reached only when man lives in harmony with his environment" (Dubus, 1959, p. 114). In line with this view, Hippocrates's humoral theory described disease as caused by an imbalance in the different fluids he believed were circulating in the body: phlegm, blood, black bile, and yellow bile. Despite the faulty theory of the four humors, the emphasis on the interrelation between mind and body is clear.

However, during the 17th century this holistic view of health changed, and, for the first time, health was seen as purely caused by bodily processes. What led to this change? First, René Descartes's development of the doctrine of mind–body dualism, namely, the view that the mind and body are two separate entities with little interaction, led to the view that the body was basically a machine. Disease was seen as resulting from the physical breakdown of the machine, and it was believed that the physician's job was to fix the machine. Second, advances in other scientific fields such as physics led to the view that science could be used to determine precise physical principles. For example, Isaac Newton's demonstration of an apple falling to the earth because of gravitational pull led other theorists to believe that all physical phenomena could be observed with such ease and explained by concrete laws. Third, various scientific advances, including Giovanni Battista Morgagni's work in autopsy, Rudolf Virchow's work in pathology, and Louis Pasteur's work in bacteriology, led to a focus on how microorganisms cause disease. All of these factors facilitated the focus on a biomedical model.

The Failure of the Biomedical Model

The **biomedical model**, which was formed in the 19th and 20th centuries, proposes that health problems are rooted in physical causes, such as viruses, bacteria, injuries, and biochemical imbalances (Engel, 1977; Schwartz, 1982; Wade & Halligan, 2004). This model therefore explains illness in terms of the pathology, biochemistry, and physiology of a disease—diabetes is caused by an imbalance in blood sugar, polio is caused by exposure to a virus, and cancer is caused by genetic mutations. In turn, the biomedical model proposes that medical treatment is needed to cure or manage the physical complaint and thereby return a person to good health. The biomedical model therefore focuses on physical treatments for disease, such as a vaccine to prevent measles, medication to manage high blood pressure, and chemotherapy to delay the spread of cancer.

Although the biomedical model has led to a number of benefits for our society, including advancements in immunology, public health policy, pathology, and surgery, increasingly evidence is showing that biological factors alone cannot account for health. First, and as described previously, psychological and behavioral factors are associated with the development of many of the leading causes of death, such as cancer and heart disease. People who are high in neuroticism are at increased risk of developing an ulcer, chronic fatigue syndrome, and coronary heart disease (Charles, Gatz, Kato, & Pedersen, 2008; Suls & Bunde, 2005). Similarly, people who are experiencing high levels of stress—at home and/or work—are at greater risk of experience a heart attack (Rosengren et al., 2004). The biomedical model also fails to take into account how psychological factors, such as personality, cognitive beliefs, social support, and the relationship between the patient and the health care practitioner, can

influence development of and recovery from illness and disease. Why do placebos, drugs, or treatments that influence health outcomes, purely because of people's expectations of them, lead to improvement of symptoms in a sizable proportion of patients? Why do surgery patients who get more visitors leave the hospital sooner? These are just some of the questions that the biomedical model really cannot answer.

The Creation of the Biopsychosocial Model

Given the considerable evidence that the biomedical model alone can't explain physical health, researchers have turned to a **biopsychosocial model** in which the mind and body are seen as inherently connected (Ray, 2004; Suls & Rothman, 2004). The biopsychosocial model was developed in the late 1970s and posits that health is affected by both biology and social factors (Engel, 1977, 1980). In this perspective, the physical body is seen as only one aspect of a person; other aspects, such as personality, family, and society, also influence the person and his or her health. In contrast, the biomedical model, which was formed in the 19th and 20th centuries, describes health as a function only of physical attributes and sees physical health as completely separate from psychological health.

The biopsychosocial model, which was developed by psychiatrist George Engel, views health and illness as the consequences of the complex interplay between biological factors (e.g., genetics, physiology), psychological factors (e.g., personality, cognition), and social factors (e.g., culture, community, family, media) (Engel, 1977, 1980; Schwartz, 1982). As described by Engel,

> To provide a basis for understanding the determinants of disease and arriving at rational treatments and patterns of health care, a medical model must also take into account the patient, the social context in which he lives and the complementary system devised by society to deal with the disruptive effects of illness, that is, the physician role and the health care system. This requires a biopsychosocial model. (p. 132)

The biopsychosocial model is holistic in that it considers the mind and body as inherently connected. In addition, it acknowledges that biological factors can and do influence health and illness, but that social, cultural, and psychological factors also exert an effect. The biopsychosocial model therefore contributes to the biomedical model by helping to explain the impact of psychological factors on the development and progression of chronic conditions as well as how people cope with pain, illness, and disease. **Research in Action** describes how people with high-quality social relationships live longer, which is a vivid example of the biopsychosocial model's ability to explain health outcomes.

Let's take, as an example, a patient, Melanie, who arrives at her doctor's office complaining of recurring heart pain. A physician utilizing the biomedical model would focus almost entirely on physical causes of such pain and would rely primarily on diagnostic tests, such as heart monitor results, temperature, pulse, and so forth, to determine the cause of this symptom. Although the physician might ask Melanie a few questions (when did you last eat? how long have you felt this pain?), the physician would base the diagnosis on the (more objective) test results. Once a physical diagnosis was established, the physician would prescribe a treatment regimen for the patient. In contrast, a physician using the biopsychosocial model might start by gathering personal data, such as symptoms, activities, recent behaviors, and social/family relationships. The physician might, for example, ask Melanie whether she was experiencing any particular stressors at home or work or whether she had experienced significant life changes in the past few months (e.g., loss of a job, death of a loved one). Although the physician would also use standard diagnostic tests, more emphasis would be placed on eliciting psychological factors that could contribute to the symptoms. During this information-gathering

RESEARCH IN ACTION

How Good Friendships May Extend Your Life

Researchers in this study examined how people's social relationships predict physical well-being and longevity (Yang, Boen, Gerken, Li, Schorpp, & Harris, 2016). Using data from four national surveys of Americans from adolescence through old age, they examined three distinct aspects of people's social relationships: the size of their social networks, their level of social support, and the degree of social strain they were experiencing (meaning demands, criticism, and disappointments in their relationships). In addition, they measured four physical factors that predict overall health and longevity: body mass index (BMI), waist size, blood pressure, and level of C-reactive protein (a measure of inflammation). Their findings revealed consistent links between people's social relationships and indicators of physical health. However, different aspects of social relationships predicted health for people across the lifespan. Specifically, for both adolescence and older adults, having more social relationships was associated with better health outcomes. In fact, for people in these two age groups, lacking social relationships was as detrimental for health as being physically inactive or having diabetes. For people in middle age, the quality of people's social relationships, meaning their levels of social support and social strain, was a better predictor of health than the presence of a large social network. For people in mid-adulthood, who may already have multiple relationships to manage as a spouse and parent, additional relationships may provide more opportunities for strain and thus not be beneficial in reducing stress and thereby improving health. These findings are particularly important since the markers of physical well-being studied are predictors of long-term health problems, including heart disease, stroke, and cancer. In sum, developing strong social relationships is a very important way of having good health.

phase, the physician would also provide information about what was happening and for what reasons to minimize the stress Melanie experienced with the various medical procedures. Once a diagnosis was made, the physician would discuss the treatment options with Melanie, and she would have a voice in selecting her own treatment plan. The physician would not only work with Melanie to develop a treatment plan but would also pay attention to aspects of Melanie's daily life that could influence her adherence to the plan.

THE DEVELOPMENT OF HEALTH PSYCHOLOGY

LO 1.3

Explain factors leading to the development of health psychology

The creation of the biopsychosocial model was an essential step in creating the field of health psychology. A number of other factors also contributed to its development, including a change in the meaning of health, an increase in the prevalence of chronic conditions, the rising cost of health care, and advances in scientific and medical technology.

A Change in the Meaning of Health

Over the last 100 years, the meaning of health has changed in several ways. We used to think of health as simply the absence of illness or disease, but we now see health and wellness in a much broader way. The World Health Organization now defines **health** as "a state of complete physical, mental and social well-being, and not merely the absence of disease and illness" (World Health Organization, 1964). So, people who are physiologically healthy but who are

very depressed might be viewed as unhealthy under the new definition. Similarly, most college students seem healthy—generally they exercise with some regularity and exhibit few obvious signs of disease or serious illness. But can they be viewed as healthy if you look at their eating habits or, even worse, their drinking habits? By the new standard, many college students suddenly seem as if they are in worse health. Along the same lines, consider someone who has no obvious signs of illness or disease but who has a mother and two aunts who died of breast cancer. Is she healthy? In sum, researchers now see health as a continuum, ranging from a healthy level of wellness on one end and illness and even death on the other, and they have found that this continuum is viewed in different ways by different people (Antonovsky, 1987).

This change in perspective is also reflected in a relatively new focus within psychology on studying the predictors of happiness and well-being as opposed to the predictors of depression and poor health (Seligman & Csikszentmihalyi, 2000). The newly developed field of **positive psychology**, which examines how psychological factors influence positive human functioning and flourishing, focuses on helping people achieve physical and psychological well-being. Considerable research demonstrates that people who are high on positive personal traits, such as optimism and positive affect, engage in more health-promoting behaviors and are less likely to develop chronic and life-threatening diseases. For example, people who are high on optimism are more likely to engage in regular exercise, less likely to smoke, and less likely to experience a stroke (Kim, Park, & Peterson, 2011; Steptoe, Wright, Kunz-Ebrecht, & Iliffe, 2006). Similarly, people with coronary heart disease who experience more positive emotions—such as *proud*, *enthusiastic*, and *inspired*—report engaging in more health-promoting behaviors, including exercising, avoiding smoking, and greater adherence to medication, which, in turn, should reduce the risk of experiencing subsequent cardiac events (Sin, Moskowitz, & Whooley, 2015).

What You'll Learn 1.3

Researchers in one study examined whether teenagers with good emotional health and well-being developed into healthier adults later on (Hoyt, Chase-Lansdale, McDade, & Adam, 2012). First, more than 10,000 teenagers answered questions about their overall emotional health, including happiness, enjoyment of life, self-esteem, and hopefulness for the future. They then examined rates of health-related behavior in these same teenagers—now young adults—seven years later. Their findings revealed that teenagers who generally felt happy and positive were less likely to engage in unhealthy behaviors, such as smoking, binge drinking, using drugs, and eating unhealthy foods, later on. This link between experiencing positive emotions during the teenage years and engaging in healthier behaviors in young adulthood remained even when researchers took into account other variables that could explain better health, including socioeconomic status, gender, ethnicity, and depression. These findings suggest that helping teenagers feel positive may have lasting benefits for health.

An Increase in Chronic Conditions

Until the early 1900s, most people in the United States died from acute infectious diseases, such as tuberculosis, smallpox, measles, pneumonia, and typhoid fever (see Table 1.3). These diseases were caused by viruses or bacteria and were typically the result of eating or drinking contaminated water or food, interacting with infected people, or living in unhealthy conditions. Moreover, although people sought treatment for these disorders, doctors often had little knowledge or resources to treat or even manage these illnesses.

Today, in contrast, relatively few people (at least in the United States) die from the major infectious diseases that previously caused such high rates of death. What led to the decrease in the incidence of such diseases? First, changes in technology and lifestyle, such as the development of sewage treatment plants, water purification efforts, and better overall nutrition, led to better overall hygiene. Second, because of the development of vaccines and antibiotics, very few people contract (and even fewer die from) diseases such as smallpox, tuberculosis, and polio (see Figure 1.3). Most children are vaccinated against many of the major infectious

Table 1.3 The 10 Leading Causes of Death in 1900 Versus 2015

Major Causes of Death	
In 1900	**In 2015**
Cardiovascular diseases (strokes, heart disease)	Heart disease
Influenza and pneumonia	Cancer
Tuberculosis	Chronic lower respiratory disease
Gastritis	Unintentional injuries
Accidents	Stroke
Cancer	Alzheimer's disease
Diphtheria	Diabetes
Typhoid fever	Flu and pneumonia
Measles	Kidney disease (nephritis)
Chronic liver disease and cirrhosis	Suicide

Note: In 1900, many people died from infectious diseases; today, many of the leading causes of death are chronic conditions that are at least partially caused by lifestyle choices.

diseases, and other diseases can be effectively treated with antibiotics. **Focus on Development** describes the important role parents play in promoting health in their children, and in other children, by following recommended immunization schedules.

This shift in the pattern of illnesses from acute or infectious diseases to chronic conditions has focused attention on the role of psychological factors in predicting health. Specifically, the major health problems in the United States today are chronic conditions, such as cancer, cardiovascular disease, obesity, diabetes, and pulmonary diseases, which are caused at least in part by behavioral, psychosocial, and cultural factors. As shown in Table 1.3, heart disease is currently the most common cause of death in the United States. However, the likelihood of developing heart disease is influenced by many behavioral choices—smoking, high-fat diet, physical inactivity, obesity, and alcohol use (all behavioral choices) as well as psychological variables (e.g., stress) and environmental factors (e.g., social support). Similarly, the major cause of lung cancer—which is the leading cause of cancer deaths for men and women—is cigarette smoking. Smoking contributes not only to heart disease and cancer but also to strokes (the third leading cause of death), chronic lower respiratory disorder (the fourth leading cause of death), pneumonia (the eighth leading cause of death), and diabetes (the seventh leading cause of death). In sum, people's own behavior contributes to many of the leading causes of death today. Specifically, the five leading causes of death among people younger than 80 cause 63% of deaths each year in the United States; these causes are heart disease, cancer, stroke, chronic

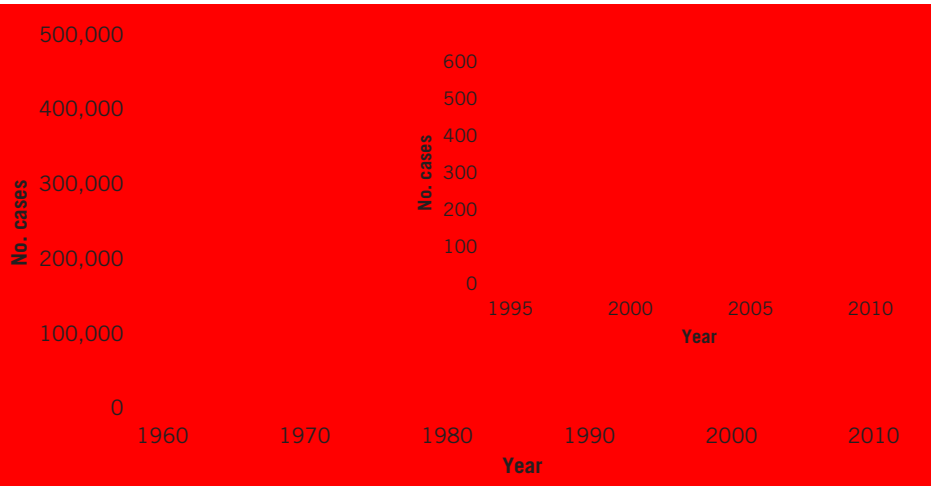
The development of penicillin, which treats previously untreated bacterial illnesses such as pneumonia and cholera, had a substantial impact on life expectancy.

FOCUS ON DEVELOPMENT

How Immunizations Save Lives

One of the most significant factors leading to the increase in life expectancy over the last century is the development of vaccinations, which help the immune system fight infections and thereby prevent diseases. Vaccines are now able to prevent many diseases that used to be common in the United States and around the world, including polio, measles, rubella (German measles), and pertussis (whooping cough). Although getting vaccinations is one of the best ways people can stay healthy, 27% of American preschool-age children do not have full immunization against currently controllable diseases (National Center for Health Statistics, 2017). Unfortunately, when children don't get vaccinated, they can develop very serious, and even life-threatening, illnesses. For example, after the development of the varicella vaccine, which prevents chicken pox, in 1995, deaths from varicella dropped 88% in a six-year period (Marin, Zhang, & Seward, 2011). Children who aren't vaccinated are at risk not only of developing a potentially life-threatening disease but also of infecting others. In 2010, 10 babies in California died from whooping cough. Although these babies were younger than three months, which means they were too young to have been vaccinated against this disease, they clearly had come in contact with someone who wasn't vaccinated. Thus, parents have a responsibility to make sure their children have all recommended vaccinations to protect not only their children but also those with whom their children come in contact.

Figure 1.3 Data From McLean, Fiebelkorn, Temte, and Wallace, 2013



Prior to 1963, when the measles vaccine was developed, an estimated 3 to 4 million people in the United States were infected each year, and 450 to 500 of these people died. In 2016, only 70 people in the United States were diagnosed with measles, and not a single person died.

Source: McLean, Fiebelkorn, Temte, & Wallace (2013).

lower respiratory diseases, and unintentional injuries (García, Bastian, Rossen, et al., 2016). But roughly one-third of these deaths could be prevented through changes in people's behavior, such as not smoking, maintaining a healthy weight, and safer driving.

Given the role of individuals' behavior in contributing to health problems, principles of psychology can be used to try to change people's behavior to prevent health problems from ever developing, such as to increase health-promoting behavior (e.g., wearing seat belts, engaging in regular exercise, using sunscreen) and decrease health-damaging behavior (e.g., smoking, using drugs, eating a diet high in fat). This type of preventive behavior is known as **primary prevention**, meaning behavior designed to prevent or diminish the severity of illnesses and diseases. Researchers in one study examined the influence of smoking and obesity on life expectancy (van Baal, Hoogenveen, de Wit, & Boshuizen, 2006). Men who smoke die on average 7.7 years sooner, and women who smoke die 6.3 years sooner. Similarly, obese men die 4.7 years earlier and obese women die 4.4 years earlier. This research provides powerful evidence that the behavioral choices we make have a major impact on how long we live.

Yet influencing people's behavior is complex, as you will see throughout this book; many people engage (or fail to engage in) behaviors that they know impact their health, such as smoking, getting too little sleep, not exercising, and failing to have that recommended colonoscopy. As physician John Knowles (1977) noted, "over 99 percent of us are born healthy and made sick as a result of personal misbehavior and environmental conditions. The solution to the problems of ill health in modern American society involves individual responsibility, in the first instance, and social responsibility through public legislation and private volunteer efforts, in the second instance" (p. 58).

The Rising Cost of Health Care

Health care costs have risen sharply in the last 50 years. The U.S. population currently spends nearly $3.8 trillion a year on health care, which represents 17.8% of the gross domestic product (Centers for Disease Control and Prevention, 2017h). In contrast, health care costs represented only 5.1% of the gross domestic product in 1960.

One reason for the rise in health care costs is the dramatic increase in life expectancy that has occurred over the last century. In the early 1900s, people lived to an average age of 47.3 years; today the mean life expectancy is nearly 79 years (Kochanek, Murphy, Xu, & Tejada-Vera, 2016). This increase in life expectancy is partially a result of a substantial drop in the rate of infant mortality. Specifically, in 1960, 47 infant deaths occurred for every 1,000 live births, whereas fewer than 6 infant deaths occur for every 1,000 live births today. Moreover, infants who are born two or three months premature now have a very good chance of surviving, whereas even 10 years ago their odds were significantly worse.

This increase in life expectancy contributes to the high cost of health care; people are living longer, so they develop more chronic, long-term diseases that require ongoing care, possibly for years. AIDS, Alzheimer's disease, coronary heart disease, and cancer are all examples of very common diseases that people may live with for many years—sometimes requiring extended and expensive treatment (e.g., bypass surgery, drug regimens, chemotherapy, and radiation). More than half of all spending on health care costs in the United States is on 20 conditions; the most expensive of these is diabetes (Dieleman et al., 2016). Other costly health conditions include heart disease, back and neck pain, injuries from falls, and hypertension.

Another factor contributing to the rising cost of health care is increasing technological advancements, such as new surgical techniques and medical procedures, which require specialized equipment and are very expensive. Doctors are now able to perform truly remarkable procedures to save and improve lives, including transplanting organs, performing surgery on fetuses prior to birth, and tailoring cancer treatments to patients' particular genetic profiles. These advances in medical technology also mean that in some cases people are now able to live with serious conditions that in the past would have killed them. Although such treatments are partially responsible for the increase in life expectancy, they have also greatly increased the cost of health care.

Concern about the high cost of health care has led to increasing acceptance of psychologists and their research by physicians and other health care professionals for several reasons. First, principles in health psychology can be used to prevent health problems from developing, which is much more cost-effective than diagnosing and treating illness and disease (Fries, 1998; Winett, 1995). For example, preventing premature birth by ensuring that pregnant women have prenatal care reduces medical costs considerably (Brown, 1985)—babies who weigh as little as 1 pound at birth can be saved, but it costs about $350,000 per baby for four months of care in the neonatal intensive care unit, and these babies often have ongoing struggles and disabilities. In contrast, it would cost about $600 per pregnant woman to provide prenatal care to 583 women, which substantially reduces the likelihood of premature birth (Butter, 1993). Although this type of prevention program would reduce the demand for medical services and thereby reduce health care costs, the vast majority of funds devoted to researching health issues each year are devoted to treating illness, not preventing it (DeLeon, 2002). Principles in health psychology can also be used to persuade people to seek medical care in order to detect health problems at an early stage, when there are more treatment options available and these options are less expensive. For example, people who learn they are HIV positive are able to start antiretroviral therapy (ART), which slows the growth of the virus in the body.

Although many chronic conditions cannot be cured, people can often live with them for many years. Health psychologists can therefore contribute to the design of treatment programs that help people manage these illnesses, such as ones that encourage patients with heart disease to adopt healthier eating habits and to stop smoking. Moreover, in many cases psychological treatments may help people cope with pain and recover from medical problems at a lower cost. For example, women who have a "doula" (a trained supportive companion to assist with labor and delivery) have shorter labors, use less epidural anesthesia, and are less likely to have a cesarean section than women without such support (Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991). They are also less likely to have babies that require neonatal hospitalization, which is a tremendous cost savings. Similarly, surgical patients who receive high levels of social support show less anxiety, receive lower doses of narcotics, and are released from the hospital faster than those with lower levels of support (Krohne & Slangen, 2005). All of these psychologically based strategies for improving health can lead to decreases in health problems and/or minimize the pain and disability caused by such problems, and thereby reduce health care costs.

Even subtle shifts in the environment, such as having a room overlooking nature, can speed up recovery from surgery, and thereby reduce medical costs.

Advances in Technology

Another factor that has contributed greatly to the development of health psychology, and our understanding about the link between psychological factors and physical health, is scientific advances. For example, the field of genetics has grown substantially over the last few decades, enabling researchers to examine how particular genes are associated with health and behavior. We now know that genes influence health-related behaviors, such as obesity, substance abuse, and even risk of experiencing an injury. In part through its influence on health-related behaviors, genetics also plays a role in the development of many chronic diseases, including diabetes, cancer, coronary heart disease, and Alzheimer's disease.

Advances in technology have also enabled researchers to examine the link between brain activity and particular health-related behaviors. Neuroscience research now illustrates that activation

in specific parts of the brain may provide insight into various health behaviors, such as how people with anorexia respond to food, why certain people really crave alcohol, and why people prefer high-calorie foods (Foerde, Steinglass, Shohamy, & Walsh, 2015; Frye et al., 2016; Tang, Fellows, & Dagher, 2014). This type of technology can also provide valuable information about the effectiveness of fear-based appeals for helping smokers quit and mindfulness meditation for reducing pain (Falk, O'Donnell, Tompson, et al., 2015; Zeidan et al., 2011). The contributions of neuroscience to health psychology are highlighted in special Focus on Neuroscience boxes in each chapter of this book. For example, **Focus on Neuroscience** describes how obese people continue to respond to food cues, even when they are not hungry.

THE BROAD INFLUENCE OF HEALTH PSYCHOLOGY

LO 1.4

Describe the influence of health psychology on other fields

The growing awareness of the link between psychological states and physical health has influenced not only the field of psychology but also other disciplines. In this section you'll learn about the link between health psychology and the fields of medicine, sociology, and anthropology.

Medicine

Although this section has focused on the development of the distinct field of health psychology, several branches of medicine have also described the role of psychological factors in influencing physical health. **Psychosomatic medicine**, which developed in the 1930s, studies how emotional, social, and psychological factors influence the development and progression of illness (Lipowski, 1986). For example, researchers might study how psychological factors such as anxiety, depression, and stress may lead to physical problems such as ulcers, migraine headaches, arthritis, and asthma.

FOCUS ON NEUROSCIENCE

Why Some People Respond to Food Cues, Even When Not Hungry

Researchers in one study examined how people's brains respond to pictures of food, and whether such responses vary depending on both level of hunger and level of obesity (Puzziferri et al., 2016). Half of the women in the study were lean (they had a BMI under 25), whereas the others were obese (they had a BMI over 35). All women, who had fasted for nine hours before the study to make sure they were hungry, looked at photos of food while they were in an MRI machine, which measures brain activity. Next, all participants ate the same meal in the lab, so that they were no longer hungry, and then once again viewed photos of food while in an MRI machine. Their findings revealed that both hunger and obesity influenced patterns of brain activation in response to food cues. First, all women showed the same type of brain activity when they were hungry, indicating that hunger activates particular parts of the brain that process rewarding experiences. After eating a full meal, lean women's brains showed a substantial decrease—15%—in brain activity in response to photos of food, indicating that these women aren't particularly responding to cues of food once they are no longer hungry. In contrast, women who were obese showed only a very slight decline—4%—in brain activity in response to photos of food, indicating that even after they've eaten and thus are no longer hungry, their brain is still responding to food cues. These findings, which suggest that obese people continue to respond to food cues even when no longer full, demonstrate why it is so difficult for obese people to lose weight.

Similarly, **behavioral medicine** is an interdisciplinary field that developed in the 1970s and that focuses on the integration of behavioral and biomedical sciences. Specifically, behavioral medicine focuses on developing and applying behavioral techniques to the treatment, management, and rehabilitation of patients (Gentry, 1984). Such techniques are used widely to help people overcome various types of health-damaging behaviors. Correspondingly, the discipline of **behavioral health**, a subdiscipline of behavioral medicine, emphasizes enhancing health and preventing disease in currently healthy people (Matarazzo, 1980). Researchers in this field focus on general strategies of health promotion.

Theories and principles in health psychology are now used regularly in medical settings, largely because of a greater understanding and acceptance of how psychological factors influence physical health.

Although the medical community has often resisted collaborating with psychologists (or other non–medically trained personnel), this resistance has faded substantially given the growing evidence that psychological factors improve patient outcomes and reduce costs. As of July 1, 2001, the Accreditation Council for Graduate Medical Education required that residency programs teach skills in such collaboration, and residency programs must now demonstrate that residents have these skills prior to graduation. Moreover, as of 2015, the American Association of Medical Colleges added a section to the Medical College Admission Test (MCAT) that tests people's understanding of human behavior and psychology. These changes in medical school admissions and training reflect a growing awareness that doctors' behavior has a substantial impact on patients' health outcomes. For example, and as described in **Focus on Diversity,** doctors interact with patients differently as a function of their race/ethnicity, which could in turn influence patients' decision making regarding end-of-life care.

FOCUS ON DIVERSITY

The Impact of Patients' Race on Doctors' Nonverbal Communication

Doctors may behave differently when interacting with patients from different ethnic and racial backgrounds, which in turn could influence patients' health outcomes. Researchers in one study asked physicians—who were mostly White men—to participate in realistic simulations about how they would convey information to patients and their family members regarding end-of-life care (Elliott, Alexander, Mescher, Mohan, & Barnato, 2016). Physicians were given specific information about the patient's medical condition, such as poor vital signs for someone with late-state cancer, and were told to convey this information to the patient and their family and to determine what type of life-saving measures, if any, they wanted. Researchers then watched videotapes of these doctor–patient interactions and measured both verbal and nonverbal communication (e.g., body position, eye contact, proximity, and touch). Although physicians gave similar verbal messages to both Black and White patients, their nonverbal cues differed substantially as a function of the patient's race. Specifically, when talking with a White person about next steps for care, the physicians were more likely to stand right beside the patient's bedside and touch them than when talking with a Black person. These unconscious nonverbal behaviors, in turn, could have a substantial impact on Black patients' trust and confidence in their physicians as well as on the medical decisions they make.

What You'll Learn 1.4

Doctors' interactions with other medical professionals also impact the quality of medical decision making in hospitals. Researchers in one study examined whether rudeness between medical professionals impacts the care people receive in a hospital (Riskin et al., 2015). Teams of doctors working in neonatal intensive care units (NICUs) participated in an exercise in which they had to decide how to care for a premature infant suffering from a relatively common, but severe, medical complication. They were told that an expert on "team reflexivity" would be observing them through a live video and would make suggestions. Half of the teams received suggestions from a "neutral" expert, whereas the others received suggestions from a "rude" expert, who started the observation by noting that he was not very impressed by the quality of medical care offered at this hospital. Three independent judges—who were not told about the initial statements made by the expert—then viewed the videotaped discussions to evaluate the teams' performance. As predicted, teams who were exposed to the rude expert scored lower on diagnostic performance, meaning their ability to appropriately identify key aspects of the infant's condition, as well as on procedural performance, meaning the technical skills used to provide care to the infant. These findings suggest that even relatively low levels of rudeness in a medical setting may lead to an overall lower quality of care, which clearly could have substantial implications for health outcomes.

Sociology

Medical sociology examines how social relationships influence illness, cultural and societal reactions to illness, and the organization of health care services (Adler & Stone, 1979). For example, researchers in this field might examine the effects of social stress on health and illness, how attitudes and behaviors influence health and illness, and the negative consequences of labeling someone a "patient."

Sociologists also examine how social and cultural factors—such as race, socioeconomic status, religion, and sexual orientation—influence health and health care utilization. For example, research consistently finds that people with lower levels of education experience overall worse health outcomes, in part because they are more likely to engage in detrimental health behaviors, such as smoking (Conti & Heckman, 2010). Lower levels of education are also associated with an increased risk of experiencing chronic pain, meaning pain that interferes with the ability to function in daily life; in fact, people who didn't finish high school are 370% more likely to experience severe chronic pain than those with graduate degrees (Grol-Prokopczyk, 2017). Similarly, both race and income are associated with a greater risk of developing chronic and life-threatening health conditions. A recent large-scale study of over 12,000 children living in Houston, Texas, found that asthma was more prevalent in Black children than in White children, and was also more prevalent in children living in poor neighborhoods—meaning those with a median income of less than $34,000—than in middle-class or affluent ones (Kranjac et al., 2017).

Furthermore, social and cultural factors influence health care utilization. For example, data from a large national survey revealed that Latinos and Blacks are more likely than Whites to feel their doctors didn't see them as equals and aren't concerned for their well-being, which in turn could influence comfort in seeking health care (Sewell, 2015). Similarly, certain religious groups believe illnesses are caused by mental and spiritual processes, and thus rely entirely on prayer and other nonmedical interventions to treat disease.

Anthropology

The field of **medical anthropology** examines the differences in how health and illness are viewed by people in different cultures. Cultures, in fact, vary tremendously in how they define

health, how they view disease, and, in turn, how they treat illness. People in different cultures vary in how they describe health and even in the behaviors that they view as healthy. People vary considerably, for example, in how they interpret and express physical symptoms, as well as in their willingness to rely on medical professionals as opposed to a "lay referral system" of family and friends for advice regarding medical issues (Bates, Edwards, & Anderson, 1993; Burnam, Timbers, & Hough, 1984; Landrine & Klonoff, 1994; Sanders et al., 1992).

What You'll Learn 1.5

Interestingly, the predictors of health may also differ across cultures. Researchers in one study examined the link between expressing anger, such as "slamming doors" and "saying nasty things," and physiological responses in people from the United States and Japan (Kitayama et al., 2015). Greater anger expression was associated with increased physiological responses, including cardiovascular functioning and inflammation, for people from the United States, indicating that expressing anger was linked to increased health risks. But for people from Japan, expressing anger was associated with lower levels of physiological response, indicating that expressing anger was actually good for health. Researchers believe that for Americans, anger is a manifestation of frustration in response to daily life stress, which negatively impacts health. But for Japanese people, the ability to express anger reflects power and dominance over others, and such feelings of entitlement are beneficial to health. In sum, the predictors of health may well differ substantially for people from different cultures.

Culture may also play an important role in how people respond to health-promoting messages and interventions. For example, interventions that emphasize increasing connection to and support from family and friends are particularly effective at decreasing substance use among Blacks living in low-income communities (Cheney, Booth, Borders, & Curran, 2016). Although many approaches to treating addiction focus on the use of formal drug treatment programs, many people of color living in high-poverty communities are best able to recover from addiction by connecting to and obtaining support from social networks and resources within their own community.

WORKING IN HEALTH PSYCHOLOGY

LO 1.5

Compare different training pathways and careers in health psychology

Given the growing evidence of the impact of psychological factors on physical well-being, many opportunities are available to work in the field of health psychology. In this section, you'll learn about various training pathways and career options.

Training Pathways

What should you do if you are interested in a career in health psychology? First, you should enroll in a range of courses in psychology. The field of health psychology draws on a number of parts of the field of psychology; hence, students who are interested in this field should try to get a broad background. Taking courses in anatomy and physiology may also be beneficial, as would courses in statistics and research methods (which are required for some graduate programs). Second, many students find that getting hands-on experience in health psychology is a great way to learn more about the field, as well as a good résumé builder! You might be able to assist one of your professors with his or her research in health psychology, find a summer internship in a hospital, or volunteer with a social service agency.

After receiving an undergraduate degree in psychology, training in health psychology can involve a number of different programs, depending on your career goals. The majority of health psychologists obtain a PhD (a doctorate degree) in some discipline within psychology. Graduate school consists of coursework as well as training in research, which culminates in the completion of a dissertation (an original research project). Graduate programs in health

psychology typically provide training in biology (e.g., anatomy, physiology, psychopharmacology, epidemiology, neuropsychology), the broad domains of psychology (e.g., social, developmental, personality, cognitive, neuroscience), and social factors (e.g., family, ethnicity, culture, race). They also include training in statistics and research methods. Many health psychologists also choose to do postdoctoral training or an internship, often in a hospital, clinic, or university setting, for a year or two after graduate school to gain additional experience and skills.

Depending on your specific interests, you could pursue training in a specific area within health psychology. For example, the field of *clinical* health psychology focuses on using knowledge gained in the discipline of psychology to promote and maintain physical health, including preventing and treating injury and disease, identifying causes of health problems, and improving health policy and the health care system (Belar, 1997). *Occupational* health psychology focuses on using theory and research in psychology to protect and promote worker safety, health, and well-being (Quick, 1999). People with this type of focus explore how work-related factors influence stress, injury, and violence as well as strategies for encouraging workers to participate in wellness programs, effectively balance home and work life, and maintain overall health and well-being (see Table 1.4).

Career Options

Health psychologists work in a variety of settings, including medical schools, government agencies, universities, and private practice (Enright, Resnick, DeLeon, Sciara, & Tanney, 1990; Frank, Gluck, & Buckelew, 1990; Robiner, Dixon, Miner, & Hong, 2014). Some health psychologists conduct research in academic settings and may also teach courses to undergraduate and/or graduate students. They might also do research and teach in medical, dental, and nursing schools. Other health psychologists work directly with patients to prevent and/or improve psychological and physical well-being, such as by providing diagnostic and

Table 1.4 Occupational Health Psychology in Action

Occupational health psychology is an emerging area of health psychology that focuses specifically on healthy workplaces, namely, ones in which people produce high-quality work and achieve great personal satisfaction (Quick, 1999). This field blends issues in public health, clinical psychology, organizational behavior, and industrial/organizational psychology. For example, research results of occupational health psychologists suggest that people who are able to have some control and flexibility in their jobs experience better health and satisfaction, that workers benefit from having effective ways of reducing stress (e.g., exercise, social support), and that workers can be more effective when they are not concerned about family issues. These psychologists could work directly with a business and in this capacity advise employers on ways to improve employee health (e.g., smoking cessation interventions, exercise facilities, stress management), as described in the following two examples.

U.S. Air Force

In 1993, Joyce Adkins of the U.S. Air Force Biomedical Sciences Corps started an organizational health center at the McClellan Air Force Base in Sacramento, California (Quick, 1999). The goals of this center included improving working conditions; monitoring psychological disorders and risk factors; providing information, training, and education; and providing psychological health services to all employees. Within the first year of the project, several substantial changes were noted. First, the total cost of worker's compensation

payments (given to employees who were injured) decreased 3.9%, leading to a savings of $289,099. Second, medical visits and health care utilization for job-related injury and illness decreased by 12%, leading to a cost savings of $150,918. Finally, there was a decrease in death rates, suggesting that perhaps 10 deaths caused by behavioral-related events were avoided. In turn, this decrease in premature mortality was associated with a tremendous savings in terms of productive years gained (e.g., recruiting, hiring, training new employees).

Johnson & Johnson

In 1978, Johnson & Johnson developed a comprehensive health-promotion program titled Live for Life (Quick, 1999). This program included health assessments, materials promoting health behavior change, and the development of a physical fitness program. In turn, the addition of this program led to increases in workers' psychological and physical well-being (Bly, Jones, & Richardson, 1986). First, employees showed improvements in their attitudes toward many aspects of their jobs, including commitment, supervision, working conditions, job competence, pay and benefits, and job security. These increases should lead to lower turnover and thereby reduce the considerable costs associated with hiring and training new employees. The company also experienced lower health care costs, partly because of lower rates of hospital admissions and fewer hospitalized days. Specifically, inpatient health care costs for workers in this program were only $42 to $43 per employee as compared to $76 for those without this program.

Source: Quick (1999).

counseling services, preparing patients for surgery and other medical procedures, and designing programs to help patients adhere to medical recommendations and cope with chronic pain. These positions often involve working in a hospital, medical school, HMO, pain and rehabilitation clinic, or independent practice. Still other health psychologists work on forming health policies and finding funding research on health-related issues, often in a government agency such as the National Institutes of Health or the Centers for Disease Control and Prevention.

Health psychologists work in many different settings and on many different health-related issues. For example, research in health psychology has examined whether providing free condoms in schools increases rates of sexual activity and reduces rates of teenage pregnancy.

Other people who are interested in the broad topic of health psychology choose a career in a health-related field, such as medicine or nursing, physical or occupational therapy, nutrition, or social work. These different careers involve different training paths, as described in Table 1.5. The specific career you choose should be determined by your major interests and goals for your work life. Do you prefer working directly with people and personally helping people make changes in their behavior or manage their pain? If so, you may want to pursue a degree in counseling or clinical psychology, social work, or nursing and work in an applied setting.

Do you especially enjoy working on research projects and forming and testing different hypotheses to find the answer to a particular question? If so, you may want to pursue a degree in psychology or public health and work in a research setting. Are you primarily interested in people's physical and physiological responses and in exploring how their bodies work? In this case, you should consider pursuing a degree in medicine, physical therapy, or occupational therapy.

Table 1.5 Careers in Health-Related Fields

When you think of people working as health professionals, what types of jobs come to mind? Probably doctors, nurses, and perhaps dentists. But there are many types of careers in health-related fields, and virtually all of them involve and use principles and research of health psychology in some way. Most of these careers require an undergraduate degree in the field and often some type of additional training or education for a year or two after college.

Job Title	Job Functions	Work Setting
Physical Therapist	Help people with diseases of or injuries to muscles, joints, nerves, or bones; evaluate a patient's capabilities, including muscle strength, coordination, endurance, and range of motion, and design a treatment to address the person's limitations; may also work to increase people's mobility and decrease their pain; provide training in using adaptive devices, such as crutches, canes or walkers, or prostheses (artificial limbs).	Hospitals, nursing homes, rehabilitation clinics
Occupational Therapist	Work with patients who have physical, mental, or emotional disabilities and try to help them learn the skills they need to function in a productive way; evaluate a patient's capabilities and then design a treatment program.	School, work, or community setting
Dietitians and nutritionists	Help people create and manage healthy diets; work with patients and their families on making and adhering to dietary changes.	Hospitals, clinics, or nursing homes
Social worker	Help individuals and their families cope with psychological and social issues; serve as therapists; connect people with various community services.	Hospitals, community agencies, clinics, nursing homes
Public health researcher	Work directly with people in a given community to improve their health; develop and implement interventions to prevent health problems or evaluate programs that are currently in use.	Academic settings, government agencies, hospitals, social service agencies, clinics

Source: Created by Catherine A. Sanderson.

Table 1.6 Information YOU Can Use

Stress has a negative impact on psychological and physical well-being, but coping with stress in positive ways—such as relying on social support and maintaining a positive attitude—can improve health outcomes.

Many health problems are caused at least in part by behaviors we choose to engage in, so make sure to choose health-promoting behaviors—wear a seat belt, engage in healthy eating and exercise, avoid smoking and excessive alcohol use—whenever possible.

Writing about traumatic events can help people express their feelings and, in turn, reduce physical symptoms and improve health outcomes. So, keeping a journal may in fact help you be healthy!

Psychological factors—such as level of social support and neuroticism—influence the experience of pain, the likelihood of becoming ill, and the speed of recovery from surgery, so try to surround yourself with loved ones and maintain a positive outlook.

Treating health problems at an early stage is far easier than treating them later on, so make sure to engage in recommended screenings for illness, such as checking cholesterol and performing regular breast and testicular self-exams.

SUMMARY

Psychological factors, including environmental stressors, personality, and social influences, have a substantial impact on health behaviors and on health outcomes. People who experience higher levels of stress are at greater risk of experiencing both minor and major illnesses, in part because stress weakens the immune system, and tend to engage in behaviors that weaken the body's ability to fight off infections. Personality traits as well as social factors (social support, modeling) are also associated with people's physiological responses to various situations as well as their health-related behaviors.

Psychological factors influence the development and treatment of pain as well as chronic and life-threatening illnesses. Pain is influenced by psychological factors, and psychological factors can help reduce the experience of pain. Psychological factors impact whether people develop particular chronic and life-threatening illnesses and the progression of such diseases.

Health psychology examines how psychological factors influence whether people take steps to identify and treat illnesses early, whether they adhere to medical recommendations, and how they respond to health-promotion messages. Behavior that involves detecting illness at an early stage as a way of reducing the illness's potential effects is called secondary prevention. Treatments that can help minimize or slow the damage caused by a disease are known as tertiary prevention actions. Psychological factors influence how people react to treatment plans and whether they recover from illness.

Many early cultures viewed illness and disease as caused by evil spirits and described health as the interaction between mind and body. However, during the 17th century, this view of health changed, and health was seen as purely caused by bodily processes. This change was caused by Descartes's development of the doctrine of mind–body dualism as well as advances in other scientific fields.

The biomedical model proposes that health problems are rooted in physical causes, such as viruses, bacteria, injuries, and biochemical imbalances, and explains illness in terms of the pathology, biochemistry, and physiology of a disease. This model therefore proposes that medical treatment is needed to cure or manage physical complaints. Although the biomedical model has made some contributions, evidence shows that biological factors alone cannot account for health.

The biopsychosocial model views health and illness as the consequences of a complex interplay between biological factors (e.g., genetics, physiology), psychological factors (e.g., personality, cognition), and social factors (e.g., culture, community, family, media). The biopsychosocial model acknowledges that biological factors can and do influence health and illness, but that social, cultural, and psychological factors also exert an effect. The biopsychosocial model contributes to the biomedical model by helping to explain the impact of psychological factors on the development and progression of chronic conditions as well as on how people cope with pain, illness, and disease.

We used to think of health as simply the absence of illness or disease, but researchers now see health as a continuum, ranging from a healthy level of wellness on one end and illness and even death on the other. This change in perspective is also reflected in a relatively new focus within psychology on positive psychology, which examines how psychological factors influence positive human functioning and flourishing.

Changes in technology and lifestyle as well as the development of vaccines and antibiotics have led to dramatic decreases in deaths from infectious diseases caused by viruses or bacteria. Most health problems are now caused by chronic conditions, which are influenced by people's own behavior. Principles of psychology can be used to try to change people's behavior to prevent health problems, which is known as primary prevention.

Health care costs have risen sharply due to increases in life expectancy and subsequent increases in chronic diseases as well as various technological advancements. Principles in health psychology can help prevent health problems from developing, persuade people to seek medical care in order to detect health problems at an early stage, and develop treatment programs that help

people manage these illnesses; these are all cheaper approaches than treating chronic diseases.

Scientific advances have also contributed to the development of health psychology. We now know that genes influence health-related behaviors and play a role in the development of many chronic diseases. Advances in technology have also enabled researchers to examine the link between brain activity and particular health-related behaviors.

Several branches of medicine include the role of psychological factors in influencing physical health. Psychosomatic medicine studies how emotional, social, and psychological factors influence the development and progression of illness. Behavioral medicine integrates behavioral and biomedical sciences and focuses on developing and applying behavioral techniques to the treatment, management, and rehabilitation of patients. The discipline of behavioral health, a subdiscipline of behavioral medicine, emphasizes enhancing health and preventing disease in currently healthy people.

Medical sociology examines how social relationships influence illness, cultural and societal reactions to illness, and the organization of health care services. Sociologists also examine how social and cultural factors—such as race, socioeconomic status, religion, and sexual orientation—influence health and health care utilization.

The field of medical anthropology examines the differences in how health and illness are viewed by people in different cultures. Cultures, in fact, vary tremendously in how they define health, how they view disease, and, in turn, how they treat illness. People in different cultures vary in how they describe health and even in the behaviors they view as healthy. Culture may also play an important role in how people respond to health-promoting messages and interventions.

Students interested in a career in health psychology should enroll in a range of courses in psychology as well as courses in anatomy, physiology, statistics, and research methods. Hands-on experience in health psychology is a great way of learning more about the field. Following an undergraduate degree in psychology, training in health psychology can involve a number of different programs, such as a PhD (a doctorate degree) in some discipline within psychology or specific training in an area within health psychology.

Some health psychologists conduct research in academic settings and may also teach courses to undergraduate and/or graduate students. Other health psychologists work directly with patients to prevent and/or improve psychological and physical well-being. These positions often involve working in a hospital, medical school, HMO, pain and rehabilitation clinic, or independent practice. Other health psychologists work on forming health policies and conducting research on health-related issues, often in a government agency such as the National Institutes of Health or the Centers for Disease Control and Prevention. People who are interested in the broad topic of health psychology can also choose a career in a health-related field, such as medicine or nursing, physical or occupational therapy, nutrition, or social work.

2

RESEARCH METHODS

Learning Objectives

2.1 Describe the scientific method

2.2 Compare different types of descriptive research methods

2.3 Summarize the features of experiments and quasi-experiments

2.4 Describe different types of epidemiological research methods

2.5 Compare internal and external validity

2.6 Summarize ethical issues in conducting research in health psychology

What You'll Learn

2.1 Why living near a park helps reduce the risk of developing diabetes

2.2 Whether people who are married live longer

2.3 Why exercising with a friend is a good idea

2.4 Why people who *believe* they are engaging in physical activity lose weight

2.5 Why divorce is sometimes bad for children's health

Preview

Students sometimes approach learning about research methods with concern, believing this material will be boring, or difficult to master, or hard to apply to their own lives. But the information covered in this chapter is an essential part of understanding the rest of this book, because it provides tools for understanding and evaluating

(Continued)

(Continued)

the findings in health psychology described throughout this book. And the examples chosen throughout this chapter all have real-world implications, such as whether Google searches can predict suicide risk, whether women's dissatisfaction with their weight changes with age, and whether college students who join fraternities or sororities drink more alcohol. First, you'll learn the steps involved in conducting research in general. The chapter then describes three different types of research methods used in the field of health psychology, including descriptive, experimental, and epidemiological. The chapter ends with a description of the ethical issues involved in conducting research in this field.

UNDERSTANDING THE SCIENTIFIC METHOD

LO 2.1

Describe the scientific method

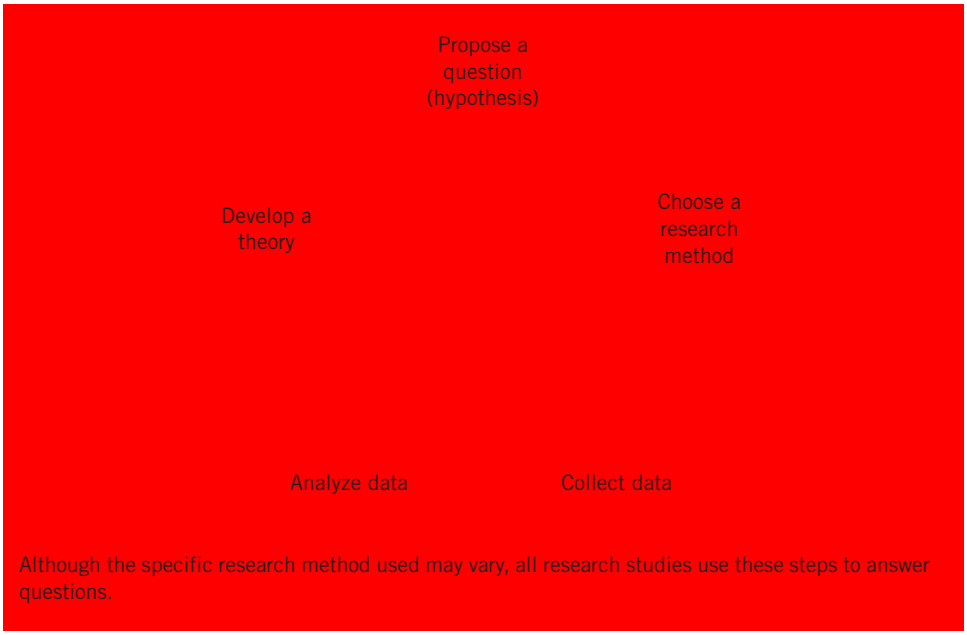
Health psychology is an empirical science, and hence research in this field is based in the **scientific method** (see Figure 2.1). The general goals of research using the scientific method are to describe a phenomenon, make predictions about it, and explain why it happens. All research in health psychology as well as in other scientific fields starts with a question. Sometimes researchers form these questions based on what they observe in the world. For example, you might notice that you always seem to get a cold right after exam period. Sometimes researchers form questions based on intuition or a "gut feeling." You might have a feeling that people who are happier tend to get sick less often than those who are depressed. These are both examples of a **hypothesis**, which is a testable prediction about the conditions under which an event will occur.

In other cases, researchers generate hypotheses to test a specific **theory,** an organized set of principles used to explain observed phenomena. Although hypotheses are specific predictions about the association between two events (such as exam period and illness, for example), they do not explain how or why these two events are connected. Theories provide potential explanations for particular phenomena and therefore generate specific ideas for future research. For example, you could have a theory that students don't take care of themselves well during exam period (e.g., they don't sleep enough, don't eat balanced meals) and that these poor health behaviors in turn lead to illness. And if you had this theory, you'd be right (as you'll learn in ***Chapter 4: Understanding Stress***).

Once you have formed the particular question that you will attempt to answer through experimentation, you need to form an *operational definition* of how you will study this problem. For example, you need to decide how you will classify illness (is it sneezing and coughing? is it a diagnosed medical health problem?) and how you will classify exam period (is it only the time during final exams? or the time before any test?). Researchers can define their variables in very different ways, which in turn can influence the findings, so it's important to standardize definitions.

Next, you *collect data*. Data could be collected in a number of different ways, including by observation, surveys, or experiments. For example, you could ask people about various symptoms they are experiencing at the beginning of the semester and then ask them the same questions again during exam week. Alternatively, you could track the number of students who visit the health center during the beginning of the semester and then at the end of the semester. If you are really adventurous, you could go to local stores and count how many people standing in line are buying cold medicine or go through students' trash cans and count used tissues!

Figure 2.1 Steps in the Research Process



Source: Created by Catherine A. Sanderson.

After the data is collected, the next step is to *analyze the data*. This step is often one of the most exciting parts of conducting research because you get to find out the answers to your questions and write up those responses. (Although issues of data analysis are not covered in this textbook, you can learn more about different approaches to analyzing research findings by taking a statistics class.) This is my favorite part of conducting research because I get to see whether my hypothesis is right.

The next step in the research process is developing or revising a *theory* based on the findings of the research. If your data supports what you predicted in your hypothesis, you may decide to develop a theory to explain what you found. In other cases your findings may provide additional support for a theory, which gives you confidence that the theory is indeed accurate. However, all researchers sometimes get findings that are unexpected. When this happens, the findings may lead to a revision of the hypothesis or theory, which then of course must be tested again in another research study.

DESCRIPTIVE RESEARCH METHODS

LO 2.2

Compare different types of descriptive research methods

Descriptive research, in which behavior and/or thoughts are systematically observed and recorded, is commonly used in health psychology. In this approach, researchers describe their observations but do not manipulate or interfere with behavior. This section reviews the various types of descriptive research methods used to test questions in health psychology, and then how these methods show correlations between variables but not causation.

In this section, you'll learn about several different types of descriptive research methods and then the strengths and limitations of such approaches. These methods include qualitative research, archival research, surveys, developmental studies, behavioral genetics research, and meta-analyses.

Qualitative Research

Qualitative research, which focuses on understanding and interpreting behavior in a natural setting, originated in the fields of anthropology and sociology but is now increasingly used in the field of psychology. As you'll learn in this section, qualitative research methods can provide important insights about the predictors of health-related behavior.

Case Studies

Some health psychology researchers use the **case study** to form hypotheses and theories. This research technique relies on studying one or more individuals in great depth to determine the causes of the person's behavior and to predict behavior in others who are similar. Sigmund Freud's famous descriptions of his patients, such as Dora and "Little Hans," who suffered from psychological difficulties, are examples of case studies (Freud, 1963). Freud wrote detailed descriptions of his patients' experiences and dreams and then examined these descriptions to form theories about the causes of their psychological problems.

One of the most famous examples of the use of case studies to form hypotheses related to health occurred in the early 1980s, when the first documented cases of a strange new syndrome were reported in the *Morbidity and Mortality Weekly Report* (*MMWR*) of June 5, 1981 (Foege, 1983). Five young men in Los Angeles were treated for *Pneumocystis carinii* pneumonia, a rare type of pneumonia that typically affects those with suppressed immune systems. These previously healthy men had developed severe symptoms, including nausea, weight loss, night sweats, and general tiredness. Interestingly, all of these men were gay. At just about the same time, doctors in New York City diagnosed a rare skin cancer, Kaposi's sarcoma, in 20 gay men. Given these unusual cases affecting a particular population, a task force was created by the Centers for Disease Control and Prevention to interview all patients with these symptoms to determine what factors might have led to these illnesses. By the fall of 1981, epidemiologists had determined that patients with these diseases reported having many sexual partners. Researchers then hypothesized that some type of disease was spreading in the gay population, possibly through sexual contact. Although the first cases of this strange type of pneumonia were found in gay men, doctors soon began seeing similar symptoms in other populations. Doctors in New York noticed similar symptoms in heterosexual men and women who used intravenous drugs. State health departments in New York and New Jersey also reported finding symptoms in prisoners. Nearly one year later, in the summer of 1982, three patients with hemophilia, a blood disorder that requires frequent blood transfusions, had developed similar symptoms. This finding finally led public health officials to recognize that this disorder could be transmitted via blood as well as through sexual contact.

Former National Football League (NFL) linebacker Adrian Robinson was 25 years old when he committed suicide in May 2015. Following his death, it was found that he had the degenerative brain disease chronic traumatic encephalopathy (CTE), which occurs following repeated concussions.

Case studies are typically used to examine relatively rare events or unique populations. For example, in-depth studies of professional athletes who experienced concussions while playing their sport and later committed suicide provided evidence that head trauma may have lasting effects on psychological well-being (Omalu et al., 2006; Omalu, Hamilton, Kamboh, DeKosky, & Bailes, 2010).

Although case studies can be very valuable in generating hypotheses and theories, their usefulness is limited because it is always possible that the person (or persons) who was studied