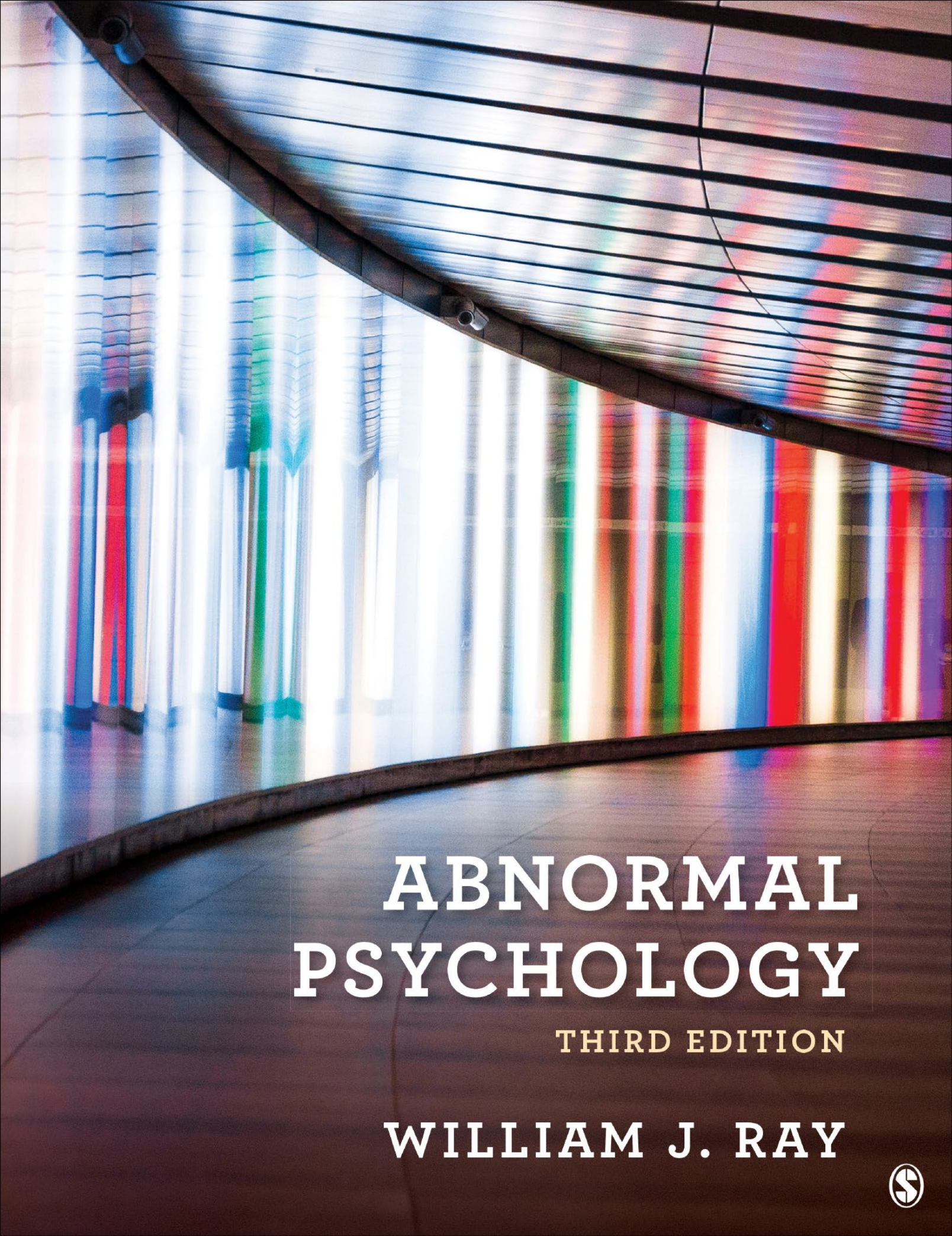
ABNORMAL
PSYCHOLOGY
THIRD EDITION
WILLIAM J. RAY

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ABNORMAL PSYCHOLOGY

THIRD EDITION

To those with the courage to share their experience of mental illness and the willingness to help others lead a meaningful life

ABNORMAL PSYCHOLOGY

THIRD EDITION

WILLIAM J. RAY

Pennsylvania State University

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Brief Contents

Detailed Contents

Preface

Abnormal psychology books from the middle of the last century largely contained descriptions of particular disorders. However, there would not be much written about the experiences of having a mental disorder. Since that time, society has a new conceptualization of what it means to have a mental disorder. There is also a greater awareness of how many people with a mental illness are able to live full lives and have productive occupations. In this text, I want to introduce some of these individuals and describe their experiences.

Also, in a textbook from the last century, there would not be much written about research studies. The research included would be focused exclusively on studies related directly to abnormal psychology. It would not be connected with the larger human condition and how mental illness is part of our evolutionary history and related to human cognition, emotion, and motor processes. In many ways, the field of abnormal psychology at that time remained disconnected from other areas of psychology as well as the life sciences.

Jumping ahead to the beginning of the 2000s, abnormal psychology textbooks included more research. However, the amount of research related to the neurosciences was limited. There was little in the way of brain imaging and the manner in which different disorders are related to one another on an underlying level. However, there was a realization that mental illness is a complex process and cannot be explained on a single level such as the possibility of mental illness being produced by a single gene or by one type of environmental experience.

Using this broader perspective, the dichotomous positions of nature versus nurture or innate versus learned fuse into the larger question of how aspects of each lead to an understanding of behavior and experience and their relationship to mental illness. Understanding that human behavior and experience take place on a number of different levels replaces the strict dichotomous approach pitting one level against another. On a molecular level, for example, we now know that genes must be turned on and off. What this means is that many significant human processes are directed by the environment. That is, environmental factors are able to influence which genes turn on and off. On a higher level, the "genetics versus culture" debate may be of limited value without understanding the manner in which humans both live within a culture and are influenced by historical environments.

Development of Brain Imaging

As we entered the twenty-first century, questions of importance to psychology were being embraced by the neurosciences. This allowed for both richness and an integration of scientific information concerning important psychological questions. In the past 25 years, we have seen a shift in focus that has included the "Decade of the Brain" of the 1990s as well as a real emergence of the cognitive and affective neurosciences. A number of scientists have also begun to ask how neuroscience approaches can influence psychopathology and inform the diagnosis of different types of mental disorders.

Recent developments in brain imaging have provided important perspectives on psychopathological processes. These developments include functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and magnetoencephalography (MEG), and their basics should be understood by students seeking an overview of psychopathology. The perspectives based on these brain imaging techniques are beginning to emphasize the manner in which underlying cortical networks may reflect particular changes in psychopathological conditions and give us a better understanding of the manner in which normal social

and emotional processes may become dysfunctional. For example, we know that there are a variety of basic networks in the brain, some of which are involved in internal processes such as mind wandering when there is no external stimulation, and others that become activated when interaction with the external world is required. A number of researchers have sought to articulate how these so-called default networks as well as other networks are associated with psychopathology. Other researchers have focused on emotional circuits that are either under- or overactivated in particular psychopathologies. One aspect of this emotional expression is the role it has played in our survival, mating, and social relationships from throughout our history. This brings us to the value of an evolutionary perspective.

Development of an Evolutionary Perspective

An evolutionary perspective examines the close interaction of organisms with their environment. In this close connection, the organism seeks ways to solve the fundamental problems or challenges of its existence. In many cases of mental illness, this close connection is no longer functioning in an optimal manner. The environment for humans includes not only nature but also culture. Throughout their evolutionary history, humans have always lived in groups with other people. The manner in which cultures understand and solve problems related to mental illness is one crucial question I will explore in this book. An evolutionary perspective also can give us insight into why some disorders such as schizophrenia are seen in similar proportions around the world, whereas other disorders vary by geographical location.

Implications for Treatment

An integration of research from the neurosciences with traditional psychological research helps clarify the efficacy and mechanisms of psychological treatments. For example, recent brain imaging research concerning treatment suggests that the type of treatment used determines the brain response. On the one hand, research concerning treatment of depression shows that psychotropic medications work from a bottom-up perspective by influencing the limbic areas that, in turn, influence higher cortical networks. On the other hand, cognitive therapies work in a top-down manner by influencing the prefrontal cortex (PFC), which, in turn, has an inhibitory effect on the lower brain processes. Even within traditional psychotherapy outcome research, there is a new sense of integration of traditionally dichotomous positions. This includes a search for specifying empirically supported procedures, such as the successful relationship between client and therapist, which determine treatment outcomes. In terms of prevention, there has been a recent increase in neuroscience research that shows the manner in which enriched environments as well as exercise can influence brain development and play an important role in the prevention of both pathophysiology and psychopathology.

New Perspectives in Abnormal Psychology

In the same way that psychology offers important insights in terms of human behavior and experience, abnormal psychology must also consider these perspectives. This not only includes the signs and symptoms seen in particular disorders, but also the abilities of individuals with these disorders to live productive lives. From this perspective, you will read stories of people with even serious mental disorders who have made important contributions in their professional and personal lives.

Behavior and experience take place on a number of levels, and it is imperative that abnormal psychology texts begin to offer such an integrative perspective. For example, recent thinking in social neuroscience suggests that it is not productive to teach brain anatomy or

emotionality in one chapter of a textbook and social relationships, influence, and perception in another. Within the community of abnormal psychology researchers, there is an increasing understanding of the manner in which various disorders reflect impairments in social processes and the brain functions associated with them. With such an integrated approach, students can come to understand the nature of impaired relationships on a variety of levels including cognitive, affective, and motor processes.

This Text

The purpose of this text is to bring together current perspectives in understanding mental disorders. In addition to the traditional psychological literature, additional information from the cognitive and affective neurosciences, ethology, evolution, and genetics will be discussed. The focus is on a unification and integration of these understandings within a broader consideration.

This Third Edition

Based on feedback from numerous faculty and researchers in the field, some changes were undertaken in this third edition. Throughout the text, introductory sections have been streamlined and tightened in terms of language to facilitate clear and concise transitions from one topic or chapter to the next. Also, all web links have been updated and new references have been included in the For Further Reading section at the end of the chapters. This edition also includes additional LENS features, including new Cultural LENS boxes, which highlight important societal and cultural issues relevant to abnormal psychology, along with "Thought Questions" that have been added to engage critical thinking. Glossary terms have also been updated and clarified. Specific chapter changes are described below.

Chapter 1

- Data in the text and figures on the impact and prevalence of mental disorders have been updated.
- An additional example has been provided describing culture as based on emphasis on individual achievement or on collective values.
- The language in the section Historical Considerations in Understanding Psychopathology has been trimmed and tightened.
- The connection between Darwin's work and our current understanding of the connection between the environment and genetic processes has been made more explicit.
- New citations have been added on the beginnings of empirically based treatments.

Chapter 2

- The section The Growing Importance of Neuroscience, Genetics, and an Evolutionary Perspective has a new introduction that better contextualizes the progress from historical considerations of psychopathology to the ways advances in neuroscience have changed our understanding of mental illness.
- The section on Genetics and Psychopathology has been updated with new citations on the effects of genes on psychological processes and mental illness. New research techniques in genetics such as SNP (single-nucleotide polymorphism) approaches have been included.

Chapter 3

- The chapter now more explicitly clarifies the role of doubt in science as well as bias in designing and interpreting experiments.
- New study citations have been added on behavioral genetics and NASA's twin study of Scott and Mark Kelly.
- New study citations have been added on replication.

Chapter 4

- New information has been added on the newly released *ICD-11*.
- The clinical scale in the MMPI has been updated to include the appropriate abbreviations.
- Caption for Figure 4.1 has been updated to clarify that clinical scales are on the left side and supplementary scales are on the right.
- A new study citation is included on linking the Rorschach test to its neuroscience principles.
- A link to current research related to R-PAS is new to this chapter.
- A new study citation has been added on neuroscience approaches to classify mental illness and inform its treatment.
- The section on *DSM–5* has been updated to reflect the latest changes and the effort to make the *DSM–5* and *ICD-11* more similar with each new edition.
- A link has been added to the most recent update on the RDoC framework.

Chapter 5

- The title of this chapter has been changed from Disorders of Childhood to Childhood and Adolescent-Onset Disorders.
- New information on *ICD-11* has been added.
- A new study citation has been added on atypical connections in the brain that may be related to autism.
- The sections on Harry Harlow and John Bowlby have been tightened and are now more concise.
- The section Adolescence now clarifies that some disorders with adolescent onset will continue into adulthood, but others will not.
- The section Brain Systems Involved in Social Relations has been substantially streamlined and the section The Importance of the Prefrontal Cortex deleted.
- There is now clarification that when an individual becomes 18 years old, their behavior would be described in terms of a personality disorder rather than CD or ODD.
- A new study citation has been added on the research related to autism spectrum disorder and gut bacteria.
- The chapter now includes updates on reviews of empirically supported treatment for autism spectrum disorder.
- A new study citation has been added on rates of ADHD around the world.

Chapter 6

- New information on the relationship of inflammation and depression has been added.
- Data on mood disorders around the world has been updated in the Cultural LENS box to reflect 2018 numbers from the WHO.
- A new study citation has been added on prevalence of, and important risk factors for, major depressive disorder.
- A new study citation has been added on the connection between major depressive disorder and heart disease, stroke, diabetes, and obesity.
- A new study citation has been added on the importance of prefrontal brain regions in depression.
- Additional information on ketamine has been added.
- New study citations have been added on medications and alternative treatments for depression.
- Coverage and citations on the cultural considerations of using CBT for treating depression have been added to this chapter.
- A new study citation has been added on self-reported creativity among individuals with mood disorders.
- There is additional clarification on how the *DSM–5* handles suicide.
- Rates of suicide have been updated with data through 2017.
- More data have been added on the cultural differences in suicide rates.

Chapter 7

- A new study citation has been added on how PTSD can develop from violence, rape, and assaults as well as from war.
- A new Cultural LENS box, Child Soldiers in Africa, has been added.
- A new study citation has been added on the understanding of cortical networks involved in PTSD.
- A new study citation has been added on the most effective therapies for PTSD.
- The chapter now includes coverage of Written Exposure Therapy (WET).
- A new study citation has been added on EMDR therapy for PTSD.

Chapter 8

- Data on the prevalence of anxiety disorders have been updated.
- A new study citation has been added on a common brain network that underlies all forms of anxiety.
- A new study citation has been added on the sensitivity of those with anxiety disorders to the possibility of a potential threat.
- A new heading has been added for Treatment of Separation Anxiety Disorder.
- New study citations have been added on the most effective treatments for GAD.
- An example and link describe comedian Howie Mandel's experience with OCD.

Chapter 9

- A new study citation has been added on treatments that are most effective for dissociative identity disorder.
- A new study citation has been added on the diagnosis of illness anxiety disorder.
- A new example cites the Gypsy Rose Blanchard case of factitious disorder.

Chapter 10

- The definition of pica has added detail for clarity.
- A new study citation has been added on current hunter-gatherer groups and their weight/energy expenditure.
- Data on obesity rates have been updated through 2017.
- More clarification has been added on the difference between the binge eating/purging subtype of anorexia nervosa and bulimia.
- The LENS feature, Eating Disorders and Your Gut, has been fully updated with the latest neuroscientific research.
- A new study citation has been added on the most effective treatment for bulimia.

Chapter 11

- The chapter title has been changed to Sexual Disorders, Paraphilic Disorders, and Gender Dysphoria (previously Sexuality and Gender Dysphoria).
- The connection has been made between John Kellogg and his holistic approach to medicine and the feud with his brother that resulted in the creation of Kellogg's Corn Flakes.
- The historical context around the sexual response studies of Masters and Johnson has been made more explicit.
- Data on sexual orientation and behaviors of Americans have been updated through 2018.
- A new study citation has been added on same-sex vs. heterosexual arousal in women.
- A new study citation has been added on treatment for sexual disorders and the context of cultural expectations of gender roles.
- A new study citation has been added on the prevalence of sexual dysfunction disorders.
- New developments in medications to treat female sexual arousal disorder have been added.
- Data on the prevalence of paraphilic disorders have been updated.
- A new study citation has been added on pedophilic individuals' level of the neurotransmitter GABA.
- A new study citation has been added on brain activation patterns in pedophiles.
- A new study citation has been added on guidelines for the treatment of paraphilic disorders in adolescents.
- The section called Gender Roles, Gender Identity, and Gender Dysphoria has been updated with new examples, data, neuroscience, and citations.

Chapter 12

- Cultural LENS: Cultural and Historical Factors Related to Using Drugs has been added.
- Data on prevalence of illicit drug use has been updated through 2017.
- Data on adult consumption of alcohol worldwide has been updated through 2016.
- A new study citation has been added on the increased legalization of cannabis and the way in which it will allow better understanding of the positive and negative effects of the drug.
- More information has been added on the effects of opium and treatment with naloxone.
- A new study citation has been added on opioid receptors in the brain.
- A new study citation has been added on treatments for addiction.
- Information on legal status of marijuana use by states has been updated.
- Updates on opioid use in the United States have been added.

Chapter 13

- The section Schizophrenia Basics has been revised to add the five domains of abnormalities as described in the *DSM–5* and a citation on a decline in both verbal and spatial abilities in those with a psychotic disorder.
- A new study citation has been added on the suggestion to replace the term *schizophrenia* with the concept of a psychosis spectrum disorder.
- Cultural LENS: Schizophrenia Around the World has been added, which examines how cultural context impacts the individuals' experience of schizophrenia.
- The chapter clarifies the reference to *ICD-10* subtypes for schizophrenia that have been removed in the *ICD-11* since they are of historical importance.
- A new study citation has been added on natural selection in genetic selection for schizophrenia.
- A new study citation has been added on the association of childhood traumas with the severity of hallucinations and delusions in schizophrenics.
- A new study citation has been added on the influence of vitamin D deficiency on the cognitive defects seen in schizophrenia.
- A new study citation has been added on the genetic pathway to the development of schizophrenia.
- A new study citation has been added on NIMH research studies on the best treatments for schizophrenia.
- A new study citation has been added on the use of mobile apps to help adolescents with schizophrenia.
- Examples of antipsychotic medications have been added, along with clarifications of the various generations of antipsychotic medications.

Chapter 14

- A new study citation has been added on the value of viewing personality disorders and typical traits from a variety of perspectives, including *DSM–5,* the five-factor model, and the NIMH RDoC model.
- A new study citation has been added on the consistency of results with the five-factor model across a variety of cultures.
- The section called Antisocial Personality Disorder and Psychopathy has been updated with the latest terminology from the *DSM–5.*
- The film *No Country for Old Men* has been cited as an example of a portrayal of an individual with psychopathy.
- A new study citation has been added on structural differences in the brain between individuals with psychopathic behaviors.
- A new study citation has been added on grouping those high in BPD characteristics in terms of loneliness, recklessness, and mood instability.
- The television show *Crazy Ex-Girlfriend* has been cited as an example of a portrayal of a character with signs of BPD.
- A new study citation has been added on early childhood maltreatment and incidence of BPD in both males and females.
- A new study citation has been added on treatment of personality disorders and focusing on conceptualization of the disorder.
- The definition of dialectical behavior therapy has been revised for clarity.
- The *ICD-11* approach to personality disorders has been updated.

Chapter 15

- Cultural LENS: Aging Around the World has been added.
- A new study citation has been added on weakened connections between brain areas and those who are at risk for delirium.
- A note about Robin Williams has been added since the discovery that he likely had Lewy body dementia at the end of his life.

Chapter 16

- A new study citation has been added on the media labeling of murderers as "mentally ill," though research does not support this conclusion for every individual.
- There is an update with a web link on the U.S. Department of Justice funding for projects involving mental health courts.
- There is an updated link to information on mandated reporting of abuse by state.
- The chapter now includes information on the use of child treatment laws to enable parents to transfer legal and physical custody of a child to the state in order to allow treatment they might not otherwise be able to access.

Digital Resources

Abnormal Psychology is accompanied by a dynamic interactive eBook that goes way beyond highlighting and note-taking, giving you access to **SAGE Premium Video**—Clinical Clips curated specifically for this third edition of *Abnormal Psychology.* Clinical Clips features video from the author discussing topics in abnormal psychology as well as specially selected video from the Associated Press and SAGE sources that highlight and contextualize specific illnesses and disorders. The text is also accompanied by instructor materials and open-access student study tools. Resources available at the SAGE edge website, **edge.sagepub.com/rayabnormal3e**, are described in more detail below.

For Instructors

Instructors using this book can access customizable PowerPoint slides, along with an extensive test bank built on Bloom's taxonomy and featuring multiple-choice, true/false, essay, and short-answer questions for each chapter. The instructor's manual features lecture notes, discussion questions, chapter exercises, class assignments, and more.

For Students

Each chapter's learning objectives are paired with study tools designed to promote mastery of course material. Students are directed to web and multimedia resources. Students can also practice with mobile-friendly eFlashcards and take the web quizzes at SAGE edge to find out what they've learned.

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About the Author

William J. Ray is an Emeritus Professor of Psychology at Pennsylvania State University. He received his PhD from Vanderbilt University and was a Fellow in Medical Psychology at the University of California Medical Center in San Francisco. He received his undergraduate degree from Eckerd College, where he learned about the value of primary sources and the need to integrate information from a number of perspectives. As part of his clinical training, he has worked in a number of mental hospitals and clinics across the country, where he developed an appreciation of the experiences of those with mental disorders. In his career, he has served as a visiting professor and researcher at the University of Hawaii, Münster University, University of Rome, Tübingen University, and Konstanz University. At Penn State, he was the Director of the SCAN (Specialization in Cognitive and Affective Neuroscience) program and was previously the Director of the Clinical Psychology Program. His research has focused on approaching clinical questions from a neuroscience perspective. He has used psychophysiological and brain imaging techniques such as EEG, MEG, DTI, and fMRI to study emotionality, psychopathology, and individual differences. These studies can be found in his numerous articles, book chapters, and books. His work has been published in such journals as *Science, Proceedings of the National Academy of Sciences, Journal of Neuroscience, Psychophysiology, Physiological Reviews, Journal of Personality and Social Psychology, Developmental Psychology, Journal of Abnormal Psychology, Cognitive Brain Research, Biological Psychology, NeuroImage,* and *Clinical Neurophysiology*. This work has been funded by both national and international agencies including NIH, NIMH, NASA, NATO, and the DAAD. In addition to research, teaching has been an important part of his career. His textbooks include *Abnormal Psychology, Methods Toward a Psychology of Behavior and Experience, Psychophysiological Methods* (with Robert Stern & Karen Quigley), and *Evolutionary Psychology: Neuroscience Perspectives Concerning Human Behavior and Experience*.

Matthias Ritzmann/Corbis/Getty Images

1 An Overview of Psychopathology and Changing Conceptualizations of Mental Illness

CHAPTER OUTLINE

LEARNING OBJECTIVES

1.1 Describe the components and key considerations of psychopathology.

1.2 Discuss the major themes of this book.

1.3 Explain how evolution and culture are relevant to psychopathology.

1.4 Summarize the historical influences on modern conceptions of mental disorders.

1.5 Explain how discoveries about the brain contributed to an understanding of psychopathology.

1.6 Discuss past and present methods of care for those with mental disorders.

1.7 Describe the major present-day empirical treatment perspectives.

The biography *A Beautiful Mind* describes the fascinating life and experiences of mathematician John Nash (Nasar, 1998). The powerful story was made into a major Hollywood film that won the Academy Award for Best Picture in 2001. John Nash was a remarkable figure who received a PhD in mathematics from Princeton University and taught at both MIT and Princeton. In 1994, Nash won the Nobel Prize in Economics for his work on game theory. From what you just read, you would probably assume that John Nash had a very productive career, and in many ways he did.

Terri Cheney

However, there was another aspect to John Nash's life that caused considerable distress to himself and puzzlement for others. One day at work, when he was 30 years old, he walked into a room full of others in his department, held up a copy of the *New York Times,* and said to no one in particular that the story in the upper-left corner contained an encrypted message. Not only was it a message in code, he claimed, but it had also been put there by inhabitants of another galaxy, and he knew how to decode it (Nasar, 1998, p. 16).

From that day on, there were times Nash was productive, but there were also times when he had disordered thoughts, mumbled to himself without thought of those around him, and experienced delusions of situations that did not exist. He felt there were individuals around him who put him in danger. He even wrote letters to officials in the U.S. government to suggest these individuals were setting up alternative governments. John Nash suffered from schizophrenia.

In Terri Cheney's memoir, *Manic* (2008), the author, who rose to success as an entertainment attorney in Beverly Hills, told of her experience of exceptional energy. She described one time she was in Santa Fe, New Mexico:

> The mania came in four-day spurts. Four days of not eating, not sleeping, barely sitting in one place for more than a few minutes at a time. Four days of constant shopping—and Canyon Road is all about commerce, however artsy its façade.

She further described her experiences:

> Mostly, however, I talked to men. Canyon Road has a number of extremely lively, extremely friendly bars and clubs, all of which were in walking distance of my hacienda. It wasn't hard for a redhead with a ready smile and a feverish glow in her eyes to strike up a conversation and then continue that conversation well into the early-morning hours, his place or mine. (pp. 6–7)

Many individuals experience feelings of high energy or sexuality that would not be considered a mental disorder. However, as you will see in Chapter 6 on mood disorders, those with bipolar disorder often experience high levels of energy for long periods of time and an intense desire to engage in sexual activity, gambling, or shopping. Our task is to understand which types of activities would be considered as psychopathology or mental illness.

Understanding Psychopathology: Definitions and Key Considerations

At one time in our history, health professionals distinguished between physical disorders and mental disorders—physical disorders involved the body, and mental disorders involved the mind. For example, addiction was at one time seen as a lack of will, with little to do with physiology. Today, we see the close connection of the brain with what were previously considered mental processes. Mental disorders are brain disorders. Further, those physiological processes involved in physical disorders such as the immune system, the turning on and off of genes, and the chemical processes of the body are also equally involved in mental disorders.

In this book, the terms *psychopathology*, *mental disorders*, or *mental illness* are used to refer to those disorders traditionally described in scientific and professional research and

practice. *Psychopathology* is the word commonly used in the neurosciences and the one you would want to use when performing literature searches in research and clinical journals. *Abnormal psychology* as a research area has a long tradition in psychology, and this tradition will be noted by that term.

Defining Psychopathology and Understanding Its Components

Mental disorders are part of our human condition. We have many names for these conditions. We speak of people with *mental illness*. For over a century, psychologists have studied these conditions in terms of **abnormal psychology**, which is the study of abnormal behavior. Others have used the term **psychopathology**. This is in contrast with *pathophysiology,* or pathology of our physiology. Slang words such as *crazy* or *nuts* have been around for hundreds of years. One of the oldest terms is *insanity,* or *insane,* which comes from the Latin meaning "not healthy."

Mental disorders have been with us throughout our human history. Since the time that written language became a part of our experience, humans have described mental disorders. We find such descriptions in Egyptian, Greek, Chinese, Indian, and other texts throughout world history. Today, our films, novels, plays, and television programs often portray problems experienced by those with mental disorders.

The experiences of the individuals described in the chapter opening give us insights into the nature of mental illness. Terri Cheney told how she experienced great energy, which lasted for 4 days. She described the experience of mental illness as something happening *to* her. In this sense, Terri Cheney and John Nash did not feel they had an alternative way of acting. Thus, one important characteristic of mental illness is the lack of control over one's experience. This can also be described as a loss of freedom or an inability to consider alternative ways of thinking, feeling, or doing. Some individuals show this loss mainly in terms of emotional experiences, as in the case of Terri Cheney with bipolar disorder. Others show the loss in terms of cognitive processes, such as the experiences of John Nash. At the beginning of many of the chapters of this book, you will read first-person accounts from individuals with particular disorders. In this way, you can discover how people with a mental disorder experience their world.

Another common theme seen in psychopathology is the loss of genuine personal contact. Individuals with depression or schizophrenia often find it difficult to have social interactions as experienced by other people. Just having a simple conversation or talking to clerks in stores may seem impossible. Mental illness not only affects individuals' interpersonal relationships but also their relationship with themselves, their *intrapersonal* relationship. When individuals with schizophrenia or depression talk to themselves, they often think negative thoughts about who they are and what will happen in the future.

In many cases, the experience of a mental disorder results in personal distress. Not being able to get out of bed, or feeling that a voice in your head is telling you that you are evil, or worrying that even a rice cake or an apple will make you fat all represent different degrees of distress.

Thus, we can consider four important personal components in psychopathology (*Table 1.1*). These are a loss of freedom or ability to consider alternatives; a loss of genuine personal contact; a loss of connection with one's self and the ability to live in a productive manner; and, finally, personal distress. As you will see with the disorders presented in this book, personal distress over time is one of the criteria required for a diagnosis to be made. There is also a more global component in which the person's behavior and experiences are considered to be deviant in terms of cultural and statistical norms.

TABLE 1.1 Key Personal Components of Psychopathology

FOUR KEY PERSONAL COMPONENTS OF PSYCHOPATHOLOGY
1. Loss of freedom and ability to consider alternatives
2. Loss of genuine personal contact
3. Loss of connection with one's self and the ability to live in a productive manner
4. Personal distress

Impact of Mental Disorders

Today, the National Institute of Mental Health (NIMH) estimates that at least 18.9% of the U.S. population experiences a diagnosable mental disorder during a given year (www.nimh.nih.gov/health/statistics/prevalence/any-mental-illness-ami-among-us-adults.shtml). This represents almost 44.7 million people in the United States (see *Figure 1.1*).

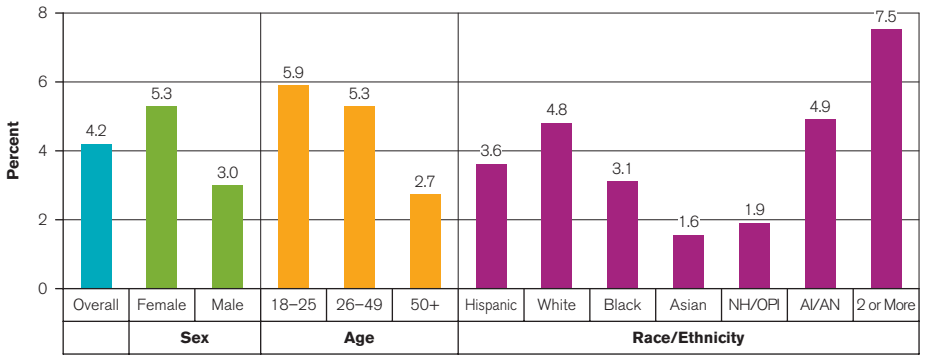
Having a mental disorder results in lost productivity, lost personal enjoyment, and potentially even premature death. The World Health Organization (WHO) estimated that in the United States and Canada, mental disorders cause a greater loss in what they refer to as disability-adjusted life years (DALYs) than cardiovascular disease or cancer. DALYs represent the total number of years lost due to illness, disability, or premature death (www.nimh.nih.gov/health/statistics/disability/file_148328.pdf).

With mental illness being so common, you might think that we as humans would have a complete understanding of the factors involved. However, this is not the case. We are not even sure how to refer to individuals with mental disorders. Are they abnormal? How you answer this question may be related to your experiences, including your cultural perspective.

Depending on your perspective, one can be normal or abnormal. Many famous artists such as the Impressionists of the nineteenth century had their work initially rejected because it did not fit into the standards of what was considered good art at the time. However, today we appreciate that these artists showed us another way of viewing the world. Likewise, many movies and YouTube videos today would be rejected as not representing mainstream values at a previous time. Being part of the lesbian, gay, bisexual, and transgender (LGBT)

FIGURE 1.1 Past Year Prevalence of Any Mental Illness Among U.S. Adults (2017)

Source: National Institute of Mental Health, http://www.nimh.nih.gov/health/statistics/prevalence/any-mental-illness-ami-among-us-adults.shtml



community was considered a mental disorder at one time. Further, what would be acceptable in one culture might be seen as completely "crazy" in another.

Stigma and Mental Disorders

As you will see throughout this book, experiencing a mental illness does not mean that one has to live a limited life. Individuals like John Nash and Terri Cheney not only have had productive careers, but they also have enjoyed successful personal relationships. However, many children, adolescents, and young adults with a mental illness report being told they could never perform in a high-level profession or have the types of relationships that others have. Mental disorders are seen throughout the U.S. population regardless of gender, age, and race/ethnicity (*Figure 1.1*).

There is often a **stigma** experienced by those with a mental disorder. Historically, *stigma* has been defined as a mark of disgrace associated with a particular person. In psychological terms, stigma involves negative attitudes and beliefs that cause the general public to avoid certain people, including those with a mental illness. Throughout the world, those with mental illness experience stigma. In many cultures, they are seen as different. When they are thus stigmatized, they are no longer treated as individual people, but only as part of a group who is different. It becomes an "us versus them" way of thinking.

Part of the stigma comes from inaccurate information about those with mental illness. For example, many people think that anyone with a mental illness is violent. In 2012, there was a mass shooting that killed 20 children and six teachers at the Sandy Hook Elementary School in Newtown, Connecticut. Immediately after, it was suggested that the killer had a mental illness. Officials of the National Rifle Association claimed that this could not have been done by a sane person. However, the data do not support a strong relationship between mental disorders and violence.

The MacArthur Foundation followed hospitalized individuals with mental illness after their release and found that only 2% to 3% became involved with violence with a gun. As a general rule, individuals with mental illness do not show more violent tendencies than is seen in the general population. However, particular disorders such as antisocial personality disorder (psychopathy) are associated with serial killers and other violent criminals. Also, substance abuse can increase violence in some individuals. With these exceptions, however, having a mental illness has not been found to increase violence toward others.

Stigma can be seen on a number of levels. If a society believes that mental illness is the fault of the person—and that the person can change himself or herself by willpower—then it is less likely to spend the money necessary to set up clinics and train professionals. For similar reasons, society may also be less likely to set up school-based programs to help adolescents with bullying or suicide. As well, companies may not be willing to include mental health treatment in their insurance coverage, or they may place limits on benefits for treatment of these disorders.

In the United States, attitudes are moving toward less stigma. In 1996, for example, according to the CDC, 54% of the U.S. population viewed depression as related to neurobiological causes. During the next 10 years, this increased to 67%. With a better understanding of the disorders presented throughout this book, it is possible to have a more compassionate as well as intellectual understanding of those with mental disorders.

As a society, Americans demonstrate a number of different values when considering those with mental illness. On the one hand, we may want to help those who experience distress. On the other hand, we may feel it is their responsibility to take care of themselves. *LENS: American Attitudes Toward Mental Illness* portrays some of these differing values.

LENS

American Attitudes Toward Mental Illness

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Throughout our history, a number of traditions and themes have developed in relation to American society. At times, these themes create a dynamic tension. For example, there is often a call for the federal government to tax less. However, in times of disaster, we expect the government to spend money to help our community. Such desires create a dynamic tension between different ideas and values.

There is also such a dynamic tension in relation to individuals with mental illness. This partly comes from our desire to take care of those who are not able to take care of themselves. Historically, in many countries from which Americans originally came, the king, queen, or government took care of those who could not care for themselves. However, there is also a tradition in America related to pioneers' settlement of our vast lands. This is represented by the pioneer or cowboy spirit in which we support the individual's right to do what he or she wants and to live the type of life desired.

As Americans, we have contradictory attitudes toward mental illness. In terms of treatment, 94% of Americans believe it can help people with mental illness lead normal lives. This might suggest that society would encourage treatment of mental illness and reduce any stigma around seeking help. However, it is estimated that only about 20% of those with a mental disorder actually sought help in the prior year. This may have resulted from embarrassment or an attempt to hide the condition from others. This leads to less treatment and may, in turn, affect work and life opportunities. The attempt to hide mental problems may also reflect a reality, as only around 60% of Americans believe that people are generally caring and sympathetic to people with mental illness.

The picture becomes more complicated when we realize that in any given year, about one fourth of all adult Americans have a mental disorder, including anxiety, depression, and substance abuse. Emotional problems and psychological distress are also experienced by those with chronic physical conditions such as arthritis, cancer, diabetes, and cardiovascular problems. Given the large number of individuals experiencing different types of emotional problems and psychological distress, you might expect that these conditions would be more accepted. However, stigma and negative attitudes toward mental illness are common in the United States. Some people even see having a disorder as being the person's fault and believe that they could change if they wanted to.

The dynamic tension between taking care of others and being independent becomes clear when we see homeless individuals in our community who have a mental illness. This raises a number of questions. Can we take these individuals off the street if they don't want to be taken to a shelter? If they do not want to take medication, can we force them to take it if this would help them function better in our community? Should it be the police or health care workers that work with these individuals? In the final chapter of this book, which focuses on legal and ethical issues and mental health, a number of these questions will be considered.

Thought Question: Who do you believe should take care of the mentally ill in American society?

Note: Data presented above are taken from the Centers for Disease Control and Prevention (CDC) (2012).

CONCEPT CHECK

- What are the four key components of psychopathology? Give an example of each.
- How does reading about the experiences of individuals with mental illness inform our understanding of the nature of psychopathology?

- What are the impacts of mental illness in the United States in any given year?
- Describe the dynamic tension in American attitudes toward mental illness.

The Three Major Themes of This Book

In this book, three major themes will be explored. The first theme takes a **behavioral and experiential perspective** on psychopathology. Here, current ways of classifying and describing abnormal behavior are discussed. We will also consider the experience of having a psychological disorder, and this book will present first-person reports from individuals with particular disorders. It is also important to examine the role of one's social groups and culture.

We will also discuss symptoms and signs. Traditionally, *symptoms,* such as feeling sad, are seen as subjective, and may be reported by the individual to a professional, whereas *signs,* such as having a fever, are an objective process that can be measured and would be apparent to a professional. An important aspect of this perspective is the manner in which the symptoms and signs of a particular disorder are seen in a similar manner throughout the world. The universality of mental disorders has been an important consideration for scientists. It is also important to note the role culture plays in the manifestations of behaviors and experiences related to psychopathology.

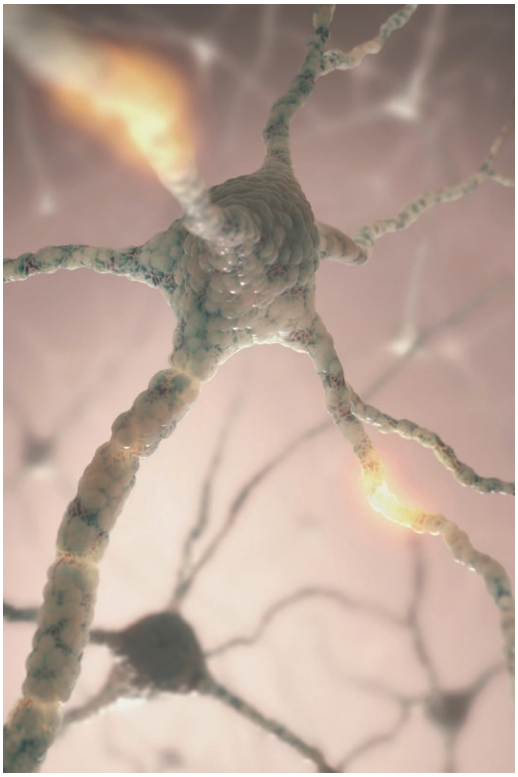
The second theme examines what we know about particular psychopathological experience from a **neuroscience perspective**. In particular, the structure and function of the brain as it relates to psychopathology is discussed. With neuroscience techniques such as brain imaging, it is becoming clear that mental disorders are also brain disorders. In fact, with every disorder we will consider in this book, it is possible to examine how the structure and function of the brain is changed. The neuroscience perspective will also help us to consider how certain disorders share a similarity in underlying brain processes. For example, knowing that the same brain networks involved in physical pain are also involved in social rejection helps us understand the experience of each and how they are similar.

The third theme asks much broader scientific questions and examines psychological disorders from an **evolutionary perspective**. In adopting this perspective, we can think about how certain ways of seeing or being in the world might be adaptive. Being afraid of heights, for example, keeps us from taking unnecessary risks. We can ask if there is any advantage to behaving and feeling in certain ways that others consider abnormal. We can also ask if the disordered behavior is secondary to another process that is beneficial. This could include an attempt by our body to protect itself.

In the same way that we know that having a fever is protective and beneficial to recovering from sickness, we can look for similarities in psychological disorders. We can also ask questions about why particular disorders continue to exist. Individuals with schizophrenia, for example, generally have fewer children than those without the disorder. Thus, you might expect that schizophrenia would have gradually disappeared over our evolutionary history through the production of fewer children with the genetics related to the disorder. However, this is not the case, and in fact, schizophrenia occurs in approximately the same percentage (1% of the population) throughout the world in both developed and developing countries. As will be discussed in more detail later in this book, this suggests that schizophrenia is an old disorder that has existed since humans migrated out of Africa around 100,000 years ago. It also suggests that the multiple genes associated with schizophrenia may be associated with more positive human traits such as creativity.

Levels of Analysis

As we explore together the themes of behavior and experience, neuroscience contributions, and evolutionary perspectives as related to psychopathology, you will see that we will move



How do our neurons form networks?

across a variety of **levels of analysis** ranging from culture to genetics. You can group these levels into three domains. The higher-level domain examines the individual in relationship with others. This includes our culture and society as well as our social relationships. From there, we can look at an individual domain, which includes our actions and our experiences. This is typically how we experience ourselves every day. Included in this is our sensory, motor, emotional, and cognitive processes. We can examine each of these levels as it influences our behavior and experience.

The final domain focuses on the physiological processes that make up our central and peripheral nervous systems. This will take us to the cortical network level, and you will see how neurons and their connections form the basis of information transfer and processing. The most basic level you will be introduced to in this book is the genetic level, which in turn will require us to understand how environmental conditions influence genetic processes. You will also learn about a related process, *epigenetics*, in which genes can be turned on or off by the environment, and these mechanisms can be passed on to future generations without actually changing the basic genetic structure.

To help focus their work, scientists often concentrate primarily on one of these levels of analysis. However, in this book a more integrative approach that draws on a number of these levels will be used. You should not take any one of these levels of analysis as being more important or truer than another. A similar plea was made by George Engel in 1977 when he helped to develop the biopsychosocial approach to understanding mental illness.

Biopsychosocial Approach

In his 1977 paper in the journal *Science*, George Engel introduced the term *biopsychosocial.* He suggested that individuals with mental illness or another medical disorder should be understood from more than just a biological perspective. Type 2 diabetes, for example, is a disorder, but it is also related to how the person eats and exercises. Likewise, depression and anxiety can be influenced by social and emotional factors. Thus, it is necessary to see the signs and symptoms of the disorder in a larger context. Otherwise, one has a limited perspective that ignores the social, psychological, and behavioral dimensions of any disorder. Therefore, as a mental health professional, you would want to know more about an individual than just the symptoms that the person describes, as represented in *Figure 1.2*. This could be his or her family life, work conditions, and cultural practices as well as eating habits and how the person exercises.

As you will read throughout this book, since the 1970s researchers have come a long way in understanding how various levels ranging from genetics to culture interact with each other in a complex manner. Let us now turn to a consideration of culture through the ages that will take us to an understanding of behavior and experience on a number of levels. In later chapters, you will be introduced to additional levels of analysis.

FIGURE 1.2 The Biopsychosocial Model

Individuals with mental illness should be understood from an intergrative perspective, which includes psychological, social, and biological variables.

Culture: How are we a part of culture, and what is its influence?

Individual: How do we relate to ourselves in terms of behavior and experience?

CONCEPT CHECK

- Identify the three major themes this book takes in regard to psychopathology.
- What does *level of analysis* mean? Identify three domains presented for studying psychopathology. Which is the most important?
- How is the biopsychosocial model related to the broader levels-of-analysis approach?

The Relation of Evolution and Culture to Psychopathology

Considering psychopathology from evolutionary and cultural perspectives goes beyond the traditional psychological and physiological considerations (Ray, 2013). These perspectives make us realize that for at least the last 100,000 years, humans have been social beings who have lived within the context of a group in which there were interactions related to gathering and preparing food, having sexual relations, and being part of a community. Cultures developed from this.

The **cultural perspective** emphasizes the social world in which a person lives (López & Guarnaccia, 2000). In this sense, culture can be viewed as "information capable of affecting individuals' behavior that they acquire from other members of their species through teaching, imitation, and other forms of social transmission" (Richerson & Boyd, 2005). From this perspective, culture can be seen as a system of inheritance. Humans learn a variety of things from others in their culture including skills, values, beliefs, and attitudes. Historically, parents and others taught children how to perform particular tasks such as farming, toolmaking, and hunting. In addition, human culture has formalized learning in the form of schools and apprenticeships. Cultures also differ in their level of economic development and the amount of resources they devote to mental health. In *Cultural LENS: Global Mental Health: Available Treatment,* the availability of mental health professionals across the world is described.

For a more complete understanding of psychopathology, it is important to understand the particular rules a culture has for expressing both internal experiences and external behaviors (Marsella & Yamada, 2000). One simple way to describe cultures is in terms of whether they emphasize the importance of individual achievement such as that seen in the

Genetics: How do genes influence the environment, and how does the environment influence genes?

United States and Europe or whether they emphasize collective values and working together as seen in Asian cultures such as those of China and Japan. This in turn can influence the type of psychological distress experienced. For example, social anxiety is more common in collective as compared to individualistic cultures (Hong, 2018). What may be a common stress-free experience in one culture may lead to stress and anxiety in another. Even what individuals tell themselves about having a mental disorder can vary from culture to culture. Likewise, artistic and spiritual experiences considered normal in one society may be considered "crazy" in another.

Historically, a simplistic view of culture has emphasized how each culture is locally determined, without reference to universal psychological processes. When universal ways of behaving, feeling, or thinking are suggested, this view assumes that this information is acquired by social learning. Although this is an important aspect of culture, such an emphasis will quickly lead you into the outdated nature–nurture debate, which lacks the insights of modern evolutionary and neuroscience perspectives. For example, consider the question of why foods with milk are found in European diets and not in Asian diets. One answer could be cultural preferences. However, a more complete answer includes the fact that Northern Europeans have a gene that allows them to continue digesting milk products after the traditional time of weaning.

A person with such a gene would have had an advantage in Northern Europe, since dairy products are a high-quality food source, and over time—probably less than 10,000 years—that advantage would have allowed these genes to be passed on to almost all of the European population. Today, 98% of all individuals in Sweden have this gene. In the United States, with its large European migration, 88% of white Americans are lactose tolerant, meaning they can digest milk products. Native Americans, on the other hand, are lactose *in*tolerant. Overall, this suggests a close connection between cultural and evolutionary perspectives.

The picture becomes even more complicated in terms of psychological processes. There is a particular form of a gene (5-HTT) related to the neurotransmitter serotonin that is associated with being prone to develop higher levels of anxiety and depression. When its occurrence is examined cross-culturally, studies have shown that 70 to 80% of Japanese individuals carry this gene, whereas only 40 to 45% of Europeans carry it (see Ambady & Bharucha, 2009). Likewise, brain imaging studies have shown that cultural values can influence which areas of the brain are active during self-evaluation (Chiao, 2011).

The larger question raised by these studies is whether this genetic variation influences the manner in which cultural structures formalize social interactions and how this might be related to what is considered mental illness. That is, a society that has more individuals who are prone to anxiety may develop different forms of social interaction than one that does not. Not only can the environment influence genetics, but genetics can also influence culture. This work is just beginning to be applied to viewing psychopathology from a cultural standpoint.

Considering how a condition such as lactose tolerance is found in some groups of individuals around the world and not in others gives us additional insights into when this condition may have developed. Since lactose tolerance is not found throughout the world but is limited to particular groups, one would assume that it was not part of the human condition when humans migrated out of Africa some 100,000 years ago. We can ask similar questions in terms of psychopathology. One question might be, how long, in terms of our human history, a particular psychopathology has existed.

Let's take schizophrenia as an example. A WHO study examined the presence of schizophrenia in a number of countries with very different racial and cultural backgrounds (Sartorius et al., 1986). If schizophrenia had an important environmental component, then you would expect to see different manifestations of the disorder in different cultures. Developed countries would show different rates from those of developing countries. Areas with different climates might also show differences, as is the case with multiple sclerosis. What these authors found was that, despite the different cultural and racial backgrounds surveyed, the experience of schizophrenia was remarkably similar across countries. Likewise, the risk of developing schizophrenia was similar in terms of total population presence—about 1%. Further, the disorder had a similar time course in its occurrence, with its characteristics first being seen in young adults.

The evolutionary and cultural perspectives help us ask questions such as what function a disorder might serve, as well as how it came about. For example, humans fear animals they have little contact with but do not fear more likely causes of danger such as automobile accidents. Unlike other species, humans live in environments that are different in many respects from those that shaped our early evolutionary history. We have developed large cities and the technological abilities to communicate instantly around the planet. We have also developed ways to mitigate conditions such as the weather experienced in our personal environment that would have played a greater role in our lives thousands of years ago. Compared with other species, humans live less in nature and more in culture. However, it is important in considering psychopathology to remember the environment in which humans as a species developed.

In thinking about our evolutionary history, we can consider how one basic human process developed in relation to an earlier one. For example, in the same way that pain can be seen as a warning system to the body to protect it from tissue damage, anxiety may have evolved to protect the individual from other types of potential threats. In fact, an evolutionary perspective has led to neuroscience research findings that social processes such as feeling rejected use similar brain circuits to those processes involved in physical pain. Further, many of the outward expressions of social anxiety parallel what is seen in dominance interactions in primates. Submissive monkeys avoid contact with more dominant ones, just as humans experiencing social anxiety avoid more dominant individuals. Thus, one hypothesis would be that anxiety may have its evolutionary origins in dominance structures. If this were true, we might expect to see some relationship to sexual instinctual processes as is the case with dominance. Indeed, social anxiety begins to show just prior to the onset of puberty—around 8 years of age. Of course, this merely shows how evolution may be related to anxiety. The evolutionary perspective can help us think about the roots of psychopathology as well, and it will be a recurring theme of this text.

Is Psychopathology Universal?

If psychopathology is part of our human makeup, then we would expect to see similar manifestations of it worldwide. One classic study was performed by Jane Murphy (1976) of Harvard University. It dates from the 1970s when mental illness was considered to be related to learning and the social construction of norms. In fact, some suggested that mental illness was just a myth developed by Western societies. In this perspective, neither the individual nor his or her acts are abnormal in an objective sense. One important implication of this view was that what would be seen as mental illness in a Western industrial culture might be very different from what was seen as mental illness in a less developed rural culture. That is to say, mental illness in this perspective was viewed as a social construction of the society. The alternative to this perspective is more similar to other human processes such as emotionality, in which humans throughout the world recognize similar expressions of the basic emotions. If mental illness is part of our human history, as evolutionary psychologists suggest, then we would expect to find similar manifestations across a variety of cultures.

CULTURAL LENS

Global Mental Health: Available Treatment

REUTERS/Sylvain Cherkaoui

Mental health services are available worldwide. However, they differ by country in how available they are and the nature of the services offered. In countries in which individuals have a higher income, such as the United States, Canada, England, Germany, France, Japan, and Australia, there are many more mental health care workers, such as psychologists and psychiatrists, than in countries with lower income such as India, China, and much of Africa. *Figure 1.3* shows the number of mental health professionals throughout the world. This map illustrates the number of psychiatrists, psychologists, nurses, and social workers per 100,000 people in the country.

High-income countries have the greatest number of mental health professionals, and low-income countries have the least. *Figure 1.4* shows the number of psychiatrists, psychologists, nurses, and social workers by income level. The governments of about one third of all countries do not have a specific budget for mental health. In many countries, informal networks of families, friends, and other social networks are utilized to care for those with mental illness.

FIGURE 1.3 Where Are the Mental Health Workers Available for Those With a Mental Illness?

Human resources for mental health (psychiatrists, psychologists, nurses, and social workers) vary by country. This figure shows the number of workers available by country for every 100,000 people in that country.

Source: Shekhar Saxena, Graham Thornicroft, Martin Knapp, and Harvey Whiteford, "Resources for Mental Health: Scarcity, Inequity, and Inefficiency," *The Lancet*, 8 September 2007, Vol. 370, Issue 9590, Pages 878–889. Copyright © 2007, with permission from Elsevier.

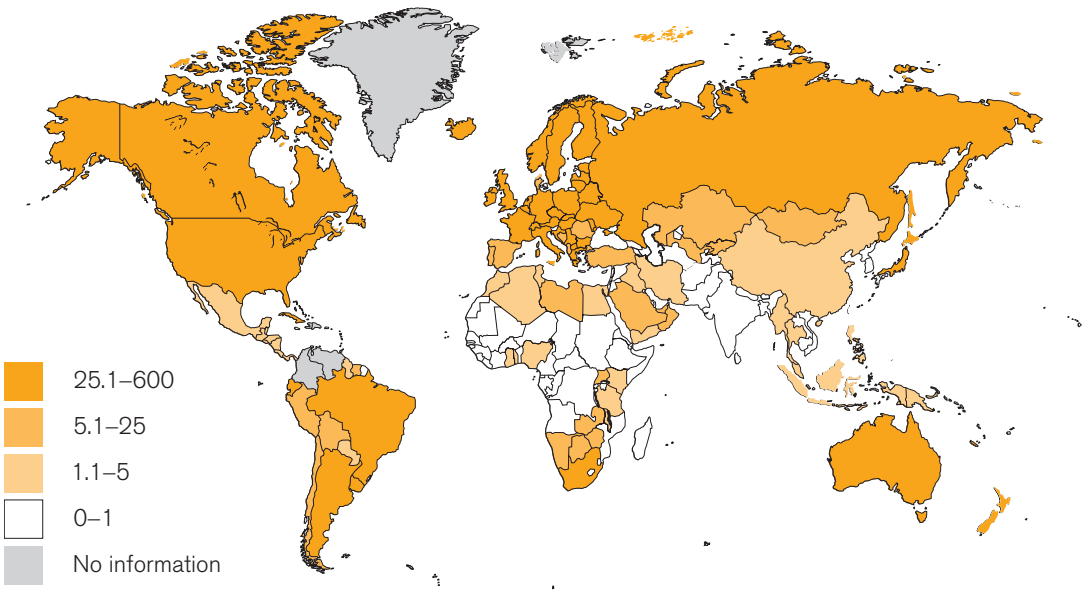
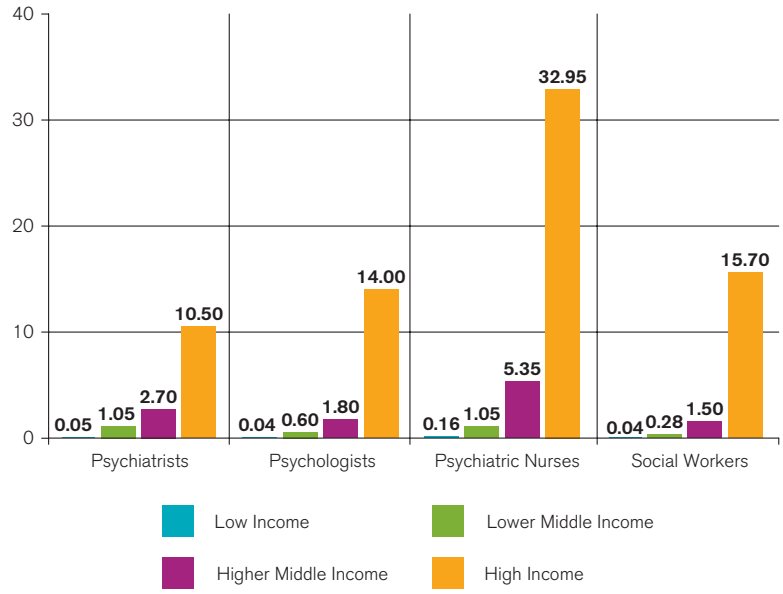


FIGURE 1.4 Do High-Income Countries Have More Mental Health Workers?

High-income countries have the greatest number of mental health professionals and low-income countries the least. This graph shows human resources in terms of mental health professionals in each income group of countries. The numbers are based on each 100,000 of population.

Source: Shekhar Saxena, Graham Thornicroft, Martin Knapp, and Harvey Whiteford, "Resources for Mental Health: Scarcity, Inequity, and Inefficiency," *The Lancet*, 8 September 2007, Vol. 370, Issue 9590, Pages 878–889. Copyright © 2007, with permission from Elsevier.



Thought Question: What are some ways mental health care professionals in both higher- and lower-income countries can work together to increase the availability and quality of mental health resources in the developing world?

Jane Murphy first studied two geographically separate and distinct non-Western groups: the Eskimos (Inuit) of northwest Alaska and the Yorubas of rural tropical Nigeria. Although many researchers of that time would have *expected* to find the conceptions of normality and abnormality to be very different in the two cultures, this is not what Murphy found. She found that these cultures were well acquainted with disturbed thought and behavior processes in which a person was said to be "out of his or her mind." This included the person doing strange things as well as hearing voices. Murphy concluded that processes of disturbed thought and behavior similar to schizophrenia are found in most cultures and that most cultures have a distinct name in their language for these processes.

In addition, Jane Murphy reported that these cultures had a variety of words for what traditionally is referred to as neurosis, although today we would call it anxiety or depression. Mood disorders include feeling anxious, tense, and fearful of being with others as well as being troubled and not able to sleep. One Inuit term was translated as "worrying too much until it makes the person sick." Thus, it appears that most cultures have a word for what has been called neurosis, what has been called psychosis, and what has been called normalcy. What is also interesting is that many cultures also have words for people who are "out of their mind" but not "crazy": witch doctors, shamans, and artists.

To add evidence to her argument that psychopathology is indeed part of our human nature, Jane Murphy also reviewed a large variety of studies conducted by others that looked at how common mental illness was in different cultures. The implication here is that if its prevalence is similar in cultures across the world, then it is more likely to be part of the human condition rather than culturally derived. What these studies suggest is that many forms of

mental illness such as schizophrenia are found at similar rates the world around. Overall, this research established that mental illness was not a created concept by a given culture, but rather part of the human condition in both its recognition and its prevalence. However, one's culture plays a role in how it is manifested in a specific society.

CONCEPT CHECK

- What evidence would you cite to characterize the relationships among genetics, culture, and evolution in human development?
- Is psychopathology universal? What kinds of evidence show that it is? What evidence is there for cultural differences in psychopathology?

Historical Considerations in Understanding Psychopathology

Humans have gone from a worldview in which magic—including the idea that you could be possessed by spirits or demons—produced mental illness to a time in which our scientific understanding describes a complex set of processes on many levels that contribute to mental illness. As you have seen, these levels go from society and culture to research from the neurosciences, including the role of genes and neurons.

Today, we have also come to see those with mental illness as whole people with both abilities and deficits. In terms of the future, there is a growing movement to allow people with mental disorders to have a greater say in their treatment. A person's high functioning and the ability to make decisions are not completely taken away by having a mental disorder. The person is still able to describe his or her experiences and, in the best of conditions, to ask others for help. However, this is getting ahead of ourselves.

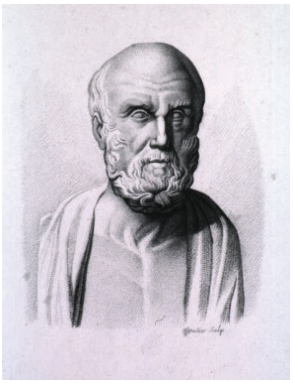
Psychology seeks to describe and understand human behavior and experience. In fact, as humans, we have a long history of trying to understand ourselves. In this section, you will see some of the historical conceptions that have influenced psychology (see Finger, 2000, or the classic Boring, 1950, for more information). One of these conceptions is the role of the body and its involvement in our mental processes. Some of the ideas we will examine date back thousands of years yet still influence our views today.

Ancient Greek and Roman Influences—Mental Illness Involves the Brain

Beginning with Pythagoras in the sixth century BCE, whom we know for his theorem concerning the sides of a right triangle, there was an emphasis on identifying the underlying scientific principles that may account for all forms of behavior. Pythagoras not only coined the term *philosophy,* which can be translated as love of meaning or wisdom, but he also began to set the stage for understanding human behavior and experience as related to internal processes and natural causes. This was in contrast to the prevailing view that human behavior and related disorders reflected the actions of the gods, such as the belief that mental illness was a divine punishment. Pythagoras was one of the first to see the brain as the structure involved in human intellect as well as in mental disorders.

In the next century, Hippocrates, often seen as the father of modern medicine, moved this concept to the next level with his emphasis on careful observation and a continued articulation of the idea that all disorders, both mental and physical, should be sought within the patient. His view of the brain suggests it produces "joys, delights, laughter and sports, and sorrows, griefs, despondency, and lamentations." He further notes,

> [W]e become mad and delirious, and fears and terrors assail us, some by night, and some by day, and dreams and untimely wanderings, and cares that are not suitable, and ignorance of present circumstances, desuetude, and unskillfulness. All these things we endure from the brain. (Hippocrates, 400 BCE)



Hippocrates is often seen as the father of Western medicine.
The National Library of Medicine

Galen (130–200 CE) was a physician in the Roman Empire who influenced Western and Islamic thought until the Renaissance. Some see him as a representation of the beginning of experimentation in medicine because he used dissection to better describe the structure and function of physiological structures. His work as a physician to the gladiators would have also given him firsthand knowledge of the consequences of trauma and its treatment.

During his lifetime, Galen wrote hundreds of treatises on science, medicine, and philosophy. He was largely a champion of *empiricism,* which stresses the use of direct observation as a means of gaining information. Writing in his treatise *On Medical Experience,* Galen (trans. 1944 by R. Walzer) stated, "I am a man who attends only to what can be perceived by the senses."

From chance encounters with human accidents and trauma and his anatomical work using a variety of animals, Galen carefully described the brain; the cranial nerves that are involved in sight, smell, movement, and other functions; and the nerves of the sympathetic nervous system involved in fight-or-flight reactions, among others. From his experiments with animals, Galen knew that blood was transported throughout the body. He had an early theory of how blood was changed by the organs based on the idea of *spirits*. Galen believed that blood was made in the liver, which gave it *natural spirits*. It then went to the heart where it developed *vital spirits* and then, with the introduction of air to the blood on the way to the brain, it was transformed into *animal spirits*. These animal spirits could be stored in the ventricles of the brain until they were needed. Today, we think in terms of hormones rather than spirits. Galen's works became the encyclopedia of medicine for the next 1,500 years.

Psychopathology in the Middle Ages

Although the Greek and Roman periods included individuals who attempted to understand psychopathology in a more humane way, this perspective disappeared as their civilizations declined. During the Middle Ages, disease and especially mental illness was seen from a religious perspective, with the devil being a major player. That is, when someone was observed to act in strange and bizarre ways, it was assumed that the person was a witch or possessed by the devil. As such, mental illness did not exist. What existed was the devil working through individuals. This view continued in Europe until the 1800s, especially among the less educated.

One of the classic books in this genre was the *Malleus Maleficarum* (*The Hammer of the Witches*), published in the 1480s. This book was written by two German priests and approved by the pope. It went through a number of editions and became the handbook of the Inquisition. It explained how witches existed and flew through the air as well as how they should be tortured if they did not confess. In a

During the Middle Ages, mental illness was perceived as the work of the devil, and individuals were accused of witchcraft.
Lanmas/Alamy Stock Photo

"catch-22," the captured witches were tied to a device and lowered into cold water. If they floated, they were thought to be possessed by the devil and most likely were then killed by hanging or fire. If they sank to the bottom and drowned, then they were innocent. During the interrogations, witches were not to be left alone or given clothes, since the devil would visit them or hide in their clothing. Although the writers of the time did not understand the nature of psychopathology, they did describe in some detail particular characteristics of different disorders including bipolar disorder, depression, and such psychotic processes as hallucinations and delusions.

From the Renaissance to the 1700s—The Beginning of Modern Science

Between the time of Galen and the Renaissance, Western science and medicine remained fairly stagnant, with little new knowledge being added. One problem during this period was that authority, which was often the Church, determined what was true or not. Since authority was able to use its own standard of truth, it was difficult to argue another position. For example, the Church was able to say that the Earth was the center of the universe, and that was that.

FIGURE 1.5 Leonardo da Vinci Drawing of the Structure of Human Organs

Before Leonardo da Vinci, there were few drawings of actual human organs. Beginning in the fourteenth century, da Vinci performed dissections on animals and human cadavers. He was then able to draw the structure of organs.

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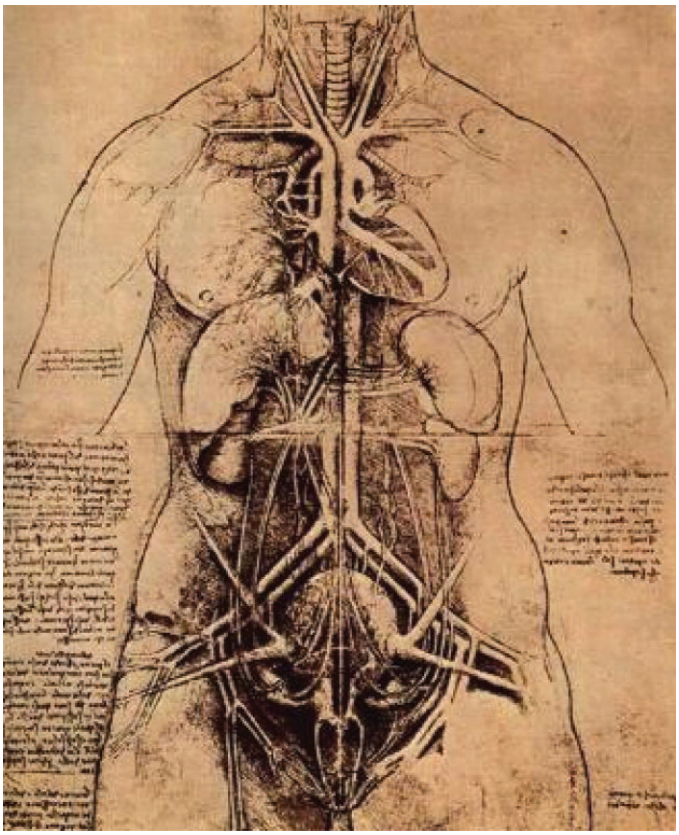

Beginning in the fourteenth century, however, a new spirit began to emerge in Europe. It influenced art, literature, politics, and science. In art, there was a desire for a sense of realism, which led artists such as Leonardo da Vinci to carefully study the human body. He performed dissections on animals and human cadavers to carefully reveal the structure of organs. *Figure 1.5* shows one of da Vinci's drawings.

With the detailed drawings of human anatomy created by da Vinci and other artists of the time, there was now the possibility for the scientists of the 1600s to consider function. One important focus was the manner in which the nervous system allows us to perform both involuntary and voluntary functions. How physiological processes are involved in remembering, moving, feeling, and thinking became topics of consideration. Mechanical models emerged, as illustrated by the writings of French philosopher René Descartes (1596–1650).

Descartes was intrigued by mechanical machines such as the large clocks in Europe with moving figures or water displays in large fountains. By analogy, he assumed that reflexes or involuntary actions of organisms were based on similar principles. Thus, moving your hand quickly from a hot stove or even digesting food was seen as a mechanical operation.

For Descartes, all animal behavior could be explained by mechanical principles as could human involuntary actions. In *Figure 1.6* from Descartes' work, you can see the mechanical means by which a hot fire would cause an involuntary or reflexive movement.

The important distinction that continues today is that behavior can be categorized as either involuntary or voluntary. Voluntary actions such as thinking or consciously performing an act were different in that they required a mind, and humans were the only organism to have a mind, according to Descartes. By thinking, humans can know with certainty that they exist—thus, the famous philosophical statement of Descartes, "I think, therefore I am."

Given the understanding that the bodies of animals are totally mechanical and that humans have both a body and a mind, Descartes created a mind–body distinction that science has had to face in its explanations. The problem is, how can a material body including the brain be influenced by an immaterial process such as the mind? How can a thought influence a cell in the brain?

Although today we generally talk about the mind–body problem, the metaphysics of Descartes' era would often make the distinction between body and soul. Descartes answered this problem by suggesting that the rational soul was able to control the mechanical body by having both functions come together in one particular organ of the brain, the pineal gland. It is in the pineal gland, Descartes claimed, that the mind not only controls the body but also senses the nature and flow of the mechanical nervous system.

FIGURE 1.6 Involuntary or Reflexive Movement

In this drawing by Descartes from the 1600s, the person is shown touching the fire with his foot, which results in an impulse being sent to the brain.

Source: Public domain

Today, most neuroscientists see the mind as resulting directly from the brain and that the mind–body problem is not actually a problem to be solved. However, the question of whether particular behaviors seen in individuals with mental illness represent involuntary processes performed without the benefit of a conscious mind has plagued our legal understanding of mental illness.

In the 1600s, science as a way of knowing about the world began to emerge. At the beginning of this period, prior authorities such as Aristotle or the Church determined the worldview. In this century, Galileo led a movement that would eventually replace authority with experimentation. This movement toward experimentation was greatly aided by Galileo's own inventions, such as the telescope, the thermometer, an improved microscope, and a pendulum-type timing device. Each of these instruments allowed people to experiment and answer for themselves the questions of nature. With Galileo's work, a new science based on observation and experimentation was beginning. Galileo was part of a revolution that was to challenge authority. In the 1680s, Isaac Newton's classic work *Principia* was published (Newton, 1729/1969). Designated by science historian Gerald Holton (1952) as "probably the greatest single book in the history of science," this work describes Newton's theories of time, space, and motion as well as his rules of reasoning for science.

CONCEPT CHECK

- Concepts in understanding psychopathology date back thousands of years yet still influence our views today. What important contributions did the ancient Greeks and Romans—particularly Pythagoras, Hippocrates, and Galen—make to current views of psychopathology?
- Describe the shift from authority to science as a way of knowing that happened during the Renaissance. Specifically, what did Leonardo da Vinci, René Descartes, Galileo, and Isaac Newton contribute during this period that led to this shift?

Discovering the Function of the Brain in Behavior and Psychopathology

The developing spirit of science during the 1600s set the stage for a new breed of scientists to emerge. One scientist was an English doctor, Thomas Willis (1621–1675). He was interested in neurology and in fact coined that term along with a number of anatomical terms such as lobe, hemisphere, and corpus striatum. He may also have been the first person to use the word *psychology* in English.

Willis sought to combine the study of brain structure and function. He suggested that lower-brain structures were responsible for more basic functions of life and that these structures could be found across a variety of vertebrates. On the other hand, those structures located higher in the brain must be involved in more advanced processes seen in higher organisms such as humans. Implicit in this idea is a break with Descartes' suggestion that animals are only machines.

By the end of the 1700s, the nervous system had been completely dissected and the major parts described in detail. The brain was seen to be composed of gray matter and white matter, terms we continue to use today (see *Figure 1.7*). White matter was involved in moving information to and from the gray matter. Today, we have a fuller understanding of brain structure, with the thin outer shell of the brain consisting of cells that appear to be a darker color and are thus called *gray matter.* Underlying this are the axons, which transfer information throughout the brain. Their myelin sheaths are lighter in color, and thus these areas are referred to as *white matter.* Myelin is made up of fats and proteins and wraps around axons like insulation does around electrical cables, resulting in an increased speed of information transmissions.

Also by the 1700s, scientists knew that there was a general pattern in all human brains in how the brain was structured in terms of surface structures or bumps, which were called *gyri,* and the grooves between them, referred to then and now as *sulci* and *fissures.* The present-day terms used to describe parts of the brain also come from Latin, so the lobes of the brain are

FIGURE 1.7 Gray Matter and White Matter in the Brain

The outer level of the brain contains cells that appear darker in color and thus are called *gray matter.* Axons transfer information throughout the brain. Their myelin sheaths are lighter in color and thus are called *white matter.*

Source: Courtesy of http://www.healcentral.org/healapp/showMetadata?metadataId=40566