

V. MARK DURAND
DAVID H. BARLOW

Essentials of
ABNORMAL PSYCHOLOGY

6e

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SIXTH EDITION

ESSENTIALS OF

Abnormal Psychology

V. Mark Durand

University of South Florida–St. Petersburg

David H. Barlow

Boston University



Australia • Brazil • Japan • Korea • Mexico • Singapore • Spain • United Kingdom • United States

**Essentials of Abnormal Psychology,
Sixth Edition****V. Mark Durand and David H. Barlow**

Publisher: Jon-David Hague

Development Editor: Tangelique Williams

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Rights Acquisitions Specialist: Don Schlotman

Production Service: Megan Greiner,
Graphic World Inc.

Text Designer: Ellen Pettengill

Photo Researcher: Wendy Granger/Bill Smith
Group

Text Researcher: Pablo D'Stair

Copy Editor: Graphic World Inc.

Cover Designer: Paula Goldstein

Cover Image: Digital Vision/Getty Images

Compositor: Graphic World Inc.

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Library of Congress Control Number: 2011934458

Student Edition (SE):

ISBN-13: 978-1-111-83698-6

ISBN-10: 1-111-83698-1

Paperbound Edition:

ISBN-13: 978-1-111-83729-7

ISBN-10: 1-111-83729-5

Loose-Leaf Edition:

ISBN-13: 978-1-111-83735-8

ISBN-10: 1-111-83735-X

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*To Wendy and Jonathan,
whose patience, understanding, and love
provided me the opportunity
to complete such an ambitious project.*

V. M. D.

*I dedicate this book to my mother,
Doris Elinor Barlow-Lanigan,
for her multidimensional influence
across my life span.*

D. H. B.

ABOUT THE AUTHORS

V. Mark Durand



V. Mark Durand is known worldwide as an authority in the area of autism spectrum disorders. He is a professor of psychology at the University of South Florida–St. Petersburg, where he was the founding Dean of Arts & Sciences and Vice Chancellor for Academic Affairs. Dr. Durand is a fellow of the American Psychological Association. He has received over \$4

million in continuous federal funding since the beginning of his career to study the nature, assessment, and treatment of behavior problems in children with disabilities. Before moving to Florida, he served in a variety of leadership positions at the University at Albany, including associate director for clinical training for the doctoral psychology program from 1987 to 1990, chair of the psychology department from 1995 to 1998, and interim dean of Arts and Sciences from 2001 to 2002. There he established the Center for Autism and Related Disabilities at the University at Albany, SUNY. He received his B.A., M.A., and Ph.D.—all in psychology—at the State University of New York–Stony Brook.

Dr. Durand was awarded the University Award for Excellence in Teaching at SUNY–Albany in 1991 and was given the Chancellor's Award for Excellence in Research and Creative Scholarship at the University of South

Florida–St. Petersburg in 2007. Dr. Durand is currently a member of the Professional Advisory Board for the Autism Society of America and is on the board of directors of the International Association of Positive Behavioral Support. He is co-editor of the *Journal of Positive Behavior Interventions*, serves on a number of editorial boards, and has over 100 publications on functional communication, educational programming, and behavior therapy. His books include *Severe Behavior Problems: A Functional Communication Training Approach*, *Sleep Better! A Guide to Improving Sleep for Children with Special Needs*, *Helping Parents with Challenging Children: Positive Family Intervention*, and most recently, *Optimistic Parenting: Hope and Help for You and Your Challenging Child*.

Dr. Durand developed a unique treatment for severe behavior problems that is currently mandated by states across the country and is used worldwide. He also developed an assessment tool that is used internationally and has been translated into more than 15 languages. Most recently he developed an innovative approach to help families work with their challenging child (Optimistic Parenting), which was validated in a 5-year clinical trial. He has been consulted by the departments of education in numerous states and by the U.S. Departments of Justice and Education. His current research program includes the study of prevention models and treatments for such serious problems as self-injurious behavior.

In his leisure time, he enjoys long-distance running and has just completed his third marathon.

David H. Barlow



David H. Barlow is an internationally recognized pioneer and leader in clinical psychology. A professor of psychology and psychiatry at Boston University, Dr. Barlow is Founder and Director Emeritus of the Center for Anxiety and Related Disorders, one of the largest research clinics of its kind in the world. From 1996 to 2004, he directed the clinical psychology programs.

From 1979 to 1996, he was distinguished professor at the University at Albany–State University of New York. From 1975 to 1979, he was professor of psychiatry and psychology at Brown University, where he also founded the clinical psychology internship program. From 1969 to 1975, he was professor of psychiatry at the University of Mississippi, where he founded the Medical School psychology residency program. Dr. Barlow received his B.A. from the University of Notre Dame, his M.A. from Boston College, and his Ph.D. from the University of Vermont.

A fellow of every major psychological association, Dr. Barlow has received many awards in honor of his excellence in scholarship, including the National Institute of Mental Health Merit Award for his long-term contributions to the clinical research effort; the 2000 Distinguished Scientist Award for applications of psychology from the American Psychological Association; the Distinguished Scientist Award from the Society of Clinical Psychology of the American Psychological Association; and a certificate of appreciation from the APA section on the clinical psychology of women for “outstanding commitment to the advancement of women in psychology.” In 2004, he received the C. Charles Burlingame Award from the Institute of Living and was awarded an Honorary Doctorate of Humane Letters degree from the Massachusetts School of Professional Psychology. He also received career contribution awards from the Massachusetts, Connecticut, and California Psychological Asso-

ciations and, in 2000, was named Honorary Visiting Professor at the Chinese People’s Liberation Army General Hospital and Postgraduate Medical School in Beijing, China. In addition, the annual Grand Rounds in Clinical Psychology at Brown University was named in his honor, and he was awarded the first graduate alumni scholar award at the University of Vermont. During the 1997–1998 academic year, he was Fritz Redlich Fellow at the Center for Advanced Study in the Behavioral Sciences in Menlo Park, California. His research has been continually funded by the National Institute of Mental Health for over 40 years.

Dr. Barlow has edited three journals, has served on the editorial boards of 19 different journals and is currently editor in chief of the “Treatments That Work” series for Oxford University Press.

He has published more than 500 scholarly articles and written over 65 books and clinical manuals, including *Anxiety and Its Disorders*, 2nd edition, Guilford Press; *Clinical Handbook of Psychological Disorders: A Step-by-Step Treatment Manual*, 4th edition, Guilford Press; *Single-Case Experimental Designs: Strategies for Studying Behavior Change*, 3rd edition, Allyn & Bacon (with Matthew Nock and Michael Hersen); *The Scientist–Practitioner: Research and Accountability in the Age of Managed Care*, 2nd edition, Allyn & Bacon (with Steve Hayes and Rosemary Nelson); and *Mastery of Your Anxiety and Panic*, Oxford University Press (with Michelle Craske). The book and manuals have been translated in over 20 languages, including Arabic, Chinese, and Russian.

Dr. Barlow was one of three psychologists on the task force that was responsible for reviewing the work of more than 1,000 mental health professionals who participated in the creation of *DSM-IV*. He also chaired the APA Task Force on Psychological Intervention Guidelines, which created a template for clinical practice guidelines. His current research program focuses on the nature and treatment of anxiety and related emotional disorders.

At leisure he plays golf, skis, and retreats to his home in Nantucket, where he loves to write, walk on the beach, and visit with his island friends.

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PREFACE

Science is a constantly evolving field, but every now and then something groundbreaking occurs that alters our way of thinking. For example, evolutionary biologists, who long assumed that the process of evolution was gradual, suddenly had to adjust to evidence that says evolution happens in fits and starts in response to such cataclysmic, environmental events as meteor impacts. Similarly, geology has been revolutionized by the discovery of plate tectonics.

Until recently, the science of psychopathology had been compartmentalized, with psychopathologists examining the separate effects of psychological, biological, and social influences. This approach is still reflected in popular media accounts that describe, for example, a newly discovered gene, a biological dysfunction (chemical imbalance), or early childhood experiences as a “cause” of a psychological disorder. This way of thinking still dominates discussions of causality and treatment in some psychology textbooks: “The psychoanalytic views of this disorder are . . .,” “the biological views are . . .,” and, often in a separate chapter, “psychoanalytic treatment approaches for this disorder are . . .,” “cognitive behavioral treatment approaches are . . .,” or “biological treatment approaches are . . .”

In the first edition of this text, we tried to do something very different. We thought the field had advanced to the point that it was ready for an integrative approach in which the intricate interactions of biological, psychological, and social factors are explicated in as clear and convincing a manner as possible. Recent explosive advances in knowledge confirm this approach as the only viable way of understanding psychopathology. To take just two examples, Chapter 2 describes a study demonstrating that stressful life events can lead to depression but that not everyone shows this response. Rather, stress is more likely to cause depression in individuals who already carry a particular gene that

influences serotonin at the brain synapses. Similarly, Chapter 7 describes how the pain of social rejection activates the same neural mechanisms in the brain as physical pain. On the other hand, the entire section on genetics has been rewritten to highlight the new emphasis on gene–environment interaction, along with recent thinking from leading behavioral geneticists that the goal of basing the classification of psychological disorders on the firm foundation of genetics is fundamentally flawed. Descriptions of the emerging field of epigenetics, or the influence of the environment on gene expression, is also woven into the chapter, along with new studies on the seeming ability of extreme environments to largely override the effects of genetic contributions. Studies elucidating the mechanisms of epigenetics or specifically how environmental events influence gene expression are described.

These results confirm the integrative approach in this book: psychological disorders cannot be explained by genetic or environmental factors alone but rather from their interaction. We now understand that psychological and social factors directly affect neurotransmitter function and even genetic expression. Similarly, we cannot study behavioral, cognitive, or emotional processes without appreciating the contribution of biological and social factors to psychological and psychopathological expression. Instead of compartmentalizing psychopathology, we use a more accessible approach that accurately reflects the current state of our clinical science.

As colleagues, you are aware that we understand some disorders better than others. But we hope you will share our excitement in conveying to students both what we currently know about the causes and treatment of psychopathology and how far we have yet to go in understanding these complex interactions.



Integrative Approach

As noted earlier, the first edition of *Abnormal Psychology* pioneered a new generation of abnormal psychology textbooks, which offer an integrative and multidimensional perspective. (We acknowledge such one-dimensional approaches as biological, psychosocial, or supernatural as historic trends.) We include substantial current evidence of the reciprocal influences of biology and behavior and of

psychological and social influences on biology. Our examples hold students’ attention; for example, we discuss genetic contributions to divorce, the effects of early social and behavioral experience on later brain function and structure, new information on the relation of social networks to the common cold, and new data on psychosocial treatments for cancer. We emphasize the fact that in the

phenomenon of implicit memory and blind sight, which may have parallels in dissociative experiences, psychological science verifies the existence of the unconscious (although it does not much resemble the seething caldron of conflicts envisioned by Freud). We present new evidence confirming the effects of psychological treatments on neurotransmitter flow and brain function. We acknowledge the often neglected area of emotion theory for its rich contributions to psychopathology (e.g., the effects of anger on cardiovascular disease). We weave scientific findings from the study of emotions together with behavioral, biological, cognitive, and social discoveries to create an integrated tapestry of psychopathology.

Life-Span Developmental Influences

No modern view of abnormal psychology can ignore the importance of life-span developmental factors in the manifestation and treatment of psychopathology. In this edition, for the first time, studies highlighting developmental windows for the influence of the environment on gene expression are highlighted. Accordingly, although we include a developmental disorders chapter (Chapter 13), we consider the importance of development throughout the text; we discuss childhood and geriatric anxiety, for example, in the context of the anxiety disorders chapter. This organization, which is for the most part consistent with *DSM-IV*, helps students appreciate the need to study each disorder from childhood through adulthood and old age. We note findings on developmental considerations in separate sections of each disorder chapter and, as appropriate, discuss how specific developmental factors affect causation and treatment.

Scientist–Practitioner Approach

We go to some lengths to explain why the scientist–practitioner approach to psychopathology is both practical and ideal. Like most of our colleagues, we view this as something more than simple awareness of how scientific findings apply to psychopathology. We show how every clinician contributes to general scientific knowledge through astute and systematic clinical observations, functional analyses of individual case studies, and systematic observations of series of cases in clinical settings. For example, we explain how information on dissociative phenomena provided by early psychoanalytic theorists remains relevant today. We also describe the formal methods used by scientist–practitioners and show how abstract research designs are actually implemented in research programs.

Clinical Cases of Real People

We have enriched the book with authentic clinical histories to illustrate scientific findings on the causes and treatment of psychopathology. We have both run active clinics for years, so 95% of the cases are from our own files, and they provide a fascinating frame of reference for the findings we

describe. Most chapters begin with a case description, and most of the discussion of the latest theory and research is related to these very cases.

Disorders in Detail

We cover the major psychological disorders in 10 chapters, focusing on three broad categories: clinical description, causal factors, and treatment and outcomes. We pay considerable attention to case studies and *DSM-IV* criteria, and we include statistical data, such as prevalence and incidence rates, sex ratio, age of onset, and the general course or pattern for the disorder as a whole. Because one of us (DHB) is an appointed advisor to the *DMS-5* task force, we are able to include likely revisions to the diagnostic criteria and the reasons why. Throughout, we explore how biological, psychological, and social dimensions may interact to cause a particular disorder. Finally, by covering treatment and outcomes within the context of specific disorders, we provide a realistic sense of clinical practice.

Treatment

One of the best received innovations in the first five editions is that we discuss treatment in the same chapter as the disorders themselves instead of in a separate chapter, an approach that is supported by the development of specific psychosocial and pharmacological treatment procedures for specific disorders. We have retained this integrative format and have improved upon it, and we include treatment procedures in the key terms and glossary.

Legal and Ethical Issues

In our closing chapter, we integrate many of the approaches and themes that have been discussed throughout the text. We include case studies of people who have been involved directly with many legal and ethical issues and with the delivery of mental health services. We also provide a historical context for current perspectives so students will understand the effects of social and cultural influences on legal and ethical issues.

Diversity

Issues of culture and gender are integral to the study of psychopathology. Throughout the text we describe current thinking about which aspects of the disorders are culturally specific and which are universal and about the strong and sometimes puzzling effects of gender roles. For instance, we discuss the current information on topics, such as the gender imbalance in depression, how panic disorders are expressed differently in various Asian cultures, the ethnic differences in eating disorders, treatment of schizophrenia across cultures, and the diagnostic differences of attention deficit/hyperactivity disorder (ADHD) in boys and girls. Clearly, our field will grow in depth and detail as

these subjects and others become standard research topics. For example, why do some disorders overwhelmingly affect females and others appear predominantly in males? And why does this apportionment sometimes change from

one culture to another? In answering questions like these, we adhere closely to science, emphasizing that gender and culture are each one dimension among several that constitute psychopathology.

New to This Edition

A Thorough Update

This exciting field moves at a rapid pace, and we take particular pride in how our book reflects the most recent developments. Therefore, once again, every chapter has been carefully revised to reflect the latest research studies on psychological disorders. Hundreds of new references from 2008 to 2011 (and some still “in press”) appear for the first time in this edition, and some of the information they contain stuns the imagination. Nonessential material has been eliminated, some new headings have been added, and *DSM-IV* criteria are included in their entirety as tables in the appropriate disorder chapters.

The chapters on Anxiety Disorders (Chapter 4), Mood Disorders and Suicide (Chapter 6), Physical Disorders and Health Psychology (Chapter 7), Eating and Sleep Disorders (Chapter 8), Substance-Related and Impulse-Control Disorders (Chapter 10), Schizophrenia and Other Psychotic Disorders (Chapter 12), and Developmental and Cognitive Disorders (Chapter 13) have been the most heavily revised to reflect new research, but all chapters have been significantly updated and freshened. Some highlights of the changes include:

- › In Chapter 2, An Integrative Approach to Psychopathology, the entire section on genetics has been rewritten to highlight the new emphasis on gene–environment interaction. The emerging field of epigenetics is integrated throughout the chapter. Also included are new studies on the relative contribution of genetic factors and environmental factors to both variability and stability in important human traits, as well as new evidence on the ability of early childhood experiences to override genetic influences in the development of behavior.
- › Chapter 3, Clinical Assessment, Diagnosis, and Research in Psychopathology, now presents updated research findings on labeling and stigma and their relation to potential changes in the *DSM-5*, as well as examples of more fully developed conceptually satisfying dimensional approaches to diagnosis and reasons why these will probably not make an appearance until the *DSM-6*.
- › Chapter 3 also introduces a new concept that is now the focus of intense study—endophenotypes. Another new section describes clinical trials and defines the differences among clinical trials, randomized clinical trials, and randomized control trials. The section “Studying Behavior over Time” is completely rewritten,

with a new example of prospective longitudinal research on the development of autism, as is the section “The Power of a Program of Research,” using all new examples to illustrate different research strategies and how these are used to answer complex questions in abnormal psychology.

- › Chapter 4, Anxiety Disorders, now includes the conceptual basis of description on how a future diagnostic system using dimensional approaches for emotional disorders might work, as well as data supporting a possible new category of separation anxiety disorder in adults.
- › Chapter 4 also describes consideration of the likely new names for several anxiety disorders in *DSM-5*, as well as likely changes to definitions.
- › Descriptions of new major clinical trials for both adults and children with GAD evaluating the effects of psychological treatments and drugs are also presented in Chapter 4.
- › Finally, Chapter 4 provides a description of a new disorder under consideration for inclusion in *DSM-5* called “olfactory reference syndrome.”
- › Chapter 5, Somatoform and Dissociative Disorders, describes a potential new *DSM-5* reorganization where the disorders of hypochondriasis, somatization disorder, and (somatoform) pain disorders are grouped together as varying examples of medically unexplained physical symptoms (MUPS) with a potential label of complex somatic symptom disorder. Chapter 5 also includes an updated review of the latest evidence on the induction of false memories and the role that false memory may play in various presentations of dissociation and psychopathology.
- › Chapter 6, Mood Disorders and Suicide, is thoroughly rewritten and reorganized, with approximately 40% new material and 149 new references. Existing material has been streamlined and reorganized to facilitate reading and comprehension, resulting in a chapter that is shorter and more succinct than in previous editions. Chapter 6 also includes data underscoring the combination of depression with impulse control problems as causal factors in suicide, as well as new data on the ability to detect implicit or out-of-awareness suicidal ideation as a possible powerful risk factor for depression.
- › In Chapter 7, Physical Disorders and Health Psychology, updated information is presented on the worldwide epidemic of AIDS, as well as new information on the effec-

tiveness of psychological treatments for AIDS on immune functioning and survival time. Chapter 7 also includes updated information on the role of psychological factors on the progression and treatment of cancer, including new randomized controlled trials demonstrating increases in survival time from psychological treatments, as well as new hypotheses on the causes and maintenance factors of chronic fatigue syndrome.

- › Chapter 8, Eating and Sleep Disorders, includes an update on the status of binge-eating disorder and the reasons why it will almost certainly be included as a disorder in the *DSM-5*, as well as new data on the disappointing follow-up of anti-obesity drugs for binge-eating disorder. Chapter 8 also presents recent results from a transdiagnostic psychological approach to the treatment of eating disorders, illustrating the importance of conceptualizing eating disorders on a dimension or spectrum.
- › Chapter 8 also presents research that suggests that the effects of jet lag on circadian rhythms can be quite serious—at least among older adults.
- › Chapter 9, Sexual and Gender Identity Disorders, includes prevalence, social and psychological determinants, treatments, and likely changes to *DSM-5* for sexual dysfunction. Also presented is new information on the malleability of sexual identities relative to sexual arousal patterns, particularly in women, and new information on the very loose connections between gender nonconforming behavior in children and sexual orientation and gender identity as an adult.
- › Chapter 10, Substance-Related and Impulse-Control Disorders, includes a discussion of a new longitudinal study that shows that hard drug use in high school predicts poorer job outcomes in young adults (younger than 29 years of age). The section on medical marijuana use is also completely revised and now describes its application in routine medical care in Canada. Chapter 10 also provides a revised section on fetal alcohol syndrome and updated data on cultural variations in binge drinking.
- › In addition to updated coverage of changes being discussed for *DSM-5*, Chapter 11, Personality Disorders, describes a large and important longitudinal study that

finds impaired fear conditioning at age 3 predicts criminal status at age 23, which suggests a gene–environment interaction in the development of antisocial personality disorder. Chapter 11 also discusses a new prospective study, which shows that a history of abuse and neglect does predict later development of borderline personality disorder. Updated research on the medical treatment of borderline personality disorder is also provided.

- › Chapter 12, Schizophrenia and Other Psychotic Disorders, now includes coverage of the outcomes from two large drug studies conducted in the United States (called the Clinical Antipsychotic Trials of Intervention Effectiveness or CATIE) and in the U.K. (called the Cost Utility of the Latest Antipsychotic Drugs in Schizophrenia Study or CUtLASS). These studies find that newer, second-generation drugs are no more effective or better tolerated than the older drugs.
- › In Chapter 13, Developmental and Cognitive Disorders, a great deal of new information on ADHD is presented, including a new section on ADHD comorbidity; new information on global ADHD prevalence; significantly expanded coverage of genetics, including the only gene–environment interaction study; updated material on brain structural differences in children with ADHD; and a new discussion of the overlap among ADHD and opposition defiant disorder (ODD), conduct disorder, and bipolar disorder. Also, the section previously titled “Mental Retardation” is completely revised to recognize the use of the more acceptable term *intellectual disability*.
- › Chapter 13 also includes a new section on Spectra and Dimensions, which describes the changes proposed for *DSM-5* to use two types of “Neurocognitive Disorders” (Major and Minor) to indicate their dimensional quality. Chapter 13 also provides updated information on the progress being made in the early identification of Alzheimer’s disease (the Alzheimer’s Disease Neuroimaging Initiative or ADNI), as well as an added discussion of the controversial nature of vascular dementia as different from dementia of the Alzheimer’s type. New data are also presented on sex differences in dementia across developed and developing countries.

New Features

In addition to the changes highlighted earlier, we have added two new features to the sixth edition:

- › New *Student Learning Outcomes* at the start of each chapter assist instructors in accurately assessing and mapping questions throughout the chapter. The outcomes are mapped to the core APA goals and are integrated throughout the instructor resources and testing program.
- › At the end of every disorder chapter is another new feature called *On the Spectrum*, which examines

cutting-edge developments in the gradual but inexorable movement toward a more multidimensional approach to studying psychopathology. Examples include new transdiagnostic assessment schemes and treatment for emotional disorders; previews of disorders in the *DSM-5*, where more dimensional approaches will be adopted; and the adoption of cross-cutting dimensional measures of, for example, anxiety or features of distorted reality for every patient to provide a richer description of psychopathology.



DSM-IV, DSM-IV-TR, and DSM-5

Much has been said about the mix of political and scientific considerations that resulted in *DSM-IV*, and naturally we have our own opinions. (DHB had the interesting experience of sitting on the task force.) Psychologists are often concerned about turf issues in what has become, for better or worse, the nosological standard in our field, and with good reason: in previous *DSM* editions, scientific findings sometimes gave way to personal opinions.

However, for *DSM-IV*, most professional biases were left at the door while the task force almost endlessly debated the data. This process produced enough new information to fill every psychopathology journal for a year with integrative reviews, reanalysis of existing databases, and new data from field trials. From a scholarly point of view, the process was both stimulating and exhausting. This book contains highlights of various debates that created the nomenclature, as well as recent updates. For example, we summarize and update the data and discussion of premenstrual dysphoric disorder and mixed anxiety depression, two disorders that did not make it into the final criteria. Students can thus see the process of making diagnoses, as well as the mix of data and inferences that are part of it.

In 2000, the American Psychiatric Association published a revision of the text accompanying the *DSM-IV* diagnostic criteria, which updated the scientific literature and changed some of the criteria themselves, mostly in minor ways. Several senior clinical investigators from one of our (DHB) research centers participated in the text revision, and this information is included. For example, the text revision (*DSM-IV-TR*) discusses the intense continuing debate on categorical and dimensional approaches to classification.

We describe some of the compromises the task force made to accommodate data, such as why it does not yet seem possible to dimensionalize personality disorders even though almost everyone agrees that when we can, we will prefer to do so.

Now *DSM-5* is nearing completion with a publication date of May 2013, and one of us (DHB) is an appointed advisor to the *DSM-5* task force. The first phase of this massive project involved a joint effort by the National Institute of Mental Health and the American Psychiatric Association in focusing on delineating needed research efforts to provide

crucial information for the *DSM-5* process. Research planning workgroups were formed in areas, such as neuroscience, problems/gaps in the current system, cross-cultural issues, and developmental issues with the charge of producing “white papers” outlining the required research agenda. The white papers, along with an article summarizing important recommendations, were published in 2002 with an update in 2008. The planning committee then organized a series of conferences to further these efforts. Eleven conferences were held from 2004 to 2007, chaired by members of the American and international research communities on topics such as externalizing disorders of childhood, personality disorders, and stress-induced and fear circuitry disorders. In 2007, the *DSM-5* task force and the major committees covering large classes of disorders (anxiety, mood, schizophrenia, and so on) were appointed. Field trials testing proposed changes to the criteria are underway and will continue into early 2012. It is already clear that *DSM-5* will incorporate a somewhat more dimensional approach to classification. Likely changes along these lines are presented in Chapter 3 and in the disorder chapters. For this reason, as noted previously, we now end each disorder chapter with a special feature entitled *On the Spectrum*, highlighting new scientific findings illustrating and supporting a more dimensional approach to psychopathology.

Prevention

Looking into the future of abnormal psychology as a field, it seems our ability to prevent psychological disorders may help the most. Although this has long been a goal of many, we are now at the precipice of what appears to be the beginning of a new age in prevention research. Numerous scientists from all over the globe are developing the methodologies and techniques that may at long last provide us with the means to interrupt the debilitating toll of emotional distress caused by the disorders chronicled in this book. We therefore highlight these cutting-edge prevention efforts—such as preventing eating disorders, suicide, and health problems, such as HIV and injuries—in appropriate chapters as a means to celebrate these important events, as well as to spur on the field to continue this important work.



Retained Features

Video Concept Reviews

VMD's *Video Concept Reviews*—more than 200—are video clips that review challenging topics that typically need more than one explanation. A list of these clips appears in every chapter, and the actual videos can be found within CourseMate.

Visual Summaries

At the end of each disorder chapter is a colorful, two-page visual overview that succinctly summarizes the causes, development, symptoms, and treatment of each disorder covered in that chapter. Our integrative approach is instantly evident in these diagrams, which show the interaction of

biological, psychological, and social factors in the etiology and treatment of disorders. The visual summaries will help instructors wrap up discussions, and students will appreciate them as study aids.

Pedagogy

Each chapter contains several Concept Checks, which let students verify their comprehension at regular intervals. Answers are listed at the end of each chapter, along with a more detailed Summary; the Key Terms are listed in the order they appear in the text and thus form a sort of outline that students can study. Finally, each chapter con-

cludes with two elements: a link to *Psychology CourseMate*, which includes chapter-specific interactive learning tools including the *Abnormal Psychology Videos*, and a link to the *CengageNOW* online study tool, which includes pre- and posttests and VMD's *Video Concept Reviews* on challenging topics.

Discussing Diversity

Each chapter features *Discussing Diversity* boxes, which highlight diversity and discuss important research about how gender and culture impact the presentation and treatment of disorders.

Learning Aids for the Student

Abnormal Psychology Videos

The *Abnormal Psychology Videos*, which include video clips of actual clients discussing their disorders, are available online through *Psychology CourseMate* (www.cengagebrain.com). Each video clip has specific questions written around it, and students can write their responses on the screen, as well as print them out. By chapter, the videos include:

- › **Chapter 2, An Integrative Approach to Psychopathology:** Integrative Approach
- › **Chapter 3, Clinical Assessment, Diagnosis, and Research in Psychopathology:** Arriving at a Diagnosis; Psychological Assessment; Research Methods
- › **Chapter 4, Anxiety Disorders:** Panic Disorder: Steve; Virtual Reality Therapy: A New Technique on the Treatment of Anxiety Disorders; Rapid Behavioral Treatment of a Specific Phobia (Snakes); Obsessive-Compulsive Disorder: Chuck
- › **Chapter 5, Somatoform and Dissociative Disorders:** Dissociative Identity Disorder: Rachel; Body Dysmorphic Disorder: Doug
- › **Chapter 6, Mood Disorders and Suicide:** Major Depressive Disorder: Barbara; Major Depressive Disorder: Evelyn; Bipolar Disorder: Mary
- › **Chapter 7, Physical Disorders and Health Psychology:** Social Support/HIV: Orel; The Immune System,

Effects of Stress and Emotion; Cancer: Education and Support Groups

- › **Chapter 8, Eating and Sleep Disorders:** Anorexia Nervosa: Susan; Anorexia Nervosa/Bulimia: Twins; Weight Control: The Obesity Epidemic; Sleep Cycle
- › **Chapter 9, Sexual and Gender Identity Disorders:** Erectile Dysfunction: Clark; Changing Over: Jessica
- › **Chapter 10, Substance-Related and Impulse-Control Disorders:** Substance Use Disorder: Tim; Nicotine Dependence
- › **Chapter 11, Personality Disorders:** Antisocial Personality Disorder: George; Borderline Personality Disorders; Dialectical Behavior Therapy
- › **Chapter 12, Schizophrenia and Other Psychotic Disorders:** Schizophrenia: Etta; Positive versus Negative Symptoms; Common Symptoms of Schizophrenia
- › **Chapter 13, Developmental and Cognitive Disorders:** ADHD: Sean; Edward: ADHD in a Gifted Student; Life Skills Training; Bullying Prevention; Autism: The Nature of the Disorder; Autism: Christina; Rebecca: A First-Grader with Autistic Disorder; Lauren: A Kindergartner with Down Syndrome; Alzheimer's Disease: Tom; Amnesic Disorder: Mike; Amnesic Patient Interview: Endel Tulving; Neural Networks: Cognition and Dementia
- › **Chapter 14, Mental Health Services: Legal and Ethical Issues:** False Memory Research

Teaching Aids for the Instructor

PowerLecture

PowerLecture instructor resources are a collection of book-specific lecture and class tools on either CD or DVD. The fastest and easiest way to build powerful, customized media-rich lectures, PowerLecture assets include chapter-specific PowerPoint presentations, images, animations and videos, instructor manuals, test banks, useful web links,

and more. PowerLecture media-teaching tools are an effective way to enhance the educational experience.

Instructor's Manual


Written by Fred Whitford of Montana State University, the Instructor's Manual helps you streamline and maximize the effectiveness of your course preparation using such


resources as learning objectives, chapter outlines, classroom activities, handouts, and annotated supplementary reading lists and video resources.

Test Bank

Simplify testing and assessment using this printed selection of more than 1,500 questions. Choose from multiple-choice and essay questions in the test bank by David W. Alfano, Community College of Rhode Island.

CENGAGENOW CengageNOW is an online teaching and learning resource that gives you more control in less time and delivers better outcomes—NOW. And only CengageNOW for Accounting identifies and reports content as it relates to AACSB, AICPA, and IMA, and specific Principles of Accounting Course Outcomes allows you to track student assessment outcomes throughout your accounting course.

 **CourseMate** Cengage Learning's new Psychology CourseMate includes interactive teaching and learning tools including an integrated eBook, quizzes, flashcards, videos, learning modules, and more. It also features Engagement Tracker, a first-of-its-kind tool that monitors student engagement in the course.

 **aplia** Aplia™ is an online interactive learning solution that improves comprehension and outcomes by increasing student effort and engagement. Founded by a professor to enhance his own courses, Aplia provides automatically graded assignments that were written to make the most of the web medium and contains detailed, immediate explanations on every question. Our easy-to-use system has been used by more than 1,000,000 students at over 1,800 institutions.

 **WebTUTOR** “Jumpstart your course with customizable, rich, text-specific content within your Course Management System.

- › Jumpstart—Simply load a WebTutor cartridge into your Course Management System.
- › Customizable—Easily blend, add, edit, reorganize, or delete content.
- › Content—Rich, text-specific content, media assets, quizzing, web links, discussion topics, interactive games and exercises, and more.”

Videos

- › *Abnormal Psychology: Inside/Out*, Volume I 0-534-20359-0
- › *Abnormal Psychology: Inside/Out*, Volume II 0-534-36480-2
- › *Abnormal Psychology: Inside/Out*, Volume III 0-534-50759-X
- › *Abnormal Psychology: Inside/Out*, Volume IV 0-534-63369-2
- › ABC Video: Abnormal Psychology, Volume I 0-495-59639-6
- › ABC Video: Abnormal Psychology, Volume II 0-495-60494-1

Additional Resources

- › *Looking into Abnormal Psychology: Contemporary Readings*, by Scott O. Lilienfeld, is a fascinating 234-page reader comprised of 40 articles from popular magazines and journals. Each article explores ongoing controversies regarding mental illness and its treatment. 0-534-35416-5
- › *Casebook in Abnormal Psychology*, 4th edition, by Timothy A. Brown and David H. Barlow, is a comprehensive casebook that reflects the integrative approach, which considers the multiple influences of genetics, biology, and familial and environmental factors into a unified model of causality, as well as maintenance and treatment of the disorder. The casebook reflects treatment methods that are the most effective interventions developed for a particular disorder. It also presents three undiagnosed cases in order to give students an appreciation for the complexity of disorders. The cases are strictly teaching/learning exercises, similar to what many instructors use on their examinations. 0-495-60438-0

Acknowledgments

Finally, this book in all of its editions would not have begun and certainly would not have been finished without the inspiration and coordination of our senior editor at Cengage, Jaime Perkins, who always keeps his eye on the ball. A special note of thanks to Carolyn Smith and senior developmental editor Tangelique Williams for their attention to detail

and organization. The book is much better for their efforts. We hope to work with you on many subsequent editions. We appreciate the expertise of marketing manager Christine Sosa. Lauren Keyes did an outstanding job on the media products. Paige Leeds and Jessica Alderman were hardworking, enthusiastic, and organized from beginning to end.

In the production process, many individuals worked as hard as we did to complete this project. In Boston, Meredith Elkins assisted enormously in typing and integrating a vast amount of new information into each chapter. Her ability to find missing references and track down information was remarkable. It is an understatement to say we couldn't have done it without you. In St. Petersburg, Marly Sadou's quiet professionalism and attention to detail helped smooth this process immensely. At Wadsworth/Cengage, Vernon Boes guided the design down to the last detail. Pat Waldo coordinated all of the production details with grace under pressure. To production manager Megan Greiner at Graphic World Inc. and copy editor Margo Harris, let's just say your attention to detail puts the folks at CSI to shame. We thank

Wendy Granger with Bill Smith Group for her commitment to finding the best photos possible.

Numerous colleagues and students provided superb feedback on the previous editions, and to them we express our deepest gratitude. Although not all comments were favorable, all were important. Readers who take the time to communicate their thoughts offer the greatest reward to writers and scholars.

Finally, you share with us the task of communicating knowledge and discoveries in the exciting field of psychopathology, a challenge that none of us takes lightly. In the spirit of collegiality, we would greatly appreciate your comments on the content and style of this book and recommendations for improving it further.

Reviewers

Creating this book has been both stimulating and exhausting, and we could not have done it without the valuable assistance of colleagues who read one or more chapters and provided extraordinarily perceptive critical comments, corrected errors, pointed to relevant information, and, on occasion, offered new insights that helped us achieve a successful, integrative model of each disorder. We thank the following reviewers of the sixth edition of *Essentials of Abnormal Psychology*:

Pamela G. Costa, *Tacoma Community College*
Kurt R Emmerling, *Carlow University*
Maria A. Gartstein, *Washington State University*
Ellen I. Koch, *Eastern Michigan University*
John Ramirez, *Middlesex County College*
Sandra Terneus, *Tennessee Tech University*
Terry S. Trepper, *Purdue University Calumet*
Cynthia L. Turk, *Washburn University*

We also thank the reviewers of previous editions:

Kerm O. Almos, *Capital University*
Frank Andrasik, *University of West Florida*
Robin Apple, *Stanford University Medical Center*
Jim Backlund, *Kirkland Community College*
Joe S. Bean, *Shorter College*
Dorothy Bianco, *Rhode Island College*
Cheryl Bluestone, *Queensborough Community College*
Susan Blumenson, *City University of New York, John Jay College of Criminal Justice*
Robert Bornstein, *Gettysburg College*
Edwin Boundreaux, *Louisiana State University*
James Calhoun, *University of Georgia*
Glenn M. Callagan, *San Jose State University*
Montie Campbell, *Oklahoma Baptist University*
Antonio Cepeda-Benito, *Texas A & M University*
Sheree Dukes Conrad, *University of Massachusetts at Boston*

Eric J. Cooley, *Western Oregon State University*
Laurie Rotando Corey, *Westchester Community College*
Lenore DeFonson, *Indiana-Purdue University-Fort Wayne*
Andrew L. Dickson, *University of Southern Mississippi*
Joan B. Doolittle, *Anne Arundel Community College*
Juris Draguns, *Pennsylvania State University*
Mitchell Earlywine, *University of Southern California*
Raymond Eastman, *Stephen F. Austin State University*
Elizabeth Epstein, *Rutgers University*
Donald Evans, *Drake University*
Ronald G. Evans, *Washburn University*
Anthony Fazio, *University of Wisconsin-Milwaukee*
Mark A. Fine, *University of Missouri at Columbia*
Diane Finley, *Towson State University*
Sheila Fling, *Southwest Texas State University*
Karen E. Ford, *Mesa State College*
John R. Foust, *Parkland College*
Allen Frances, *Duke University*
David Gard, *San Francisco State University*
Andrew Getzfeld, *New Jersey City University*
David Gleaves, *Texas A & M University*
Frank Goodkin, *Castleton State College*
Irving Gottesman, *University of Virginia*
Peter Gram, *Pensacola Junior College*
Ron Hallman, *Emmanuel Bible College*
Marjorie Hardy, *Muhlenberg College*
Brian Hayden, *Brown University*
Holly Hazlett-Stevens, *University of Nevada-Reno*
Shaine Henert, *Chicago State University*
Stephen Hinshaw, *University of California-Berkeley*
Debra L. Hollister, *Valencia Community College*
Steven Huprich, *Baylor University*
William Iacono, *University of Minnesota*
Heidi M. Inderbitzen-Nolan, *University of Nebraska-Lincoln*
Ken Ishida, *California State University-Bakersfield*
Thomas Jackson, *University of Arkansas*

Boaz Kahana, *Cleveland State University*
 Stephen R. Kahoe, *El Paso Community College*
 Ricki E. Kantrowitz, *Westfield State College*
 Susan Kashubeck, *Texas Tech University*
 Arthur Kaye, *Virginia Commonwealth University*
 Christopher Kearney, *University of Nevada–Las Vegas*
 Ernest Keen, *Bucknell University*
 Elizabeth Klonoff
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CHAPTER 1

Abnormal Behavior in Historical Context

Chapter Outline

Understanding Psychopathology

- What Is a Psychological Disorder?
- The Science of Psychopathology
- Historical Conceptions of Abnormal Behavior

The Supernatural Tradition

- Demons and Witches
- Stress and Melancholy
- Treatments for Possession
- Mass Hysteria
- Modern Mass Hysteria
- The Moon and the Stars
- Comments

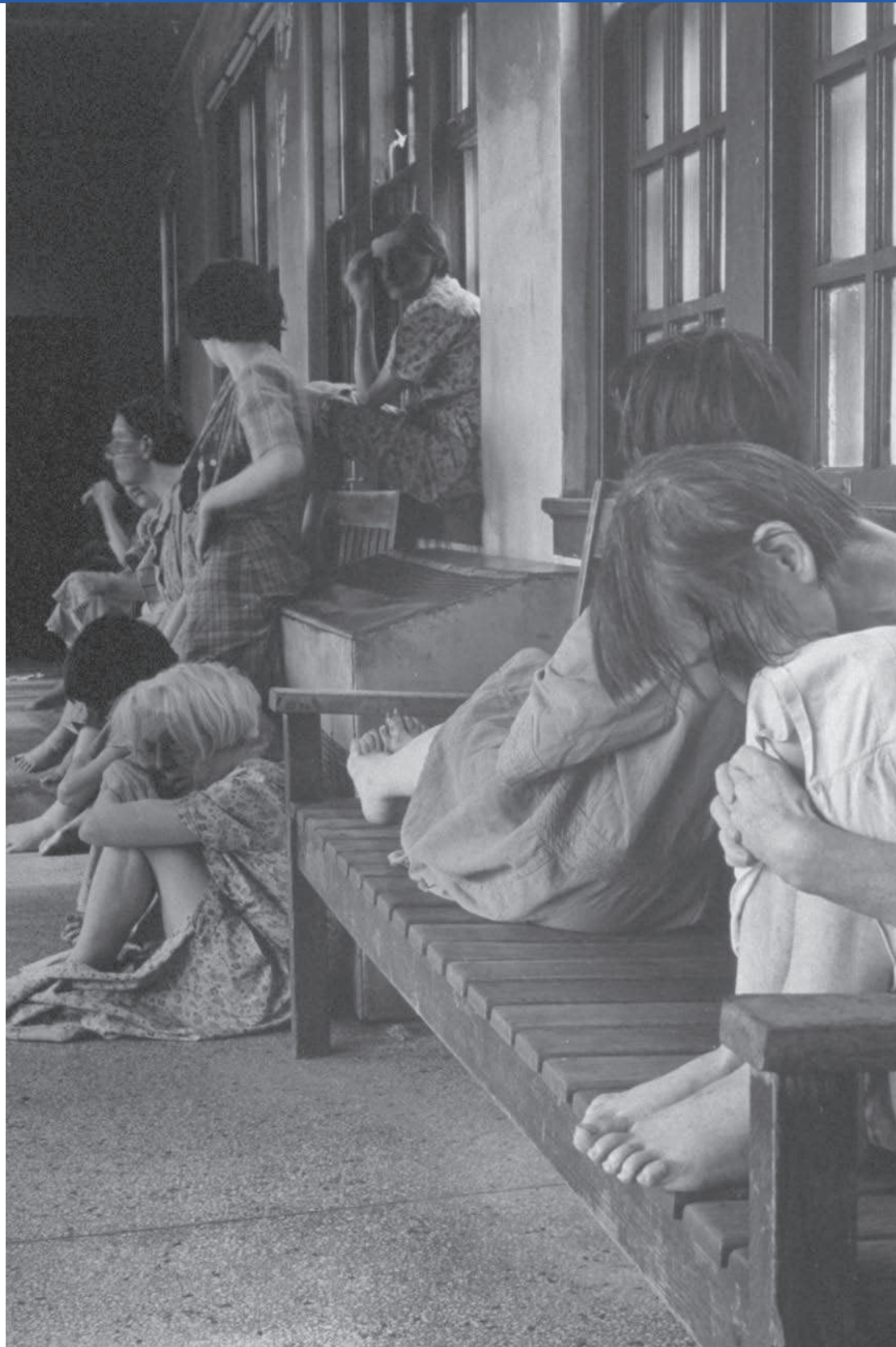
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- Hippocrates and Galen
- The 19th Century
- The Development of Biological Treatments
- Consequences of the Biological Tradition

The Psychological Tradition

- Moral Therapy
- Asylum Reform and the Decline of Moral Therapy
- Psychoanalytic Theory
- Humanistic Theory
- The Behavioral Model

An Integrative Approach



Student Learning Outcomes*

Characterize the nature of psychology as a discipline.

› Explain why psychology is a science (APA SLO 1.1.a) (see textbook pages 4–6).

Demonstrate knowledge and understanding representing appropriate breadth and depth in selected content areas of psychology.

› Know the history of psychology, including the evolution of methods of psychology, its theoretical conflicts, and its sociocultural contexts (APA SLO 1.2.b) (see textbook pages 6–22).

Use the concepts, language, and major theories of the discipline to account for psychological phenomena.

› Use theories to explain and predict behavior and mental processes (APA SLO 1.3.d) (see textbook pages 7–22).
› Integrate theoretical perspectives to produce comprehensive and multifaceted explanations (APA SLO 1.3.e) (see textbook page 23).

Explain major perspectives of psychology (e.g., behavioral, biological, cognitive, evolutionary, humanistic, psychodynamic, and sociocultural).

› Explain major perspectives in psychology (APA SLO 1.4a) (see textbook pages 7–22).

*Portions of this chapter cover learning outcomes suggested by the American Psychological Association (2007) in their guidelines for the undergraduate psychology major. Chapter coverage of these outcomes is identified by APA Goal and APA Suggested Learning Outcome (SLO).

Understanding Psychopathology

- › How do psychologists define a psychological disorder?
- › What is a scientist–practitioner?

Today you may have gotten out of bed, had breakfast, gone to class, studied, and enjoyed the company of your friends before dropping off to sleep. It probably did not occur to you that many people are not able to do some or any of these things. What they have in common is a **psychological disorder**, a psychological dysfunction associated with distress or impairment in functioning and a response that is not typical or culturally expected. Before examining exactly what this means, let's look at one individual's situation.

Judy • The Girl Who Fainted at the Sight of Blood

Judy, a 16 year old, was referred to our anxiety disorders clinic after increasing episodes of fainting. About 2 years earlier, in Judy's first biology class, the teacher showed a movie of a frog dissection.

This was a graphic film, with vivid images of blood, tissue, and muscle. About halfway through, Judy felt lightheaded and left the room. But the images did not leave her. She continued to be bothered by them and occasionally felt queasy. She began to avoid situations in which she might see blood or injury. She found it difficult to look at raw meat, or even Band-Aids, because they brought the feared images to mind. Eventually, anything anyone said that evoked an image of blood or injury caused Judy to feel lightheaded. If one of her friends exclaimed, "Cut it out!" she felt faint.

Beginning about 6 months before her visit to the clinic, Judy fainted when she encountered something bloody. Physicians could find nothing wrong with her. By the time she was referred to our clinic she was fainting 5 to 10 times a week, often in class. Clearly, this was problematic and disruptive; each time Judy fainted, the other students flocked around her, trying to help, and class was interrupted. The principal finally concluded that she was being manipulative and suspended her from school, even though she was an honor student.

Judy was suffering from what we now call *blood–injury–injection phobia*. Her reaction was severe, thereby meeting the criteria for **phobia**, a psychological disorder characterized by marked and persistent fear of an object or situation. But many people have similar reactions that are not as severe when they receive an injection or see someone who is injured. For people who react as severely as Judy, this phobia can be disabling. They may avoid certain careers, such as medicine or nursing, and their fear of injections may put their health at risk.

psychological disorder Psychological dysfunction associated with distress or impairment in functioning that is not a typical or culturally expected response.

phobia Psychological disorder characterized by marked and persistent fear of an object or situation.

What Is a Psychological Disorder?

A psychological disorder, or **abnormal behavior**, is a psychological dysfunction that is associated with distress or impairment in functioning and a response that is not typical or culturally expected (■ Figure 1.1). These three criteria may seem obvious, but they were not easily arrived at and it is worth a moment to explore what they mean.

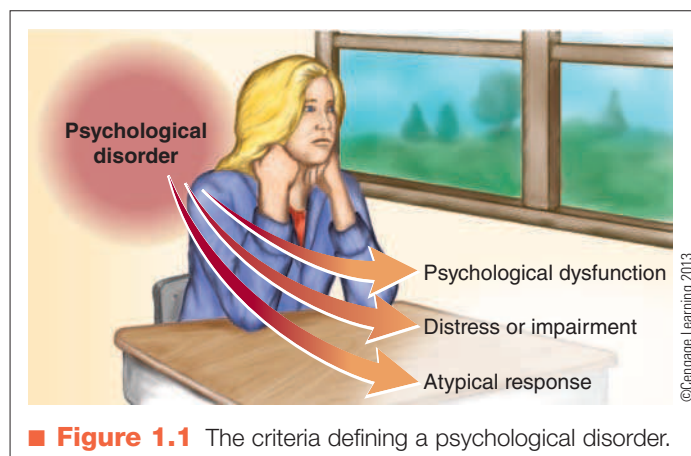
Psychological Dysfunction

Psychological dysfunction refers to a breakdown in cognitive, emotional, or behavioral functioning. For example, if you are on a date, it should be fun. But if you experience severe fear all evening, even though there is nothing to be afraid of, and the fear happens on every date, your emotions are not functioning properly. However, if your friends agree that the person who asked you out is dangerous in some way, it would not be dysfunctional to be fearful.

A dysfunction was clearly present for Judy. But many people experience a mild version of this reaction (feeling queasy at the sight of blood) without meeting the criteria for the disorder. Drawing the line between normal and abnormal dysfunction is often difficult. For this reason, these problems are often considered to be on a continuum or a dimension rather than either present or absent. This, too, is a reason why just having a dysfunction is not enough to meet the criteria for a psychological disorder.

Personal Distress

That the behavior must be associated with distress to be classified as abnormal seems clear: The criterion is satisfied if the individual is extremely upset. We can certainly say that Judy was distressed. But remember, by itself this criterion does not define abnormal behavior. It is often normal to be distressed—for example, if someone close to you dies. Suffering and distress are very much part of life. Furthermore, for some disorders, by definition, suffering and distress are absent. Consider the person who feels elated and may act impulsively as part of a manic episode. As you will see in Chapter 6, one of the major difficulties with this problem is that some people enjoy the manic state so much they are reluctant to receive treatment for it.



▲ Distress and suffering are a natural part of life and do not in themselves constitute a psychological disorder.

Thus, defining psychological disorder by distress alone doesn't work.

The concept of *impairment* is useful, although it is not entirely satisfactory. For example, many people consider themselves shy or lazy. This doesn't mean they're abnormal. But if you are so shy that you find it impossible to interact with people even though you would like to have friends, your social functioning is impaired.

Judy was clearly impaired by her phobia, but many people with less severe reactions are not impaired. This difference again shows that most psychological disorders are extreme expressions of otherwise normal emotions, behaviors, and cognitive processes.

Atypical or Not Culturally Expected

The criterion that the response be *atypical* or *not culturally expected* is also insufficient to determine abnormality by itself. At times, something is considered abnormal because it deviates from the average. The greater the deviation, the more abnormal it is. You might say that someone is abnormally short or abnormally tall, but this obviously isn't a definition of a disorder. Many people's behavior is far from average, but we call them talented or eccentric, not disordered. For example, it's not normal to plan to have blood spurt from your clothes, but when Lady Gaga did this while performing it only enhanced her celebrity. In most cases, the more productive you are in the eyes of society, the more eccentricities society will tolerate. Therefore, "deviating from the average" doesn't work as a definition for abnormal behavior.

Another view is that your behavior is abnormal if you are violating social norms. This definition is useful in considering cultural differences in psychological disorders. For example, to enter a trance state and believe you are possessed reflects a psychological disorder in most Western cultures but not in many other societies, where the behavior is accepted and expected (see Chapter 5). An example is provided by Robert Sapolsky (2002), a neurosci-

entist who worked closely with the Masai tribe in East Africa. One day, Sapolsky's Masai friend Rhoda asked him to bring his jeep to the village where a woman had been acting aggressively and hearing voices. The woman had killed a goat with her own hands. Sapolsky and several Masai were able to subdue her and transport her to a local health center. Sapolsky and Rhoda had the following discussion:

"So, Rhoda," I began laconically, "what do you suppose was wrong with that woman?"

She looked at me as if I was mad.

"She is crazy."

"But how can you tell?"

"She's crazy. Can't you just see from how she acts?"

"But how do you decide that she is crazy? What did she do?"

"She killed that goat."

"Oh," I said with anthropological detachment, "but Masai kill goats all the time."

She looked at me as if I were an idiot. "Only the men kill goats," she said.



Christopher Polk/Getty Images

▲ We accept extreme behaviors by entertainers, such as Lady Gaga, that would not be tolerated in other members of our society.

"Well, how else do you know that she is crazy?"

"She hears voices."

Again, I made a pain of myself. "Oh, but the Masai hear voices sometimes." (At ceremonies before long cattle drives, the Masai trance-dance and claim to hear voices.) In one sentence, Rhoda summed up half of what anyone needs to know about cross-cultural psychiatry:

"But she hears voices at the wrong time." (p. 138)

A social standard of *normal* can be misused. Consider the practice of committing political dissidents to mental institutions because they protest the policies of their government, which was common in Iraq before the fall of Saddam Hussein. Although such behavior violates social norms, it should not be cause for commitment.

Jerome Wakefield (1992, 1999, 2009) uses the shorthand definition of harmful dysfunction. A related concept is whether the behavior is out of the individual's control (Widiger & Sankis, 2000). Variants of these approaches are most often used in current diagnostic practice, as outlined in the American Psychological Association's (APA's) *Diagnostic and Statistical Manual (DSM)*.

An Accepted Definition

In conclusion, it is difficult to define "normal" and "abnormal" (Lilienfeld & Marino, 1995, 1999)—and the debate continues (Clark, 1999; Houts, 2001; Klein, 1999; Spitzer, 1999; Wakefield, 2003, 2009). The most widely accepted definition describes behavioral, psychological, or biological dysfunctions that are unexpected in their cultural context and associated with present distress and impairment in functioning or increased risk of suffering, death, pain, or impairment. This definition can be useful across cultures if we pay attention to what is dysfunctional (or out of control) in a given society. But it is never easy to decide what represents dysfunction, and some scholars have argued that we can never satisfactorily define *disease* or *disorder* (see, for example, Lilienfeld & Marino, 1995, 1999). The best we may be able to do is to consider how the apparent disease or disorder matches a "typical" profile of a disorder—for example, major depression or schizophrenia. We call this typical profile a *prototype*, and, as described in Chapter 3, the diagnostic criteria found throughout this book are all prototypes. This means that the patient may have only some symptoms of the disorder and still meet criteria for the disorder because those symptoms are close to the prototype.

Creation of the *fifth edition of the DSM (DSM-5)* is in progress, with publication due May 2013. But the basic definition of psychological disorder will be largely unchanged.

abnormal behavior Actions that are unexpected and often evaluated negatively because they differ from typical or usual behavior.



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▲ Some religious behaviors may seem unusual to us but are culturally or individually appropriate.

The Science of Psychopathology

Psychopathology is the scientific study of psychological disorders. Within this field are clinical and counseling psychologists, psychiatrists, psychiatric social workers, psychiatric nurses, marriage and family therapists, and mental health counselors. *Clinical* and *counseling psychologists* receive the PhD degree (or sometimes an EdD, doctor of education, or PsyD, doctor of psychology) and follow a course of graduate-level study, lasting approximately 5 years, that prepares them to conduct research into the causes and treatment of psychological disorders and to diagnose, assess, and treat these disorders. Counseling psychologists tend to study and treat adjustment and vocational issues encountered by relatively healthy individuals, and clinical psychologists usually concentrate on more severe psychological disorders. Psychologists with other specialty training, such as experimental and social psychologists, investigate the basic determinants of behavior but do not assess or treat psychological disorders.

Psychiatrists first earn an MD degree in medical school and then specialize in psychiatry during residency training that lasts 3 to 4 years. Psychiatrists also investigate the nature and causes of psychological disorders, make diagnoses, and offer treatments. Many psychiatrists emphasize drugs or other biological treatments, although most also use psychosocial treatments.

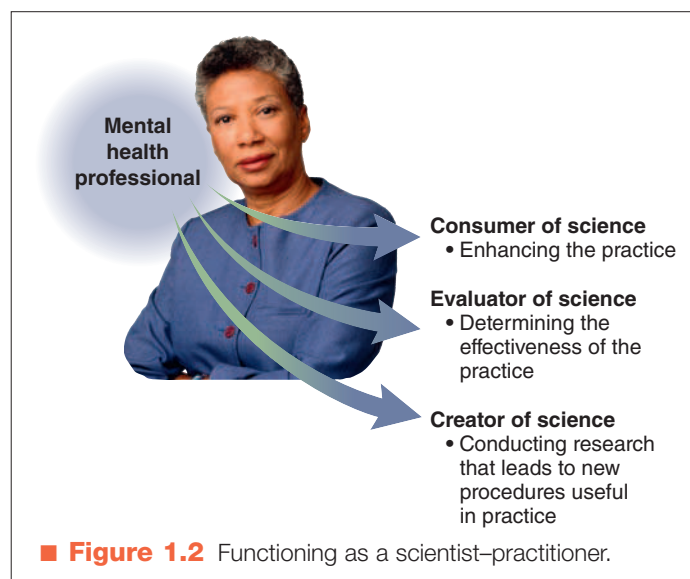
Psychiatric social workers typically earn a master's degree in social work as they develop expertise in collecting information about the social and family situation of the individual with a psychological disorder. Social workers also treat disorders, often concentrating on family problems. *Psychiatric nurses* have advanced degrees and specialize in the care and treatment of patients with psychological disorders, usually in hospitals as part of a treatment team.

Finally, *marriage and family therapists* and *mental health counselors* typically spend 1–2 years earning a master's degree and are employed to provide clinical services by hospitals or clinics.

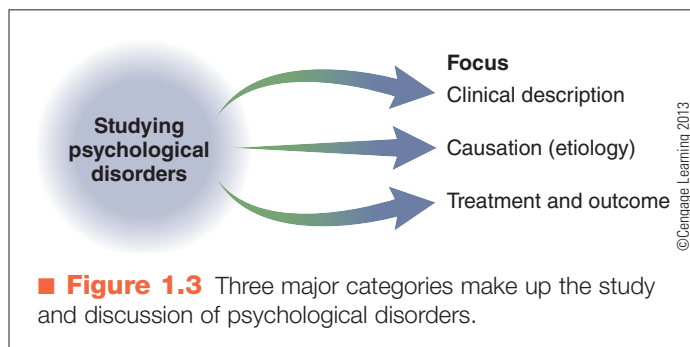
The Scientist–Practitioner

The most important recent development in psychopathology is the adoption of scientific methods to learn more about psychological disorders, their causes, and their treatment. Many mental health professionals take a scientific approach to their clinical work and therefore are called **scientist–practitioners** (Barlow, Hayes, & Nelson, 1984; Hayes, Barlow, & Nelson-Gray, 1999). Mental health practitioners function as scientist–practitioners in three ways (■ Figure 1.2). First, they keep up with the latest developments in their field and therefore use the most current diagnostic and treatment procedures. In this sense, they are consumers of the science of psychopathology.

Second, they evaluate their own assessments or treatment procedures to see whether they work. They are accountable not only to their patients, but also to government agencies and insurance companies, so they must demonstrate that their treatments work. Third, they conduct research that produces new information about disorders or their treatment. Such research attempts three basic things: describe psychological disorders, determine their causes, and treat them (■ Figure 1.3). These three categories compose an organizational structure that recurs throughout this book. A general overview of them will give you a clearer perspective on our efforts to understand abnormality.



Kevin Peterson/Photodisc/Getty Images



Clinical Description

In hospitals and clinics, we often say that a patient “presents” with a specific problem or we discuss the **presenting problem**. Describing Judy’s presenting problem is the first step in determining her **clinical description**, the unique combination of behaviors, thoughts, and feelings that make up a specific disorder. The word *clinical* refers both to the types of disorders you would find in a clinic or hospital and to the activities connected with assessment and treatment.

An important function of the clinical description is to specify what makes the disorder different from normal behavior or from other disorders. Statistical data may also be relevant. For example, how many people in the population as a whole have the disorder? This figure is called the **prevalence** of the disorder. Statistics on how many new cases occur during a given period, such as a year, represent the **incidence** of the disorder. Other statistics include the *sex ratio*—that is, what percentage of males and females have the disorder—and the typical age of onset, which often differs from one disorder to another.

In addition, most disorders follow a particular pattern, or **course**. Some, such as schizophrenia (see Chapter 12), follow a *chronic course*, meaning that they tend to last a long time. Others, like mood disorders (see Chapter 6), follow an *episodic course*, in that the individual is likely to recover within a few months only to suffer a recurrence of the disorder at a later time. Still other disorders may have a *time-limited course*, meaning they will improve without treatment in a relatively short period.

Closely related to differences in course of disorders are differences in onset. Some disorders have an *acute onset*, meaning they begin suddenly; others develop gradually over an extended period, which is sometimes called an *insidious onset*. It is important to know the typical course of a disorder so we can know what to expect and how best to deal with the problem. For example, if someone is suffering from a mild disorder with acute onset that we know is time limited, we might advise the individual not to bother with expensive treatment. However, if the disorder is likely to last a long time (become chronic), the individual might want to seek treatment. The anticipated course of a disorder is called the **prognosis**. Age is an important part of the clinical description. A disorder occurring in childhood may present differently from the same disorder in adulthood or old age. Children experiencing severe anxiety often assume they are



▲ Children experience panic and anxiety differently from adults, so their reactions may be mistaken for symptoms of physical illness.

physically ill. Because their thoughts and feelings are different from those experienced by adults with anxiety, children are often misdiagnosed and treated for a medical disorder.

We call the study of changes in behavior over time *developmental psychology*, and we refer to the study of changes in abnormal behavior as *developmental psychopathology*. Because we change throughout our lives, researchers study development in children, adolescents, adults, and older adults. Study of abnormal behavior across the entire age span is referred to as *life-span developmental psychopathology*.

psychopathology Scientific study of psychological disorders.

scientist-practitioner Mental health professional expected to apply scientific methods to his or her work. A scientist-practitioner must know the latest research on diagnosis and treatment, must evaluate his or her methods for effectiveness, and may generate research to discover information about disorders and their treatment.

presenting problem Original complaint reported by the client to the therapist. The actual treated problem may be a modification derived from the presenting problem.

clinical description Details of the combination of behaviors, thoughts, and feelings of an individual that make up a particular disorder.

prevalence Number of people displaying a disorder in the total population at any given time (compare with incidence).

incidence Number of new cases of a disorder appearing during a specific period (compare with prevalence).

course Pattern of development and change of a disorder over time.

prognosis Predicted development of a disorder over time.

Causation, Treatment, and Etiology Outcomes

Etiology, or the study of origins, has to do with why a disorder begins and includes biological, psychological, and social dimensions. Chapter 2 is devoted to this key aspect of abnormal psychology.

Treatment is also important to the study of psychological disorders. If a new drug or psychosocial treatment is successful in treating a disorder, it may give us some hints about the nature of the disorder and its causes. For example, if a drug with a specific effect within the nervous system alleviates a specific disorder, we know that something in that part of the nervous system might either be causing the disorder or helping maintain it. As you will see in the next chapter, psychology is rarely simple because the *effect* does not necessarily imply the *cause*. To use a common example, you might take an aspirin to relieve a headache you developed while taking an exam. If you then feel better, that does not mean the headache was caused by a lack of aspirin. Nevertheless, many people seek treatment for psychological disorders, and treatment can provide hints about the nature of the disorder.

In the past, textbooks emphasized treatment approaches in a general sense, with little attention to the disorder being treated. For example, a mental health professional might be thoroughly trained in a single theoretical approach, such as psychoanalysis or behavior therapy (both described later in the chapter), and then use that approach on every disorder. More recently, as our science has advanced, we have developed specific effective treatments that do not always adhere neatly to one theoretical approach or another but that have grown out of a deeper understanding of the disorder in question. For this reason, there are no separate chapters in this book on such types of treatment approaches as psychodynamic, cognitive behavioral, or humanistic. Rather, the latest and most effective drug and psychosocial treatments (nonmedical treatments that focus on psychological, social, and cultural factors) are described in the context of specific disorders in keeping with our integrative multidimensional perspective.

We now survey many early attempts to describe and treat abnormal behavior and to comprehend its causes. In Chapter 2 we examine contemporary views of causation and treatment. In Chapter 3 we discuss efforts to classify abnormal behavior and review research methods. In Chapters 4 through 13 we examine specific disorders. Finally, in Chapter 14 we examine legal, professional, and ethical issues relevant to psychological disorders and their treatment.

Historical Conceptions of Abnormal Behavior

How have people viewed abnormal behavior? For thousands of years, humans have tried to explain and control problematic behavior. But our efforts always derive from the theories or models of behavior popular at the time. The purpose of these models is to explain why someone is “acting like that.” Three major models that have guided us date back to the beginnings of civilization.

Humans have always supposed that agents outside our bodies and environment influence our behavior, thinking, and emotions. These agents, which might be divinities, demons, spirits, or other phenomena such as magnetic fields or the moon or the stars, are the driving forces behind the *supernatural model*. In addition, the mind has often been called the *soul* or the *psyche* and considered separate from the body. Although many have thought that the mind can influence the body and, in turn, the body can influence the mind, most philosophers looked for causes of abnormal behavior in one or the other. This split gave rise to two traditions of thought about abnormal behavior: the *biological model* and the *psychological model*.

Concept Check 1.1

Part A

Write the letter for any or all of the following definitions of abnormality in the blanks: (a) societal norm violation, (b) impairment in functioning, (c) dysfunction, (d) distress.

1. Miguel recently began feeling sad and lonely. Although still able to function, he finds himself feeling down much of the time and worries about what is happening to him. Which definitions of abnormality apply to Miguel's situation? _____
2. Three weeks ago, Jane, a 35-year-old business executive, stopped showering, refused to leave her apartment, and started watching television talk shows. Threats of being fired have failed to bring Jane back to reality. Which of the definitions seems to describe Jane's behavior? _____

Part B

Match the following words that are used in clinical descriptions with their corresponding examples:

- (a) presenting problem, (b) prevalence, (c) incidence, (d) prognosis, (e) course, (f) etiology.
3. Maria should recover quickly with no intervention. Without treatment, John will deteriorate rapidly. _____
4. Three new cases of bulimia have been reported in this county during the past month and only one in the next county. _____
5. Elizabeth visited the campus mental health center because of her increasing feelings of guilt and anxiety. _____
6. Biological, psychological, and social influences all contribute to a variety of disorders. _____
7. The pattern a disorder follows can be chronic, time limited, or episodic. _____
8. How many people in the population as a whole suffer from obsessive-compulsive disorder? _____

What supernatural influences were formerly believed to explain abnormal behavior? For much of our recorded history, deviant behavior has been considered a reflection of the battle between good and evil. When confronted with unexplainable, irrational behavior, people perceived evil.

Demons and Witches

One strong current of opinion put the causes and treatment of psychological disorders squarely in the realm of the supernatural. During the last quarter of the 14th century, religious and lay authorities supported these popular superstitions and society as a whole began to believe more strongly in the existence and power of demons and witches.

The bizarre behavior of people afflicted with psychological disorders was seen as the work of the devil and witches. It followed that individuals “possessed” by evil spirits were probably responsible for any misfortune experienced by the townspeople, which inspired drastic action against the possessed. Treatments included **exorcism**, in which various religious rituals were performed to rid the victim of evil spirits. Other approaches included shaving the pattern of a cross in the hair of the victim’s head and securing sufferers to a wall near the front of a church so that they might benefit from hearing Mass.

The conviction that sorcery and witches are causes of madness and other evils continued into the 15th century, and evil continued to be blamed for unexplainable behavior, as evidenced by the Salem, Massachusetts, witch trials.

Stress and Melancholy

An equally strong opinion reflected the view that insanity was a natural phenomenon, caused by mental or emotional stress, and was curable (Alexander & Selesnick, 1966; Maher & Maher, 1985a). Mental depression and anxiety were recognized as illnesses (Kemp, 1990; Schoeneman, 1977), although the church identified symptoms such as despair and lethargy with the sin of *acedia*, or sloth (Tuchman, 1978). Common treatments were rest, sleep, and a healthy environment. Other treatments included baths, ointments, and various potions. Indeed, during the 14th and 15th centuries, people with insanity, along with those



▲ During the Middle Ages, individuals with psychological disorders were sometimes thought to be possessed by evil spirits that had to be exorcised through rituals.

with physical deformities or disabilities, were often moved from house to house in medieval villages as neighbors took turns caring for them. We now know that keeping people with psychological disturbances in their own community is beneficial (see Chapter 12).

One of the chief advisers to the king of France, Nicholas Oresme, suggested that melancholy (depression) was the source of some bizarre behavior, rather than demons. Oresme pointed out that much of the evidence for the existence of sorcery and witchcraft, particularly among those considered insane, was obtained from people who were tortured and who, quite understandably, confessed to anything.

These conflicting natural and supernatural explanations for mental disorders are represented more or less strongly in historical works, depending on the sources consulted by historians. Some assumed that demonic influences were the predominant explanations of abnormal behavior during the Middle Ages (for example, Zilboorg & Henry, 1941); others believed that the supernatural had little or no influ-

etiology Cause or source of a disorder.

exorcism Religious ritual that attributes disordered behavior to possession by demons and seeks to treat the individual by driving the demons from the body.

ence. As we see in the handling of the severe psychological disorder experienced by late-14th-century King Charles VI of France, both influences were strong, sometimes alternating in the treatment of the same case.

Charles VI • The Mad King

In the summer of 1392, King Charles VI of France was under a great deal of stress. As he rode with his army to the province of Brittany, a nearby aide dropped his lance with a loud clatter and the king, thinking he was under attack, turned on his own army, killing several prominent knights before being subdued from behind. The army immediately marched back to Paris. The king's lieutenants and advisers concluded that he was mad.

During the following years, at his worst, the king hid in a corner of his castle believing he was made of glass or roamed the corridors howling like a wolf. At other times he couldn't remember who or what he was. He became fearful and enraged whenever he saw his own royal coat of arms and would try to destroy it if it was brought near him.



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▲ King Charles VI

The people of Paris were devastated by their leader's apparent madness. Some thought it reflected God's anger, but most thought it was caused by sorcery, a belief strengthened by a great drought that dried up the ponds and rivers, causing cattle to die of thirst. Merchants claimed their worst losses in 20 years.

Naturally, the king was given the best care available. The most famous healer in the land was a 92-year-old physician whose treatment program included moving the king to one of his residences in the country where the air was thought to be the cleanest in the land. The physician prescribed rest, relaxation, and recreation. After some time, the king seemed to recover. Unfortunately, the physician died and the insanity of King Charles VI returned more seriously than before. This time, however, he came under the influence of the conflicting crosscurrent of supernatural causation. "An unkempt evil-eyed charlatan and pseudo-mystic named Arnaut Guilhem was allowed to treat Charles on his claim of possessing a book given by God to Adam by means of which man could overcome all affliction resulting from original sin" (Tuchman, 1978, p. 514). Guilhem insisted that the king's malady was caused by sorcery.

Various remedies and rituals of all kinds were tried, but none worked. High-ranking officials and doctors of the university called for the "sorcerers" to be discovered and punished. "On one occasion, two Augustinian friars, after getting no results from magic

incantations and a liquid made from powdered pearls, proposed to cut incisions in the king's head. When this was not allowed by the king's council, the friars accused those who opposed their recommendation of sorcery" (Tuchman, 1978, p. 514). Even the king himself, during his lucid moments, came to believe that the source of madness was evil and sorcery.

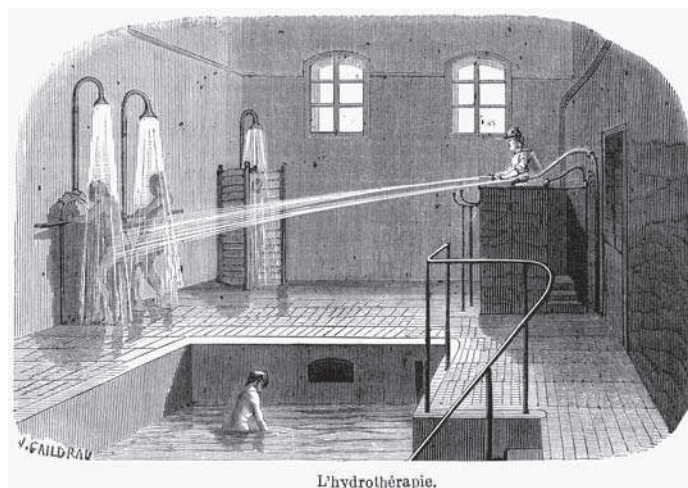
Treatments for Possession

Exorcisms at least have the virtue of being relatively painless. Interestingly, they sometimes work, as do other forms of faith healing, for reasons we explore in subsequent chapters. But what if they did not? In the Middle Ages if exorcism failed, some authorities thought that steps were necessary to make the body uninhabitable by evil spirits, and many people were subjected to confinement, beatings, and other forms of torture (Kemp, 1990).

Somewhere along the way, a creative "therapist" decided that hanging people over a pit full of poisonous snakes might scare the evil spirits right out of their bodies. Strangely, this approach sometimes worked; the most disturbed individuals would suddenly come to their senses, if only temporarily. Many other treatments based on the hypothesized therapeutic element of shock were developed, including dunkings in ice-cold water.

Mass Hysteria

Another fascinating phenomenon is characterized by large-scale outbreaks of bizarre behavior. During the Middle Ages they lent support to the notion of possession. In Europe whole groups of people were simultaneously compelled to run out in the streets, dance, shout, rave, and jump around in patterns as if they were at a particularly wild party (called a *rave* even then) but without the



L'hydrothérapie.

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▲ In hydrotherapy, patients were shocked back to their senses by being submerged in ice-cold water.



Adriana is an 18-year-old woman who has become concerned about her increasingly excessive nervousness, irritability, loss of appetite, and insomnia. According to the biological tradition of abnormal behavior, what is the best explanation for Adriana's experiences? How should they be treated?

As the understanding of human biology has changed over time, so too have the biological models that guide the conceptualization and treatment of psychopathology. Unfortunately, some approaches to understanding and treating psychopathology have been unfavorable for women. An interesting and relevant case is the diagnosis of hysteria to describe general psychological complaints among women. In ancient times, the Greek physician Hippocrates would have attributed Adriana's symptoms to a biological condition known as "wandering womb," or the movement of Adriana's uterus around her body because of a lack

of sexual intercourse. Hippocrates often prescribed marriage as an effective treatment for hysteria. Although this idea may seem absurd in retrospect, hysteria was a popular diagnosis for a range of psychological complaints expressed by women. As recently as the late 19th century, Adriana's complaints still would have been attributed to hysteria, although by that time the idea of a wandering womb had been replaced with the belief that hysteria was caused by sexual dissatisfaction. As a result, the prescribed treatment often was vaginal massage to enhance sexual satisfaction.

In the early 20th century, Sigmund Freud (1856–1939) proposed that hysteria actually worked in the opposite direction and suggested that many general physical complaints reported by young women in the 1900s were the result of the "conversion" of unacceptable sexual fantasies into more acceptable outlets. This was an

influential theory and one that ultimately led to the inclusion of a diagnosis of conversion hysteria in the DSM.

More recent scientific advances have abandoned the concept of hysteria, which has been replaced with more objective, specific, and gender-neutral diagnoses such as anxiety disorders, depressive disorders, and somatoform disorders. As a result of research on genetics and neuroscience, simple biological explanations such as the wandering womb theory also have been replaced with more sophisticated models of biological influences on psychopathology. Despite these modern-day advances, history suggests that our current approaches to conceptualizing and treating psychopathology will someday be looked on as primitive and naïve. In the meantime, psychologists continue to use currently available science as a guide to explaining and treating psychopathology.

music. This behavior was known by several names, including Saint Vitus's Dance and tarantism. Several reasons were offered in addition to possession. One reasonable guess was reaction to insect bites. Another possibility was what we now call *mass hysteria*. Consider the following example.

Modern Mass Hysteria

One Friday afternoon an alarm sounded over the public address system of a community hospital calling all physicians to the emergency room. Arriving from a local school in a fleet of ambulances were 17 students and 4 teachers who reported dizziness, headache, nausea, and stomach pains. Some were vomiting; most were hyperventilating.

All the students and teachers had been in four classrooms, two on each side of the hallway. The incident began when a 14-year-old girl reported a smell that seemed to be coming from a vent. She fell to the floor, crying and complaining that her stomach hurt and her eyes stung. Soon, many of the students and most of the teachers in the four adjoining classrooms, who could see and hear what was happening, experienced similar symptoms. Of 86 susceptible people (82 students and 4 teachers in the four classrooms), 21 patients (17 students and 4 teachers) experienced symptoms severe enough to be evaluated at the hospital. Inspection of the school building by public health

authorities revealed no apparent cause for the reactions, and physical examinations revealed no physical abnormalities. All the patients were sent home and quickly recovered (Rockney & Lemke, 1992).

Mass hysteria may simply demonstrate the phenomenon of *emotion contagion*, in which the experience of an emotion seems to spread to those around us (Hatfield, Cacioppo, & Rapson, 1994; Wang, 2006). If someone nearby becomes frightened or sad, chances are that for the moment you also will feel fear or sadness. When this kind of experience escalates into full-blown panic, whole communities are affected (Barlow, 2002). People are also suggestible when they are in states of high emotion. Therefore, if one person identifies a "cause" of the problem, others will probably assume that their own reactions have the same source. In popular language, this shared response is sometimes referred to as *mob psychology*.

The Moon and the Stars

Paracelsus, a Swiss physician who lived from 1493 to 1541, rejected notions of possession by the devil, suggesting instead that the movements of the moon and stars had profound effects on people's psychological functioning. This influential theory inspired the word *lunatic*, which is derived from the Latin word for moon, *luna*. You might hear some of your friends explain something crazy they did last night

by saying, “It must have been the full moon.” Despite much ridicule, millions of people around the world are convinced that their behavior is influenced by the stages of the moon or the position of the stars. This belief is most noticeable today in followers of astrology, who hold that their behavior and the major events in their lives can be predicted by their day-to-day relationship to the position of the planets. However, no serious evidence has ever confirmed such a connection.

Comments

The supernatural tradition in psychopathology is alive and well, although it is relegated, for the most part, to small religious sects and primitive cultures. Members of organized religions look to psychology and medical science for help with psychological disorders; in fact, the Roman Catholic Church requires that all health-care resources be exhausted before spiritual solutions such as exorcism can be considered. Miraculous cures are sometimes achieved by exorcism, rituals, and other methods that seem to have



AP Photo/Hatem Mousa

▲ Emotions are contagious and can escalate into mass hysteria.

little connection with modern science. But such cases are relatively rare, and almost no one would advocate supernatural treatment for severe psychological disorders except, perhaps, as a last resort.

The Biological Tradition

› What are the underlying assumptions of the biological approach to understanding abnormal behavior?

Physical causes of mental disorders have been sought since antiquity. Important to the biological tradition are a man, Hippocrates; a disease, syphilis; and the early consequences of believing that psychological disorders are biologically caused.

Hippocrates and Galen

The Greek physician Hippocrates (460–377 B.C.) is considered the father of modern Western medicine. In a body of work called the *Hippocratic Corpus*, written between 450 and 350 B.C. (Maher & Maher, 1985a), he and others suggested that psychological disorders could be treated like any other disease. They did not limit their search to the general area of “disease”; they believed psychological disorders might also be caused by brain pathology or head trauma and could be influenced by heredity (genetics). Hippocrates considered the brain to be the seat of wisdom, consciousness, intelligence, and emotion. Therefore, disorders involving these functions would logically be located in the brain.

Hippocrates also recognized the importance of psychological and interpersonal contributions to psychopathology.

The Roman physician Galen (approximately 129–198 A.D.) adopted these ideas and developed them further, creating an influential school of thought that extended well into the 19th century. One of the more interesting legacies of the Hippocratic–Galenic approach is the *humoral theory* of disorders. Hippocrates assumed that normal brain functioning was related to four bodily fluids or *humors*: blood, black bile, yellow bile, and phlegm. Blood came from the heart, black bile from the spleen, phlegm from the brain, and choler or yellow bile from the liver. Physicians believed that disease resulted from too much or too little of one of the humors; for example, too much black bile was thought to cause melancholia (depression). In fact, the term *melancholy*, from *melancholer*, which means black bile, is still used to refer to aspects of depression. The humoral theory was, perhaps, the first example of associating psychological disorders with a “chemical imbalance,” an approach that is widespread today.



▲ Bloodletting, the extraction of blood from patients, was intended to restore the balance of humors in the body.

The four humors were related to the Greeks' conception of the four basic qualities: heat, dryness, moisture, and cold. Each humor was associated with one of these qualities. Terms derived from the four humors are still sometimes applied to personality traits. For example, *sanguine* (red, like blood) describes someone who is ruddy in complexion and cheerful and optimistic, although insomnia and delirium were thought to be caused by excessive blood in the brain. *Melancholic* means depressive (depression was thought to be caused by black bile flooding the brain). A *phlegmatic* personality (from the humor phlegm) indicates apathy and sluggishness but can also mean being calm under stress. A *choleric* person (from yellow bile or choler) is hot tempered (Maher & Maher, 1985a).

Excess humors were treated by regulating the environment to increase or decrease heat, dryness, moisture, or cold. One reason King Charles VI's physician moved him to the countryside was to restore the balance in his humors (Kemp, 1990). In addition to rest, good nutrition, and exercise, two treatments were developed. In one, *bleeding* or *bloodletting*, a carefully measured amount of blood was removed from the body, often with leeches. The other was to induce vomiting; indeed, in a well-known treatise on depression published in 1621, *Anatomy of Melancholy*, Robert Burton recommended eating tobacco and a half-boiled cabbage to induce vomiting (Burton, 1621/1977). If Judy had lived 300 years ago, she might have been diagnosed with an illness, a brain disorder, or some other physical problem, perhaps related to excessive humors, and been given the proper medical treatments of the day, including bed rest, a healthful diet, and exercise.

In ancient China and throughout Asia, a similar idea existed. But rather than "humors," the Chinese focused on

the movement of air or "wind" throughout the body. Unexplained mental disorders were caused by blockages of wind or the presence of cold, dark wind (yin) as opposed to warm, life-sustaining wind (yang). Treatment involved restoring proper flow of wind through various methods, including acupuncture.

Hippocrates also coined the word *hysteria* to describe a concept he learned from the Egyptians, who had identified what we now call the *somatoform disorders*. In these disorders, symptoms, such as paralysis and some kinds of blindness, appear to be the result of a problem for which no physical cause can be found. Because these disorders occurred primarily in women, physicians assumed that they were restricted to women. They also presumed a cause: The empty uterus wandered to various parts of the body in search of conception (the Greek for uterus is *hysteron*). Numerous physical symptoms reflected the location of the wandering uterus. The prescribed cure might be marriage or, occasionally, fumigation of the vagina to lure the uterus back to its natural location (Alexander & Selesnick, 1966). Knowledge of physiology eventually disproved the wandering uterus theory; however, the tendency to stigmatize dramatic women as hysterical continued into the 1970s. As you will learn in Chapter 5, somatoform disorders are not limited to one sex.

The 19th Century

The biological tradition waxed and waned during the centuries after Hippocrates and Galen but was reinvigorated in the 19th century because of two factors: the discovery of the nature and cause of syphilis and strong support from the well-respected American psychiatrist John P. Grey.

Syphilis

Behavioral and cognitive symptoms of what we now know as *advanced syphilis*, a sexually transmitted disease caused by a bacterial microorganism entering the brain, include believing that everyone is plotting against you (delusion of persecution) or that you are God (delusion of grandeur). Although these symptoms are similar to those of *psychosis*—psychological disorders characterized in part by beliefs and/or perceptions that are not based in reality—researchers recognized that a subgroup of apparently psychotic patients deteriorated steadily, becoming paralyzed and dying within 5 years of onset. This course of events contrasted with that of most psychotic patients, who remained fairly stable. In 1825, the condition was designated a disease, *general paresis*, because it had consistent symptoms (presentation) and a consistent course that resulted in death. The relationship between general paresis and syphilis was only gradually established. Louis Pasteur's germ theory of disease, around 1870, facilitated the identification of the microorganism that caused syphilis.

Of equal importance was the discovery of a cure for general paresis. Physicians observed a surprising recovery in patients with general paresis who had contracted malaria, so they injected other patients with blood from a

soldier who was ill with malaria. Many recovered because the high fever “burned out” the syphilis bacteria. Obviously, this type of experiment would not be ethically possible today. Ultimately, investigators discovered that penicillin cures syphilis, but with the malaria cure, “madness” and associated symptoms for the first time were traced directly to a curable infection. Many mental health professionals assumed that comparable causes and cures might be discovered for all psychological disorders.

John P. Grey

The champion of the biological tradition in the United States was the most influential American psychiatrist of the time, John P. Grey (Bockoven, 1963). In 1854, Grey was appointed superintendent of the Utica State Hospital in New York and became editor of the *American Journal of Insanity*, the precursor of the *American Journal of Psychiatry*. Grey held that the causes of insanity were *always* physical. Therefore, mentally ill patients should be treated as if they were physically ill, with treatment including rest, diet, and proper room temperature and ventilation. Grey even invented the rotary fan to ventilate his large hospital.

Under Grey’s leadership, conditions in hospitals improved and they became more humane institutions. But in subsequent years they also became so large that individual attention was not possible.

In fact, leaders in psychiatry became alarmed at the increasing size and impersonality of mental hospitals and recommended that they be downsized. It was almost 100 years before the community mental health movement was successful in reducing the population of mental hospitals with the controversial policy of deinstitutionalization, in which patients were released into their communities. Unfortunately, this practice has as many negative consequences as positive ones, including a large increase in the number of homeless patients on city streets.

The Development of Biological Treatments

Renewed interest in the biological origin of psychological disorders led to greatly increased understanding of biological contributions to psychopathology and to the development of new treatments. In the 1930s, electric shock and brain surgery were often used. Their effects, and the effects of new drugs, were discovered by accident. For example, insulin was occasionally given to stimulate appetite in psychotic patients who were not eating, but it also seemed to calm them down. In 1927, a Viennese physician, Manfred Sakel, began using increasingly higher dosages until, finally, patients convulsed and became temporarily comatose (Sakel, 1958). Some actually recovered their mental health, and their recovery was attributed to the convulsions. The procedure became known as *insulin shock therapy*, but it was abandoned because it often resulted in coma or death. Other methods of producing convulsions had to be found.

In the 1920s, Hungarian psychiatrist Joseph von Meduna observed that schizophrenia was rarely found in individu-

als with epilepsy. Some of his followers concluded that induced brain seizures might cure schizophrenia. Following suggestions on the possible benefits of applying electric shock directly to the brain—notably, by two Italian physicians, Ugo Cerletti and Lucio Bini, in 1938—a surgeon in London treated a depressed patient by sending six small shocks directly through his brain, producing convulsions (Hunt, 1980). The patient recovered. Although greatly modified, shock treatment is still used. The controversial modern uses of *electroconvulsive therapy* are described in Chapter 6. During the 1950s, the first effective drugs for severe psychotic disorders were developed in a systematic way. Before that time, a number of medicinal substances, including opium, had been used as sedatives, along with countless herbs and folk remedies (Alexander & Selesnick, 1966). With the discovery of *Rauwolfia serpentina* (later renamed *reserpine*) and another class of drugs called *neuroleptics* (major tranquilizers), for the first time hallucinatory and delusional thought processes could be diminished in some patients; these drugs also controlled agitation and aggressiveness. Other discoveries included *benzodiazepines* (minor tranquilizers), which seemed to reduce anxiety. By the 1970s, the benzodiazepines (such as Valium and Librium) were among the most widely prescribed drugs in the world. As drawbacks of tranquilizers became apparent, prescriptions decreased somewhat (we discuss the benzodiazepines in more detail in Chapters 4 and 10).

Throughout the centuries, as Alexander and Selesnick point out, “[t]he general pattern of drug therapy for mental illness has been one of initial enthusiasm followed by disappointment” (1966, p. 287). For example, bromides, a class of sedating drugs, were used at the end of the 19th century and beginning of the 20th century to treat anxiety and other psychological disorders. By the 1920s, they were reported as being effective for many serious psychological and emotional symptoms. When their side effects became widely known and experience began to show that their overall effectiveness was modest, bromides largely disappeared from the scene.

Neuroleptics have also been used less as attention has focused on side effects such as tremors and shaking. However, the positive effects of these drugs on some patients’ psychotic symptoms revitalized the search both for biological contributions to psychological disorders and for new and more powerful drugs.

Consequences of the Biological Tradition

In the late 19th century, Grey and his colleagues ironically reduced interest in treating mental patients because they thought mental disorders were the result of some as-yet-undiscovered brain pathology and were therefore incurable. The only available course of action was to hospitalize these patients. Around the turn of the century, some nurses documented clinical success in treating mental patients but were prevented from treating others for fear of raising hopes of a cure among family members. In place of treat-

ment, interest centered on diagnosis and the study of brain pathology itself.

Emil Kraepelin (1856–1926) was the dominant figure during this period. He was influential in advocating the major ideas of the biological tradition, but he was little involved in treatment. His lasting contribution was in the area of diagnosis and classification. Kraepelin (1913) was one of the first to distinguish among various psychological disorders, seeing that each may have a different age of onset, different symptoms, and probably a different cause.

By the end of the 1800s, a scientific approach to psychological disorders and their classification had begun with the search for biological causes. Furthermore, treatment was based on humane principles. However, there were many drawbacks, the most unfortunate being that treatment was all but eliminated in some settings, despite the availability of some effective approaches. It is to these that we now turn.

Concept Check 1.2

Check your understanding of these historical theories and match them to the treatments used to “cure” abnormal behavior: (a) bloodletting; induced vomiting; (b) patient placed in socially facilitative environments; and (c) exorcism; burning at the stake.

1. Supernatural causes; evil demons took over victims’ bodies and controlled their behaviors.

2. The humoral theory reflected the belief that normal functioning of the brain required a balance of four bodily fluids or humors. _____
3. Maladaptive behavior was caused by poor social and cultural influences within the environment.

The Psychological Tradition

› How do the psychological approaches of psychoanalysis, humanism, and behaviorism explain abnormal behavior?

It is a long leap from evil spirits to brain pathology as the cause of psychological disorders. In the intervening centuries, how did psychological development come to be viewed in an interpersonal and social context? In fact, this approach has a long tradition. Plato, for example, thought that the two causes of maladaptive behavior were the social and cultural influences in one’s life and the learning that took place in that environment. If something was wrong in the environment, such as abusive parents, one’s impulses and emotions would overcome reason. The best treatment was to reeducate the individual so that reason would predominate (Maher & Maher, 1985a). This was a precursor to modern **psychosocial treatment** approaches to the treatment of psychopathology, which focus not only on psychological factors, but also on social and cultural ones. Other early philosophers, including Aristotle, also emphasized the influence of social environment and early learning on later psychopathology. They wrote about the importance of fantasies, dreams, and cognitions and thus anticipated later developments in psychoanalytic thought and cognitive science. They also advocated humane care for individuals with psychological disturbances.

Moral Therapy

During the first half of the 19th century, a psychosocial approach called **moral therapy** became influential. (The term *moral* meant emotional or psychological rather than a code of conduct.) Its tenets included treating patients as normally as possible in a setting that encouraged social

interaction (Bockoven, 1963). Relationships were carefully nurtured. Individual attention emphasized positive consequences for appropriate behavior, and restraint and seclusion were eliminated.

As with the biological tradition, the principles of moral therapy date back to Plato and beyond. For example, the Greek Asclepiad Temples of the 6th century B.C. housed the chronically ill, including those with psychological disorders. Here, patients were well cared for, massaged, and provided with soothing music. Similar practices were evident in Muslim countries in the Middle East (Millon, 2004). But moral therapy as a system originated with the French psychiatrist Philippe Pinel (1745–1826) and his associate Jean-Baptiste Pussin (1746–1811), the superintendent of the Parisian hospital La Bicêtre (Gerard, 1997; Zilboorg & Henry, 1941).

When Pinel arrived in 1791, Pussin had already removed chains used to restrain patients and instituted humane psychological interventions. Pussin persuaded Pinel to go along with the changes. Much to Pinel’s credit, he did, first at La Bicêtre and then at the women’s hospital

psychosocial treatment Treatment practices that focus on social and cultural factors (such as family experience), as well as psychological influences. These approaches include cognitive, behavioral, and interpersonal methods.

moral therapy Psychosocial approach in the 19th century that involved treating patients as normally as possible in normal environments.

Salpêtrière (Gerard, 1997; Maher & Maher, 1985b; Weiner, 1979).

After William Tuke (1732–1822) followed Pinel's lead in England, Benjamin Rush (1745–1813), often considered the founder of American psychiatry, introduced moral therapy at Pennsylvania Hospital. *Asylums* had appeared in the 16th century, but they were more like prisons than hospitals. It was the rise of moral therapy in Europe and the United States that made asylums habitable and even therapeutic.

In 1833, Horace Mann, chairman of the board of trustees of the Worcester State Hospital, reported on 32 patients who had been given up as incurable. These patients were treated with moral therapy, cured, and released to their families. Of 100 patients who were viciously assaultive before treatment, no more than 12 continued to be violent a year after beginning treatment. Before treatment, 40 patients had routinely torn off clothes provided by attendants; only 8 continued this behavior after treatment. These statistics would be remarkable even today (Bockoven, 1963).

Asylum Reform and the Decline of Moral Therapy

After the mid-19th century, humane treatment declined. It was widely recognized that moral therapy worked best when the number of patients in an institution was 200 or fewer, allowing for a great deal of individual attention. But after the Civil War, enormous waves of immigrants arrived in the

United States, and patient loads in existing hospitals increased to 1,000 or 2,000, and even more. Because immigrants were thought not to deserve the same privileges as native-born Americans (whose ancestors had immigrated perhaps only 50 or 100 years earlier!), they were not given moral treatments even when there were sufficient hospital personnel.

A second reason for the decline of moral therapy has an unlikely source. Dorothea Dix (1802–1887) campaigned for reform in the treatment of insanity.

Having worked in various institutions, she had firsthand knowledge of the deplorable conditions imposed on patients with insanity, and she made it her life's work to inform the American public of these abuses. Her work became known as the **mental hygiene movement**.

In addition to improving the standards of care, Dix worked hard to make sure everyone who needed care received it. Through her efforts, humane treatment became more widely available.

An unforeseen consequence of Dix's heroic efforts was a substantial increase in the number of mental patients. This influx led to a rapid transition from moral therapy to custodial care. Dix reformed our asylums and inspired the construction of numerous new institutions here and abroad. But even her tireless efforts could not ensure sufficient staffing to allow the individual attention necessary to moral therapy. A final blow was the decision, in the middle of the 19th century, that mental illness was caused by brain pathology and, therefore, was incurable.

The psychological tradition lay dormant for a time, only to reemerge in several different schools of thought in the 20th century. The first major approach was **psychoanalysis**, based on Sigmund Freud's (1856–1939) theory of the structure of the mind and the role of unconscious processes in determining behavior. The second was **behaviorism**, associated with John B. Watson, Ivan Pavlov, and B. F. Skinner, which focuses on how learning and adaptation affect the development of psychopathology.



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▲ Dorothea Dix (1802–1887) began the mental hygiene movement and spent much of her life campaigning for reform in the treatment of the mentally ill.



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▲ Patients with psychological disorders were freed from chains and shackles as a result of the influence of Philippe Pinel (1745–1826), a pioneer in making mental institutions more humane.

Psychoanalytic Theory

Have you ever felt as if someone cast a spell on you? Have you ever been mesmerized by a look across the classroom from a beautiful man or woman or a stare from a rock musician as you sat down in front at a concert? If so, you have something in common with the patients of Anton Mesmer (1734–1815) and with millions of people who have been hypnotized. Mesmer suggested to his patients that their problem was caused by an undetectable fluid found in all living organisms called “animal magnetism,” which could become blocked.

Mesmer had his patients sit in a dark room around a large vat of chemicals with rods extending from it and touching them. Dressed in flowing robes, he might then identify and tap various areas of their bodies where their “animal magnetism” was blocked, while suggesting strongly that they were being cured. Because of his unusual techniques, Mesmer was considered an oddity and strongly opposed by the medical establishment (Winter, 1998). Many scientists and physicians were interested in Mesmer’s powerful methods of suggestion. One of the best known, Jean-Martin Charcot (1825–1893), was head of the Salpêtrière Hospital in Paris, where Philippe Pinel had introduced psychological treatments several generations earlier. Charcot demonstrated that some techniques of mesmerism were effective with a number of psychological disorders, and he did much to legitimize the practice of hypnosis. In 1885 a young man named Sigmund Freud came from Vienna to study with Charcot.

After returning from France, Freud teamed up with Josef Breuer (1842–1925), who had experimented with a somewhat different hypnotic procedure. While his patients were in the highly suggestible state of hypnosis, Breuer asked them to describe their problems, conflicts, and fears. Breuer observed two important phenomena during this



▲ Anton Mesmer (1734–1815) and other early therapists used strong suggestions to cure their patients, who were often hypnotized.



▲ Jean Charcot (1825–1893) studied hypnosis and influenced Sigmund Freud to consider psychosocial approaches to psychological disorders.

process. First, patients often became extremely emotional as they talked and felt relieved and improved after emerging from the hypnotic state. Second, seldom would they have gained an understanding of the relationship between their emotional problems and their psychological disorder. In fact, it was difficult or impossible for them to recall some details they had described under hypnosis. In other words, the material seemed to be beyond the awareness of the patient. With this observation, Breuer and Freud had “discovered” the **unconscious** mind and its apparent influence on the production of psychological disorders.

They also discovered that it is therapeutic to recall emotional trauma that has been made unconscious and to release the accompanying tension. This release of emotional material became known as **catharsis**. A fuller understanding of the relationship between current emotions and earlier events is referred to as *insight*. As you shall see throughout this book, the existence of “unconscious” memories and feelings and the importance of processing emotion-filled information have been verified.

Freud and Breuer’s theories were based on case observations. An example is Breuer’s description of his treatment

mental hygiene movement Mid-19th-century effort to improve care of the mentally disordered by informing the public of their mistreatment.

psychoanalysis Assessment and therapy pioneered by Sigmund Freud that emphasizes exploration of, and insight into, unconscious processes and conflicts.

behaviorism Explanation of human behavior, including dysfunction, based on principles of learning and adaptation derived from experimental psychology.

unconscious Part of the psychic makeup that is outside the awareness of the person.

catharsis Rapid or sudden release of emotional tension thought to be an important factor in psychoanalytic therapy.

of “hysterical” symptoms in Anna O. in 1895 (Breuer & Freud, 1957). Anna O. was a bright, attractive young woman who was perfectly healthy until she reached 21 years of age. Shortly before her problems began, her father developed a chronic illness that led to his death. Throughout his illness, Anna O. had cared for him, spending endless hours at his bedside. Five months after her father became ill, Anna noticed that during the day her vision blurred and that from time to time she had difficulty moving her right arm and both legs. Soon she began to experience difficulty speaking, and her behavior became unpredictable. Shortly thereafter, she consulted Breuer.

In a series of treatment sessions, Breuer dealt with one symptom at a time through hypnosis and subsequent “talking through,” tracing each symptom to its hypothetical causation in circumstances surrounding the death of Anna’s father. One at a time her “hysterical” ailments disappeared, but only after treatment was administered for each respective behavior. This process of treating one behavior at a time fulfills a basic requirement for drawing scientific conclusions about the effects of treatment in an individual case study. Freud expanded these basic observations into the **psychoanalytic model**, the most comprehensive theory yet constructed on the development and structure of our personalities. He also speculated on where this development could go wrong and produce psychological disorders. Although many of Freud’s views changed over time, the basic principles of mental functioning that he originally proposed remained constant through his writings and are still applied by psychoanalysts today.

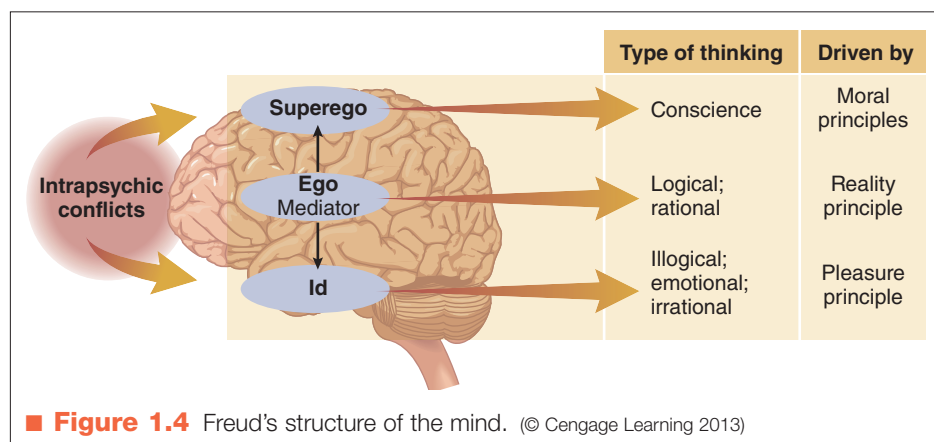


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▲ Bertha Pappenheim (1859–1936), famous as Anna O., was described as “hysterical” by Breuer.

Although most of it remains unproven, psychoanalytic theory has had a strong influence, and it is important to be familiar with its basic ideas; what follows is a brief outline of the theory. We focus on its three major facets: (1) the structure of the mind and the distinct functions of personality that sometimes clash with one another; (2) the defense mechanisms with which the mind defends itself from these conflicts; and (3) the stages of psychosexual development that contribute to our inner conflicts.

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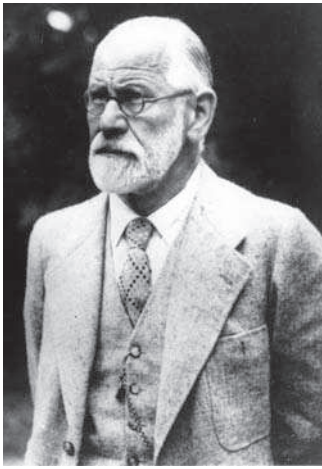
The Structure of the Mind

The mind, according to Freud, has three major parts: the id, ego, and superego (■ Figure 1.4). Although you may have heard these terms, you may not be aware of their meaning. The **id** is the source of our strong sexual and aggressive feelings or energies. It is, basically, the animal within us; if totally unchecked, it would make us all rapists or killers. The energy or drive within the id is the *libido*. Even today, some people explain low sex drive as an absence of libido. A less important source of energy is the death instinct, or *thanatos*. These two basic drives, toward life and fulfillment on the one hand and death and destruction on the other, are continually in opposition.

The id operates according to the *pleasure principle*, trying to maximize pleasure and eliminate any associated tension or conflicts. The goal of pleasure, which is particularly prominent in childhood, often conflicts with social rules. The id has its own characteristic way of processing information; referred to as the *primary process*, this type of thinking is emotional; irrational; illogical; filled with fantasies; and preoccupied with sex, aggression, selfishness, and envy.

Fortunately for all of us, in Freud’s view, the id’s selfish and sometimes dangerous drives do not go unchecked. In fact, only a few months into life, we know we must find ways to meet our basic needs without offending everyone around us. Put yet another way, we must act realistically. The part of our mind that ensures that we act realistically is called the **ego**, and it operates according to the *reality principle*. The cognitive operations or thinking styles of the ego are characterized by logic and reason and are referred to as the *secondary process*, as opposed to the illogical and irrational primary process of the id.

The third important structure within the mind, the **superego**, or conscience, represents the *moral principles* instilled in us by our parents and our culture. It is the voice within us that nags at us when we know we’re doing something wrong. Because the purpose of the superego is to counteract the potentially dangerous aggressive and sexual drives of the id, the basis for conflict is apparent.



AP Photo

▲ Sigmund Freud (1856–1939) is considered the founder of psychoanalysis.

The role of the ego is to mediate conflict between the id and the superego. The ego is often referred to as the executive or manager of our minds. If it mediates successfully, we can go on to higher intellectual and creative pursuits. If it is unsuccessful and the id or superego becomes too strong, conflict will overtake us and psychological disorders will develop. Because these conflicts are all within the mind, they are referred to as **intrapsychic conflicts**.

Defense Mechanisms

The ego fights a continual battle to stay on top of the warring id and superego. Occasionally, their conflicts produce anxiety. The anxiety alerts the ego to marshal **defense mechanisms**, unconscious protective processes that keep emotions associated with conflicts in check so that the ego can continue to function. Although Freud first conceptualized defense mechanisms, it was his daughter, Anna Freud, who developed the ideas more fully.

Defense mechanisms may be adaptive or maladaptive. Have you ever done poorly on a test because the grading was unfair, and when you got home you yelled at your brother or perhaps your dog? This is an example of the defense mechanism of *displacement*. The ego adaptively decides that expressing anger at your professor might not be in your best interest. Because your brother and your dog don't have the authority to affect you in an adverse way, your anger is displaced to one of them. Some people may redirect energy from conflict or underlying anxiety into a more constructive outlet such as work. This process is called *sublimation*.

More severe internal conflicts that produce a lot of anxiety or other emotions can trigger self-defeating defensive processes or symptoms. Phobic and obsessive symptoms are common self-defeating defensive reactions that, according to Freud, reflect an inadequate attempt to deal with such conflicts. Phobic symptoms typically incorporate elements of the conflict. For example, a dog phobia may be connected to an infantile fear of castration; that is, a man's internal conflict involves a fear of being attacked and castrated, a fear that is consciously expressed as a fear of being attacked and bitten by a dog, even if he knows the dog is harmless.

Examples of defense mechanisms include the following (based on *DSM-IV-TR*, APA, 2000):

Denial: Refuses to acknowledge some aspect of objective reality or subjective experience that is apparent to others



Imagno/Hulton Archive/Getty Images

▲ Anna Freud (1895–1982), here with her father, contributed the concept of defense mechanisms to the field of psychoanalysis.

Displacement: Transfers a feeling about, or a response to, an object that causes discomfort onto another, usually less-threatening, object or person

Projection: Falsely attributes own unacceptable feelings, impulses, or thoughts to another individual or object

Rationalization: Conceals the true motivations for actions, thoughts, or feelings through elaborate reassuring or self-serving but incorrect explanations

Reaction formation: Substitutes behavior, thoughts, or feelings that are the direct opposite of unacceptable ones

Repression: Blocks disturbing wishes, thoughts, or experiences from conscious awareness

Sublimation: Directs potentially maladaptive feelings or impulses into socially acceptable behavior

psychoanalytic model Complex and comprehensive theory originally advanced by Sigmund Freud that seeks to account for the development and structure of personality, as well as the origin of abnormal behavior, based primarily on inferred inner entities and forces.

id In psychoanalysis, the unconscious psychic entity present at birth representing basic drives.

ego In psychoanalysis, the psychic entity responsible for finding realistic and practical ways to satisfy id drives.

superego In psychoanalysis, the psychic entity representing the internalized moral standards of parents and society.

intrapsychic conflicts In psychoanalytic theory, a struggle among the id, ego, and superego.

defense mechanisms Common pattern of behavior, often an adaptive coping style when it occurs in moderation, observed in response to a particular situation. Psychoanalytic theory suggests that defense mechanisms are unconscious processes originating in the ego.

Psychosexual Stages of Development

Freud also theorized that during infancy and early childhood we pass through a number of **psychosexual stages of development**. The stages—oral, anal, phallic, latency, and genital—represent distinctive patterns of gratifying our basic needs and satisfying our drive for physical pleasure. For example, the oral stage (birth to about age 2), is characterized by a focus on the need for food. In the act of sucking, necessary for feeding, the lips, tongue, and mouth become the focus of libidinal drives and, therefore, the principal source of pleasure. Freud hypothesized that if we did not receive appropriate gratification during a specific stage or if a specific stage left a particularly strong impression (which he termed *fixation*), an individual's personality would reflect the stage throughout adult life. For example, fixation at the oral stage might result in excessive thumb-sucking and emphasis on oral stimulation through eating, chewing pencils, or biting fingernails. Adult personality characteristics theoretically associated with oral fixation include dependency and passivity or, in reaction to these tendencies, rebelliousness and cynicism.

One of the more controversial psychosexual conflicts occurs during the phallic stage (from age 3 to age 5 or 6), which is characterized by early genital self-stimulation. This conflict is the subject of the Greek tragedy *Oedipus Rex*, in which Oedipus is fated to kill his father and, unknowingly, to marry his mother. Freud asserted that all young boys relive this fantasy when genital self-stimulation is accompanied by images of sexual interactions with their mothers. These fantasies, in turn, are accompanied by strong feelings of envy and perhaps anger toward their fathers, with whom they identify but whose place they wish to take. Furthermore, strong fears develop that the father may punish that lust by removing the son's penis—thus, the phenomenon of **castration anxiety**. This fear helps the boy keep his lustful impulses toward his mother in check. The battle of the lustful impulses on the one hand and castration anxiety on the other creates a conflict that is internal, or intrapsychic, called the *Oedipus complex*. The phallic stage passes uneventfully only if several things happen. First, the child must resolve his ambivalent relationship with his parents. If this happens, he may channel his libidinal impulses into heterosexual relationships while retaining harmless affection for his mother.

The counterpart conflict in girls, called the *Electra complex*, is even more controversial. Freud viewed the young girl as wanting to replace her mother and possess her father. Central to this possession is the girl's desire for a penis—hence the term *penis envy*. According to Freud, the conflict is resolved when females develop heterosexual relationships and look forward to having a baby, which he viewed as a healthy substitute for having a penis. Needless to say, this particular theory has provoked marked consternation over the years as being sexist and demeaning. It is important to remember that it is theory, not fact; no systematic research exists to support it.

In Freud's view, all nonpsychotic psychological disorders resulted from unconscious conflicts, the anxiety that resulted from those conflicts, and the implementation of

defense mechanisms. Freud called such disorders **neuroses**, or *neurotic disorders*.

Later Developments in Psychoanalytic Thought

Freud's original psychoanalytic theories have been modified and developed in a number of different directions. Some theorists simply took one component of psychoanalytic theory and developed it more fully. Others broke with Freud and went in entirely new directions.

Anna Freud (1895–1982), Freud's daughter, concentrated on how defense mechanisms determine behavior. In so doing, she was the first proponent of the modern field of **ego psychology**. According to Anna Freud, the individual slowly accumulates adaptational capacities, skill in reality testing, and defenses. Abnormal behavior develops when the ego is deficient in regulating such functions as controlling impulses or in marshaling appropriate defenses to internal conflicts. In another modification of Freud's theories, Heinz Kohut (1913–1981) focused on the formation of self-concept and the attributes of the self that allow an individual to progress toward health or develop neurosis. This psychoanalytic approach became known as **self psychology** (Kohut, 1977).

A related area is **object relations**, the study of how children incorporate the images, the memories, and sometimes the values of a person to whom they were (or are) emotionally attached. *Object* in this sense refers to these important people, and the process of incorporation is called *introjection*. Introjected objects can become an integrated part of the ego or may assume conflicting roles in determining the identity, or self. For example, your parents may have conflicting views on relationships or careers, which, in turn, may differ from your own. To the extent that these varying positions have been incorporated, the potential for conflict arises. One day you may feel one way about your career direction, and the next day you may feel quite different. According to object relations theory, you tend to see the world through the eyes of the person incorporated into your self. Object relations theorists focus on how these disparate images come together to make up a person's identity.

Carl Jung (1875–1961) and Alfred Adler (1870–1937) were students of Freud who formed their own schools of thought. Jung, rejecting many of the sexual aspects of Freud's theory, introduced the concept of the collective unconscious, a wisdom that is stored deep in individual memories and passed down from generation to generation. Jung also suggested that spiritual and religious drives are as much a part of human nature as are sexual drives; this emphasis and the idea of the **collective unconscious** continue to draw the attention of mystics.

Adler focused on feelings of inferiority and the striving for superiority; he created the term *inferiority complex*. Unlike Freud, both Jung and Adler believed that the basic quality of human nature is positive and that there is a drive toward self-actualization (realizing one's full potential). They believed that by removing barriers to both internal and external growth the individual would flourish.

Others emphasized development over the life span and the influence of culture and society. Karen Horney (1885–

1952) and Erich Fromm (1900–1980) are associated with these ideas, but the best-known theorist is Erik Erikson (1902–1994). Erikson's greatest contribution was his theory of development across the life span, in which he described the crises and conflicts that accompany eight specific stages. For example, in the *mature stage*, beginning about age 65, individuals review their lives, experiencing both satisfaction at having completed some goals and despair at having failed at others. Scientific developments have borne out the wisdom of considering psychopathology from a developmental point of view.

Psychoanalytic Psychotherapy

Many techniques of psychoanalytic psychotherapy, or psychoanalysis, are designed to reveal the nature of unconscious mental processes through catharsis and insight. Freud developed techniques of **free association**, in which patients are instructed to say whatever comes to mind. Free association is intended to reveal material that may be repressed because it is too painful or threatening to bring into consciousness. Freud's patients lay on a couch, and he sat behind them so they would not be distracted. Other techniques include **dream analysis** (still quite popular), in which the therapist interprets the content of dreams, supposedly reflecting the primary-process thinking of the id, and relates the dreams to symbolic aspects of unconscious conflicts. This procedure is often difficult because the patient may resist the efforts of the therapist to uncover repressed conflicts and may deny the interpretations. The goal of this stage of therapy is to help the patient gain insight into the nature of the conflicts.

The relationship between the therapist, called the **psychoanalyst**, and the patient is important. In the context of this relationship, the therapist may discover the nature of the patient's intrapsychic conflict because, in a phenomenon called **transference**, patients come to relate to the therapist much as they did to important figures in their childhood. Patients who resent the therapist but cannot give a reason may be re-enacting childhood resentment toward a parent. More often, the patient falls in love with the therapist, reflecting strong positive feelings for a parent. In the phenomenon of *counter-transference*, therapists project some of their own feelings, usually positive, onto the patient. Therapists are trained to deal with their own feelings in addition to those of their patients, and relationships outside therapy are forbidden.

Classical psychoanalysis requires therapy 4 to 5 times a week for 2 to 5 years to analyze unconscious conflicts, resolve them, and restructure the personality to put the ego back in charge. Reduction of symptoms (psychological disorders) is less important because they are only expressions of intrapsychic conflicts that arise from psychosexual development. Thus, eliminating a phobia or depressive episode would be of little use unless the underlying conflict was dealt with because another set of symptoms would probably emerge (*symptom substitution*). Because of the huge expense of classical psychoanalysis, and the lack of evidence that it is effective, this approach is seldom used today.

Psychoanalysis is still practiced, but many psychotherapists use a loosely related set of approaches referred to as

psychodynamic psychotherapy. Although conflicts and unconscious processes are still emphasized and efforts are made to identify trauma and defense mechanisms, therapists use a mixture of tactics, including (1) a focus on affect and the expression of patients' emotions; (2) exploration of patients' attempts to avoid topics or hinder the progress of therapy; (3) identification of patterns in patients' actions, thoughts, feelings, experiences, and relationships; (4) an emphasis on past experiences; (5) a focus on interpersonal experiences; (6) an emphasis on the therapeutic relationship; and (7) exploration of patients' wishes, dreams, or fantasies (Blagys & Hilsenroth, 2000). Two additional features characterize psychodynamic psychotherapy. First, it is significantly briefer than classical psychoanalysis. Second, psychodynamic therapists deemphasize the goal of personality reconstruction, focusing instead on relieving the suffering associated with psychological disorders.

Comments

Classical psychoanalysis as a treatment has been diminishing in popularity for years. A major criticism of psychoanalysis is that it is unscientific, relying on reports by the patient of events that happened years ago. These events have been filtered through the experience of the observer and then interpreted by the psychoanalyst in ways that could be questioned and might differ from one analyst to the next. Finally, there has been no careful measurement of

psychosexual stages of development Psychoanalytic concept of the sequence of phases a person passes through during development. Each stage is named for the location on the body where id gratification is maximal at that time.

castration anxiety In psychoanalysis, the fear in young boys that they will be mutilated genitally because of their lust for their mothers.

neurosis (neuroses plural) Obsolete psychodynamic term for a psychological disorder thought to result from an unconscious conflict and the anxiety it causes. Plural is *neuroses*.

ego psychology Psychoanalytic theory that emphasizes the role of the ego in development and attributes psychological disorders to failure of the ego to manage impulses and internal conflicts. Also known as self-psychology.

object relations Modern development in psychodynamic theory involving the study of how children incorporate the memories and values of people who are close and important to them.

collective unconscious Accumulated wisdom of a culture collected and remembered across generations, a psychodynamic concept introduced by Carl Jung.

free association Psychoanalytic therapy technique intended to explore threatening material repressed into the unconscious. The patient is instructed to say whatever comes to mind without censoring.

dream analysis Psychoanalytic therapy method in which dream content is examined as symbolic of id impulses and intrapsychic conflicts.

psychoanalyst Therapist who practices psychoanalysis after earning either an M.D. or a Ph.D. degree and receiving additional specialized postdoctoral training.

transference Psychoanalytic concept suggesting that clients may seek to relate to the therapist as they do to important authority figures, particularly their parents.

psychodynamic psychotherapy Contemporary version of psychoanalysis that still emphasizes unconscious processes and conflicts but is briefer and more focused on specific problems.

any of these phenomena and no obvious way to prove or disprove the basic hypotheses of psychoanalysis. This is important because measurement and the ability to prove or disprove a theory are the foundations of the scientific approach.

Nevertheless, psychoanalytic concepts and observations have been valuable. Scientific studies have supported the observation of unconscious mental processes, the notion that emotional responses are often triggered by hidden or symbolic cues, and the understanding that memories can be repressed and avoided in a variety of ways. The relationship of the therapist and the patient, called the *therapeutic alliance*, is an important area of study. These concepts, along with the importance of various coping styles or defense mechanisms, will appear throughout this book.

Freud's revolutionary idea that pathological anxiety emerges in connection with some of our deepest and darkest instincts brought us a long way from witch trials and ideas of incurable brain pathology. Before Freud, the source of good and evil and of urges and prohibitions was conceived as external and spiritual, usually in the form of demons confronting the forces of good. Since Freud, we ourselves have become the battleground for these forces.

Humanistic Theory

We have already seen that Jung and Adler broke sharply with Freud. Their fundamental disagreement concerned the very nature of humanity. Freud portrayed life as a battleground where we are continually in danger of being overwhelmed by our darkest forces. Jung and Adler, by contrast, emphasized the positive, optimistic side of human nature. Jung talked about setting goals, looking toward the future, and realizing one's fullest potential. Adler believed that human nature reaches its fullest potential when we contribute to other individuals and to society as a whole. He believed that we all strive to reach superior levels of intellectual and moral development. Nevertheless, both retained many of the principles of psychodynamic thought. Their philosophies were adopted by personality theorists and became known as *humanistic psychology*.

This movement emphasized **self-actualizing**. It assumed that all of us could reach our highest potential if only we had the freedom to grow. A variety of conditions may block our actualization, usually originating outside the individual. Difficult living conditions or stressful experiences may move you away from your true self.

Abraham Maslow (1908–1970) postulated a *hierarchy of needs*, beginning with our needs for food and sex and ranging upward to our needs for self-actualization, love, and self-esteem. Social needs such as friendship fall somewhere between. Maslow hypothesized that we cannot progress up the hierarchy until we have satisfied the needs at lower levels.

Carl Rogers (1902–1987) is the most influential humanist. Rogers (1961) originated client-centered therapy, later known as **person-centered therapy**. In this approach, the therapist takes a passive role, making as few interpretations as possible. The point is to give the individual a

chance to develop, unfettered by threats to the self. **Unconditional positive regard**, the complete acceptance of most of the client's feelings and actions, is critical to this approach. *Empathy* is the sympathetic understanding of the individual's view of the world. The hoped-for result of person-centered therapy is that clients will be more straightforward and honest with themselves and will access their innate tendencies toward growth.

The humanistic approach has had a substantial effect on theories of interpersonal relationships. For example, the human potential movements so popular in the 1960s and 1970s were a direct result of humanistic theorizing. This approach also emphasized the importance of the therapeutic relationship in a way quite different from Freud's approach. Rather than seeing the relationship as a means to an end (transference), humanistic therapists believed that relationships, including the therapeutic relationship, were the most positive influence in facilitating human growth. Nevertheless, the humanistic model contributed relatively little new information to the field of psychopathology. One reason for this is that its proponents, with some exceptions, had little interest in doing research that would discover or create new knowledge. Rather, they stressed the unique, nonquantifiable experiences of the individual, emphasizing that people are more different than alike. As Maslow noted, the humanistic model found its greatest application among individuals without psychological disorders. The application of person-centered therapy to more severe psychological disorders has decreased substantially over the decades.

The Behavioral Model

The **behavioral model**, also known as the *cognitive-behavioral model* or *social learning model*, brought a more scientific approach to psychological aspects of psychopathology.

Pavlov and Classical Conditioning

In examining why dogs salivate before the presentation of food, physiologist Ivan Pavlov (1849–1936) of St. Petersburg, Russia, initiated the study of **classical conditioning**, a type of learning in which a neutral stimulus is paired with a response until it elicits that response. Conditioning is one way in which we acquire new information. This process can be automatic. Here's an example.

Chemotherapy, a common treatment for some forms of cancer, has side effects including severe nausea and vomiting. But pa-



▲ Ivan Pavlov (1849–1936) identified the process of classical conditioning, which is important to many emotional disorders.

tients often experience these effects when they merely see the person who administered the chemotherapy or any equipment associated with the treatment (Morrow & Dobkin, 1988). For some patients, this reaction becomes associated with stimuli that evoke people or things present during chemotherapy—anybody in a nurse’s uniform or even the sight of the hospital. This phenomenon is called *stimulus generalization* because the response generalizes to similar stimuli. Psychologists have had to develop specific treatments to overcome this response (Redd & Andrykowski, 1982).

Whether the stimulus is food or chemotherapy, the classical conditioning process begins with a stimulus that would elicit a response in almost anyone and requires no learning; no conditions must be present for the response to occur. This is the *unconditioned stimulus (UCS)*. The unlearned response to this stimulus—in these cases, salivation or nausea—is the *unconditioned response (UCR)*. Now the learning comes in. As we have seen, any person or object associated with the unconditioned stimulus (food or chemotherapy) acquires the power to elicit the same response, but now the response, because it was elicited by the conditional or *conditioned stimulus (CS)*, is termed a *conditioned response (CR)*. Thus, the nurse associated with the chemotherapy becomes a conditioned stimulus. The nauseous sensation (on seeing the nurse), which is almost the same as that experienced during chemotherapy, becomes the conditioned response.

With unconditioned stimuli as powerful as chemotherapy, a conditioned response can be learned in one trial. However, most learning of this type requires repeated pairing of the unconditioned stimulus and the conditioned stimulus. When Pavlov began studying this phenomenon, he substituted a metronome for the footsteps of his assistants so he could quantify the stimulus more accurately. He found that presentation of the conditioned stimulus (for example, the metronome) *without* the food for a long enough period would eventually eliminate the conditioned response to the food. In other words, the dog learned that the metronome no longer meant that a meal might be on the way. This process was called **extinction**.

Because Pavlov was a physiologist, it was natural for him to study these processes in a laboratory. This required precision in measuring and observing relationships and in ruling out alternative explanations. Although this scientific approach is common in biology, it was uncommon in psychology at that time. For example, it was impossible to measure unconscious conflicts precisely or even observe them. Even early experimental psychologists such as Edward Titchener (1867–1927) emphasized the study of **introspection**. Subjects reported their thoughts and feelings after experiencing certain stimuli, but the results of this “armchair” psychology were inconsistent.

Watson and the Rise of Behaviorism

American psychologist John B. Watson (1878–1958) is considered the founder of behaviorism. Watson decided that to base psychology on introspection was to head in the wrong direction—that psychology could be made as scientific as physiology (Watson, 1913).

Most of Watson’s time was spent developing behavioral psychology as an empirical science, but he did dabble briefly in the study of psychopathology. In 1920, he and a student, Rosalie Rayner, presented an 11-month-old boy named Albert with a fluffy white rat to play with. Albert was not afraid of the small animal and enjoyed playing with it. However, every time Albert reached for the rat, the experimenters made a loud noise behind him. After only five trials, Albert showed signs of fear if the white rat came near. The experimenters then determined that Albert displayed mild fear of any white furry object, even a Santa Claus beard. You may not think this is surprising, but keep in mind that this was one of the first examples ever recorded in a laboratory of producing fear of an object not previously feared. Of course, this experiment would be considered unethical by today’s standards.

Another student of Watson’s, Mary Cover Jones (1896–1987), thought that if fear could be conditioned in this way, perhaps it could also be unlearned or extinguished. She worked with a boy named Peter, who at 2 years, 10 months old was already afraid of furry objects. Jones decided to bring a white rabbit into the room where Peter was playing for a short time each day. She also arranged for other children, who did not fear rabbits, to be in the same room. Peter’s fear gradually diminished. Each time it diminished, Jones brought the rabbit closer. Eventually Peter was touching and even playing with the rabbit (Jones, 1924a, 1924b).

The Beginnings of Behavior Therapy

The implications of Jones’s research were largely ignored for two decades, but in the late 1940s and early 1950s, South African psychiatrist Joseph Wolpe (1915–1997) became dissatisfied with psychoanalytic interpretations of psychopathology. He turned to the field of behavioral psychology and

self-actualizing Process emphasized in humanistic psychology in which people strive to achieve their highest potential against difficult life experiences.

person-centered therapy Therapy method in which the client, rather than the counselor, primarily directs the course of discussion, seeking self-discovery and self-responsibility.

unconditional positive regard Acceptance by the counselor of the client’s feelings and actions without judgment or condemnation.

behavioral model Explanation of human behavior, including dysfunction, based on principles of learning and adaptation derived from experimental psychology.

classical conditioning Fundamental learning process first described by Ivan Pavlov. An event that automatically elicits a response is paired with another stimulus event that does not (a neutral stimulus). After repeated pairings, the neutral stimulus becomes a conditioned stimulus that by itself can elicit the desired response.

extinction Learning process in which a response maintained by reinforcement in operant conditioning or pairing in classical conditioning decreases when that reinforcement or pairing is removed; also the procedure of removing that reinforcement or pairing.

introspection Early, nonscientific approach to the study of psychology involving systematic attempts to report thoughts and feelings that specific stimuli evoked.

developed a variety of behavioral procedures for treating his patients, many of whom suffered from phobias. His best-known technique was termed **systematic desensitization**. It was similar to the treatment of little Peter: Individuals were gradually introduced to the objects or situations they feared so that their fear could extinguish. They could test reality and see that nothing bad happened in the presence of the phobic object or scene. Wolpe also had his patients do something that was incompatible with fear while they were in the presence of the dreaded object or situation. Because he could not always reproduce the phobic object in his office, Wolpe had his patients *imagine* the phobic scene while relaxing. For example, Wolpe treated a young man with a phobia of dogs by training him first to relax deeply and then imagine he was looking at a dog across the park. Gradually, he could imagine the dog across the park and remain relaxed, experiencing little or no fear. Wolpe then had him imagine that he was closer to the dog. Eventually, the young man imagined that he was touching the dog while maintaining a relaxed, almost trancelike state.

Wolpe reported great success with systematic desensitization, one of the first wide-scale applications of the new science of behaviorism to psychopathology. Wolpe, working with fellow pioneers Hans Eysenck and Stanley Rachman in London, called this approach **behavior therapy**. Although Wolpe's procedures are seldom used today, they paved the way for modern-day procedures in which severe phobias can be eliminated in as little as 1 day (see Chapter 4).

B. F. Skinner and Operant Conditioning

Freud's influence extended far beyond psychopathology into many aspects of cultural and intellectual history. Only one other behavioral scientist has made a similar impact: Burrhus Frederic (B. F.) Skinner (1904–1990). In 1938 he published *The Behavior of Organisms*, in which he laid out the principles of *operant conditioning*, a type of learning in which behavior changes as a function of what follows it. Skinner was strongly influenced by Watson's conviction that a science of human behavior must be based on observable events; he was also influenced by the work of psychologist Edward L. Thorndike (1874–1949).



Archives of the History of American Psychology/University of Akron

▲ Mary Cover Jones (1896–1987) was one of the first psychologists to use behavioral techniques to free a patient from a phobia.

Thorndike is known for the *law of effect*, which states that behavior is either strengthened (likely to occur more frequently) or weakened (likely to occur less frequently) depending on its consequences. Skinner took the simple notions that Thorndike had tested in animals, using food as a reinforcer, and developed them in a variety of ways to apply to much of our behavior. For example, if a 5-year-old boy starts shouting at the top of his lungs in McDonald's, it is unlikely that his behavior was automatically elicited by an unconditioned stimulus. Also, he will be less likely to do it in the future if his parents scold him, take him out to the car, or consistently reinforce more appropriate behavior. If the parents think his behavior is cute and laugh at it, chances are he will do it again.

Skinner coined the term *operant conditioning* because behavior operates on the environment and changes it in some way. For example, the boy's behavior affects his parents' behavior and probably the behavior of other customers. Most things that we do socially provide the context for other people to respond to us, thereby providing consequences for our behavior. The same is true of our physical environment, although the consequences may be long term (polluting the air eventually will poison us). Skinner preferred the term **reinforcement** to "reward" because it connotes the effect on the behavior. He pointed out that all our behavior is governed to some degree by reinforcement, which can be arranged in a variety of *schedules of reinforcement* (Ferster & Skinner, 1957). He also believed that using punishment as a consequence is relatively ineffective and that the primary way to develop new behavior is to positively reinforce desired behavior. Skinner did not deny the influence of biology or the existence of subjective states of emotion or cognition; he simply explained them as side effects of a particular history of reinforcement.

The subjects of Skinner's research were usually pigeons or rats. Skinner taught the animals a variety of tricks, including dancing, playing ping-pong, and playing a toy piano. To do this he used **shaping**, a process of reinforcing successive approximations to a final behavior. If you want a pigeon to play ping-pong, first you provide it with a pellet of food every time it moves its head slightly toward a ping-pong ball tossed in its direction. Gradually you require the pigeon to move its head ever closer to the ball until it touches it. Finally, receiving the food pellet is contingent on the pigeon hitting the ball with its head.



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Comments

The behavioral model has contributed greatly to the

▲ B. F. Skinner (1904–1990) studied operant conditioning, a form of learning that is central to psychopathology.

understanding and treatment of psychopathology. Nevertheless, this model is inadequate to account for what we now know about psychopathology. In the past, there was little or no room for biology in behaviorism. The model also fails to

account for development of psychopathology across the life span. Recent advances in our knowledge of how information is processed have added a layer of complexity. Integrating all these dimensions requires a new model of psychopathology.

An Integrative Approach

Why is the scientific method so important in studying abnormal behavior? We have reviewed three traditions or ways of thinking about causes of psychopathology: supernatural, biological, and psychological (further subdivided into two major historical components: psychoanalytic and behavioral).

Supernatural explanations of psychopathology are still with us. However, this tradition has little influence on scientists and other professionals. Biological, psychoanalytic, and behavioral models, by contrast, continue to further our knowledge of psychopathology.

Each tradition has failed in important ways. First, scientific methods were not often applied to the theories and treatments within a tradition, mostly because methods that would have produced the evidence necessary to confirm or disprove them had not been developed. Lacking such evidence, various fads were widely accepted that ultimately proved to be useless. New fads often superseded truly useful procedures. King Charles VI was subjected to a variety of procedures, some of which have since been proved useful and others that were mere fads or even harmful. How we use scientific methods to confirm or disconfirm findings in psychopathology is described in Chapter 3. Second, health professionals tend to look at psychological disorders from their own point of view. Grey assumed that psychological disorders were the result of brain disease. Watson assumed that all behaviors, including disordered behavior, were the result of psychological and social influences.

In the 1990s, two developments came together to shed light on the nature of psychopathology: (1) the increasing sophistication of scientific methodology and (2) the realization that no influence ever occurs in isolation. Every time we think, feel, or do something, the brain and the rest of the body are hard at work. Perhaps not as obvious, however, is that our thoughts, feelings, and actions influence the function and even the structure of the brain. In other words, our behavior, both normal and abnormal, is the product of a continual interaction of psychological, biological, and social influences.

By 2000, the young fields of cognitive science and neuroscience were growing rapidly as we learned more about the brain and about how we process, remember, and use information. At the same time, new findings from behavioral science revealed the importance of early experience in determining later development. It was clear that a new model was needed that would consider biological, psychological, and social influences on behavior and findings from our

rapidly growing understanding of how we experience life during different developmental periods. In 2010, the National Institute of Mental Health (NIMH) undertook to support research on the interrelationship of these factors with the aim of translating research findings to treatment settings (Insel, 2009). In the remainder of this book, therefore, we explore the reciprocal influences among neuroscience, cognitive science, behavior science, and developmental science and demonstrate that the only currently valid model of psychopathology is multidimensional and integrative.

Concept Check 1.3

Match the treatment with the corresponding theory: (a) behavioral model, (b) moral therapy, (c) psychoanalytic theory, (d) humanistic theory.

1. Treating institutionalized patients as normally as possible and encouraging social interaction and relationship development. _____
2. Hypnosis, psychoanalysis-like free association and dream analysis, and balance of the id, ego, and superego. _____
3. Person-centered therapy with unconditional positive regard. _____
4. Classical conditioning, systematic desensitization, and operant conditioning. _____

systematic desensitization Behavioral therapy technique to diminish excessive fears, involving gradual exposure to the feared stimulus paired with a positive coping experience, usually relaxation.

behavior therapy Array of therapeutic methods based on the principles of behavioral and cognitive science, as well as principles of learning as applied to clinical problems. It considers specific behaviors rather than inferred conflicts as legitimate targets for change.

reinforcement In operant conditioning, consequences for behavior that strengthen it or increase its frequency. Positive reinforcement involves the contingent delivery of a desired consequence. Negative reinforcement is the contingent escape from an aversive consequence. Unwanted behaviors may result from reinforcement of those behaviors or the failure to reinforce desired behaviors.

shaping In operant conditioning, the development of a new response by reinforcing successively more similar versions of that response. Both desirable and undesirable behaviors may be learned in this manner.

Summary

Understanding Psychopathology

How do psychologists define a psychological disorder?

- › A psychological disorder is (1) a psychological dysfunction that is (2) associated with distress or impairment in functioning and (3) a response that is not typical or culturally expected. No single criterion has been identified that defines the essence of abnormality.
- › Psychopathology is concerned with the study of psychological disorders. Mental health professionals range from clinical and counseling psychologists to psychiatrists and psychiatric social workers and nurses. Each profession requires a specific type of training.

What is a scientist–practitioner?

- › Mental health professionals can function as scientist–practitioners. They not only keep up with the latest findings, but also use scientific data to evaluate their own work, and they often conduct research within their clinics or hospitals.
- › Research about psychological disorders falls into three categories: description, causation, and treatment and outcomes.

The Supernatural, Biological, and Psychological Traditions

What supernatural influences were formerly believed to explain abnormal behavior?

What are the underlying assumptions of the biological approach to understanding abnormal behavior?

How do the psychological approaches of psychoanalysis, humanism, and behaviorism explain abnormal behavior?

- › Historically, there have been three approaches to abnormal behavior. In the supernatural tradition, abnormal behavior is attributed to outside agents such as demons or spirits; this tradition has been largely replaced by biological and psychological perspectives. In the biological

tradition, disorders are attributed to disease or biochemical imbalances; in the psychological tradition, abnormal behavior is attributed to faulty psychological development and to social context.

- › Each tradition has its own forms of treatment. Supernatural treatments include exorcism to rid the body of the supernatural spirits. Biological treatments emphasize physical care and medical cures, especially drugs. Psychological approaches use psychosocial treatments, beginning with moral therapy and including modern psychotherapy.
- › Sigmund Freud, the founder of psychoanalytic therapy, offered an elaborate conception of the unconscious mind. In therapy, Freud focused on tapping into the unconscious through such techniques as catharsis, free association, and dream analysis.
- › One outgrowth of Freudian therapy is humanistic psychology, which focuses more on human potential and self-actualizing. Therapy that has evolved from this approach is known as person-centered therapy; the therapist shows almost unconditional positive regard for the client's feelings and thoughts.
- › The behavioral model moved psychology into the realm of science. Both research and therapy focus on things that are measurable, including such techniques as systematic desensitization, reinforcement, and shaping.

An Integrative Approach

Why is the scientific method so important in studying abnormal behavior?

- › With new knowledge from cognitive science, behavioral science, and neuroscience, we now realize that no contribution to psychological disorders occurs in isolation. Behavior is a product of a continual interaction of psychological, biological, and social influences.

Key Terms

psychological disorder, 1
phobia, 1
abnormal behavior, 2
psychopathology, 4
scientist–practitioner, 4
presenting problem, 5
clinical description, 5
prevalence, 5
incidence, 5
course, 5
prognosis, 5
etiology, 6
exorcism, 7
psychosocial treatment, 13

moral therapy, 13
mental hygiene movement, 14
psychoanalysis, 14
behaviorism, 14
unconscious, 15
catharsis, 15
psychoanalytic model, 16
id, 16
ego, 16
superego, 16
intrapsychic conflicts, 17
defense mechanisms, 17
psychosexual stages of development, 18

castration anxiety, 18
neurosis (neuroses *plural*), 18
ego psychology, 18
object relations, 18
collective unconscious, 18
free association, 19
dream analysis, 19
psychoanalyst, 19
transference, 19
psychodynamic psychotherapy, 19
self-actualizing, 20
person-centered therapy, 20
unconditional positive regard, 20
behavioral model, 20

classical conditioning, 20
extinction, 21
introspection, 21

systematic desensitization, 22
behavior therapy, 22

reinforcement, 22
shaping, 22

Answers to Concept Checks

1.1

Part A

1. d; 2. b, c

Part B

3. d; 4. c; 5. a; 6. f; 7. e; 8. b

1.2

1. c; 2. a; 3. b

1.3

1. b; 2. c; 3. d; 4. a

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- › Prognosis
- › Supernatural Views—Historical
- › Supernatural Views—Current
- › Emotion Contagion
- › Hippocrates
- › Bodily Humors
- › Moral Therapy
- › Concept Check—Integrative Approach

Chapter Quiz

1. Dr. Roberts, a psychiatrist, often prescribes medication to his patients for their psychological problems. Dr. Roberts has what type of degree?
 - a. PhD
 - b. MD
 - c. PsyD
 - d. EdD
2. All of the following are part of a clinical description EXCEPT:
 - a. thoughts
 - b. feelings
 - c. causes
 - d. behaviors
3. The _____ describes the number of people in a population who have a disorder; whereas the _____ describes how many new cases of a disorder occur within a given period.
 - a. ratio; prevalence
 - b. incidence; ratio
 - c. incidence; prevalence
 - d. prevalence; incidence
4. Which of the following is NOT a historical model of abnormal behavior?
 - a. the psyche model
 - b. the supernatural model
 - c. the biological model
 - d. the psychological model
5. During the 19th century, the biological tradition of psychological disorders was supported by the discovery that a bacterial microorganism, _____, could result in psychotic symptoms and bizarre behaviors in advanced stages.
 - a. malaria
 - b. yellow fever
 - c. dengue
 - d. syphilis
6. Which of the following describes the order in which biological treatments for mental disorders were introduced?
 - a. neuroleptic drug therapy, insulin therapy, electroconvulsive therapy
 - b. insulin therapy, electroconvulsive therapy, neuroleptic drug therapy
 - c. electroconvulsive therapy, neuroleptic drug therapy, insulin therapy
 - d. electroconvulsive therapy, insulin therapy, neuroleptic drug therapy

7. _____ is the release of tension following the disclosure of emotional trauma, whereas _____ is the increased understanding of current feelings and past events.
- Insight; catharsis
 - Catharsis; insight
 - Catharsis; mediation
 - Mediation; catharsis
8. Which of the following is an example of the Freudian defense mechanism known as displacement?
- Terry despises the fact that his brother is a star athlete. Instead of letting his brother know how he feels, Terry cheers him on at every game.
 - Erika is attracted to her friend's husband and flirts with him. When her friend confronts her, Erika disagrees and refuses to believe what her friend is saying.
 - Adam is criticized by his teacher in front of other students. When he goes home, his dog runs to him, and Adam kicks the dog.
 - Judith feels uncomfortable around people with ethnic backgrounds different from her own. During a group discussion at work, she tells a coworker that his ideas are racist.
9. Before feeding her dog, Anna always gets his food out of the pantry. When she opens the pantry door, her dog begins to salivate. The dog's salivation is a(n):
- unconditioned stimulus
 - unconditioned response
 - conditioned stimulus
 - conditioned response
10. B. F. Skinner is known for introducing the concept of _____, the belief that behavior can influence and change the environment.
- classical conditioning
 - systematic desensitization
 - operant conditioning
 - extinction
- (See Appendix A for answers.)

Timeline of Significant Events

400 B.C.–1825

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400 B.C.: Hippocrates suggests that psychological disorders have both biological and psychological causes.

1300s: Mental disorders are blamed on demons and witches; exorcisms are performed to rid victims of evil spirits.

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1400–1800: Bloodletting and leeches are used to rid the body of unhealthy fluids and restore balance.

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1793: Philippe Pinel introduces moral therapy and makes French mental institutions more humane.

400 B.C.

200 B.C.: Galen suggests that normal and abnormal behavior are related to four bodily fluids, or humors.

1300s

1400s: View that insanity is caused by mental or emotional stress gains momentum, and depression and anxiety are again regarded as disorders.

1500s

1500s: Paracelsus suggests that the moon and the stars affect people's psychological functioning.

1825–1875

1825–1875: Syphilis is differentiated from other types of psychosis in that it is caused by a specific bacterium; penicillin is found to cure syphilis.

1930–1968

1930: Insulin shock therapy, electric shock treatments, and brain surgery are used to treat psychopathology.

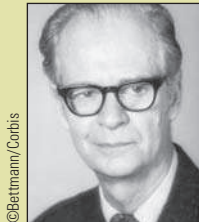
1943: The Minnesota Multiphasic Personality Inventory is published.

1950: The first effective drugs for severe psychotic disorders are developed. Humanistic psychology (based on ideas of Carl Jung, Alfred Adler, and Carl Rogers) gains some acceptance.

1958: Joseph Wolpe treats patients with phobias using systematic desensitization based on principles of behavioral science.

1930

1938: B. F. Skinner publishes *The Behavior of Organisms*, which describes the principles of operant conditioning.



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1943

1946: Anna Freud publishes *Ego and the Mechanisms of Defense*.

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1950

1952: The first edition of the *Diagnostic and Statistical Manual (DSM-I)* is published.

1968

1968: *DSM-II* is published.

1848–1920

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1848: Dorothea Dix campaigns for more humane treatment in American mental institutions.

1848

1854: John P. Grey, head of New York's Utica Hospital, believes that insanity is the result of physical causes, thus deemphasizing psychological treatments.

1870: Louis Pasteur develops his germ theory of disease, which helps identify the bacterium that causes syphilis.

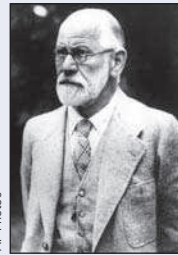
1870

1895: Josef Breuer treats the "hysterical" Anna O., leading to Freud's development of psychoanalytic theory.

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1900: Sigmund Freud publishes *The Interpretation of Dreams*.

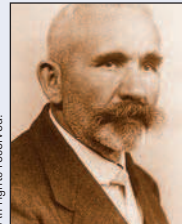
1900

1904: Ivan Pavlov identifies conditioned reflexes in dogs.

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1913: Emil Kraepelin classifies various psychological disorders from a biological point of view and publishes work on diagnosis.

1920

1920: John B. Watson experiments with conditioned fear in Little Albert using a white rat.

1980–2000

1980: *DSM-III* is published.

1980

1987: *DSM-III-R* is published.

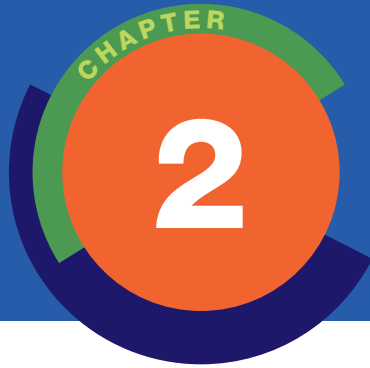
1990s: Increasingly sophisticated research methods are developed; no one influence—biological or environmental—is found to cause psychological disorders in isolation from the other.

1990s

1994: *DSM-IV* is published.

2000: *DSM-IV-TR* is published.

2000



An Integrative Approach to Psychopathology

Chapter Outline

One-Dimensional versus Multidimensional Models

- What Caused Judy's Phobia?
- Outcome and Comments

Genetic Contributions to Psychopathology

- The Nature of Genes
- New Developments in the Study of Genes and Behavior
- The Interaction of Genes and the Environment
- Epigenetics and the Nongenomic "Inheritance" of Behavior

Neuroscience and Its Contributions to Psychopathology

- The Central Nervous System
- The Structure of the Brain
- The Peripheral Nervous System
- Neurotransmitters
- Implications for Psychopathology
- Psychosocial Influences on Brain Structure and Function
- Interactions of Psychosocial Factors with Brain Structure and Function
- Comments

Behavioral and Cognitive Psychology

- Conditioning and Cognitive Processes
- Learned Helplessness
- Social Learning
- Prepared Learning
- Cognitive Science and the Unconscious

Emotions

- The Physiology and Purpose of Fear
- Emotional Phenomena
- Components of Emotion
- Anger and Your Heart
- Emotions and Psychopathology

Cultural, Social, and Interpersonal Factors

- Voodoo, the Evil Eye, and Other Fears
- Gender
- Social Effects on Health and Behavior
- Global Incidence of Psychological Disorders

Life-Span Development

Conclusions

Abnormal Psychology Live Videos

- Integrative Approach
- Web Link



Student Learning Outcomes*

1.2 Demonstrate knowledge and understanding representing appropriate breadth and depth in selected content areas of psychology.

- Learning and cognition (APA SLO 1.2.a [1]) (see textbook pages 53–56)
- Biological bases of behavior and mental processes, including physiology, sensation, perception, comparative, motivation, and emotion (APA SLO 1.2.a [3]) (see textbook pages 34–53, 57–60)
- Developmental changes in behavior and mental processes across the life span (APA SLO 1.2.a [4]) (see textbook pages 63–64)
- The interaction of heredity and environment (APA SLO 1.2.d [1]) (see textbook pages 36–40)

1.3 Use the concepts, language, and major theories of the discipline to account for psychological phenomena.

- Integrate theoretical perspectives to produce comprehensive and multifaceted explanations (APA SLO 1.3.e) (see textbook pages 31–33, 63–64)

1.4 Explain major perspectives of psychology (e.g., behavioral, biological, cognitive, evolutionary, humanistic, psychodynamic, and sociocultural). (APA SLO 1.4) (see textbook pages XXX)

- Compare and contrast major perspectives (APA SLO 1.4.a) (see textbook pages 35–37, 53–55, 61–63)

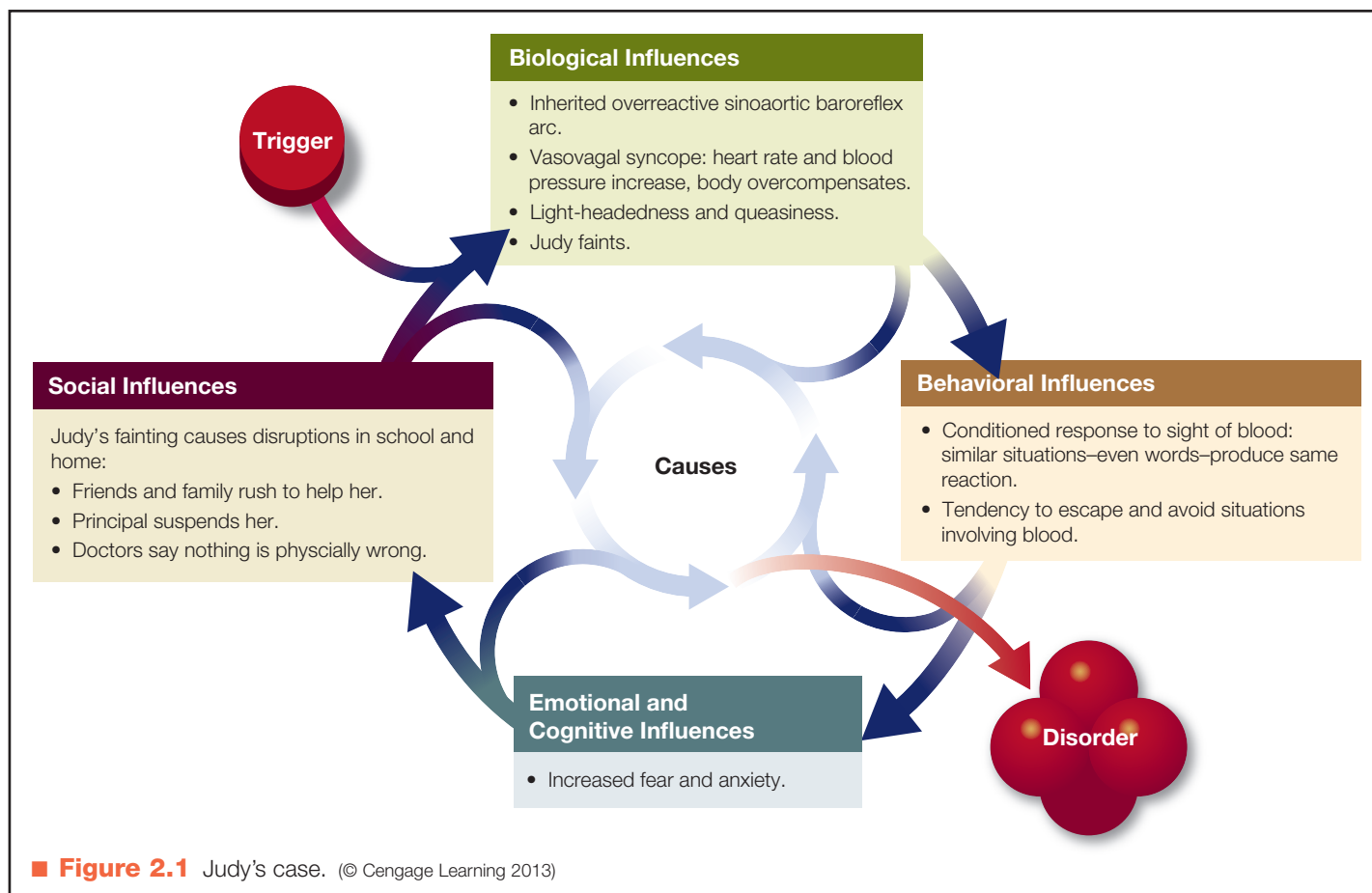
*Portions of this chapter cover learning outcomes suggested by the American Psychological Association (2007) in their guidelines for the undergraduate psychology major. Chapter coverage of these outcomes is identified by APA Goal and APA Suggested Learning Outcome (SLO).

Remember Judy from Chapter 1? We knew she suffered from blood–injury–injection phobia, but we did not know why. Here, we address the issue of causation. This chapter examines the components of a **multidimensional integrative approach** to psychopathology (■ Figure 2.1). Biological dimensions include causal factors from the fields of genetics and neuroscience. Psychological dimensions include causal factors from behavioral and cognitive processes, including learned helplessness, social learning, prepared learning, and even unconscious processes. Emotional influences contribute in a variety of ways, as do social and interpersonal influences. Finally, developmental influences figure in any discussion of causes of psychological disorders. Remember that no influence operates in isolation. Each dimension is strongly influenced by the others and by development, and they weave together in intricate ways to create a psychological disorder.

Here, we explain briefly why we have adopted a multidimensional integrative model of psychopathology. Then we preview various causal influences and interactions, using Judy’s case as background. After that, we look more deeply at specific causal influences in psychopathology.

multidimensional integrative approach Approach to the study of psychopathology that holds psychological disorders are always the products of multiple interacting causal factors.





One-Dimensional versus Multidimensional Models

- › How does a multidimensional model of causality differ from a unidimensional model?
- › What are the key influences comprising the multidimensional model of abnormal behavior?

To say that psychopathology is caused by a single cause is to accept a linear or one-dimensional model. A linear causal model might hold that schizophrenia is caused by a chemical imbalance. However, most scientists and clinicians believe abnormal behavior results from multiple influences. It may have independent inputs at many points, but as each input becomes part of the whole it can no longer be considered independent. This perspective is *systemic*; it implies that no influence contributing to psychopathology can be considered out of context—that is, the biology and behavior of the individual and the cognitive, emotional, social, and cultural environment. In this multidimensional model, each component of the system inevitably affects the other components.

What Caused Judy's Phobia?

From a multidimensional perspective, let's look at what might have caused Judy's phobia (see Figure 2.1).

Behavioral Influences

The cause of Judy's phobia might seem obvious. She saw a movie with graphic scenes of blood and injury and had a bad reaction to it. Her reaction, an unconditioned response, became associated with situations similar to the scenes in the movie. But Judy's reaction reached such an extreme that even hearing someone say "Cut it out!" evoked queasiness. Is Judy's phobia a straightforward case of classical conditioning? It might seem so, but why didn't the other kids in Judy's class develop the same phobia?

Biological Influences

We now know that more is involved in blood-injury-injection phobia than a simple conditioning experience (Antony & Barlow, 2002; Ayala, Meuret, & Ritz, 2009; Exeter-Kent & Page, 2006; Page, 1994, 1996). Physiologically, Judy experienced a *vasovagal syncope*, a common cause of fainting. When she saw the film, she became

mildly distressed, and her heart rate and blood pressure increased. Then her body took over, immediately compensating by decreasing her vascular resistance, lowering her heart rate and, eventually, lowering her blood pressure. The amount of blood reaching her brain diminished until she lost consciousness. *Syncope* means “sinking feeling” or “swoon” caused by low blood pressure in the head.

A possible cause of the vasovagal syncope is an overreaction of the *sinoatrial baroreflex arc*, which compensates for sudden increases in blood pressure by lowering it. This tendency to overcompensate seems to be inherited. Do you feel queasy at the sight of blood? If so, chances are your mother, your father, or someone else in your immediate family has the same reaction. In one study, 61% of the family members of individuals with this phobia had a similar condition (Öst, 1992). You might think, then, that we have discovered the cause of blood–injury–injection phobia. But many people with severe syncope reaction tendencies do *not* develop phobias. They cope with their reaction in various ways, including tensing their muscles whenever they are confronted with blood. Tensing the muscles quickly raises blood pressure and prevents the fainting response. Furthermore, some people with little or no syncope reaction develop the phobia anyway (Öst, 1992). Therefore, the cause of blood–injury–injection phobia is more complicated than it seems. If we said the phobia is caused by a biological dysfunction (an overactive vasovagal reaction) or a traumatic experience (seeing a gruesome film) and subsequent conditioning, we would be partly right on both counts, but we would miss the most important point: To cause blood–injury–injection phobia, a complex *interaction* must occur between behavioral and biological factors. Inheriting a strong syncope reaction definitely puts a person at risk for developing this phobia, but other influences also are at work.

Emotional Influences

Judy’s case is a good example of biology influencing behavior. But behavior can also influence biology. What role did Judy’s fear play in the development of her phobia? Emotions can affect physiological responses such as blood pressure, heart rate, and respiration, particularly if we know there is nothing to fear, as Judy did. In her case, rapid increases in heart rate, caused by her emotions, may have triggered a stronger and more intense baroreflex. Emotions also changed the way she thought about situations involving blood and injury and motivated her to avoid all situations connected with blood and injury, even if it was important not to avoid them.

Social Influences

Social and cultural factors contribute to biology and behavior. Judy’s friends and family rushed to her aid when she fainted. Did their support help or hurt? Her principal dismissed her problem. What effect did this behavior have on her phobia? Rejection, particularly by authority figures, can make psychological disorders worse than they other-



Alain Le Bou/Photoblibrary

▲ People who experience the same traumatic event will have different long-term reactions.

wise would be. Then again, being supportive only when somebody is experiencing symptoms is not always helpful because the attention may actually increase the frequency and intensity of the reaction.

Developmental Influences

As time passes, many things about ourselves and our environments change in important ways, causing us to react differently at different ages. At certain times we may enter a *developmental critical period* when we are more or less reactive to a given situation than at other times. To go back to Judy, it is possible she was previously exposed to other situations involving blood. Why did this problem develop when she was 16 and not before? Is it possible that her susceptibility to having a vasovagal reaction was highest in her teenage years? It may be that the timing of her physiological reaction, along with viewing the disturbing film, provided just the right combination to initiate her phobic response.

Outcome and Comments

Fortunately for Judy, she responded well to treatment at one of our clinics and was back in school within 7 days. Judy was gradually exposed to words, images, and situations describing or depicting blood and injury while a sudden drop in blood pressure was prevented. We began with something mild, such as the phrase “cut it out!” By the end of the week Judy was witnessing surgical procedures at the local hospital.

As you can see, finding the causes of abnormal behavior is a complex process. Focusing on biological or behavioral factors would not have given us a full picture of the causes of Judy’s disorder; we had to consider other influences and how they might interact. We now examine the research underlying the many biological, psychological, and social influences that give rise to psychological disorders.

Concept Check 2.1

Match each of the following scenarios to its most likely influence or influences: (a) behavioral, (b) biological, (c) emotional, (d) social, (e) developmental.

1. The fact that some phobias are more common than others (such as fear of heights and snakes) and may have contributed to the survival of the species suggests that phobias may be genetically prewired. This is evidence for which influence?

2. Jan's husband, Jinx, was an unemployed jerk who spent his life chasing women other than his wife. Jan, happily divorced for years, cannot understand why the smell of Jinx's brand of aftershave causes

her to become nauseated. Which influence best explains her response? _____

3. Nathan, age 16, finds it more difficult than his 7-year-old sister does to adjust to his parents' recent separation. This may be explained by what influences? _____
4. A traumatic ride on a Ferris wheel at a young age was most likely to have been the initial cause of Juanita's fear of heights. Her strong emotional reaction to heights is likely to maintain or even increase her fear. The initial development of the phobia is likely a result of _____ influences; however, _____ influences are likely perpetuating the phobia.

Genetic Contributions to Psychopathology

- › How do genes interact with environmental factors to affect behavior?
- › What kinds of models have been proposed to describe this interaction?

What causes you to look like one or both of your parents or, perhaps, your grandparents? Obviously, the genes you inherit are from your parents and from your ancestors before them. **Genes** are long molecules of deoxyribonucleic acid (DNA) at various locations on chromosomes within the cell nucleus. Physical characteristics are determined—or at least strongly influenced—by our genetic endowment. However, other factors in the environment influence our physical appearance. While our genes provide some boundaries to our development, exactly where we go within these boundaries depends on environmental influences.

Although this is true for most of our characteristics, it is not true for all of them. Some of our characteristics are strongly determined by one or more genes, including hair and eye color. A few rare disorders are also determined in this way, including Huntington's disease, a degenerative brain disease that appears in early to middle age. This disease has been traced to a genetic defect that causes deterioration in a specific area of the brain, the basal ganglia. It causes broad changes in personality, cognitive functioning, and motor behavior. We have not yet discovered a way to environmentally influence the course of Huntington's disease. Except for identical twins, every person has a unique set of genes. Because there is plenty of room for the environment to influence our development within the constraints set by our genes, there are many reasons for the development of individual differences.

What about our behavior and traits? Do genes influence personality and, by extension, abnormal behavior? This question of nature (genes) versus nurture (upbringing and other environmental influences) is age old, and the an-

swers beginning to emerge are fascinating. Before discussing them, let's review briefly what we know.

The Nature of Genes

We have known for a long time that each normal human cell has 46 chromosomes arranged in 23 pairs. One chromosome in each pair comes from the father and one from the mother.

The first 22 pairs of chromosomes provide programs or directions for the development of the body and brain, and the last pair, called the *sex chromosomes*, determines an individual's sex. In females, both chromosomes in the 23rd pair are *X chromosomes*. In males, the mother contributes an X chromosome but the father contributes a *Y chromosome*. Abnormalities in the sex chromosomal pair can cause ambiguous sexual characteristics.

The DNA molecules that contain genes have a certain structure, a double helix. The shape of a helix is like a spiral staircase. A double helix is two spirals intertwined, turning in opposite directions. Located on this double spiral are simple pairs of molecules bound together and arranged in different orders. The ordering of these pairs influences how the body develops and works.

A *dominant gene* is one of a pair of genes that strongly influences a particular trait, and we only need one of them to determine, for example, our eye or hair color. A *recessive gene*, by contrast, must be paired with another (recessive) gene to determine a trait. Gene dominance occurs when one member of a gene pair is consistently expressed over the other (for example, a brown-eyed gene is dominant

over a blue-eyed gene). When we have a dominant gene, we can predict fairly accurately how many offspring will develop a certain trait, characteristic, or disorder, depending on whether one or both of the parents carry that dominant gene.

Most of the time, predictions are not so simple. Much of our development and most of our behavior, personality, and even intelligence quotient (IQ) score are probably *polygenic*—that is, influenced by many genes, each contributing only a tiny effect, all of which, in turn, may be influenced by the environment. And because the human *genome*, or an individual's complete set of genes, is composed of more than 20,000 genes (U.S. Department of Energy Office of Science, 2009), polygenic interactions can be complex. For this reason, most genetic scientists now use sophisticated procedures such as quantitative genetics and molecular genetics that allow them to look for patterns of influence across many genes (Kendler, 2006; Plomin & Davis, 2009; Rutter, Moffitt, & Caspi, 2006; Thapar & McGuffin, 2009). *Quantitative genetics* sums up all the tiny effects across many genes without telling us which genes are responsible for which effects. *Molecular genetics* examines the structure of genes with advanced technologies such as *DNA microarrays*; these technologies allow scientists to analyze thousands of genes at once and identify broad networks of genes that may be contributing to a particular trait (Plomin & Davis, 2009). Such studies have indicated that hundreds of genes can contribute to the heritability of a single trait (Gottesman, 1997; Hariri et al., 2002; Plomin et al., 1995; Rutter et al., 2006). Research also continues to identify specific genes that contribute to individual differences in traits or temperament, such as shyness or impulsivity (for example, Gershon, Kelsoe, Kendler, & Watson, 2001).

Genes influence our bodies and behavior through a series of steps that produce proteins. Although all cells contain our entire genetic structure, only a small proportion of the genes in any one cell are “turned on” or expressed. In this way, cells become specialized. Environmental factors, in the form of social and cultural influences, can determine whether genes are “turned on.” To take one example, in



Dan McCoy/Rainbow

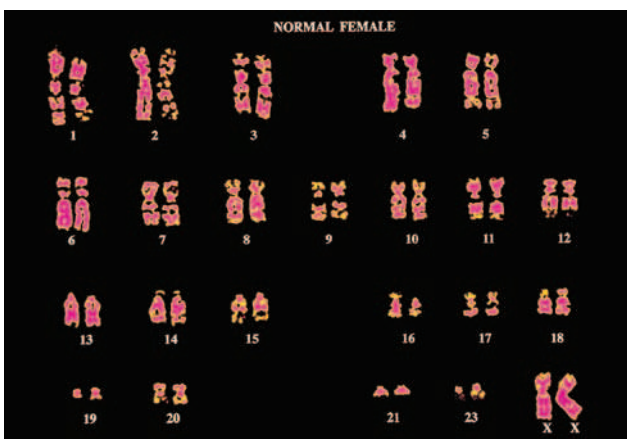
▲ Scientists can now isolate DNA for study.

studies with rat pups, researchers have found that the absence of normal maternal behavior of “licking and grooming” prevents the genetic expression of a glucocorticoid receptor that modulates stress hormones. This means rats with inadequate maternal care have greater sensitivity to stress (Meaney & Szyf, 2005). There is evidence that a similar model may be relevant in humans (Hyman, 2009).

New Developments in the Study of Genes and Behavior

Scientists have identified, in a preliminary way, the genetic contribution to psychological disorders and related behavioral patterns. The best estimates attribute about half of our enduring personality traits and cognitive abilities to genetic influence (Rutter, 2006). For example, McClearn et al. (1997) compared 110 Swedish identical twin pairs, at least 80 years old, with 130 same-sex fraternal twin pairs of a similar age and found heritability estimates for specific cognitive abilities, such as memory, ranged from 32% to 62%. This work built on earlier twin studies, with different age groups showing similar results (for example, Bouchard, Lykken, McGue, Segal, & Tellegen, 1990). Furthermore, a study of more than 1,200 twins spanning 35 years confirmed that during adulthood genetic factors determined stability in cognitive abilities, whereas environmental factors determined any changes (Lyons et al., 2009). In other studies, the same heritability calculation for personality traits such as shyness ranges between 30% and 50% (Bouchard et al., 1990; Kendler, 2001; Loehlin, 1992; Rutter, 2006; Saudino & Plomin, 1996; Saudino, Plomin, & DeFries, 1996).

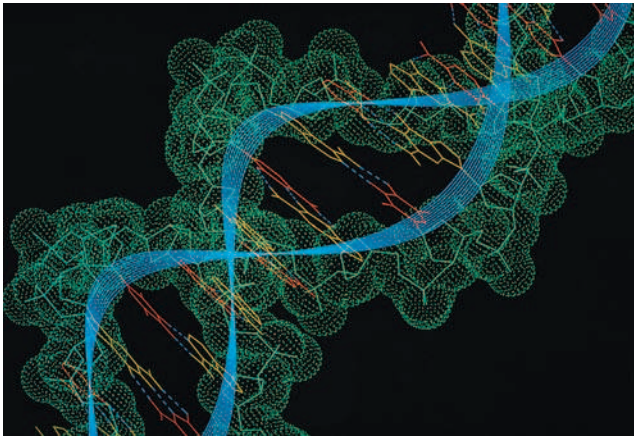
It has also become clear that adverse events such as a “chaotic” childhood can overwhelm the influence of genes



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▲ A normal female has 23 pairs of chromosomes.

genes Long deoxyribonucleic acid (DNA) molecule, the basic physical unit of heredity that appears as a location on a chromosome.



▲ A DNA molecule, which contains genes, resembles a double spiral, or helix.

(Turkheimer, Haley, Waldron, D'Onofrio, & Gottesman, 2003). For example, one member of a set of twins in the Lyons et al. (2009) study showed marked change in cognitive abilities if his or her environment changed dramatically from the other twin's because of some stressful event such as death of a loved one.

For psychological disorders, the evidence indicates that genetic factors contribute to all disorders but account for less than half of the explanation. If one of a pair of identical twins has schizophrenia, there is a less than 50% likelihood that the other twin will also have the illness (Gottesman, 1991). Similar or lower rates exist for other psychological disorders (Kendler & Prescott, 2006; Plomin, DeFries, McClearn, & Rutter, 1997; Rutter, 2006).

Behavioral geneticists have concluded that specific genes or small groups of genes may ultimately be found to be associated with certain psychological disorders. But much of the evidence suggests that contributions to psy-

chological disorders come from many genes, each having a relatively small effect (Flint, 2009; Rutter, 2006). Advances in gene mapping, molecular genetics, and linkage studies help us track the genes implicated in various disorders (for example, Gershon et al., 2001; Hettema, Prescott, Myers, Neale, & Kendler, 2005; Plomin et al., 1997). In linkage studies, scientists study individuals who have the same disorder, such as bipolar disorder, and also share other features, such as eye color; because the location of the gene for eye color is known, this allows scientists to “link” known gene locations with the possible location of a gene contributing to the disorder (Flint, 2009).

It is increasingly clear that genetic contributions cannot be studied in the absence of interactions with events that “turn on” specific genes (Rutter, 2010). It is to this fascinating topic that we now turn.

The Interaction of Genes and the Environment

In 1983, neuroscientist Eric Kandel speculated that the process of learning affects more than behavior. He suggested that the genetic structure of cells may change as a result of learning if genes that were inactive interact with the environment in such a way that they become active. In other words, the environment may occasionally turn on certain genes. This type of mechanism may lead to changes in the number of receptors at the end of a neuron, which, in turn, would affect biochemical functioning in the brain.

Most of us assume that the brain, like other parts of the body, may be influenced by environmental changes during development. But we also assume that once maturity is reached, the structure and function of most of our physiology are set or, in the case of the brain, hardwired. The competing idea is that the brain and its functions are subject to continual change in response to the environment,

even at the genetic level. Now there is evidence supporting that view (Kolb, Gibb, & Robinson, 2003; Landis & Insel, 2008; Owens, Mulchahey, Stout, & Plotsky, 1997; Robinson, Fernald, & Clayton, 2008).

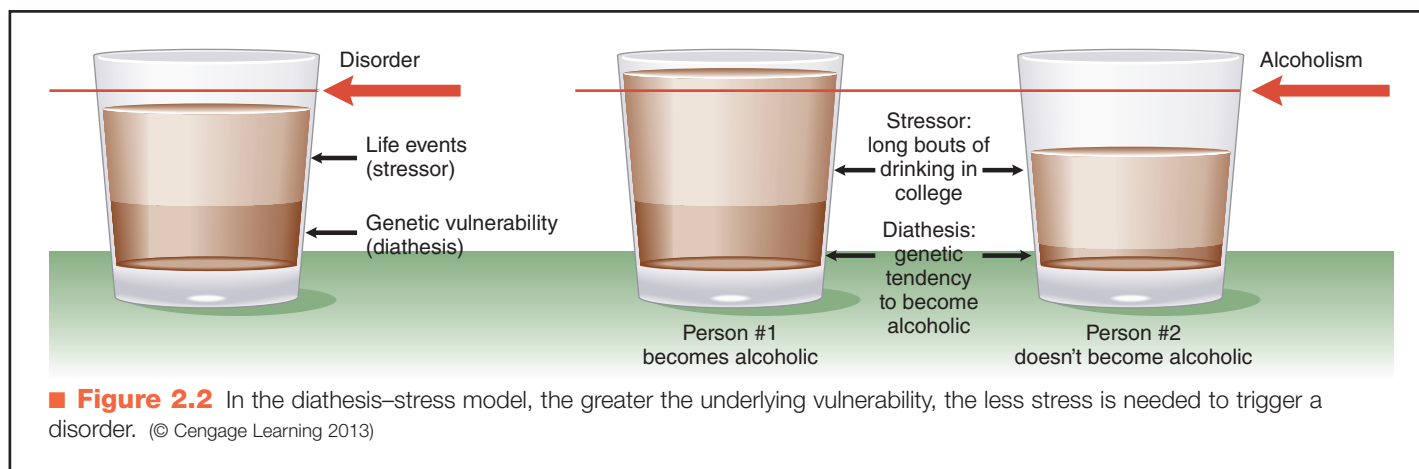
With these new findings in mind, we can now explore gene–environment interactions as they relate to psychopathology. Two models have received the most attention: the diathesis–stress model and reciprocal gene–environment model (or gene–environment correlations).

The Diathesis–Stress Model

According to this **diathesis–stress model**, individuals inherit tendencies to express certain traits or behaviors, which may be activated under conditions of stress (■ Figure 2.2). Each inherited tendency is a *diathesis*, a condition that makes someone susceptible to developing a disorder. When the right kind of event, such as a certain type of stressor, comes along, the disorder develops. For example, according to the diathesis–stress model, Judy inherited a *tendency* to faint at the sight of blood. This tendency is the dia-



▲ Genetic contributions to behavior are evident in twins who were raised apart. When these brothers were finally reunited, they were both firefighters and they discovered many other shared characteristics and interests.



thesis, or **vulnerability**. It would not become prominent until certain environmental events occurred. For Judy, this event was the sight of an animal being dissected when she was in a situation in which escape was not acceptable. The stress of seeing the dissection under these conditions activated her tendency to faint. Together, these factors led to her developing a disorder. If she had not taken biology, she might have gone through life without knowing she had the tendency, at least to such an extreme, although she might have felt queasy about minor cuts. In short, the “diathesis” is genetically based and the “stress” is environmental, but they must interact to produce a disorder.

We might also take the case of someone who inherits a vulnerability to alcoholism. During college, both this person and a friend who lacks the tendency engage in drinking bouts, but only the individual with the so-called addictive genes begins the downward spiral into alcoholism. Having a particular vulnerability doesn’t mean you will develop the associated disorder. The smaller the vulnerability, the greater the stress required to produce the disorder; conversely, with greater vulnerability, less stress is required.

This relationship has been demonstrated in a landmark study by Caspi et al. (2003), who have been studying a group of 847 individuals in New Zealand for more than 2 decades. They noted whether the participants, at age 26, had been depressed during the past year. Overall, 17% had experienced a major depressive episode and 3% felt suicidal. The investigators also identified the genetic makeup of the individuals and, in particular, a gene that produces a *chemical transporter* that affects the transmission of serotonin in the brain. Serotonin, a neurotransmitter, is implicated in depression and related disorders. But the gene that Caspi et al. were studying comes in two common versions, or *alleles*: one long and one short. There was reason to believe, from work with animals, that individuals with at least two copies of the long allele (LL) were able to cope better with stress than individuals with two copies of the short allele (SS).

Because the investigators have been recording stressful events in these individuals most of their lives, they were able to test this relationship. In people with two S alleles, the risk for having a major depressive episode doubled if they had at

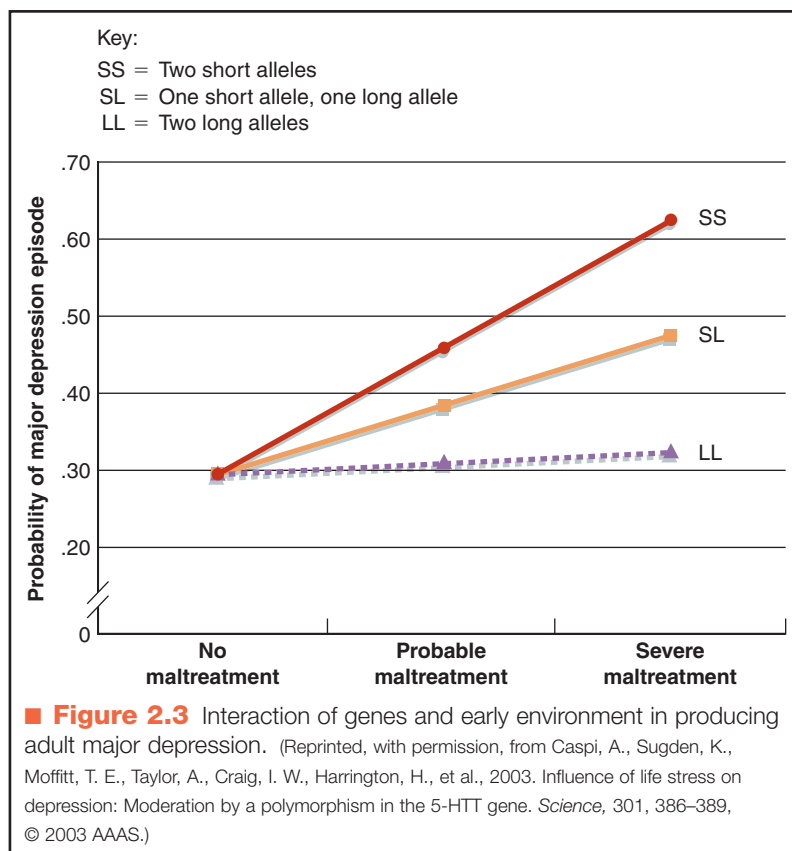
least four stressful events, compared with participants experiencing four stressful events who had two L alleles. Moreover, in people with the SS alleles, severe maltreatment during childhood more than doubled their risks of depression in adulthood compared to individuals carrying the SS alleles who were not maltreated (63% versus 30%). For individuals carrying the LL alleles, however, stressful childhood experiences did not affect the incidence of depression in adulthood; 30% of this group became depressed whether they had experienced stressful childhoods or not. (This relationship is shown in ■ Figure 2.3.) Therefore, unlike this SS group, depression in the LL allele group seems related to stress in their recent past rather than childhood experiences. This study was important in demonstrating that neither genes nor life experiences (environmental events) can solely explain the onset of a disorder such as depression. It takes a complex interaction of the two factors. Other studies have replicated or supported these findings (Binder et al., 2008; Kilpatrick et al., 2007; Rutter et al., 2006).

The Reciprocal Gene–Environment Model

With increased study, the web of interrelationships between genes and environment has been found to be even more complex. Some evidence now indicates that genetic endowment may *increase the probability* that an individual will experience stressful events (for example, Kendler, 2001, 2006; Rutter, 2006, 2010; Saudino, Pedersen, Lichtenstein, McClearn, & Plomin, 1997; Thapar & McGuffin, 2009). For example, people with a genetic vulnerability to develop a certain disorder, such as blood–injury–injection phobia, may also have a personality trait—say, impulsiveness—that makes them more likely to be involved in minor accidents that would result in their seeing blood. In other words, they may be accident prone because they are continually rushing without regard for their safety. These people, then,

diathesis–stress model Hypothesis that both an inherited tendency (a vulnerability) and specific stressful conditions are required to produce a disorder.

vulnerability Susceptibility or tendency to develop a disorder.



and both identical twins have been divorced, the chance that you will also divorce increases greatly. Furthermore, if your identical twin and your parents and your spouse's parents have been divorced, the chance that you will divorce is 77.5%. Conversely, if none of your family members on either side has been divorced, the probability that you will divorce is only 5.3%.

This is the extreme example, but McGue and Lykken (1992) demonstrated that the probability of your divorcing doubles over the probability in the population at large if your fraternal twin is also divorced and increases sixfold if your identical twin is divorced. Why would this happen? To the extent it is genetically determined, the tendency to divorce is almost certainly related to various inherited traits, such as being impulsive or short tempered, that make someone hard to get along with (Jockin, McGue, & Lykken, 1996). Another possibility is that an inherited trait makes you more likely to choose an incompatible spouse. If you are unassertive, you may choose a dominant mate who turns out to be impossible to live with. You get divorced but then find yourself attracted to another individual with the same traits, who is also impossible to live with. Some people would attribute this pattern to poor judgment. Nevertheless, there's no doubt that social, interpersonal, psychological, and

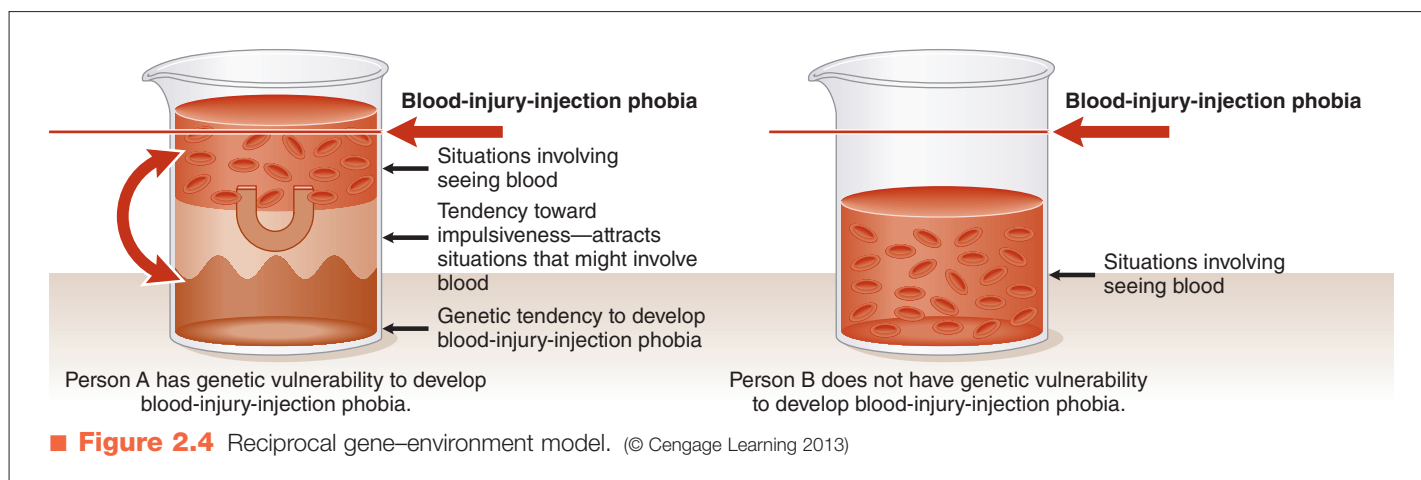
environmental factors play major roles in whether we stay married, and it's quite possible that our genes contribute to how we create our own environment.

Epigenetics and the Nongenomic "Inheritance" of Behavior

Recent reports suggest that studies to date have overemphasized the extent of genetic influence on our personalities, our temperaments, and their contribution to psychological disorders (Moore, 2001; Turkheimer & Waldron, 2000). Several lines of evidence have come together to buttress this conclusion.

might have a genetically determined tendency to create the environmental factors that trigger their vulnerability to blood-injury-injection phobia.

This is the **reciprocal gene-environment model** or gene-environment correlation model (Kendler, 2001; Thapar & McGuffin, 2009) (■ Figure 2.4). Some evidence indicates that it applies to depression because some people may tend to seek out difficult relationships or other circumstances that lead to depression (Bebbington et al., 1988; Kendler et al., 1995; McGuffin, Katz, & Bebbington, 1988). McGue and Lykken (1992) have applied the reciprocal gene-environment model to the divorce rate. For example, if you and your spouse each have an identical twin



For example, behavioral geneticists Crabbe, Wahlsten, and Dudek (1999) conducted an experiment in which three types of mice with different genetic makeups were raised in virtually identical environments at three sites. Each mouse of a given type was genetically indistinguishable from all other mice of that type at each site. The experimenters made sure the environments were the same at each site. For example, each site had the same kind of sawdust bedding that was changed on the same day of the week. If the animals had to be handled, all of them were handled at the same time by experimenters wearing the same kind of glove. If genes determine the behavior of the mice, then mice with virtually identical genetic makeup (type A) should have performed the same at all three sites on a series of tests, as should have type B and type C mice. But this did not happen. Although a certain type of mouse might perform similarly on a specific test across all three sites, on other tests that type of mouse performed differently. Robert Sapolsky, a prominent neuroscientist, concluded, “[G]enetic influences are often a lot less powerful than is commonly believed. The environment, even working subtly, can still mold and hold its own in the biological interactions that shape who we are” (Sapolsky, 2000, p. 15).

In research with rats (Cameron et al., 2005; Francis, Diorio, Liu, & Meaney, 1999; Weaver et al., 2004), investigators studied stress reactivity and how it is passed through generations, using a procedure called *cross-fostering*, in which a rat pup born to one mother is assigned to another mother for rearing. They first demonstrated that maternal behavior affected how the young rats tolerated stress. If the mothers were calm, their rat pups were better able to tolerate stress. But we don’t know if this effect results from genetic influences or from being raised by calm mothers. Francis et al. (1999) took some newly born rat pups of easily stressed mothers and placed them with calm mothers. Other young rats remained with their easily stressed mothers. They found that calm and supportive behavior by the mothers could be passed down through generations of rats *independent of genetic influences* because rats born to easily stressed mothers but reared by calm mothers grew up more calm and supportive. The authors concluded,

these findings suggest that individual differences in the expression of genes in brain regions that regulate stress reactivity can be transmitted from one generation to the next through behavior. . . . The results . . . suggest that the mechanism for this pattern of inheritance involves differences in maternal care. (p. 1158)

Strong effects of the environment have also been observed in humans. For example, Tienari et al. (1994) found that children of parents with schizophrenia who were adopted away as babies tended to develop psychiatric disorders (including schizophrenia) themselves only if they were adopted into dysfunctional families. Children adopted into functional families with high-quality parenting did not develop the disorders. Thus, it is simplistic to say the genetic contribution to a personality trait or psychological disorder is approximately 50%. We can talk of a

heritable (genetic) contribution only in the context of the individual’s past and present environment.

In support of this conclusion, Suomi (2000) demonstrated that for young monkeys with a specific genetic pattern associated with a highly reactive temperament (emotional or susceptible to the effects of stress), early maternal deprivation (disruptions in mothering) will have a powerful effect on their neuroendocrine functioning and their later emotional reactions. However, for animals without this genetic characteristic, maternal deprivation will have little effect, just as was found in the New Zealand study in humans by Caspi et al. (2003), and it is likely this effect will be carried down through the generations. But chaotic early environments can override genetic factors and alter neuroendocrine function to increase the likelihood of later behavioral and emotional disorders (Ouellet-Morin et al., 2008).

How does this work? It seems that genes are turned on or off by cellular material that is located just outside of the genome (“epi,” as in the word *epigenetics*, means on or around) and that stress, nutrition, or other factors can affect this epigenome, which is passed down to the next generation and maybe for several generations (Arai, Li, Hartley, & Feig, 2009). The genome itself isn’t changed, so if the stressful environment disappears, eventually the epigenome will fade. Thus, it seems that environmental manipulations, particularly early parenting influences, may override the genetically influenced tendency to develop undesirable behavioral and emotional reactions (Cameron et al., 2005; Collins et al., 2000; Ouellet-Morin et al., 2008).

Nowhere is the complexity of the interaction of genetic and environmental influences more apparent than in the famous cases of Chang and Eng, identical twins born in Thailand in 1810 (known as Siam at the time) who were joined at the chest. These individuals, who became successful entertainers, were the source of the name “Siamese twins.” They obviously shared identical genes, and nearly identical environments throughout their lives. Thus, we would expect them to behave in similar ways when it comes to personality features, temperaments, and psychological disorders. But these twins had distinct personalities. Chang was prone to moodiness and depression and started drinking heavily. Eng was more cheerful, quiet, and thoughtful (Moore, 2001).

In summary, a complex interaction between genes and the environment plays a role in every psychological disorder (Kendler, 2001; Rutter, 2006, 2010; Turkheimer, 1998). Our genes contribute to our behavior, emotions, and cognitive processes and constrain the influence of environmental factors, such as upbringing, on our later behavior. Environmental events, in turn, seem to affect our genes by determining

reciprocal gene–environment model Hypothesis that people with a genetic predisposition for a disorder may also have a genetic tendency to create environmental risk factors that promote the disorder.

epigenetics The study of factors other than inherited DNA sequence, such as new learning or stress, that alter the phenotypic expression of genes.

whether certain genes are activated or not (Gottlieb, 1998; Landis & Insel, 2008). Furthermore, strong environmental influences alone may be sufficient to override genetic diatheses. Thus, neither nature (genes) nor nurture (environmental events) alone, but a complex interaction of the two, influences the development of our behavior and personalities.

Concept Check 2.2

Determine whether these statements are true (T) or false (F).

1. ___ The first 20 pairs of chromosomes program the development of the body and brain.

2. ___ No individual genes have been identified that cause psychological disorders.
3. ___ According to the diathesis–stress model, people inherit a vulnerability to express certain traits that may be activated under certain conditions.
4. ___ The idea that individuals' genes may increase the probability that they will experience stressful events and therefore trigger a vulnerability is in accordance with the diathesis–stress model.
5. ___ Environmental events alone influence the development of our behavior and personalities.

Neuroscience and Its Contributions to Psychopathology

- › What are neurotransmitters, and how are they involved in abnormal behavior?
- › What are the functions of different brain regions, and what are their roles in psychopathology?

Knowing how the nervous system works is central to understanding behavior, emotions, and cognitive processes. This is the focus of **neuroscience**. To comprehend research in this field, we first need an overview of how the brain and the nervous system function. The human nervous system includes the *central nervous system*, consisting of the brain and the spinal cord, and the *peripheral nervous system*, consisting of the somatic nervous system and the autonomic nervous system (■ Figure 2.5).

The Central Nervous System

The central nervous system processes information received from our sense organs. It sorts out what is relevant, such as a certain taste or a new sound, from what isn't, such as a familiar view or ticking clock; checks memory to determine why the information is relevant; and implements the right reaction, whether it is to answer a question or to play a Mozart sonata. This is a lot of exceedingly complex work. The spinal cord is part of the central nervous system, but its primary function is to facilitate the sending of messages to and from the brain, which is the other major component of the central nervous system (CNS). The brain uses an average of 140 billion nerve cells, called **neurons**, to control thoughts and actions. Neurons transmit information throughout the nervous system.

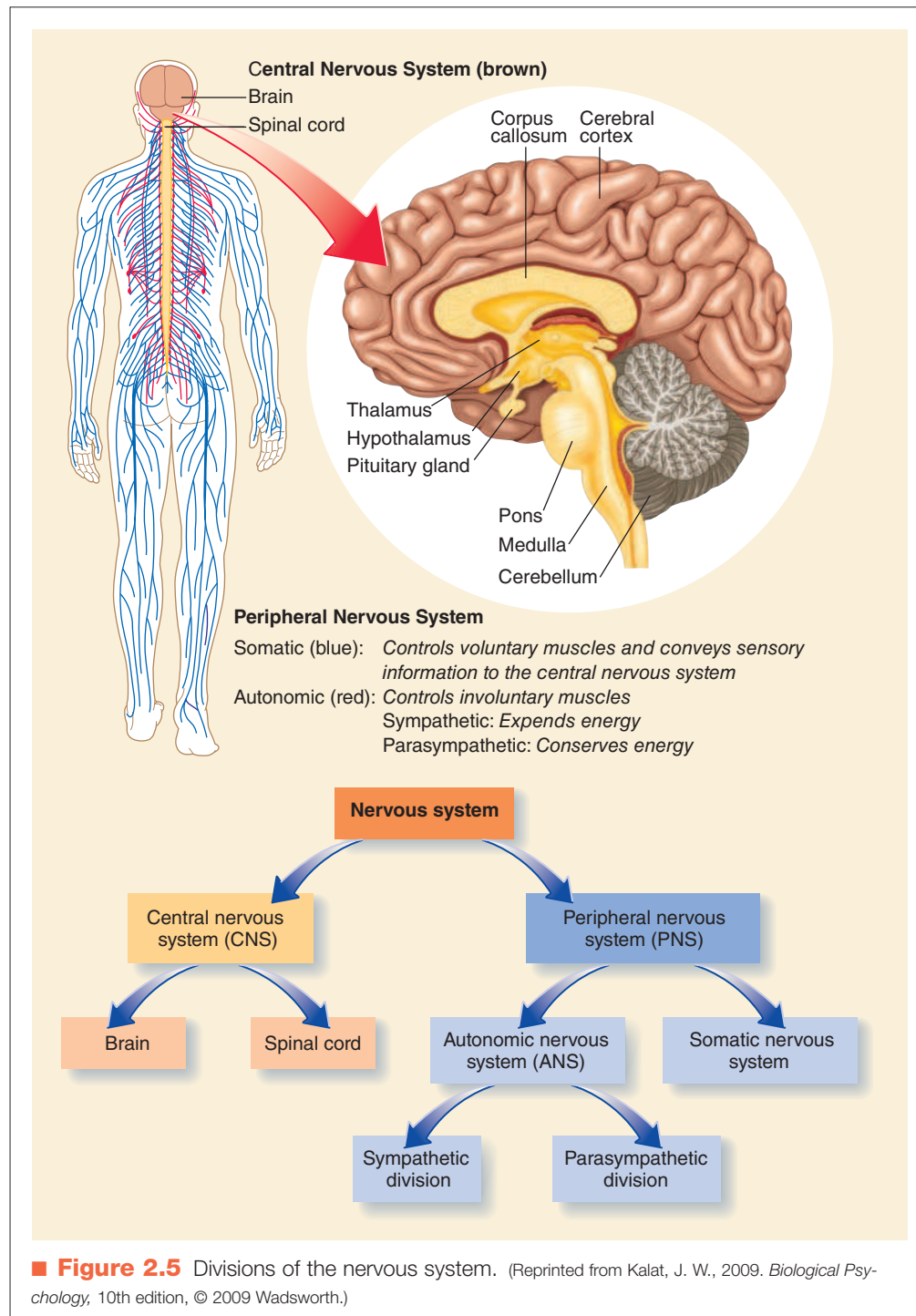
The typical neuron contains a central cell body with two kinds of branches. One kind is a *dendrite*. Dendrites have numerous *receptors* that receive messages from other nerve cells in the form of chemical impulses, which are con-

verted into electrical impulses. The other kind of branch, an *axon*, transmits these impulses to other neurons. Any nerve cell may have multiple connections to other neurons. The brain has billions of nerve cells.

Neurons are not actually connected to each other. There is a small space through which the impulse must pass to get to the next neuron. The space between the axon of one neuron and the dendrite of another is called the **synaptic cleft** (■ Figure 2.6). The biochemicals that are released from one neuron and transmit the impulse to another neuron are called **neurotransmitters**. Using increasingly sensitive equipment and techniques, scientists have identified many types of neurotransmitters.

The nervous system also contains glia (or glial) cells. For many years scientists believed that they merely served to connect and insulate neurons (Koob, 2009). More recently, scientists have discovered that glia (which are 10 times more numerous than neurons) play active roles in neural activity. It is now known that there are different types of glia cells, some of which serve to modulate neurotransmitter activity (Allen & Barres, 2009; Perea & Araque, 2007). Better understanding the role of glia cells is an important new area of research. To date, however, most neuroscience research in psychopathology focuses on neurons.

Major neurotransmitters relevant to psychopathology include norepinephrine (also known as noradrenaline), serotonin, dopamine, gamma-aminobutyric acid (GABA), and glutamate. Excesses or insufficiencies in some neurotransmitters are associated with different groups of psychological disorders. For example, reduced levels of GABA



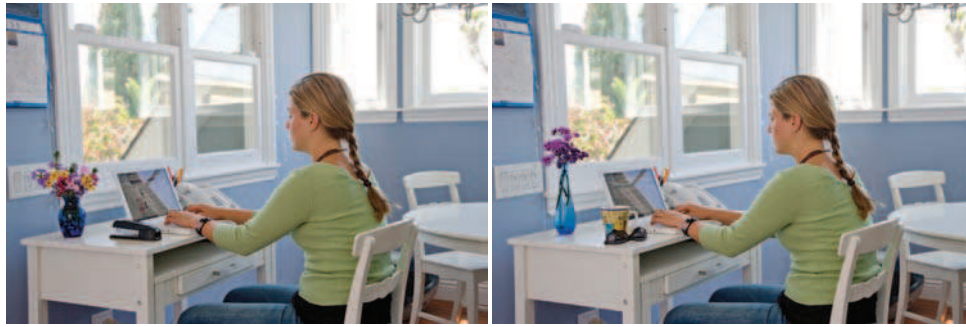
were initially thought to be associated with excessive anxiety (Costa, 1985). Early research (Snyder, 1976, 1981) linked increases in dopamine activity to schizophrenia. Other early research found correlations between depression and high levels of norepinephrine (Schildkraut, 1965) and, possibly, low levels of serotonin (Siever, Davis, & Gorman, 1991). However, more recent research indicates that these early interpretations were simplistic. We return to the subject of neurotransmitters shortly.

neuroscience Study of the nervous system and its role in behavior, thoughts, and emotions.

neuron Individual nerve cell responsible for transmitting information.

synaptic cleft Space between nerve cells where chemical transmitters act to move impulses from one neuron to the next.

neurotransmitters Chemical that crosses the synaptic cleft between nerve cells to transmit impulses from one neuron to the next. Relative excess or deficiency of neurotransmitters is involved in several psychological disorders.



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▲ The central nervous system screens out information that is irrelevant to the current situation. From moment to moment we notice what moves or changes more than what remains the same.

The Structure of the Brain

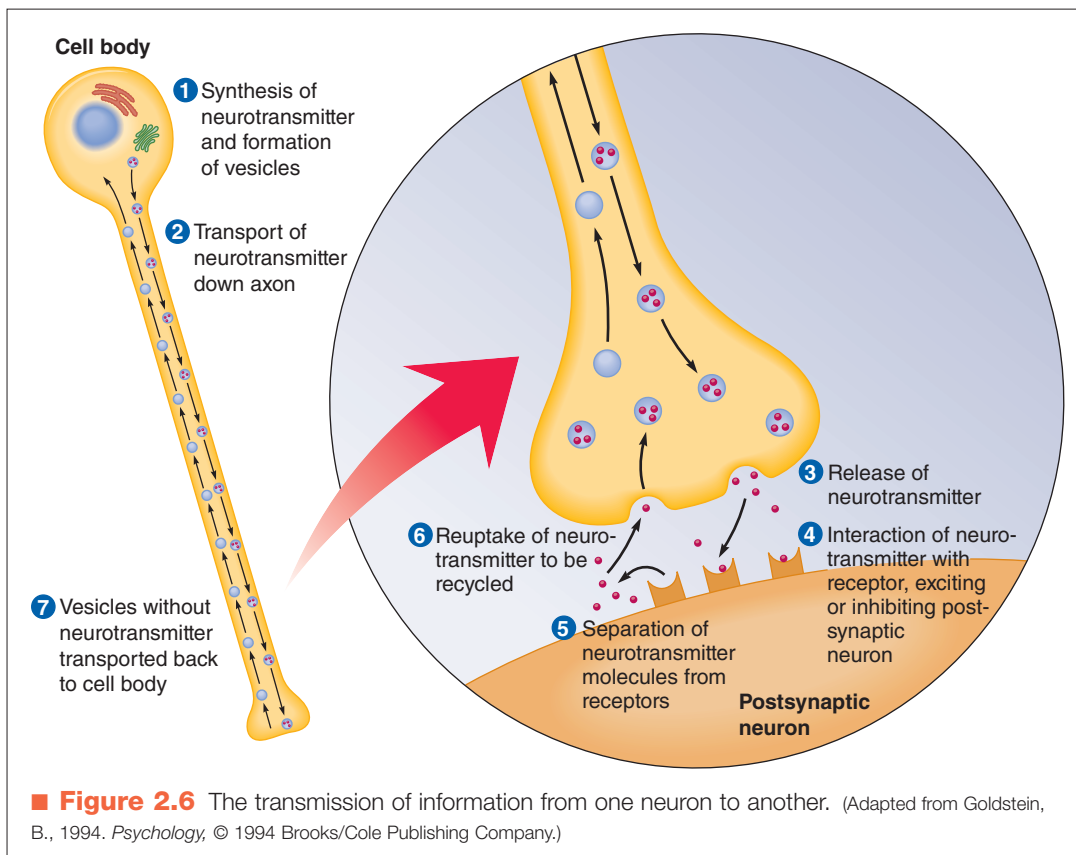
Having an overview of the brain is useful because many structures described here are later mentioned in the context of specific disorders. The brain (■ Figure 2.7) has two main parts—the *brain stem* and the *forebrain*. The brain stem is the lower and more ancient part of the brain. Found in most animals, this structure handles most of the essential automatic functions, such as breathing, sleeping, and moving around in a coordinated way.

The lowest part of the brain stem, the *hindbrain*, contains the *medulla*, the *pons*, and the *cerebellum*. The hindbrain regulates many automatic activities, such as breathing, the pumping action of the heart (heartbeat), and digestion. The cerebellum controls motor coordination.

Also located in the brain stem is the *midbrain*, which coordinates movement with sensory input and contains parts of the *reticular activating system*, which contributes to processes of arousal and tension, such as whether we are awake or asleep.

At the top of the brain stem are the *thalamus* and *hypothalamus*, which regulate behavior and emotion. These structures function as a relay between the forebrain and the lower areas of the brain stem.

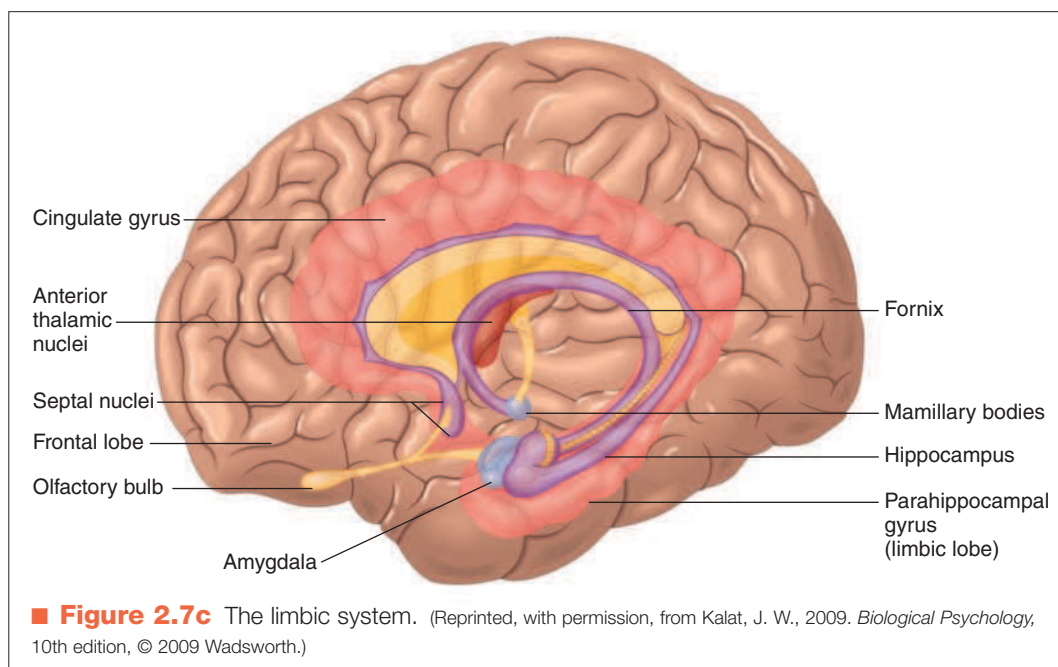
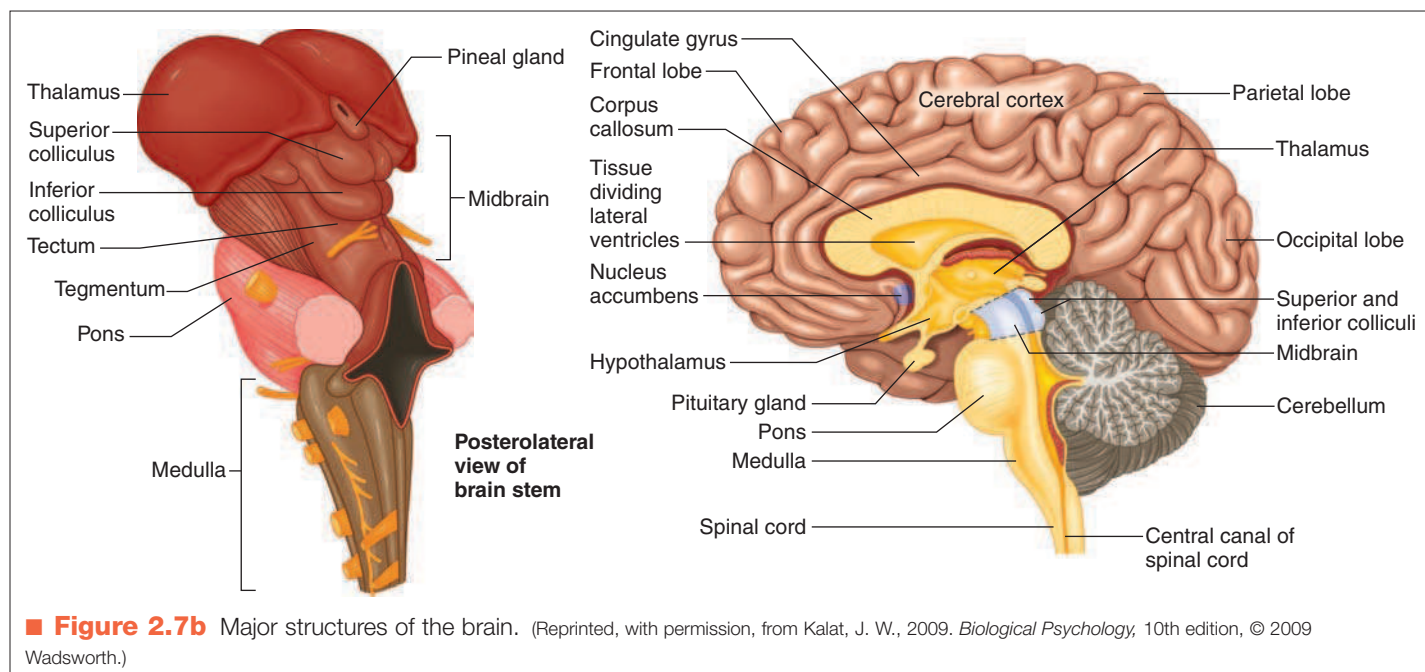
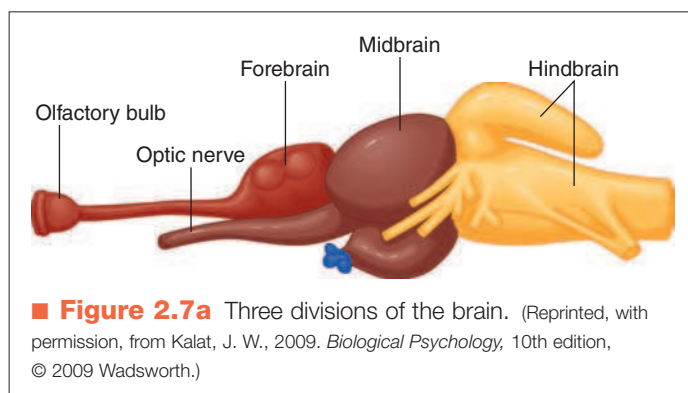
At the base of the forebrain, just above the thalamus and hypothalamus, is the *limbic system*. *Limbic* means border, so named because it is located around the edge of the center of the brain. The limbic system, which figures prominently in much of psychopathology, includes such struc-

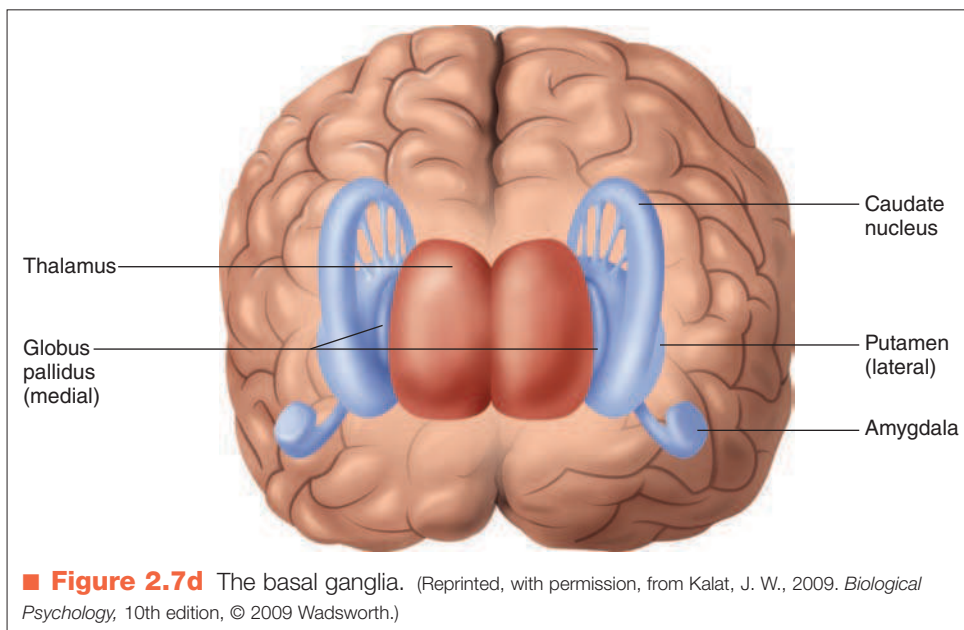


tures as the *hippocampus* (sea horse), *cingulated gyrus* (girdle), *septum* (partition), and *amygdala* (almond), all of which are named for their shapes. This system helps regulate emotion and, to some extent, our ability to learn and to control our impulses. It is also involved with the basic drives of sex, aggression, hunger, and thirst.

The *basal ganglia*, also at the base of the forebrain, include the *caudate* (tailed) *nucleus*. Because damage to these structures may make us change our posture or twitch or shake, they are believed to control motor activity.

The largest part of the forebrain is the *cerebral cortex*, which contains more than 80% of all neurons in the central



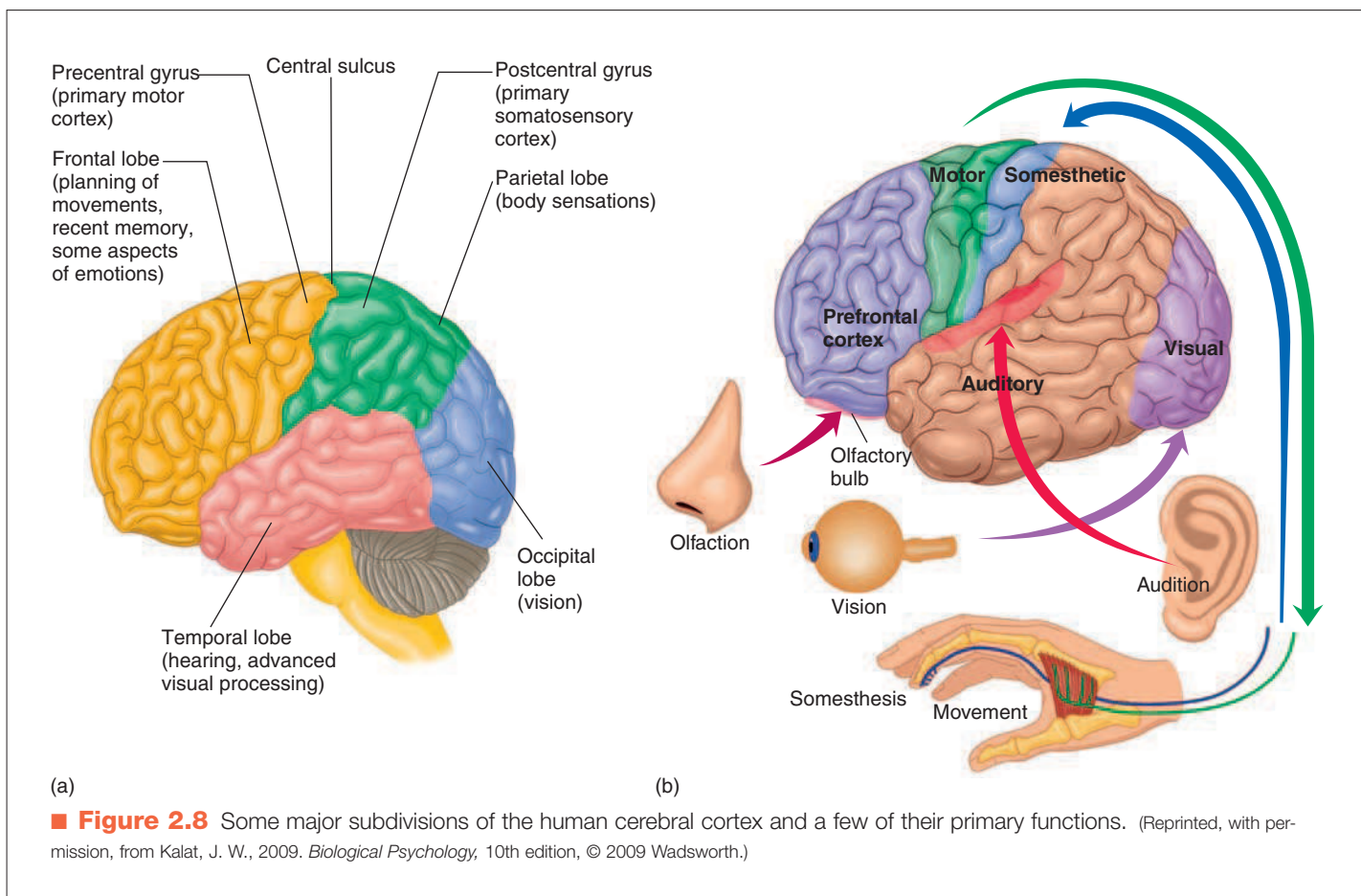


specialties. The left hemisphere seems to be chiefly responsible for verbal and other cognitive processes. The right hemisphere seems to be better at perceiving and creating images. The hemispheres may play differential roles in specific disorders. For example, current theories about dyslexia (a learning disability involving reading) suggest that it may be a result of problems in processing information in the left hemisphere and that the right hemisphere may attempt to compensate by involving visual cues from pictures while reading (Shaywitz, 2003).

Each hemisphere consists of four *lobes*: temporal, parietal, occipital, and frontal (■ Figure 2.8). Each lobe is associated with different processes: the *temporal lobe*

nervous system. It gives us our distinctly human qualities, allowing us to plan, reason, and create. It is divided into two hemispheres. Although the hemispheres look alike and operate relatively independently (both are capable of perceiving, thinking, and remembering), each has different

with recognizing sights and sounds and with long-term memory storage; the *parietal lobe* with recognizing sensations of touch and monitoring body positioning; the *occipital lobe* with making sense of visual inputs. These three lobes, located toward the back (posterior) of the brain, work

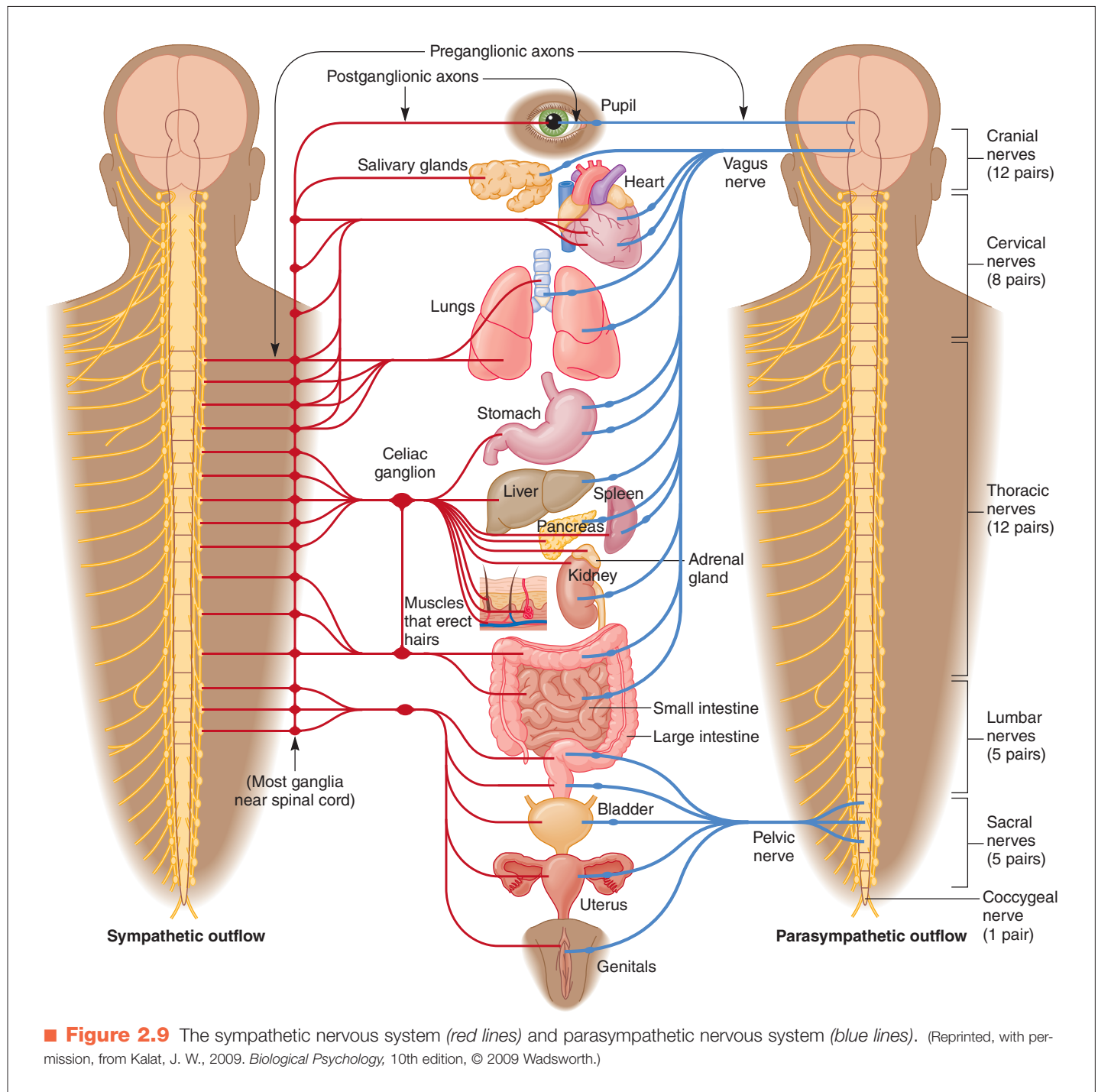


together to process sight, touch, hearing, and other signals from our senses.

The front (or anterior) of the frontal lobe is called the *pre-frontal cortex* and is responsible for higher cognitive functions such as thinking and reasoning, planning for the future, and long-term memory. It synthesizes information received from other parts of the brain and decides how to respond. It is what enables us to relate to the world around us. When studying the brain for clues to psychopathology, most researchers focus on the frontal lobe of the cerebral cortex in addition to the limbic system and the basal ganglia.

The Peripheral Nervous System

The peripheral nervous system coordinates with the brain stem to make sure the body is working properly. It consists of the *somatic nervous system* and the *autonomic nervous system*. The somatic nervous system controls the muscles. The autonomic nervous system includes the *sympathetic nervous system* and the *parasympathetic nervous system*. The autonomic nervous system regulates the cardiovascular and endocrine systems and performs various other functions, as shown in ■ Figure 2.9.



The *endocrine system* includes a number of glands, each of which produces a chemical messenger, called a **hormone**, and releases it into the bloodstream. The adrenal glands produce *epinephrine* (also called *adrenaline*) in response to stress and salt-regulating hormones; the thyroid gland produces *thyroxine*, which facilitates energy metabolism and growth; the pituitary produces a variety of regulatory hormones; and the gonadal glands produce sex hormones such as estrogen and testosterone. The endocrine system is implicated in a variety of disorders. In addition to contributing to stress-related physical disorders, endocrine regulation may play a role in depression, anxiety, and schizophrenia. Recent studies have found, for example, that depressed patients may respond better to an antidepressant medication if it is administered in combination with a thyroid hormone (Nierenberg et al., 2006). This interdisciplinary area of research is termed *psychoneuroendocrinology* and is a growing subfield.

The sympathetic and parasympathetic nervous systems operate in a complementary fashion. The sympathetic system mobilizes the body during times of stress or danger by rapidly activating the organs and glands under its control. The heart beats faster, thereby increasing the flow of blood to the muscles; respiration increases, allowing more oxygen to get into the blood and brain; and the adrenal glands are stimulated. All these changes help mobilize us for action. When you read in the newspaper that a woman lifted a heavy object to free a trapped child, you can be sure her sympathetic nervous system was working overtime. This system mediates a substantial part of our “emergency” or “alarm” reaction, discussed later in this chapter and in Chapter 4.

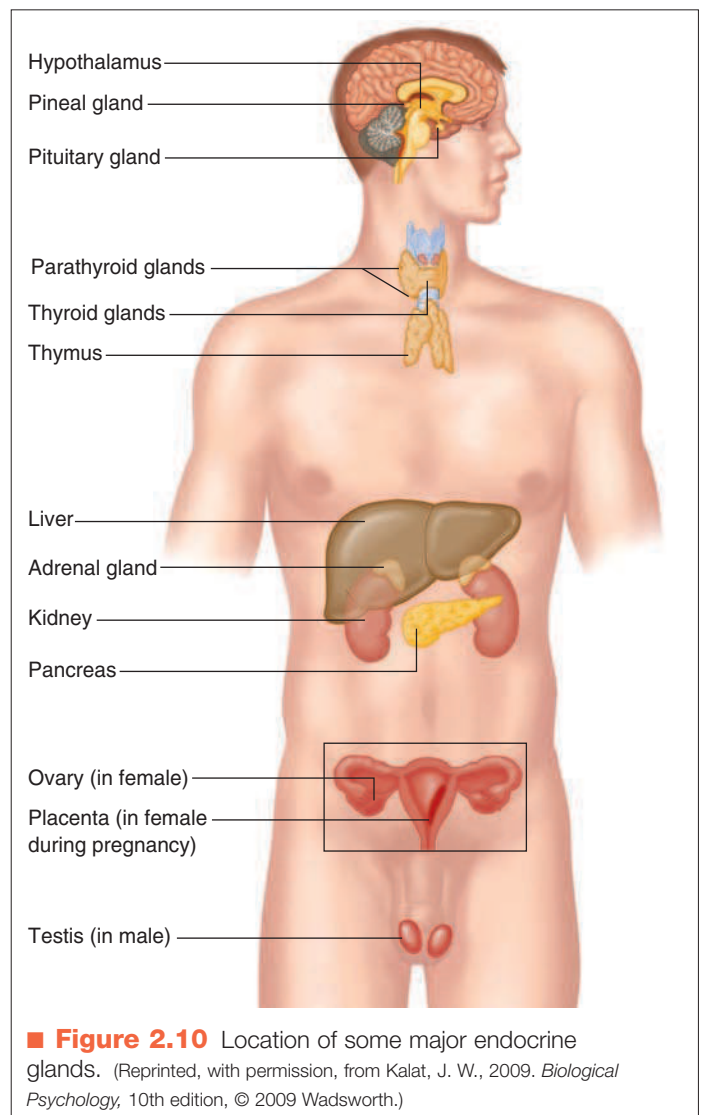
One of the functions of the parasympathetic system is to balance the sympathetic system. In other words, because we could not operate in a state of hyperarousal forever, the parasympathetic system takes over after the sympathetic system has been active for a while, normalizing arousal and facilitating the storage of energy by helping the digestive process.

As we noted previously, surges of epinephrine tend to energize us, arouse us, and get our bodies ready for threat or challenge. When athletes say their adrenaline was really flowing, they mean they were highly aroused and up for the competition. The cortical part of the adrenal glands also produces the stress hormone cortisol. This system is called the *hypothalamic–pituitary–adrenocortical axis*, or *HPA axis* (■ Figure 2.10); it has been implicated in several psychological disorders and is mentioned in Chapters 4, 6, and 8.

This brief overview should give you a general sense of the structure and function of the brain and nervous system. New procedures for studying brain structure and function that involve photographing the working brain are discussed in Chapter 3. Here, we focus on what these studies reveal about psychopathology.

Neurotransmitters

Neurotransmitters are receiving intense attention by psychopathologists (Bloom & Kupfer, 1995; Bloom, Nelson, & Lazerson, 2001; LeDoux, 2002; Iverson, 2006; Nestler, Hy-



man, & Malenka, 2008; Secko, 2005). Current estimates suggest that more than 100 different neurotransmitters, each with multiple receptors, are functioning in various parts of the nervous system (Borodinsky et al., 2004; Sharp, 2009). One way to think of neurotransmitters is as narrow currents flowing through the ocean of the brain. Sometimes they run parallel with other currents. Often they meander, looping back on themselves before moving on. Neurons that are sensitive to one type of neurotransmitter cluster together and form paths from one part of the brain to the other.

Often these paths overlap with the paths of other neurotransmitters but end up going their separate ways (Bloom et al., 2001; Dean, Kelsey, Heller, & Ciaranello, 1993). There are thousands, perhaps tens of thousands, of these **brain circuits** (Arenkiel & Ehlers, 2009). Neuroscientists have identified several neural pathways that seem to play roles in psychological disorders (Fineberg et al., 2010; LeDoux, 2002; Stahl, 2008; Tau & Peterson, 2010).

You may still read reports that certain psychological disorders are “caused” by biochemical imbalances, ex-

cesses, or deficiencies in certain neurotransmitter systems. For example, abnormal activity of the neurotransmitter serotonin is often described as causing depression. However, increasing evidence indicates that this is an enormous oversimplification. We are now learning that the effects of neurotransmitter activity are less specific. They often seem to be related to the way we process information (Bloom et al., 2001; Depue, Luciana, Arbisi, Collins, & Leon, 1994; Harmer et al., 2009; Kandel, Schwartz, & Jessell, 2000; LeDoux, 2002; Sullivan & LeDoux, 2004). Changes in neurotransmitter activity may make people more or less likely to exhibit certain kinds of behavior in certain situations without causing the behavior directly. In addition, broad-based disturbances in our functioning are almost always associated with interactions of the various neurotransmitters rather than with alterations in the activity of any one system (Depue & Spoont, 1986; Depue & Zald, 1993; Fineberg et al., 2010; LeDoux, 2002; Owens et al., 1997; Secko, 2005; Stahl, 2008; Xing, Zhang, Russell, & Post, 2006). In other words, the currents intersect so often that changes in one result in changes in the other, often in a way scientists are not yet able to predict.

Research on neurotransmitter function focuses primarily on what happens when activity levels change. We can study this in several ways. We can introduce substances called **agonists** that effectively *increase* the activity of a neurotransmitter by mimicking its effects; substances called **antagonists** that *decrease*, or block, a neurotransmitter; or substances called **inverse agonists** that produce effects *opposite* to those produced by the neurotransmitter. By manipulating the production of a neurotransmitter in different parts of the brain, we can learn more about its effects. Most drugs could be classified as either agonistic or antagonistic—that is, they work by either increasing or decreasing the flow of specific neurotransmitters. Some drugs inhibit the production of a neurotransmitter. Others increase the production of competing biochemical substances that may deactivate the neurotransmitter. Yet others do not affect neurotransmitters directly but prevent the chemical from reaching the next neuron by closing down, or occupying, the receptors in that neuron. After a neurotransmitter is released, it is quickly drawn back from the synaptic cleft into the same neuron. This process is called **reuptake**. Some drugs work by blocking the reuptake process, thereby causing continued stimulation along the brain circuit.

Two types of neurotransmitters, *monoamines* and *amino acids*, have been most studied in regard to psychopathology. These are considered the “classic” neurotransmitters because they are synthesized in the nerve. Neurotransmitters in the monoamine class include norepinephrine (also known as noradrenaline), serotonin, and dopamine. Amino acid neurotransmitters include gamma-aminobutyric acid (GABA) and glutamate.

Glutamate and GABA

Two major neurotransmitters affect much of what we do. The first, **glutamate**, is an excitatory transmitter that “turns on” many different neurons, leading to ac-

tion. The second, **gamma-aminobutyric acid**, or **GABA** for short, is an inhibitory neurotransmitter. Its job is to inhibit (or regulate) the transmission of information and action potentials. Glutamate and GABA operate relatively independently, but the relative balance of each in a cell will determine whether the neuron is activated (fires) or not.

Another characteristic of these “chemical brothers” (LeDoux, 2002) is that they are fast acting. For example, some people who are sensitive to glutamate may have experienced a few adverse reactions right after eating Chinese food. These are the result of an additive, monosodium glutamate (MSG), that can increase the amount of glutamate in the body, causing headaches, ringing in the ears, or other physical symptoms in some people.

As noted earlier, GABA reduces postsynaptic activity, which, in turn, inhibits a variety of behaviors and emotions. Its best-known effect is to reduce anxiety (Charney & Drevets, 2002; Davis, 2002; Sullivan & LeDoux, 2004). A particular class of drugs, the *benzodiazepines*, or minor tranquilizers, makes it easier for GABA molecules to attach themselves to the receptors of specialized neurons. Thus, the higher the level of benzodiazepine, the more GABA becomes attached to neuron receptors and the calmer we become (to a point). Because benzodiazepines have addictive properties, scientists are working to identify other substances that may modulate levels of GABA; these include certain natural steroids in the brain (Eser, Schule, Baghai, Romeo, & Rupprecht, 2006; Gordon, 2002; Rupprecht et al., 2009).

As with other neurotransmitter systems, we now know that GABA’s effect is not specific to anxiety but has a broader influence. The GABA system rides on many circuits distributed widely throughout the brain. GABA seems to reduce overall arousal somewhat and to temper our emotional responses. For example, in addition to reducing anxiety, minor tranquilizers have an anticonvulsant effect, relaxing muscle groups that may be subject to spasms. Drug compounds that increase GABA are also under evalu-

hormone Chemical messenger produced by the endocrine glands.

brain circuits Neurotransmitter current or neural pathway in the brain.

agonist In neuroscience, a chemical substance that effectively increases the activity of a neurotransmitter by imitating its effects.

antagonist In neuroscience, a chemical substance that decreases or blocks the effects of a neurotransmitter.

inverse agonist In neuroscience, a chemical substance that produces effects opposite those of a particular neurotransmitter.

reuptake Action by which a neurotransmitter is quickly drawn back into the discharging neuron after being released into a synaptic cleft.

glutamate Amino acid neurotransmitter that excites many different neurons, leading to action.

gamma-aminobutyric acid (GABA) Neurotransmitter that reduces activity across the synaptic cleft and thus inhibits a range of behaviors and emotions, especially generalized anxiety.

ation as treatments for insomnia (Sullivan & Guilleminault, 2009; Walsh et al., 2008). Furthermore, the GABA system seems to reduce levels of anger, hostility, aggression, and perhaps even positive emotional states such as eager anticipation and pleasure, making GABA a generalized inhibiting neurotransmitter, much as glutamate has a generalized excitatory function (Bond & Lader, 1979; Lader, 1975; Sharp, 2009).

Serotonin

The technical name for **serotonin** is 5-hydroxytryptamine (5HT). It is in the monoamine category of neurotransmitters. Approximately six major circuits of serotonin spread from the midbrain, looping around its various parts (Azmitia, 1978) (■ Figure 2.11). Serotonin is believed to influence much of our behavior, particularly the way we process information (Depue & Spoont, 1986; Harmer, 2008; Merens, Willem Van der Does, & Spinhoven, 2007; Spoont, 1992). It was genetically influenced dysregulation in this system that contributed to depression in the New Zealand study described earlier (Caspi et al., 2003).

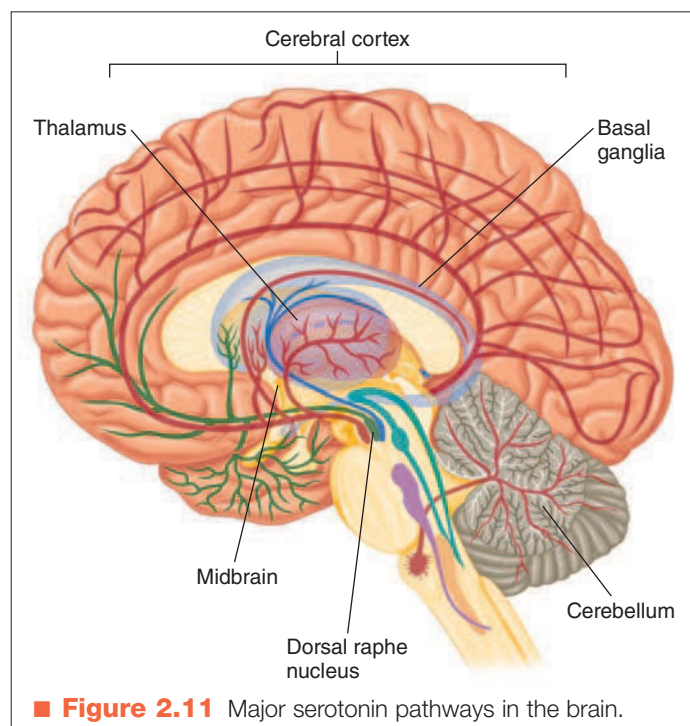
The serotonin system regulates our behavior, moods, and thought processes. Extremely low levels of serotonin are associated with less inhibition and with instability, impulsivity, and the tendency to overreact. Low serotonin activity has been associated with aggression, suicide, impulsive overeating, and excessive sexual behavior. However, these behaviors do not *necessarily* happen if serotonin activity is low. Other currents in the brain, or other psychological or social influences, may compensate. Therefore, low serotonin activity may make us more vulnerable to certain problematic behavior without directly causing it. On the other end, high levels of serotonin may interact with GABA to counteract glutamate.

Several classes of drugs primarily affect the serotonin system, including the tricyclic antidepressants such as imipramine (known by its brand name, Tofranil). However, the serotonin-specific reuptake inhibitors (SSRIs), including fluoxetine (Prozac) (■ Figure 2.12), affect serotonin more directly than other drugs, including the tricyclic antidepressants. SSRIs are used to treat a number of psychological disorders, particularly anxiety, mood, and eating disorders. The herbal medication St. John's wort, available in health food stores, also affects serotonin levels.

Norepinephrine

A third neurotransmitter system in the monoamine class is **norepinephrine** (also known as **noradrenaline**) (■ Figure 2.13 on page 50).

Norepinephrine seems to stimulate at least two groups of receptors called *alpha-adrenergic* and *beta-adrenergic receptors*. A widely used class of drugs called *beta-blockers* are used to treat hypertension or difficulties with regulating heart rate. These drugs block the beta-receptors so that their response to a surge of norepinephrine is reduced, which keeps blood pressure and heart rate down. A number of norepinephrine circuits have been identified. One major circuit begins in the hindbrain, an area that controls



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basic bodily functions such as respiration. Another circuit appears to influence emergency reactions or alarm responses (Charney & Drevets, 2002; Gray, 1987; Gray & McNaughton, 1996; Sullivan & LeDoux, 2004), suggesting that norepinephrine may bear some relationship to states of panic (Charney et al., 1990; Gray & McNaughton, 1996). More likely, however, is that this system acts in a more general way to regulate certain behavioral tendencies and is not directly involved in specific patterns of behavior or in psychological disorders.

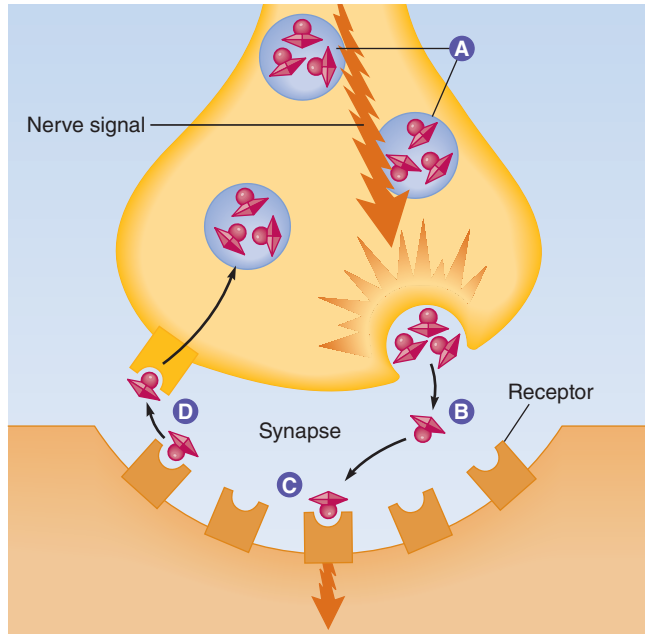
Dopamine

Finally, **dopamine** is a major neurotransmitter in the monoamine class. Dopamine has been implicated in schizophrenia (■ Figure 2.14 on page 50) and disorders of addiction (LeFoll, Gallo, LeStrat, Lu, & Gorwood, 2009). New research also indicates it may play a significant role in depression (Dunlop & Nemeroff, 2007) and attention deficit hyperactivity disorder (Volkow et al., 2009). Remember the wonder drug reserpine that reduced psychotic behaviors associated with schizophrenia? This drug and more modern antipsychotic treatments affect a number of neurotransmitter systems, but their greatest impact may be that they block specific dopamine receptors, thus lowering dopamine activity (see, for example, Snyder, Burt, & Creese, 1976).

In its various circuits throughout specific regions of the brain, dopamine also seems to have a more general effect, best described as a switch that turns on various brain circuits possibly associated with certain types of behavior. Once the switch is turned on, other neurotransmitters may then inhibit or facilitate emotions or behavior (Armbruster et al., 2009; Oades, 1985; Spoont, 1992; Stahl, 2008). Dopamine circuits merge and cross with serotonin circuits at

How Neurotransmitters Work

Neurotransmitters are stored in tiny sacs at the end of the neuron **A**. An electric jolt makes the sacs merge with the outer membrane, and the neurotransmitter is released into the synapse **B**. The molecules diffuse across the gap and bind receptors, specialized proteins, on the adjacent neuron **C**. When sufficient neurotransmitter has been absorbed, the receptors release the molecules, which are then broken down or reabsorbed by the first neuron and stored for later use **D**.



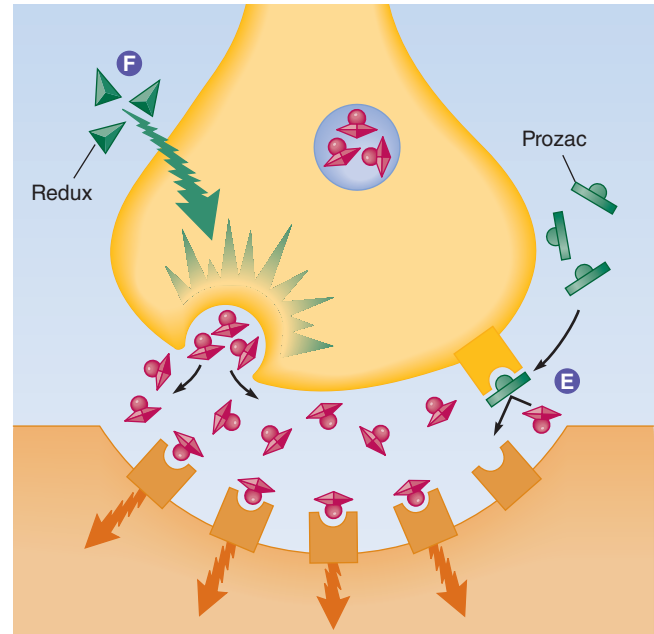
Receptor Variation

There are at least 15 different serotonin receptors, each associated with a different function. This schematic shows how some of them may work.

■ **Figure 2.12** Manipulating serotonin in the brain. (© Cengage Learning 2013)

How Serotonin Drugs Work

Prozac enhances serotonin's effects by preventing it from being absorbed **E**. Redux and fenfluramine (antiobesity drugs) cause the release of extra serotonin into the synapse **F**.



many points and therefore influence many of the same behaviors. For example, dopamine activity is associated with exploratory, outgoing, pleasure-seeking behaviors (Elovainio, Kivimäki, Viikari, Ekelund, & Keltikangas-Järvinen, 2005), and serotonin is associated with inhibition and constraint; thus, in a sense they balance each other (Depue et al., 1994).

Researchers have thus far discovered at least five different receptor sites that are selectively sensitive to dopamine (Owens et al., 1997; Girault & Greengard, 2004). One of a class of drugs that affects the dopamine circuits specifically is L-dopa, a dopamine agonist (increases levels of dopamine). One of the systems that dopamine switches on is the locomotor system, which regulates ability to move in a coordinated way and, once turned on, is influenced by serotonin activity. Because of these connections, deficiencies in dopamine have been associated with disorders such as Parkinson's disease, in which a marked deterioration in motor behavior includes tremors, rigidity of muscles, and difficulty with judgment. L-dopa has been successful in reducing some of these motor disabilities.

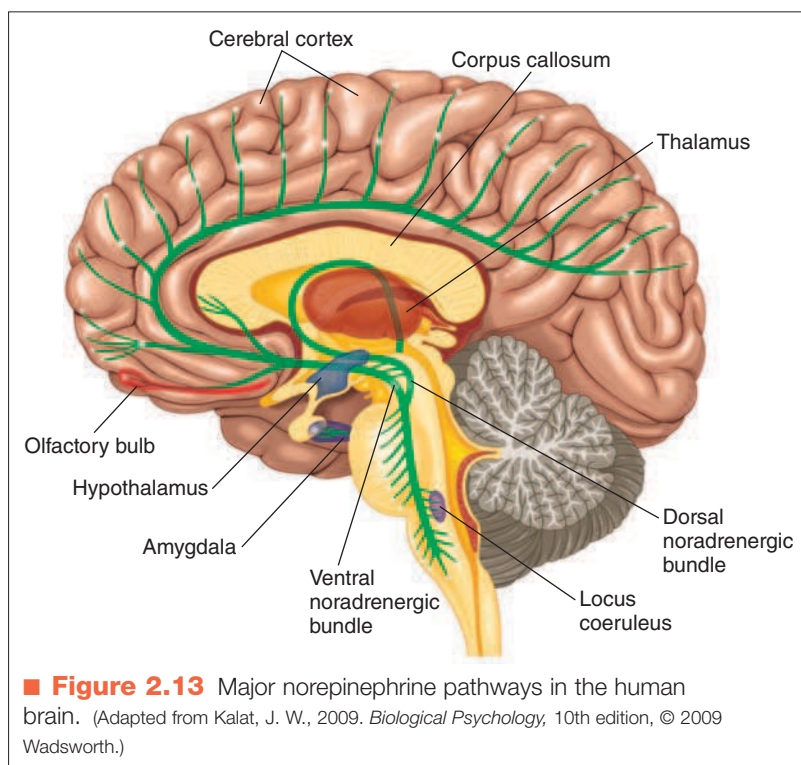
Implications for Psychopathology

Psychological disorders typically mix emotional, behavioral, and cognitive symptoms, so lesions (or damage) in specific structures of the brain do not, for the most part,

serotonin Neurotransmitter involved in processing of information and coordination of movement, as well as inhibition and restraint. It also assists in the regulation of eating, sexual, and aggressive behaviors, all of which may be involved in different psychological disorders. Its interaction with dopamine is implicated in schizophrenia.

norepinephrine (also noradrenaline) Neurotransmitter active in the central and peripheral nervous systems, controlling heart rate, blood pressure, and respiration, among other functions. Because of its role in the body's alarm reaction, it may also contribute generally and indirectly to panic attacks and other disorders. Also known as *noradrenaline*.

dopamine Neurotransmitter whose generalized function is to activate other neurotransmitters and to aid in exploratory and pleasure-seeking behaviors (thus balancing serotonin). A relative excess of dopamine is implicated in schizophrenia (although contradictory evidence suggests the connection is not simple), and its deficit is involved in Parkinson's disease.



gaging in uncontrollable compulsive rituals. He spent his days washing, dressing, and rearranging things in the single room where he lived. In other words, he had classic obsessive-compulsive symptoms. Removal of the tumor had damaged a small area of his orbital frontal cortex.

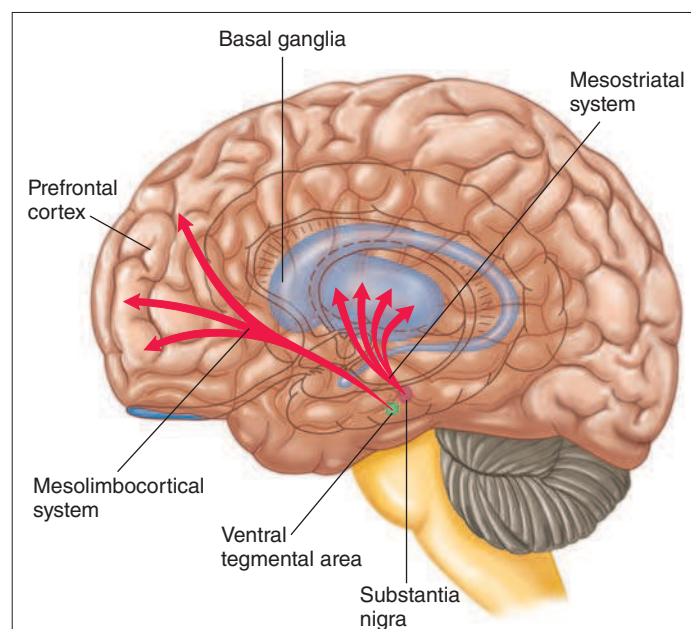
This information seems to support a biological cause for OCD. You might think there is no need to consider social or psychological influences here, but neuroscientists interpret these findings cautiously. First, this case involves only one individual. Other individuals with the *same* lesion might react differently. Also, brain-imaging studies are often inconsistent with one another, and the orbital frontal cortex is implicated in other anxiety disorders and maybe other emotional disorders (Gansler et al., 2009; Goodwin, 2009; Sullivan & LeDoux, 2004), so damage in this area of the brain may increase negative affect more generally rather than OCD specifically. Therefore, more work has to be done, and perhaps technology has to improve further, before we can be confident about the relation of the orbital frontal cortex to OCD. It is possible that activity in this area may simply be a result of the repetitive thinking and ritualistic behavior that character-

izes OCD, rather than a cause. To take a simple analogy, if you were late for class and began running, massive changes would occur throughout your body and brain. If someone who did not know that you had just sprinted to class then

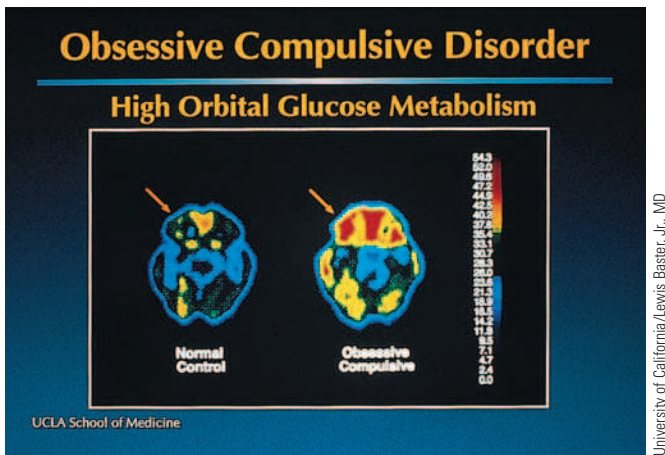
cause the disorders. Even widespread damage most often results in motor or sensory deficits, which are usually the province of the medical specialty of neurology; neurologists often work with neuropsychologists to identify specific lesions. But psychopathologists are focusing on the more general role of brain function in the development of personality, with the goal of considering how different types of personalities might be more vulnerable to certain types of disorders. For example, genetic contributions might lead to patterns of neurotransmitter activity that influence personality. Thus, some impulsive risk takers may have low serotonin activity and high dopamine activity.

Remember that one of the roles of serotonin seems to be to moderate our reactions. Eating behavior, sexual behavior, and aggression are under better control with adequate levels of serotonin. Research, mostly on animals, demonstrates that lesions (damage) that interrupt serotonin circuits seem to impair the ability to ignore irrelevant external cues, making the organism overactive. Thus, if we were to experience damage or interruption in this brain circuit, we might find ourselves acting on every thought or impulse that enters our heads.

Thomas Insel (1992) described a case originally reported by Eslinger and Damasio (1985) of a man who had been successful as an accountant, husband, and father of two before undergoing surgery for a brain tumor. He made a good recovery from surgery, but in the following year his business failed and he separated from his family. Although his scores on IQ tests were as high as ever and all his mental functions were intact, he was unable to keep a job or even be on time for an appointment. Instead, he was en-



■ **Figure 2.14** Two major dopamine pathways. The mesolimbic system is apparently implicated in schizophrenia; the path to the basal ganglia contributes to problems in the locomotor system, such as tardive dyskinesia, which sometimes results from use of neuroleptic drugs. (Adapted from Kalat, J. W., 2009. *Biological Psychology*, 10th edition, © 2009 Wadsworth.)



▲ Brain function is altered in people with obsessive-compulsive disorder, but it normalizes after effective psychosocial treatment.

examined you with brain scans, your brain functions would look different from those of the brain of a person who had walked to class. If you were doing well in the class, the scientist might conclude, wrongly, that your unusual brain function “caused” your intelligence.

Psychosocial Influences on Brain Structure and Function

Sometimes the effects of treatment tell us something about the nature of psychopathology. For example, if a clinician thinks OCD is caused by a specific brain dysfunction or by learned anxiety, this view would determine choice of treatment. Directing a treatment at one or the other of these theoretical causes and observing whether the patient gets better will prove or disprove the accuracy of the theory. This common strategy has one overriding weakness. Successfully treating a patient’s toothache with aspirin does not mean the toothache was caused by an aspirin deficiency because an effect does not imply a cause. Nevertheless, this line of evidence gives us some hints about causes of psychopathology, particularly when it is combined with other experimental evidence.

If you knew that someone with OCD might have a faulty brain circuit, what treatment would you choose? Maybe you would recommend brain surgery, or neurosurgery. Neurosurgery to correct severe psychopathology (called “psychosurgery”) is still done on occasion, particularly in the case of OCD when the suffering is severe and other treatments have failed (Aouizerate et al., 2006; Dougherty et al., 2002; Jenike et al., 1991; see also Chapter 4). For the accountant described previously, removal of his tumor seems to have eliminated an inhibitory part of the brain circuit implicated in OCD. Precise surgical lesions might dampen the runaway activity that seems to occur in or near this area of the brain. This result would probably be welcome if all other treatments have failed, although psychosurgery is used seldom and has not been studied systematically.

Nobody wants to do surgery if less intrusive treatments are available. To use the analogy of a television set that has developed the “disorder” of going fuzzy, if you had to rearrange wires on the circuit board every time the disorder occurred, the correction would be a major undertaking. If you could simply push some buttons on the remote and eliminate the fuzziness, the correction would be simpler and less risky. The development of drugs affecting neurotransmitter activity has given us one of those buttons. We now have drugs that seem to be beneficial in treating OCD. As you might suspect, most of them act by increasing serotonin activity.

But is it possible to get at this brain circuit without either surgery or drugs? Could psychological treatment be powerful enough to affect the circuit directly? The answer seems to be yes. Lewis R. Baxter and his colleagues used brain imaging on patients who had not been treated, then treated the patients with a cognitive-behavioral therapy known to be effective in OCD called *exposure and response prevention*, and then repeated the brain imaging (Baxter et al., 1992). They discovered that the brain circuit had been changed (normalized) by a psychological intervention. They replicated the experiment with a different group of patients and found the same changes in brain function (Schwartz, Stoessel, Baxter, Martin, & Phelps, 1996).

In other examples, investigators noted changes in brain function after successful psychological treatment for depression (Brody et al., 2001; Martin, Martin, Rai, Richardson, & Royall, 2001), posttraumatic stress disorder (Rabe, Zoellner, Beauducel, Maercker, & Karl, 2008), and specific phobia, which they termed “re-wiring the brain” (Paquette et al., 2003). In another intriguing study, Leuchter, Cook, Witte, Morgan, and Abrams (2002) treated patients with major depressive disorder with either antidepressant medications or placebo medications. (Remember that it is common for inactive placebo medications, which are just sugar pills, to result in behavioral and emotional changes in patients, presumably as a result of psychological factors such as increasing hope and expectations.) Measures of brain function showed that both antidepressant medications and placebos changed brain function but in somewhat different parts of the brain, suggesting different mechanisms of action for these two interventions. It would seem that psychological treatments are another button on the remote with which we can directly change brain circuits.

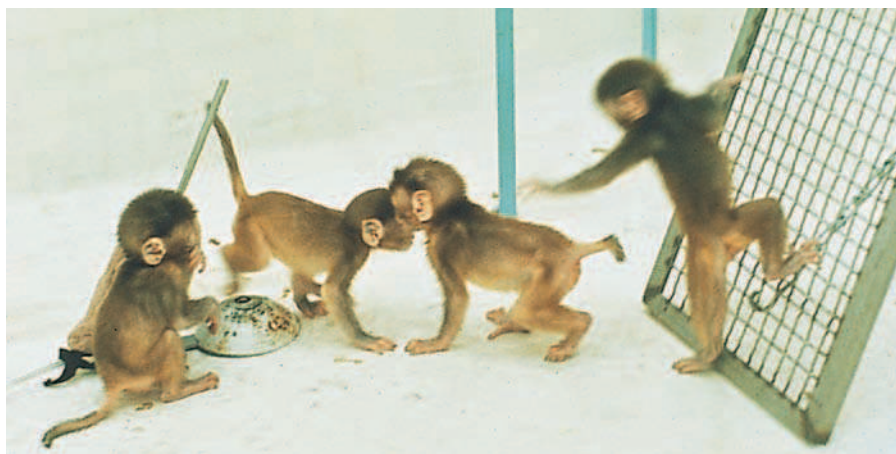
Another area of research is exploring the specific ways in which drug or psychological treatments work in terms of changes in brain function. Are the changes similar or different? Kennedy et al. (2007) treated individuals with major depressive disorder with either a psychological treatment, cognitive-behavioral therapy (CBT), or the antidepressant drug venlafaxine. Although some brain changes were similar among the three treatment groups, differences were also noted, primarily in the way in which CBT facilitated changes in thinking patterns in the cortex that, in turn, affected the emotional brain. Sometimes this is called a “top down” change because it originates in the cortex and works its way down into the lower brain.

Drugs, however, often seem to work more in a “bottom up” manner, reaching higher areas of the cortex (where thinking occurs) last. Many similar studies are now in progress. Because we know that some people respond better to psychological treatments, and others respond better to drugs, this research provides hope that we will one day be able to choose the best treatments or better combine treatments based on an analysis of the individual’s brain function.

Interactions of Psychosocial Factors with Brain Structure and Function

Several experiments illustrate the interaction of psychosocial factors and brain function. Some even indicate that psychosocial factors directly affect levels of neurotransmitters. For example, Insel, Scanlan, Champoux, and Suomi (1988) raised two groups of rhesus monkeys identically except for their ability to control things in their cages. One group had free access to toys and food treats, but the second group got these toys and treats only when the first group did. In other words, members of the second group had the same number of toys and treats but could not choose when they got them. Thus, the monkeys in the first group grew up with a sense of control over things in their lives and those in the second group didn’t.

Later in their lives, all these monkeys were administered a benzodiazepine inverse agonist, a neurochemical that has the *opposite* effect of the neurotransmitter GABA; the effect is an extreme burst of anxiety. The monkeys that had been raised with little control over their environment ran to a corner of their cage where they crouched and displayed signs of severe anxiety and panic. But the monkeys that had a sense of control did not seem anxious. Rather, they seemed angry and aggressive, even attacking other monkeys near them. Thus, the same level of a neurochemical substance, acting as a neurotransmitter, had different effects, depending on the psychological and environmental histories of the monkeys.



Thomas Insel/1986 study/National Institute of Mental Health

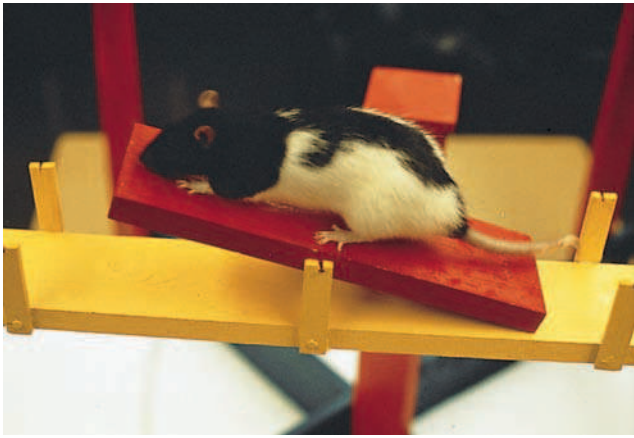
▲ Rhesus monkeys injected with a specific neurotransmitter react with anger or fear, depending on their early psychological experiences.

Other experiments suggest that psychosocial influences directly affect the functioning and perhaps even the structure of the central nervous system. Scientists have observed that psychosocial factors change the activity levels of many neurotransmitter systems, including norepinephrine and serotonin (Cacioppo et al., 2007; Coplan et al., 1996, 1998; Heim & Nemeroff, 1999; Ladd et al., 2000; Ouellet-Morin et al., 2008; Roma, Champoux, & Suomi, 2006; Sullivan, Kent, & Coplan, 2000). It also seems that the structure of neurons themselves, including the number of receptors on a cell, can be changed by learning and experience (Gottlieb, 1998; Kandel, 1983; Kandel, Jessell, & Schacter, 1991; Ladd et al., 2000; Owens et al., 1997) and that these effects continue throughout our lives (Cameron et al., 2005; Spinelli et al., 2009; Suarez et al., 2009).

We are beginning to learn how psychosocial factors affect brain function and structure (Kolb, Gibb, & Robinson, 2003; Kolb & Whishaw, 1998). William Greenough and his associates (Greenough, Withers, & Wallace, 1990) discovered that the nervous systems of rats raised in a rich environment requiring a lot of learning and motor behavior develop differently from those in rats that were “couch potatoes.” The active rats had many more connections between nerve cells in the cerebellum and grew many more dendrites. In a follow-up study, Wallace, Kilman, Withers, and Greenough (1992) reported that these structural changes in the brain began in as little as 4 days. Similarly, stress during early development can lead to changes in the functioning of the HPA axis (described earlier in this chapter) that, in turn, make primates more or less susceptible to stress later in life (Barlow, 2002; Coplan et al., 1998; Gillespie & Nemeroff, 2007; Spinelli et al., 2009; Suomi, 1999). It may be something similar to this mechanism that was responsible for the effects of early stress on the later development of depression in genetically susceptible individuals in the New Zealand study described earlier (Caspi et al., 2003). So, we can conclude that early psychological experience affects the development of the nervous system and thus determines vulnerability to psychological disorders later in life.

It seems that the very structure of the nervous system is constantly changing as a result of learning and experience, and that some of these changes become permanent (Kolb, Gibb, & Gorny, 2003; Suárez et al., 2009).

Scientists have begun to pin down the complex interaction among psychosocial factors, brain structure, and brain function as reflected in neurotransmitter activity. Yeh, Fricke, and Edwards (1996) studied two male crayfish battling to establish dominance in their social group. When one of the crayfish won the battle, serotonin made a specific set of neurons more likely to fire; but in the animal that lost the battle, serotonin made the same neurons less likely to fire. Thus, Edwards et al. discovered that naturally occurring



William Greenough/University of Illinois

▲ William Greenough and his associates raised rats in a complex environment that required significant learning and motor behavior, which affected the structure of the rat's brains. This supports the role of psychological factors on biological development.

neurotransmitters have different effects depending on the organism's previous psychosocial experience. Furthermore, this experience directly affects the structure of neurons at the synapse by altering the sensitivity of serotonin receptors. The researchers also discovered that the effects of serotonin are reversible if the losers again become dominant. Similarly, Suomi (2000) demonstrated in primates that early stressful experiences produced deficits in serotonin in genetically susceptible individuals, deficits that did not occur in the absence of early stress.

Comments

The brain circuits involved in psychological disorders are complex systems identified by pathways of neurotransmitters traversing the brain. The existence of these circuits suggests that the structure and function of the nervous system play major roles in psychopathology. But other research suggests that the circuits are influenced, perhaps even created, by psychological and social factors. Furthermore, both biological interventions, such as drugs, and

psychological interventions or experience seem capable of altering the circuits. Therefore, we cannot consider the nature of psychological disorders without examining both biological and psychological factors. We now turn to an examination of psychological factors.

Concept Check 2.3

Match each of the following with its description below: (a) frontal lobe, (b) brain stem, (c) GABA, (d) midbrain, (e) serotonin, (f) dopamine, (g) norepinephrine, and (h) cerebral cortex.

1. Movement, breathing, and sleeping depend on this ancient part of the brain, which is present in most animals. _____
2. Which neurotransmitter binds to neuron receptor sites, inhibiting postsynaptic activity and reducing overall arousal? _____
3. Which neurotransmitter is a switch that turns on various brain circuits? _____
4. Which neurotransmitter seems to be involved in emergency reactions or alarm responses? _____
5. This area contains part of the reticular activating system and coordinates movement with sensory output. _____
6. Which neurotransmitter is believed to influence the way we process information and moderate or inhibit our behavior? _____
7. More than 80% of the neurons in the human central nervous system are contained in this part of the brain. _____
8. This area is responsible for most of our memory, thinking, and reasoning capabilities and makes us social animals. _____

Behavioral and Cognitive Psychology

› What are the key differences between behavioral and cognitive explanations of the origins of mental illness?

Enormous progress has been made in understanding behavioral and cognitive influences in psychopathology. Some new information has come from the field of **cognitive science**, which is concerned with how we acquire and process information and how we store and ultimately retrieve it (one of the processes involved in memory). Scientists have also discovered that a great deal goes on inside our heads of

which we are not necessarily aware. Because, technically, these cognitive processes are unconscious, some findings

cognitive science Field of study that examines how humans and other animals acquire, process, store, and retrieve information.

recall the unconscious mental processes that are so much a part of Sigmund Freud's theory of psychoanalysis (although they do not look much like the ones he envisioned). Following is a brief account of current thinking on what happens during the process of classical conditioning.

Conditioning and Cognitive Processes

During the 1960s and 1970s, behavioral scientists in animal laboratories began to uncover the complexity of the basic processes of classical conditioning (Bouton, 2005; Bouton, Mineka, & Barlow, 2001; Eelen & Vervliet, 2006; Mineka & Zinbarg, 1996, 1998). Robert Rescorla (1988) concluded that simply pairing two events closely in time (such as the meat powder and the metronome in Pavlov's laboratories) is not what's important in this type of learning. Rather, a variety of judgments and cognitive processes combine to determine the final outcome of this learning, even in lower animals such as rats.

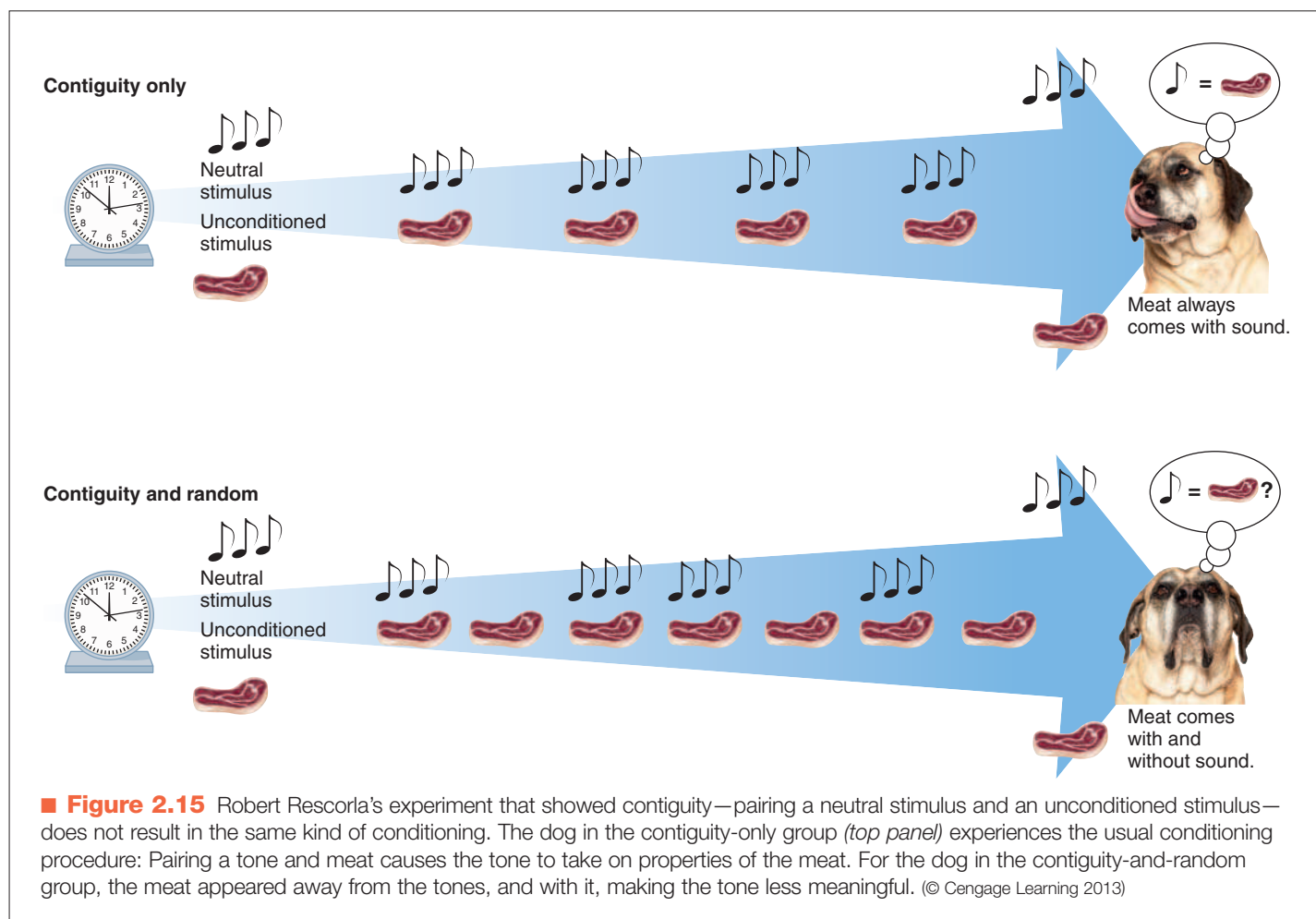
To take just one example, Pavlov would have predicted that if the meat powder and the metronome were paired, say, 50 times, a certain amount of learning would take place. But Rescorla and others discovered that if one animal never saw the meat powder except for the 50 trials following the metronome sound, whereas the meat powder was brought

to a second animal many times *between* the 50 times it was paired with the metronome, the two animals would learn different things—that is, even though the metronome and the meat powder were paired 50 times for each animal, the metronome was less meaningful to the second animal (■ Figure 2.15). Put another way, the first animal learned that the sound of the metronome meant meat powder came next; the second animal learned that the meat sometimes came after the sound and sometimes without the sound. That two different conditions produce two different learning outcomes is a commonsense notion, but it demonstrates that basic conditioning facilitates the learning of the relationship among events in the environment.

This type of learning enables us to develop working ideas about the world that allow us to make appropriate judgments. We can then respond in a way that will benefit or at least not hurt us. In other words, complex cognitive, and emotional, processing of information is involved when conditioning occurs, even in animals.

Learned Helplessness

Along similar lines, Martin Seligman and his colleague Steven Maier, also working with animals, described the phenomenon of **learned helplessness**, which occurs when ani-



mals encounter conditions over which they have no control (Maier & Seligman, 1976). If rats are confronted with a situation in which they receive occasional foot shocks, they can function well if they learn to cope with these shocks by doing something to avoid them (say, pressing a lever). But if the animals learn that their behavior has no effect on their environment—sometimes they get shocked and sometimes they don't, no matter what they do—they become “helpless”; they give up attempting to cope and seem to develop the animal equivalent of depression.

Seligman theorized that the same phenomenon may happen with people who are faced with uncontrollable stress. Subsequent work revealed this to be true under one important condition: People become depressed if they “decide” or “think” they can do little about the stress in their lives, even if it seems to others that there is something they could do. People make an *attribution* that they have no control, and they become depressed (Abramson, Seligman, & Teasdale, 1978; Miller & Norman, 1979). This finding illustrates, again, the necessity of recognizing that different people process information about events in different ways. These cognitive differences are an important component of psychopathology.

Lately, Seligman has turned his attention to a different set of attributions, which he terms *learned optimism* (Seligman, 1998, 2002). If people faced with considerable stress and difficulty in their lives nevertheless display an optimistic, upbeat attitude, they are likely to function better. Consider an example: In a study by Levy, Slade, Kunkel, & Kasl (2002), individuals between ages 50 and 94 who had positive views about themselves and positive attitudes toward aging lived 7.5 years longer than those without such attitudes. This connection was still true after the investigators controlled for age, sex, income, loneliness, and physical capability to engage in household and social activities. This effect exceeds the 1 to 4 years of added life associated with other factors, such as low blood pressure, low cholesterol levels, and no history of obesity or cigarette smoking. Studies such as this have created interest in *positive psychology*, in which investigators explore factors that account for positive attitudes and happiness (Diener, 2000; Lyubomirsky, 2001).

Social Learning

Another influential psychologist, Albert Bandura (1973, 1986), observed that organisms do not have to experience certain events in their environment to learn effectively. They can learn just as much by observing what happens to someone else in a given situation, a process termed **modeling** or **observational learning**. Even in animals, this type of learning requires integration of the experiences of others with judgments of what might happen to oneself; in other words, even an animal such as a monkey must make a decision about the conditions under which its own experiences would be similar to those of the animal it is observing. Bandura concluded that behavior, cognitive factors, and environmental influences converge to produce the complex-

ity of behavior that confronts us. He also emphasized the social context of learning—that is, much of what we learn depends on our interactions with people around us. These ideas have been integrated with findings on the genetic and biological bases of social behavior in a new field of study called social neuroscience (Cacioppo et al., 2007).

The basic idea here is that careful analysis of cognitive processes may produce the most accurate predictions of behavior. Concepts of probability learning, information processing, and attention have become increasingly important in psychopathology (Barlow, 2002; Craighead, Ilardi, Greenberg, & Craighead, 1997; Davey, 2006; Lovibond, 2006; Mathews & MacLeod, 1994).

Prepared Learning

It is clear that biological factors influence what we learn. This conclusion is based on the fact that we learn to fear some objects more easily than others (Mineka & Sutton, 2006; Morris, Öhman, & Dolan, 1998; Öhman, Flykt, & Lundqvist, 2000; Öhman & Mineka, 2001; Rakison, 2009). Why might this be? According to the concept of **prepared learning**, we have become highly prepared for learning about certain types of objects or situations over the course of evolution because this knowledge contributes to the survival of the species (Mineka, 1985; Seligman, 1971). Even without any contact, we are more likely to learn to fear snakes or spiders than rocks or flowers, even if we know the snake or spider is harmless (for example, Fredrikson, Annas, & Wik, 1997; Pury & Mineka, 1997). In the absence of experience, however, we are less likely to fear guns or electrical outlets, even though they are potentially deadlier.

Why do we so readily learn to fear snakes or spiders? One possibility is that when our ancestors lived in caves, those who avoided snakes and spiders survived in greater numbers to pass down their genes to us, thus contributing to the survival of the species. In fact, recent research has found that a sex difference may exist for this type of learning: females are particularly sensitive to this learning and, unlike males, demonstrate it as early as 11 months of age (Rakison, 2009). Thus, “prepared learning” may account for the greater incidence of snake and spider phobias in adult women (see Chapter 4). According to this theory it would have been more important for women, in their roles as foragers and gatherers, to develop a tendency to avoid snakes and spiders than for males, in their roles as risk-taking hunters (Rakison, 2009).

learned helplessness Martin Seligman's theory that people become anxious and depressed when they make an attribution that they have no control over the stress in their lives (whether or not they actually have control).

modeling (also observational learning) Learning through observation and imitation of the behavior of other individuals and consequences of that behavior.

prepared learning Ability adaptive for evolution, allowing certain associations to be learned more readily than others.

In any case, something within us recognizes the connection between a certain signal and a threatening event. If you've ever gotten sick on cheap wine or bad food, chances are you won't make the same mistake again. This quick or "one-trial" learning also occurs in animals that eat something that tastes bad, causes nausea, or may contain poison. It is easy to see that survival is associated with quickly learning to avoid poisonous food. If animals are shocked instead of poisoned when eating certain foods, however, they do not learn this association nearly as quickly, probably because in nature shock is not a consequence of eating, whereas being poisoned may be. Perhaps these selective associations are also facilitated by our genes (Barlow, 2002; Cook, Hodes, & Lang, 1986; Garcia, McGowan, & Green, 1972).

Cognitive Science and the Unconscious

Advances in cognitive science have revolutionized our conceptions of the unconscious. We are not aware of much of what goes on inside our heads, but our unconscious is not necessarily the seething cauldron of primitive emotional conflicts envisioned by Freud. Rather, we simply seem able to process and store information, and act on it, without being aware of the information or why we are acting on it (Bargh & Chartrand, 1999; Uleman, Saribay, & Gonzalez, 2008). Is this surprising? Consider two examples.

Lawrence Weiskrantz (1992) describes a phenomenon called *blind sight* or *unconscious vision*. He relates the case of a young man who, for medical reasons, had a small section of his visual cortex (the center for the control of vision in the brain) surgically removed. Although the operation was considered a success, the young man became blind in both eyes. Later, during routine tests, a physician raised his hand to the left of the patient, who reached out and touched it. Subsequently, scientists determined that he could not only reach accurately for objects but could also distinguish among objects and perform most of the functions usually associated with sight. Yet, when asked about his abilities, he would say, "I couldn't see anything, not a darn thing," and that all he was doing was guessing.

The phenomenon in this case is associated with real brain damage. However, the same thing seems to occur in healthy individuals who have been hypnotized (Hilgard, 1992; Kihlstrom, 1992)—that is, normal individuals, given hypnotic suggestions that they are blind, are able to function visually but have no awareness or memory of their visual abilities. This condition, which illustrates a process of *dissociation* between behavior and consciousness, is the basis of the dissociative disorders discussed in Chapter 5.

A second example, more relevant to psychopathology, is called **implicit memory** (Bowers & Marsolek, 2003; Craighead et al., 1997; Graf, Squire, & Mandler, 1984; Kihlstrom, Barnhardt, & Tataryn, 1992; McNally, 1999; Schacter, Chiu, & Ochsner, 1993). Implicit memory is apparent when someone clearly acts on the basis of things

that have happened in the past but can't remember the events. (A good memory for events is called *explicit memory*.) But implicit memory can be selective for only certain events or circumstances. An example of implicit memory at work is the story of Anna O., the classic case first described by Breuer and Freud (1895/1957) to demonstrate the existence of the unconscious. It was only after therapy that Anna O. remembered events surrounding her father's death and the connection of these events to her paralysis. Thus, Anna O.'s behavior (occasional paralysis) was evidently connected to implicit memories of her father's death. Several methods for studying the unconscious have been made possible by advances in technology. One of them is the Stroop color-naming paradigm.

In the Stroop paradigm, participants are shown a variety of words, each printed in a different color. They are shown these words quickly and asked to name the colors in which they are printed while ignoring their meaning. Color naming is delayed when the meaning of the word attracts the participant's attention, despite efforts to concentrate on the color—that is, the meaning of the word interferes with the participant's ability to process color information. For example, experimenters have determined that people with certain psychological disorders, like Judy, are much slower at naming the colors of words associated with their problem (for example, *blood*, *injury*, and *dissect*) than the colors of words that have no relation to the disorder. Thus, psychologists can now uncover emotionally significant patterns, even if the participant cannot verbalize them or is not even aware of them.

These developments in our understanding of the nature of psychopathology will come up repeatedly as we discuss specific disorders. Again, note that these findings support Freud's theories about the unconscious, up to a point. But no assumptions are made about an elaborate structure existing within the mind that is continually in conflict (Freud's id, ego, and superego); at present, there is no evidence to support the existence of an unconscious with such a complex structure and array of functions.

- | | | |
|-----------|-----------|------------|
| 1. RED | 6. GREEN | 11. BLUE |
| 2. PURPLE | 7. PURPLE | 12. PURPLE |
| 3. GREEN | 8. BROWN | 13. BROWN |
| 4. BLUE | 9. BLUE | 14. RED |
| 5. BROWN | 10. RED | 15. GREEN |

The Stroop paradigm. Have someone keep time as you name the colors of the words, not the words themselves, and again as you name the words and colors together.

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› What role do emotions play in psychopathology?

Emotions can contribute in major ways to the development of psychopathology (Gross, 2007; Kring & Sloan, 2010; Rottenberg & Johnson, 2007). Consider fear. Have you ever found yourself in a really dangerous situation? Have you ever almost crashed your car and known for several seconds beforehand what was going to happen? Have you ever been swimming in the ocean and realized you were out too far or caught in a current? Have you ever almost fallen from a height, such as a cliff or a roof? In such instances, you would have felt an incredible surge of arousal. As Charles Darwin (1872) pointed out more than 100 years ago, this kind of reaction seems to be programmed in all animals, including humans, which suggests that it serves a useful function. The alarm reaction that activates during potentially life-threatening emergencies is called the **flight or fight response**. If you are caught in an ocean current, you are likely to struggle toward shore. You might realize that you're best off just floating until the current runs its course. Yet the instinct for survival won't let you relax, even though struggling against the ocean will only wear you out and increase your chance of drowning. Still, this kind of reaction might momentarily give you the strength to lift a car off your trapped brother or fight off an attacker. The whole purpose of the physical rush of adrenaline that we feel in extreme danger is to mobilize us to escape the danger (flight) or fend it off (fight).



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▲ Charles Darwin (1809–1882) drew this cat frightened by a dog to show the flight or fight reaction.

The Physiology and Purpose of Fear

How do physical reactions prepare us to respond this way? According to physiologist Walter Cannon (1929), fear activates your cardiovascular system. Your blood vessels constrict, thereby raising arterial pressure and decreasing blood flow to your extremities (fingers and toes). Excess blood is redirected to the skeletal muscles, where it is available to the organs that may be needed in an emergency. Often people seem “white with fear”—that is, they turn pale as a result of decreased blood flow to the skin. “Trembling with fear,” with your hair standing on end, may be the result of shivering and piloerection (in which body hairs stand erect), reactions that conserve heat when your blood vessels are constricted.

These defensive adjustments can also produce the hot-and-cold spells that often occur during extreme fear. Breathing becomes faster and, usually, deeper to provide oxygen to rapidly circulating blood. Increased blood circulation carries oxygen to the brain, stimulating cognitive processes and sensory functions, which make you more alert and able to think more quickly. An increased amount of glucose (sugar) is released from the liver into the bloodstream, further energizing crucial muscles and organs, including the brain. Pupils dilate; hearing becomes more acute; and digestive activity is suspended, resulting in a reduced flow of saliva (the “dry mouth” of fear). In the short term, voiding the body of all waste material and eliminating digestive processes further prepare the organism for concentrated action and activity, so there is often pressure to urinate and defecate and, occasionally, to vomit.

Emotional Phenomena

The **emotion** of fear is a subjective feeling of terror, a strong motivation for behavior (escaping or fighting), and a complex physiological or arousal response. Most theorists agree that emotion is an *action tendency* (Barlow, 2002; Lang, 1985, 1995; Lang, Bradley, & Cuthbert, 1998)—that is, a tendency to behave in a certain way (for example, escape), elicited by an external event (a threat) and a feel-

implicit memory Condition of memory in which a person cannot recall past events despite acting in response to them.

flight or fight response Biological reaction to alarming stressors that musters the body's resources (for example, blood flow and respiration) to resist or flee a threat.

emotion Pattern of action elicited by an external event and a feeling state, accompanied by a characteristic physiological response.

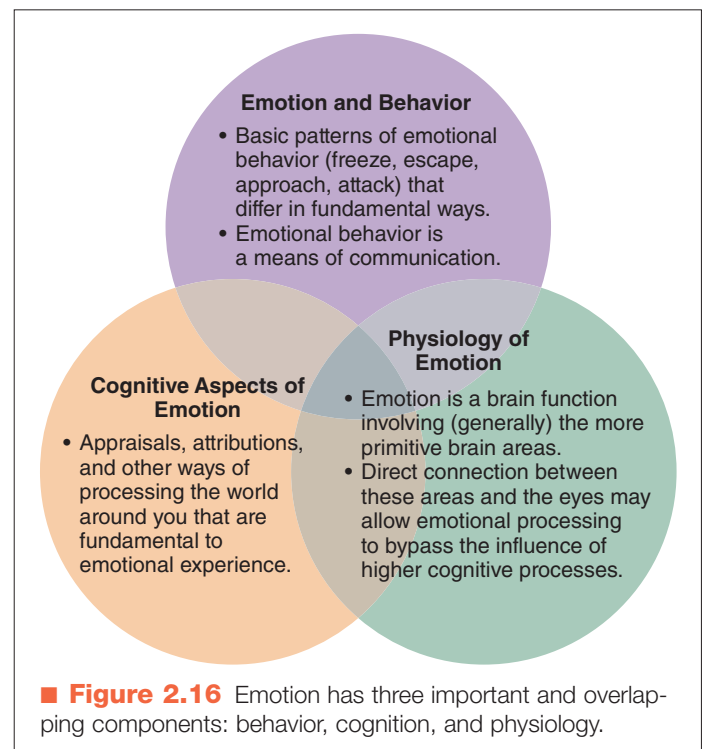
ing state (terror) and accompanied by a (possibly) characteristic physiological response (Fairholme, Boisseau, Ellard, Ehrenreich, & Barlow, 2010; Gross, 2007; Izard, 1992; Lazarus, 1991, 1995). One purpose of a feeling state is to motivate us to carry out a behavior: If we escape, our terror, which is unpleasant, will be decreased (Campbell-Sills & Barlow, 2007; Gross, 2007; Öhman, 1996). As Öhman (1996; Öhman, Flykt, & Lundquist, 2000) points out, the principal function of emotions can be understood as a means to get us to do what we have to do to pass on our genes to coming generations. How do you think this works with anger or love? What is the feeling state? What is the behavior?

Emotions are usually temporary states lasting from several minutes to several hours, occurring in response to an external event. **Mood** is a more persistent period of affect or emotionality. Thus, in Chapter 6 we describe enduring or recurring states of depression or excitement (mania) as *mood disorders*. But *anxiety disorders*, described in Chapter 4, are characterized by enduring or chronic anxiety and, therefore, could also be called *mood disorders*. Alternatively, both anxiety disorders and mood disorders could be called *emotional disorders*, a term not formally used in psychopathology. This is only one example of the occasional inconsistencies in the terminology of abnormal psychology. A related term you will see occasionally is **affect**, which usually refers to the momentary emotional tone that accompanies what we say or do. For example, if you just got an A+ on your test but look sad, your friends might think your reaction strange because your affect is not appropriate. The term *affect* can also be used to summarize commonalities among emotional states characteristic of an individual. Thus, someone who tends to be fearful, anxious, and depressed is experiencing negative affect.

Components of Emotion

Emotion is composed of three related components—*behavior*, *physiology*, and *cognition*—but most emotion theorists tend to concentrate on one component or another (■ Figure 2.16). Those who concentrate on behavior think basic emotions differ in fundamental ways; for example, anger may differ from sadness not only in how it feels, but also behaviorally and physiologically. They also emphasize that emotion is a way of communicating between one member of the species and another. One function of fear is to motivate immediate action, such as running away. But if you look scared, your facial expression will communicate the possibility of danger to your friends, who may not have been aware of it. Your facial communication increases their chance for survival because they can respond more quickly to the threat. This may be one reason emotions are contagious (Hatfield, Cacioppo, & Rapson, 1994; Wang, 2006).

Other scientists have concentrated on the physiology of emotions. Cannon (1929) viewed emotion as primarily a brain function. Some physiological research suggests that areas of the brain associated with emotional expression are



more ancient and primitive than areas associated with higher cognitive processes, such as reasoning. Other research demonstrates direct neurobiological connections between emotional centers of the brain and parts of the eye (the retina) or the ear that allow emotional activation without the influence of higher cognitive processes (LeDoux, 1996, 2002; Öhman, Flykt, & Lundqvist, 2000; Zajonc, 1984, 1998). In other words, you may experience various emotions quickly and directly without thinking about them or being aware of why you feel the way you do.

Finally, some theorists concentrate on cognitive aspects of emotion. Notable among them was the late Richard S. Lazarus (for example, 1968, 1991, 1995), who proposed that changes in a person's environment are appraised in terms of their potential impact on that person, and the type of appraisal made determines the emotion experienced. For example, if you see somebody holding a gun in a dark alley, you will probably appraise the situation as dangerous and experience fear. You would make a different appraisal if you saw a tour guide displaying an antique gun in a museum. Lazarus would suggest that thinking and feeling cannot be separated, but other cognitive scientists suggest that, although cognitive and emotional systems interact, they are fundamentally separate (Teasdale, 1993). All components of emotion—behavior, physiology, and cognition—are important, and their interaction is a subject of much current research (Barrett, 2009; Gendron & Barrett, 2009; Gross, 2007).

Anger and Your Heart

When we discussed Judy's blood phobia, we observed that behavior and emotion may influence biology. This is especially true of anger. We have known for years that negative



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▲ Our emotional reaction depends on context. Fire, for example, can be threatening or comforting.

emotions such as hostility and anger increase a person's risk of developing heart disease (Chesney, 1986; MacDougall, Dembroski, Dimsdale, & Hackett, 1985). Sustained hostility with angry outbursts, and repeatedly and continually suppressing anger, contribute more strongly to death from heart disease than other well-known risk factors, including smoking, high blood pressure, and high cholesterol levels (Finney, Stoney, & Engebretson, 2002; Harburg, Kaciroti, Gleiberman, Julius, & Schork, 2008; Suarez, Lewis, & Kuhn, 2002; Williams, Haney, Lee, Kong, & Blumenthal, 1980).

Why is this, exactly? Ironson and colleagues (1992) asked people with heart disease to recall something that made them angry in the past. Sometimes these events had occurred many years earlier. In one case, an individual who had spent time in a Japanese prisoner-of-war camp during World War II became angry every time he thought about it, especially when he thought about reparations paid by the U.S. government to Japanese Americans who had been held in internment camps during the war. Ironson and associates compared the experience of anger to stressful events that increased heart rate but were not associated with anger. For example, some participants imagined making a speech to defend themselves against a charge of shoplifting. Others tried to solve difficult arithmetic problems within a time limit. Heart rates during angry and stressful situations were then compared to heart rates that increased as a result of exercise (riding a stationary bicycle). The investigators found that the ability of the heart to pump blood efficiently through the body dropped significantly during anger but not during stress or exercise. In fact, remembering being angry was sufficient to cause the anger effect. If participants were really angry, their heart-pumping efficiency dropped even more.

This study was the first to prove that anger affects the heart through decreased pumping efficiency, at least in people who already have heart disease. Other studies, such as one by Williams and colleagues (1980), demonstrated that anger also affects people without heart disease. Medical students who were often angry were 7 times more likely

to die by the age of 50 than students in the same class who had lower levels of hostility. Suarez et al. (2002) demonstrated how anger may cause this effect. Inflammation produced by an overactive immune system in particularly hostile individuals may contribute to clogged arteries (and decreased heart-pumping efficiency). Shall we conclude that too much anger causes heart attacks? This would be another example of one-dimensional causal modeling. Increasing evidence, including the studies just mentioned, suggests that anger and hostility contribute to heart disease, but so do many other factors, including a genetically determined biological vulnerability. We discuss cardiovascular disease in Chapter 7.

Emotions and Psychopathology

We now know that suppressing almost any kind of emotional response increases sympathetic nervous system activity, which may contribute to psychopathology (Barlow, Allen, & Choate, 2004; Campbell-Sills & Barlow, 2007; Fairholme et al., 2010). Some emotions seem to have a more direct effect. In Chapter 4, we study the phenomenon of *panic* and its relationship to anxiety disorders. One interesting possibility is that a panic attack is simply the normal emotion of fear occurring at the wrong time, when there is nothing to be afraid of (Barlow, 2002). Some patients with mood disorders become overly excited and joyful. They think they can do anything they want and spend as much money as they want because everything will turn out all right. These individuals are suffering from *mania*, which is part of a serious mood disorder called *bipolar disorder*, discussed in Chapter 6. People who suffer from mania usually alternate periods of excitement with periods of extreme sad-

mood Enduring period of emotionality.

affect Conscious, subjective aspect of an emotion that accompanies an action at a given time.

ness and distress, when they feel that the world is a gloomy and hopeless place. If hopelessness becomes acute, they are at risk for suicide. This emotional state is *depression*, a defining feature of many mood disorders.

Thus, basic emotions of fear, anger, sadness or distress, and excitement may contribute to many psychological disorders and even define them. Emotions and mood also affect our cognitive processes: If your mood is positive, your interpretations and impressions also tend to be positive (Bower, 1981; Diener, Oishi, & Lucas, 2003). Your impression of people you first meet and even your memories of past events are colored to a great extent by your current mood. If you are consistently negative or depressed, then your memories of past events are likely to be unpleasant. The person who is pessimistic or depressed sees the bottle as half empty. In contrast, the cheerful optimist is said to see the world through rose-colored glasses and to see the bottle as half full. This is a rich area of investigation for cognitive and emotion scientists (Eysenck, 1992; Rottenberg & Johnson, 2007; Teasdale, 1993), particularly those interested in the interconnection of cognitive and emotional processes (Barlow et al., 2004; Campbell-Sills & Barlow, 2007; Gross, 2007; Kring & Sloan, 2010).

Concept Check 2.4

Check your understanding of behavioral and cognitive influences by identifying the descriptions. Choose your answers from (a) learned helplessness, (b) modeling, (c) prepared learning, and (d) implicit memory.

1. Karen noticed that every time Tyrone behaved well at lunch, the teacher praised him. Karen decided to behave better to receive praise herself.

2. Josh stopped trying to please his father because he never knows whether his father will be proud or outraged. _____
3. Greg fell into a lake as a baby and almost drowned. Even though he does not remember the event, he hates to be around large bodies of water.

4. Juanita was scared to death of the tarantula, even though she knew it wasn't likely to hurt her.

Discussing Diversity



Fear: Evolutionary and Social Influences

Fear and phobias are universal, occurring across all countries and cultures. Some fears are evolutionarily ingrained and found in people from all different cultures. However, other fears are learned and only are present within specific cultures.

Perhaps the most salient example of evolutionarily ingrained fear that people from all cultures experience is that related to physical illness from food and subsequent fear or repulsion at the site of similar food in the future. Have you ever eaten at a new restaurant only to go home and become physically ill after your dining experience? Chances are if this has happened to you, then you are highly unlikely to return to the same restaurant and almost certainly not going to order the dish associated with your physical illness. The strong aversion to foods that make us ill was first written about by Garcia, Ervin, & Koelling (1966) and is referred to as conditioned taste aversion. These researchers found that unlike other negative stimuli (e.g., electric shock); this type of aversion is learned from a single pairing of food with illness. Once you have become physically ill, your brain says, "No way! I am not taking a chance on that food

again." This evolutionarily based phenomenon can be used to the advantage of farmers desiring to protect their sheep from hungry coyotes. Farmers will feed coyotes sheep meat containing enough lithium salts to cause illness to the coyotes. After becoming ill from the tainted sheep meat, coyotes generally will not attack a farmer's sheep (fearing the illness) and instead will hunt rabbits or other animals (Gustavson, Kelly, Sweeney, & Garcia, 1976). Whereas this is an evolutionarily ingrained fear that affects all people (and animals) similarly despite cultural backgrounds, there also are fears that are uniquely influenced by culture/social learning.

An interesting example of a socially learned fear is that of "Koro" seen in parts of Asia (with the first epidemic appearing in Southern China in 1865). Koro refers to a fear that the penis will shrink or retract into one's abdomen, with some people even fearing that this will result in death (Garlipp, 2006). Although the perceived cause of Koro has changed over time, it has long been attributed to social influences such as witchcraft and sorcery. Moreover, reports of mass episodes of

Koro suggest that beliefs about the possibility of one's genitals shrinking or retracting into the body are spread through social means (such as word-of-mouth or people reading about other cases). In addition to the extreme fear associated with episodes of Koro, this condition can lead to dangerous physical consequences from efforts to prevent genital retraction, such as tying or asking male family members and friends to grasp the penis to prevent retraction (Cheng, 1997). Treatment often includes providing education about the impossibility of spontaneous genital retraction, as well as treatment for the anxiety associated with this condition.

Cases of Koro are rare in the United States, where episodes of sudden and intense anxiety generally are not accompanied by concerns about genital retraction (American Psychiatric Association, 2000). Instead, anxiety in Americans often occurs along with concerns about more widely accepted medical concerns, including that the person is having a heart attack or "going crazy." What seems to be an unbelievable fear in one culture can appear quite reasonable to people in other cultures.

› How do cultural, social, and interpersonal factors influence abnormal behavior?

Given the welter of neurobiological and psychological variables impinging on our lives, is there any room for the influence of social, interpersonal, and cultural factors? Studies are beginning to demonstrate the substantial power and depth of such influences. Consider the following example.

Voodoo, the Evil Eye, and Other Fears

In many cultures, individuals may suffer from *fright disorders*, which are characterized by exaggerated startle responses, and other observable fear and anxiety reactions. One example is the Latin American *susto*, which describes various anxiety-based symptoms, including insomnia, irritability, phobias, and the marked somatic symptoms of sweating and increased heart rate (tachycardia). But *susto* has only one cause: The individual becomes the object of black magic, or witchcraft. In some cultures, the sinister influence is called the *evil eye* (Good & Kleinman, 1985; Tan, 1980), and the resulting fright disorder can be fatal. Cannon (1942), examining the Haitian phenomenon of voodoo death, suggested that the sentence of death by a medicine man may create an intolerable autonomic arousal in the participant, who has little ability to cope because there is no social support—that is, friends and family ignore the individual after a brief period of grieving because

they assume death has already occurred. Ultimately, the condition leads to damage to internal organs and death. Thus, from all accounts, an individual who is from a physical and psychological point of view functioning in a perfectly healthy and adaptive way suddenly dies because of marked changes in the social environment.

Gender

Gender roles have a strong and sometimes puzzling effect on psychopathology (Kistner, 2009; Rutter, Caspi, & Moffitt, 2006). The likelihood of your having a particular phobia is powerfully influenced by your gender. For example, someone who complains of an insect or small-animal phobia severe enough to prohibit field trips or visits to friends in the country is almost certain to be female, as are 90% of the people with this phobia (possible reasons for this were mentioned earlier in this chapter). But a social phobia strong enough to keep someone from attending parties or meetings affects men and women equally.

We think these substantial differences have to do with, at least in part, cultural expectations of men and women, or our *gender roles*. For example, an equal number of men and women may have an experience that could lead to an insect or small-animal phobia, such as being bitten by one, but in our society it isn't always acceptable for a man to show or even admit fear. So a man is more likely to hide or endure the fear until he gets over it. It is more acceptable for women to acknowledge fearfulness, so a phobia develops. It is also more acceptable for a man to be shy than to show fear, so he is more likely to admit social discomfort.

Bulimia nervosa, the severe eating disorder, occurs almost entirely in young females. Why? As you will see in Chapter 8, a cultural emphasis on female thinness plagues our society and, increasingly, societies around the world. The pressures for males to be thin are less apparent, and of the few males who develop bulimia, a substantial percentage are gay; for these individuals, cultural imperatives to be thin are present in many specific instances (Rothblum, 2002).

Finally, Taylor (2002, 2006; Taylor et al., 2000) described a unique way in which females in many species respond to stress in their lives. This response is called “tend and befriend” and refers to protecting themselves and their young through nurturing behavior (tend) and forming alliances with larger social groups, particularly other females (befriend). Taylor et al. (2000) supposed that this response fits better with the way females respond to stress because it builds on the brain's attachment—



THONY BELIZAIRE/AFP/Getty Images

▲ A “possessed” person receives treatment in a voodoo ritual.

caregiving system and leads to nurturing and affiliative behavior. Furthermore, the response is characterized by identifiable neurobiological processes in the brain that are gender specific.

Our gender doesn't cause psychopathology. But because gender role is a social and cultural factor that influences the form and content of a disorder, we attend closely to it in the chapters that follow.

Social Effects on Health and Behavior

Many studies have demonstrated that the greater the number and frequency of social relationships and contacts, the longer you are likely to live. Conversely, the lower you score on a social index that measures the richness of your social life, the shorter your life expectancy. Studies documenting this finding have been reported in the United States (Berkman & Syme, 1979; House, Robbins, & Metzner, 1982; Schoenbach, Kaplan, Fredman, & Kleinbaum, 1986), Sweden, and Finland. They take into account existing physical health and other risk factors for dying young, such as high blood pressure, high cholesterol levels, and smoking habits, and they still produce the same result. Studies also show that social relationships seem to protect individuals against many physical and psychological disorders, such as high blood pressure, depression, alcoholism, arthritis, the progression to AIDS, and bearing low birth weight babies (Cobb, 1976; House, Landis, & Umberson, 1988; Leserman et al., 2000; Thurston & Kubzansky, 2009).

Even whether or not we come down with a cold is strongly influenced by the quality and extent of our social network. Cohen, Doyle, Skoner, Rabin, and Gwaltney (1997) used nasal drops to expose 276 healthy volunteers to one of two different rhinoviruses (cold viruses), then quarantined the participants for a week. The researchers measured the extent of participation in 12 types of social relationships (for example, spouse, parent, friend, and col-

league), and other factors, such as smoking and poor sleep quality, that are likely to increase susceptibility to colds. The surprising results were that the greater the extent of social ties, the smaller the chance of catching a cold, even after all other factors were taken into consideration (controlled for). Those with the fewest social ties were more than 4 times more likely to catch a cold than those with the greatest number of ties. Thus, we cannot study psychological and biological aspects of psychological disorders (or physical disorders, for that matter) without taking into account the social and cultural context of the disorder.

How do social relationships have such a profound impact on physical and psychological characteristics? We don't know for sure, but there are some intriguing hints (Cacioppo et al., 2007). Some people think interpersonal relationships give meaning to life and that people who have something to live for can overcome physical deficiencies and even delay death. You may have known an elderly person who far outlived his or her expected time to witness a significant family event, such as a grandchild's graduation from college. Once the event has passed, the person dies. A common observation is that if one spouse in a long-standing marriage dies, the other often dies soon after, regardless of health status. It is also possible that social relationships facilitate health-promoting behaviors, such as restraint in the use of alcohol and drugs, getting proper sleep, and seeking appropriate health care (House, Landis, & Umberson, 1988; Leserman et al., 2000).

Sometimes social upheaval is an opportunity for studying the impact of social networks on individual functioning. For example, whether you live in a city or the country may be associated with your chances of developing schizophrenia, a severe disorder. Lewis, David, Andreasson, and Allsbeck (1992) found that the incidence of schizophrenia was 38% greater in men who had been raised in cities than in those raised in rural areas. We have known for a long time that more schizophrenia exists in the city than in the country,

but researchers thought people with schizophrenia who drifted to cities *after* developing schizophrenia or other endemic urban factors, such as drug use or unstable family relationships, might account for the disparity. But Lewis and associates carefully controlled for such factors, and it now seems something about cities beyond those influences may contribute to the development of schizophrenia (Pedersen & Mortensen, 2006). We do not yet know what it is. This finding, if it is replicated and shown to be true, may be important in view of the mass migration of individuals to overcrowded urban areas, particularly in less developed countries.

The effect of social and interpersonal factors may differ with age (Charles & Carstensen, 2010; Gallagher-Thompson & Holland, in press). Grant, Patterson, and Yager (1988) studied 118 men and women 65 years or older who lived independently. Those with fewer meaningful contacts and less social support from relatives had consistently higher levels of depression and more reports of unsatisfac-



Yellow Dog Productions/Digital Vision/Jupiterimages

▲ A long and productive life usually includes strong social relationships and interpersonal relations.



Neil Cooper/Alamy

▲ In developing countries, personal upheaval because of political strife affects mental health.

tory quality of life. However, if these individuals became physically ill, they had more substantial support from their families than those who were not physically ill. This finding raises the unfortunate possibility that it may be advantageous for elderly people to become physically ill because illness allows them to reestablish the social support that makes life worth living. If further research confirms this finding, we will know for fact what seems to make intuitive sense: Involvement with their families before they become ill might help elderly people maintain their physical health.

Social Stigma

Psychological disorders continue to carry a stigma in our society (Hinshaw & Stier, 2008). To be anxious or depressed is to be weak and cowardly. To be schizophrenic is to be unpredictable and crazy. For physical injuries in times of war, we award medals. For psychological injuries,

the unfortunate soldiers earn scorn. Often, a patient with a psychological disorder does not seek health insurance reimbursement for fear a coworker might learn about the problem. With far less social support than for physical illness, there is less chance of full recovery.

Global Incidence of Psychological Disorders

Behavioral and mental health problems in developing countries are exacerbated by political strife, technological change, and massive movements from rural to urban areas. An important study from the World Health Organization (WHO) reveals that 10% to 20% of all primary medical services in poor countries are sought by patients with psychological disorders, principally anxiety and mood disorders (including suicide attempts),

alcoholism, drug abuse, and childhood developmental disorders (WHO, 2001). Record numbers of young men are committing suicide in Micronesia. Alcoholism levels among adults in Latin America have risen to 20%. Treatments for disorders such as depression and addictive behaviors that are successful in the United States can't be administered in countries where mental health care is limited. Even in the United States, where approximately 200,000 mental health professionals serve almost 300 million people, only one in three people with a psychological disorder has ever received treatment of any kind (Institute of Medicine, 2001). These statistics suggest that in addition to their role in causation, social and cultural factors help maintain disorders because most societies have not yet developed the social context for alleviating them. Changing societal attitudes is just one of the challenges facing us as the century unfolds.

Life-Span Development

› Why should psychological disorders be considered from a life-span developmental perspective?

We tend to look at psychological disorders from a snapshot perspective: We focus on a particular point in a person's life and assume it represents the whole person. The inadequacy of this way of looking at people should be clear. The person you were, say, 3 years ago, is different from the person you are now, and the person you will be 3 years from now will have changed in important ways. To understand psychopathology, we must appreciate how experiences during different periods of development may influ-

ence our vulnerability to stress or to psychological disorders (Charles & Carstensen, 2010; Rutter, 2002).

Important developmental changes occur at all points in life. Erik Erikson (1982) suggested that we go through eight major crises during our lives, each determined by our biological maturation and the social demands made at particular times. Unlike Freud, who envisioned no developmental stages beyond adolescence, Erikson believed that we grow and change throughout life, even in old age. Dur-

ing older adulthood, for example, we look back and view our lives either as rewarding or as disappointing.

Although aspects of Erikson's theory have been criticized as vague and not supported by research (Shaffer, 1993), it demonstrates the comprehensive approach to human development advocated by life-span developmental psychologists. Research confirms the importance of this approach. In one experiment, Kolb, Gibb, and Gorny (2003) placed animals in complex environments as juveniles, as adults, or in old age. They found that the environment had different effects on the brains of these animals depending on their developmental stage. Basically, the complex and challenging environments increased the size and complexity of neurons in the motor and sensory cortical regions in the adult and aged animals; however, unlike the older groups, in young animals the challenging environments decreased the size and complexity of neurons in the spine. Nevertheless, this decrease was associated with enhanced motor and cognitive skills when the animals became adults, indicating that stimulating environments can affect brain function in a positive way at any age. Even prenatal experience seems to affect brain structure because the offspring of an animal housed in a rich environment during the term of her pregnancy have the advantage of more complex cortical brain circuits after birth (Kolb, Gibb, & Robinson, 2003). Thus, we can infer that the individual's developmental stage and prior experience have a substantial impact on the development of psychological disorders, an inference that is receiving confirmation from life-span developmental psychologists such as Laura Carstensen (Carstensen, Charles, Isaacowitz, & Kenney, 2003; Charles & Carstensen, 2010; Isaacowitz, Smith, & Carstensen, 2003). For example, in depressive (mood) disorders, children and adolescents do not receive the same benefit from antidepressant drugs as do adults (Hazell, O'Connell, Heathcote, Robertson, & Henry, 1995; Santosh, 2009), and for many of them these drugs pose risks that are not present in adults (Santosh, 2009). Also, the gender distribution in depression is approximately equal until puberty, when it becomes more common in girls (Compas et al., 1997; Hankin, Wetter, & Cheely, 2007).

Like a fever, a particular behavior or disorder may have a number of causes. The principle of **equifinality** is used to indicate that we must consider a number of paths to a given outcome (Cicchetti, 1991). There are many examples of this principle. A delusional syndrome may be an aspect of schizophrenia, but it can also arise from amphetamine abuse. Delirium, which involves difficulty focusing attention, often occurs in older adults after surgery, but it can also result from thiamine deficiency or renal (kidney) disease. Autism can sometimes occur in children whose

mothers are exposed to rubella during pregnancy, but it can also occur in children whose mothers experience difficulties during labor.

Different paths can also result from the interaction of psychological and biological factors during various stages of development. How someone copes with impairment resulting from physical causes may have a profound effect on that person's overall functioning. For example, people with brain damage of approximately equal severity may have different levels of disorder. Those with healthy systems of social support, consisting of family and friends, and highly adaptive personality characteristics, such as confidence in their abilities to overcome challenges, may experience only mild behavioral and cognitive disturbance despite physical (organic) pathology. Those without comparable support and personality may be incapacitated. This may be clearer if you think of people you know with physical disabilities. Some, paralyzed from the waist down by accident or disease (paraplegics), have nevertheless become superb athletes or accomplished in business or the arts. Others with the same condition are depressed and hopeless; they have withdrawn from life or, even worse, ended their lives. Even the content of delusions and hallucinations that may accompany a disorder, and the degree to which they are frightening or difficult to cope with, is partly determined by psychological and social factors.

Researchers are exploring not only what makes people experience particular disorders, but also what protects others from having the same difficulties. If you were interested in why someone would be depressed, for example, you would first look at people who display depression. But you could also study people in similar situations and from similar backgrounds who are not depressed. An excellent example of this approach is research on "resilient" children, which suggests that social factors may protect some children from being hurt by stressful experiences, such as one or both parents suffering a psychiatric disturbance (Cooper, Feder, Southwick & Charney, 2007; Garmezy & Rutter, 1983; Hetherington & Blechman, 1996; Weiner, 2000). The presence of a caring adult friend or relative can offset the negative stresses of this environment, as can the child's own ability to understand and cope with unpleasant situations. More recently, scientists are discovering strong biological differences in responsiveness to trauma and stress as a result of protective factors such as social support or having a strong purpose in life (Alim et al., 2008; Charney, 2004; Ozbay et al., 2007). Perhaps if we better understand why some people do not encounter the same problems as others in similar circumstances, we can better understand particular disorders, assist those who suffer from them, and even prevent some cases from occurring.

In this overview of modern approaches to psychopathology, we have seen that contributions from (1) psychoanalytic theory, (2) behavioral and cognitive science, (3) emotional influences, (4) social and cultural influences, (5) genetics, (6) neuroscience, and (7) life-span developmental factors all must be considered when we think about psychopathology. Even though our knowledge is incomplete, you can see why we could never resume the one-dimensional thinking typical of the various historical traditions described in Chapter 1.

Yet, books about psychological disorders and news reports in the popular press often describe the causes of these disorders in one-dimensional terms. For example, how many times have you heard that a psychological disorder such as depression, or perhaps schizophrenia, is caused by a “chemical imbalance” without considering other possible causes? When you read that a disorder is *caused* by a chemical imbalance, it sounds like nothing else really matters and all you have to do is correct the imbalance in neurotransmitter activity to “cure” the problem.

There is no question that psychological disorders are associated with altered neurotransmitter activity and other aspects of brain function (a chemical imbalance). But you have learned in this chapter that a “chemical imbalance” could, in turn, be caused by psychological or social factors such as stress, strong emotional reactions, difficult family interactions, changes caused by aging, or—most likely—some interaction of all these factors. Therefore, it is inaccurate and misleading to say that a psychological disorder is “caused” by a chemical imbalance, even though chemical imbalances almost certainly exist.

Similarly, how many times have you heard that alcoholism or other addictive behaviors were caused by “lack of willpower,” implying that if these individuals simply developed the right attitude they could overcome their addiction? There is no question that people with severe addictions may have faulty cognitive processes as indicated, for example, by attributing their problems to stress in their lives or some other “bogus” excuse. They may also misperceive the effects alcohol has on them, and these cognitions and attitudes all contribute to developing addictions. But considering only cognitive processes without considering other factors, such as genes and brain physiology, as causes of addictions would be as incorrect as saying that

depression is caused by a chemical imbalance. Interpersonal, social, and cultural factors also contribute to the development of addictive behaviors. To say, then, that addictive behaviors such as alcoholism are caused by lack of willpower is just plain wrong.

If you learn one thing from this book, it should be that psychological disorders have many causes—which interact with one another—and we must understand this interaction to appreciate fully the origins of psychological disorders. To do this requires a multidimensional integrative approach. In chapters covering specific psychological disorders, we return to cases like Judy’s and consider them from this multidimensional integrative perspective. But first we must explore the processes of assessment and diagnosis used to measure and classify psychopathology.

Concept Check 2.5

Fill in the blanks to complete the following statements.

1. What we _____ is influenced by our social environments.
2. The likelihood of your having a particular phobia is influenced by your _____.
3. Studies have demonstrated that the greater the number and frequency of _____ relationships and _____, the longer you are likely to live.
4. The effect of social and interpersonal factors on the expression of physical and psychological disorders may differ with _____.
5. The principle of _____ is used to indicate that we must consider a number of paths to a given outcome.

equifinality Developmental psychopathology principle that a behavior or disorder may have several causes.

Summary

One-Dimensional versus Multidimensional Models

How does a multidimensional model of causality differ from a unidimensional model?

- › The causes of abnormal behavior are complex. You can say that psychological disorders are caused by nature (biology) and by nurture (psychosocial factors), and you would be right on both counts—but also wrong on both counts.

What are the key influences comprising the multidimensional model of abnormal behavior?

- › To identify the causes of various psychological disorders, we must consider the interaction of all relevant dimensions: genetic contributions, the role of the nervous system, behavioral and cognitive processes, emotional influences, social and interpersonal influences, and developmental factors. Thus, we have arrived at a multidimensional approach to the causes of psychological disorders.

Genetic Contributions to Psychopathology

How do genes interact with environmental factors to affect behavior?

- › The genetic influence on much of our development and most of our behavior, personality, and even IQ score is polygenic—that is, influenced by many genes. This is assumed to be the case in abnormal behavior also, although research has identified specific small groups of genes that relate to some psychological disorders.

What kinds of models have been proposed to describe this interaction?

- › In studying casual relationships in psychopathology, researchers look at the interactions of genetic and environmental effects. In the diathesis–stress model, individuals are assumed to inherit certain vulnerabilities that make them susceptible to a disorder when the right kind of stressor comes along. In the reciprocal gene–environment, or gene–environment correlation, model, genetic vulnerability toward a certain disorder may make it more likely that the person will experience the stressor that, in turn, triggers the vulnerability and thus the disorder. In epigenetics, the immediate effects of the environment (such as early stressful experiences) influence cells that turn certain genes on or off. This effect may be passed down through several generations.

Neuroscience and Its Contributions to Psychopathology

What are neurotransmitters, and how are they involved in abnormal behavior?

- › Within the nervous system, levels of neurotransmitter and neuroendocrine activity interact in complex ways to regulate emotions and behavior and contribute to psychological disorders.

What are the functions of different brain regions, and what are their roles in psychopathology?

- › Critical to our understanding of psychopathology are the neurotransmitter currents called brain circuits. Of the neurotransmitters that may play a key role, we investigated five: serotonin, gamma-aminobutyric acid (GABA), glutamate, norepinephrine, and dopamine.

Behavioral and Cognitive Science

What are the key differences between behavioral and cognitive explanations of the origins of mental illness?

- › The field of cognitive science provides a valuable perspective on how behavioral and cognitive influences affect the learning and adaptation each of us experience throughout life. Clearly, such influences not only contribute to psychological disorders, but also may directly modify brain functioning, brain structure, and even genetic expression. We examined some research in this field by looking at learned helplessness, modeling, prepared learning, and implicit memory.

Emotions

What role do emotions play in psychopathology?

- › Emotions have a direct and dramatic impact on our functioning and play a central role in many disorders. Mood, a persistent period of emotionality, is often evident in psychological disorders.

Cultural, Social, and Interpersonal Factors

How do cultural, social, and interpersonal factors influence abnormal behavior?

- › Social and interpersonal influences profoundly affect both psychological disorders and biology.

Life-Span Development

Why should psychological disorders be considered from a life-span developmental perspective?

- › The principle of equifinality reminds us that we must consider the various paths to a particular outcome, not just the result.

Key Terms

multidimensional integrative approach, 31

genes, 34

diathesis–stress model, 36

vulnerability, 37

reciprocal gene–environment model, 38

epigenetics, 39

neuroscience, 40

neuron, 40

synaptic cleft, 40

neurotransmitters, 40

hormone, 46

brain circuits, 46

agonist, 47

antagonist, 47

inverse agonist, 47

reuptake, 47

glutamate, 47

gamma-aminobutyric acid (GABA), 47

serotonin, 48

norepinephrine (also noradrenaline), 48

dopamine, 48

cognitive science, 53

learned helplessness, 54

modeling (also observational learning), 55

prepared learning, 55

implicit memory, 56

flight or fight response, 57

emotion, 57

mood, 58

affect, 58

equifinality, 64

Answers to Concept Checks

2.1

1. b; 2. a (best answer) or c; 3. e; 4. a (initial), c (maintenance)

2.2

1. F (first 22 pairs); 2. T; 3. T; 4. F (reciprocal gene–environment model);

5. F (complex interaction of both nature and nurture)

2.3

1. b; 2. c; 3. f; 4. g; 5. d; 6. e; 7. h; 8. a

2.4

1. b; 2. a; 3. d; 4. c

2.5

1. fear; 2. gender; 3. social, contacts; 4. age; 5. equifinality

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Integrative Approach: This clip summarizes the integrative approach, showing how psychological factors affect our biology and our brain influences our behavior.

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Video Concept Reviews

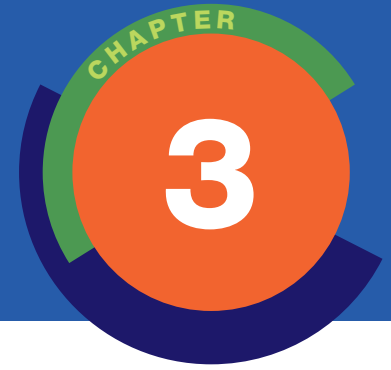
CengageNOW also contains Mark Durand’s *Video Concept Reviews* on these challenging topics:

- Multidimensional Models
- Genetics: Phenotype and Genotype
- Genetics: Nature of Genes
- Genetics: Dominant versus Recessive Genes
- Genetics: Polygenic
- Diathesis–Stress Model
- Concept Check—Reciprocal Gene–Environment Model
- Neuroscience
- Neuroimaging
- Neurons
- Neurotransmitters/Reuptake
- Agonist/Antagonist
- Implicit Memory/Stroop Test
- Emotion

Chapter Quiz

1. Which approach to psychopathology considers biological, social, behavioral, emotional, cognitive, and developmental influences?
 - a. genetic
 - b. multidimensional
 - c. interpersonal
 - d. psychodynamic
2. Much of our development and most of our behavior, personality, and IQ are influenced by many genes, each contributing only a portion of the overall effect. This type of influence is known as:
 - a. reciprocal
 - b. polygenic
 - c. integrative
 - d. recessive
3. Behavioral genetics research has concluded that:
 - a. genetic factors do not contribute to most psychological disorders
 - b. genetic factors that contribute to psychological disorders account for most of the explanation
 - c. for any one psychological disorder there is probably one gene that explains most of its development
 - d. genetic factors that contribute to psychological disorders account for less than half of the explanation
4. Which portion of the brain is responsible for complex cognitive activities such as reasoning, planning, and creating?
 - a. limbic system
 - b. basal ganglia
 - c. hindbrain
 - d. cerebral cortex
5. John is startled by a loud crash in his apartment. His heart immediately starts beating rapidly and the pace of his breathing increases. What part of the nervous system is responsible for this physiological response?
 - a. central nervous system
 - b. sympathetic nervous system
 - c. limbic system
 - d. parasympathetic nervous system
6. Which neurotransmitter appears to reduce overall arousal and dampen emotional responses?
 - a. serotonin
 - b. gamma-aminobutyric acid
 - c. norepinephrine
 - d. dopamine
7. Martin Seligman noted that when rats or other animals encounter conditions over which they have no control, they give up attempting to cope and seem to develop the animal equivalent of depression. This is referred to as:
 - a. learned depression
 - b. learned fear
 - c. learned helplessness
 - d. learned defenselessness
8. Which concept explains why fears of snakes and heights are more common (or more easily learned) than fears of cats and flowers?
 - a. equifinality
 - b. vulnerability
 - c. prepared learning
 - d. observational learning
9. Recent research on implicit memory suggests that:
 - a. people can recall colors more quickly than words
 - b. memories can change based on the implicit structures of the brain
 - c. implicit memory is more relevant to psychopathology than explicit memory
 - d. memories outside our awareness may influence psychopathology, just as Freud speculated
10. Emotion comprises all of the following components EXCEPT:
 - a. behavior
 - b. cognition
 - c. genetics
 - d. physiology(See Appendix A for answers.)

Clinical Assessment, Diagnosis, and Research in Psychopathology



Chapter Outline

Assessing Psychological Disorders

- Key Concepts in Assessment
- The Clinical Interview
- Physical Examination
- Behavioral Assessment
- Psychological Testing
- Neuropsychological Testing
- Neuroimaging: Pictures of the Brain
- Psychophysiological Assessment

Diagnosing Psychological Disorders

- Classification Issues
- DSM-IV-TR*
- Diagnosis before 1980
- DSM-III* and *DSM-III-R*
- DSM-IV* and *DSM-IV-TR*
- Beyond *DSM-IV*: Dimensions and Spectra

Conducting Research in Psychopathology

- Basic Components of a Research Study
- Statistical versus Clinical Significance
- The “Average” Client

Types of Research Methods

- Studying Individual Cases
- Research by Correlation
- Research by Experiment
- Single-Case Experimental Designs

Genetics and Behavior across Time and Cultures

- Studying Genetics
- Studying Behavior over Time
- Studying Behavior across Cultures
- The Power of a Program of Research
- Replication
- Research Ethics

Abnormal Psychology Live Videos

- Arriving at a Diagnosis
- Psychological Assessment
- Research Methods
- Web Link

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Student Learning Outcomes*

Demonstrate knowledge and understanding of selected content areas of psychology:	<ul style="list-style-type: none"> › Biological bases of behavior and mental processes, including physiology, sensation, perception, comparative, motivation, and emotion (APA SLO 1.2.a [3]) (see textbook pages 81–83) › The history of psychology, including the evolution of methods of psychology, its theoretical conflicts, and its sociocultural contexts (APA SLO 1.2.b) (see textbook pages 87–91)
Identify applications of psychology in solving problems, such as:	<ul style="list-style-type: none"> › Psychological tests and measurements (APA SLO 4.2.c) (see textbook pages 71–82, 84–91)
Explain different research methods used by psychologists.	<ul style="list-style-type: none"> › Describe how various research designs address different types of questions and hypotheses (APA SLO 2.2.a) (see textbook pages 95–103) › Articulate strengths and limitations of various research designs, including distinguishing between qualitative and quantitative methods (APA SLO 2.2.b) (see textbook pages 103–109)
Design and conduct basic studies to address psychological questions using appropriate research methods.	<ul style="list-style-type: none"> › Recognize that theoretical and sociocultural contexts and personal biases may shape research questions, design, data collection, analysis, and interpretation (APA SLO 2.4.f) (see textbook pages 107–109)

*Portions of this chapter cover learning outcomes suggested by the American Psychological Association (2007) in their guidelines for the undergraduate psychology major. Chapter coverage of these outcomes is identified by APA Goal and APA Suggested Learning Outcome (SLO).

Assessing Psychological Disorders

- › What are clinical assessment and diagnosis?
- › What are the main methods used in clinical assessment?

The processes of clinical assessment and diagnosis are central to the study of psychopathology. **Clinical assessment** is the evaluation and measurement of psychological, biological, and social factors in an individual with a possible psychological disorder. **Diagnosis** is the process of determining whether the problem afflicting the individual meets all criteria for a psychological disorder, as set forth in the fourth edition, text revision, of the *Diagnostic and Statistical Manual of Mental Disorders*, or *DSM-IV-TR* (American Psychiatric Association, 2000). In this chapter, we examine the development of the *DSM* into a widely used classification system for abnormal behavior. Then we review the assessment techniques available to clinicians. Finally, we turn to diagnostic issues and the challenges of classification.

Frank ♦ Young, Serious, and Anxious

Frank was referred to one of our clinics for evaluation and possible treatment of severe distress and anxiety centering on his marriage. He reported that he was 24 years old and that this was the first time he had ever seen a mental health professional. He wasn't sure that he needed to be there, but he felt he was beginning to "come apart" because of his marital difficulties. He figured that it wouldn't hurt to come once to see whether we could help. What follows is a transcript of parts of this first interview.

THERAPIST: What sorts of problems have been troubling you during the past month?

FRANK: I'm beginning to have a lot of marital problems. I was married about 9 months ago, but I've been really tense around the house and we've been having a lot of arguments.

THERAPIST: Is this something recent?

FRANK: Well, it wasn't too bad at first, but it's been worse lately. I've also been really uptight in my job, and I haven't been getting my work done.

Note that we always begin by asking the patient to describe the difficulties that brought him or her to the office. When dealing with adults, or children old enough (or verbal enough) to tell us their story, this strategy tends to break the ice. After Frank described this problem in some detail, we asked him about his marriage, his job, and other current life circumstances. Frank reported that he had worked in an auto body repair shop for the past 4 years and that, 9 months previously, he had married a 17-year-old woman. After getting a better picture of his current situation, we returned to his feelings of distress and anxiety.

THERAPIST: When you feel uptight at work, is it the same kind of feeling you have at home?

FRANK: Pretty much. I just can't seem to concentrate, and lots of times I lose track of what my wife's saying

to me, which makes her mad and then we'll have a big fight.

THERAPIST: Are you thinking about something when you lose your concentration, such as your work or maybe other things?

FRANK: Oh, I don't know. I guess I just worry a lot.

THERAPIST: What do you find yourself worrying about most of the time?

FRANK: Well, I worry about getting fired and then not being able to support my family. A lot of the time I feel like I'm going to catch something—you know, get sick and not be able to work. Basically I guess I'm afraid of getting sick and then failing at my job and in my marriage and having my parents and her parents both telling me what an ass I was for getting married in the first place.

During the first few minutes of the interview, Frank seemed tense and anxious and often looked down while he talked, glancing up only occasionally to make eye contact. Sometimes his right leg twitched a bit. Although it was not easy to see at first because he was looking down, Frank was also closing his eyes tightly for a period of 2 to 3 seconds. It was during these periods when his eyes were closed that his right leg would twitch.

The interview proceeded for the next half hour, exploring marital and job issues. It became increasingly clear that Frank was feeling inadequate and anxious about handling situations in his life. By this time, he was talking freely and looking up a little more at the therapist, but he continued to close his eyes and twitch his right leg slightly.

THERAPIST: Are you aware that once in a while you're closing your eyes while you're telling me this?

FRANK: I'm not aware all the time, but I know I do it.

THERAPIST: Do you know how long you've been doing that?

FRANK: Oh, I don't know, maybe a year or two.

THERAPIST: Are you thinking about anything when you close your eyes?

FRANK: Well, actually I'm trying not to think about something.

THERAPIST: What do you mean?

FRANK: Well, I have these really frightening and stupid thoughts, and . . . it's hard to even talk about it.

THERAPIST: The thoughts are frightening?

FRANK: Yes, I keep thinking I'm going to take a fit, and I'm just trying to get that out of my mind.

THERAPIST: Could you tell me more about this fit?

FRANK: Well, you know, it's those terrible things where people fall down and they froth at the mouth,

and their tongues come out, and they shake all over. You know, seizures. I think they call it epilepsy.

THERAPIST: And you're trying to get these thoughts out of your mind?

FRANK: Oh, I do everything possible to get those thoughts out of my mind as quickly as I can.

THERAPIST: I've noticed you moving your leg when you close your eyes. Is that part of it?

FRANK: Yes, I've noticed if I really jerk my leg and pray real hard for a little while the thought will go away.

(Excerpt from Nelson, R. O., & Barlow, D. H. Behavioral assessment: Basic strategies and initial procedures. In D. H. Barlow, Ed., *Behavioral assessment of adult disorders*. Copyright ©1981 Guilford Publications, Inc. Reprinted by permission.)

What's wrong with Frank? The first interview reveals an insecure young man experiencing substantial stress as he questions whether he is capable of handling marriage and a job. He reports that he loves his wife and wants the marriage to work and is attempting to be conscientious on his job, from which he derives a lot of satisfaction. Also, for some reason, he is having troubling thoughts about seizures.

How do we determine whether Frank has a psychological disorder or is simply suffering the normal stresses of a new marriage and could benefit from marital counseling? The purpose of this chapter is to illustrate how mental health clinicians address these types of questions to make diagnoses and plan treatment.

Key Concepts in Assessment

The process of clinical assessment has been likened to a funnel (Antony & Barlow, 2010; Hunsley & Mash, 2011). The clinician begins by collecting information across a broad range of the individual's functioning. Then the clinician narrows the focus by ruling out problems in some areas and concentrating on areas that seem most relevant.

Three basic concepts help determine the value of clinicians' assessments: reliability, validity, and standardization (Bagby & Ayerst, 2010) (■ Figure 3.1). One of the more important requirements of these assessments is that they be reliable: that they actually do what they are designed to do. **Reliability** is the degree to which a measurement is

clinical assessment Systematic evaluation and measurement of psychological, biological, and social factors in a person presenting with a possible psychological disorder.

diagnosis Process of determining whether a presenting problem meets the established criteria for a specific psychological disorder.

reliability Degree to which a measurement is consistent—for example, over time or among different raters.



Lisa F. Young/Stockphoto

▲ During their first meeting, the mental health professional focuses on the problem that brought the person to treatment.

consistent. Imagine how irritated you would be if you had stomach pain and you went to four physicians and got four different diagnoses and four different treatments. The diagnoses would be said to be unreliable because two or more “raters” (the physicians) did not agree on the conclusion. We expect that presenting the same symptoms to different physicians will result in similar diagnoses. One way psychologists improve their reliability is by carefully designing their assessment devices and then conducting research on them to ensure that two or more raters will get the same answers (called *interrater reliability*). They also determine whether these assessment techniques are stable across time. In other words, if you go to a clinician on

Tuesday and are told you have an IQ of 110, you should expect a similar result if you take the same test again on Thursday. This is known as *test–retest reliability*.

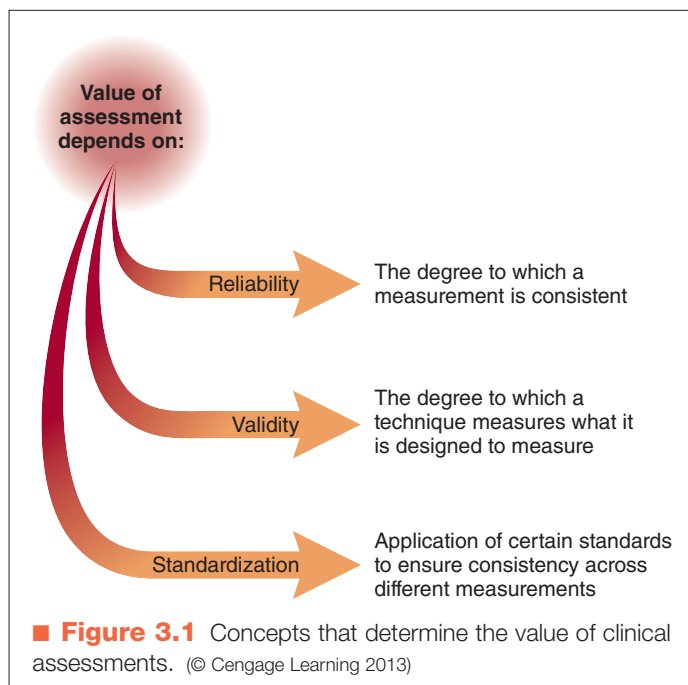
Validity is whether something measures what it is designed to measure. Comparing the results of an assessment measure under consideration with the results of others that are better known helps determine the validity of the first measure. This comparison is called *concurrent* or *descriptive validity*. For example, if the results from a standard, but long, IQ test were essentially the same as the results from a new, brief version, you could conclude that the brief version had concurrent validity. *Predictive validity* is how well your assessment tells you what will happen in the future. For example, does it predict who will succeed in school, which is one of the goals of an IQ test?

Standardization is the process by which a certain set of standards or norms is determined for a technique to make its use consistent across different measurements. The standards might apply to the procedures of testing, scoring, and evaluating data. For example, the assessment might be given to large numbers of people who differ on important factors such as age, race, and gender; their scores would be pooled with those of other individuals like them and then be used as a standard, or norm, for comparison purposes. If you are an African American male, 19-years-old, and from a middle-class background, your score on a psychological test should be compared to those of others like you and not to those of women of Asian descent in their 60s from working-class backgrounds. Reliability, validity, and standardization are important to all forms of psychological assessment.

Clinical assessment consists of procedures that help clinicians acquire the information they need to understand their patients. These procedures include a clinical interview and, within the context of the interview, a mental status exam that can be administered either formally or informally; often a thorough physical examination; a behavioral observation and assessment; and psychological tests (if needed).

The Clinical Interview

The clinical interview is used by psychologists, psychiatrists, and other mental health professionals. It gathers information on current and past behavior, attitudes, and emotions and a detailed history of the individual’s life in general and of the presenting problem. Clinicians determine when the specific problem started and identify other events that might have occurred about the same time. In addition, most clinicians gather at least some information on the patient’s current and past interpersonal and social history, including family makeup, and on the individual’s upbringing. Information on sexual development, religious attitudes (current and past), relevant cultural concerns (such as stress induced by discrimination), and educational history is also collected. To organize information obtained during an interview, many clinicians use a **mental status exam**.



The Mental Status Exam

A mental status exam involves the systematic observation of an individual's behavior. We all perform mental status exams whenever we interact with others, but clinicians must organize their observations in a way that gives them sufficient information to determine whether a psychological disorder might be present (Nelson & Barlow, 1981). Mental status exams can be structured and detailed (Wing, Cooper, & Sartorius, 1974), but mostly they are performed relatively quickly in the course of interviewing or observing a patient. The exam covers five categories:

1. *Appearance and behavior.* The clinician notes any overt physical behaviors, such as Frank's leg twitch, and the individual's dress, general appearance, posture, and facial expression. For example, slow and effortful motor behavior, sometimes referred to as *psychomotor retardation*, may indicate severe depression.
2. *Thought processes.* When clinicians listen to a patient talk, they're getting a good idea of that person's thought processes. What is the rate or flow of speech? Does the person talk quickly or slowly? What about continuity? Does the patient make sense when talking, or are ideas presented with no apparent connection? In some patients with schizophrenia, a disorganized speech pattern, referred to as *loose association* or *derailment*, is noticeable. Clinicians sometimes ask specific questions. If the patient shows difficulty with continuity or rate of speech, a clinician might ask, "Can you think clearly, or do your thoughts tend to be mixed up or come slowly?" What about the content of speech? Is there evidence of *delusions* (distorted views of reality)? Typical delusions are *delusions of persecution*, in which someone thinks people are after him and out to get him all the time, or *delusions of grandeur*, in which someone thinks she is all-powerful. The individual might also have *ideas of reference*, in which everything everyone else does somehow relates back to the individual. The most common example is thinking a conversation between two strangers on the other side of the room must be about you. *Hallucinations* are things a person sees or hears when those things really aren't there.
3. *Mood and affect.* Determining mood and affect is an important part of the mental status exam. *Mood* is the predominant feeling state of the individual. Does the person appear to be down in the dumps or continually elated? Does the individual talk in a depressed or hopeless fashion? How pervasive is this mood? *Affect*, by contrast, refers to the feeling state that accompanies what we say at a given point. Usually our affect is "appropriate"—that is, we laugh when we say something funny or look sad when we talk about something sad. If a friend just told you his mother died and is laughing about it, you would think it strange, to say the least. A mental health clinician would note that your friend's affect is "inappropriate." Then again, you might observe your friend talking about a range of happy and sad things with no affect whatsoever. In this case, a

mental health clinician would say the affect is "blunted" or "flat."

4. *Intellectual functioning.* Clinicians make a rough estimate of others' intellectual functioning just by talking to them. Do they seem to have a reasonable vocabulary? Can they talk in abstractions and metaphors? How is the person's memory? Clinicians usually make a rough estimate of intelligence that is noticeable only if it deviates from normal.
5. *Sensorium.* The term *sensorium* refers to our general awareness of our surroundings. Does an individual know the date and time, who and where he or she is, and who you are? Most of us are fully aware of these facts. People with brain damage or dysfunction may not know the answer to these questions. If the patient knows who he is and who the clinician is and has a good idea of the time and place, the clinician would say that the patient's sensorium is "clear" and is "oriented times three" (to person, place, and time).

What can we conclude from these observations? Basically, they allow the clinician to make a preliminary determination of which areas of the patient's behavior should be assessed in more detail. If psychological disorders remain a possibility, the clinician may begin to hypothesize which disorders might be present.

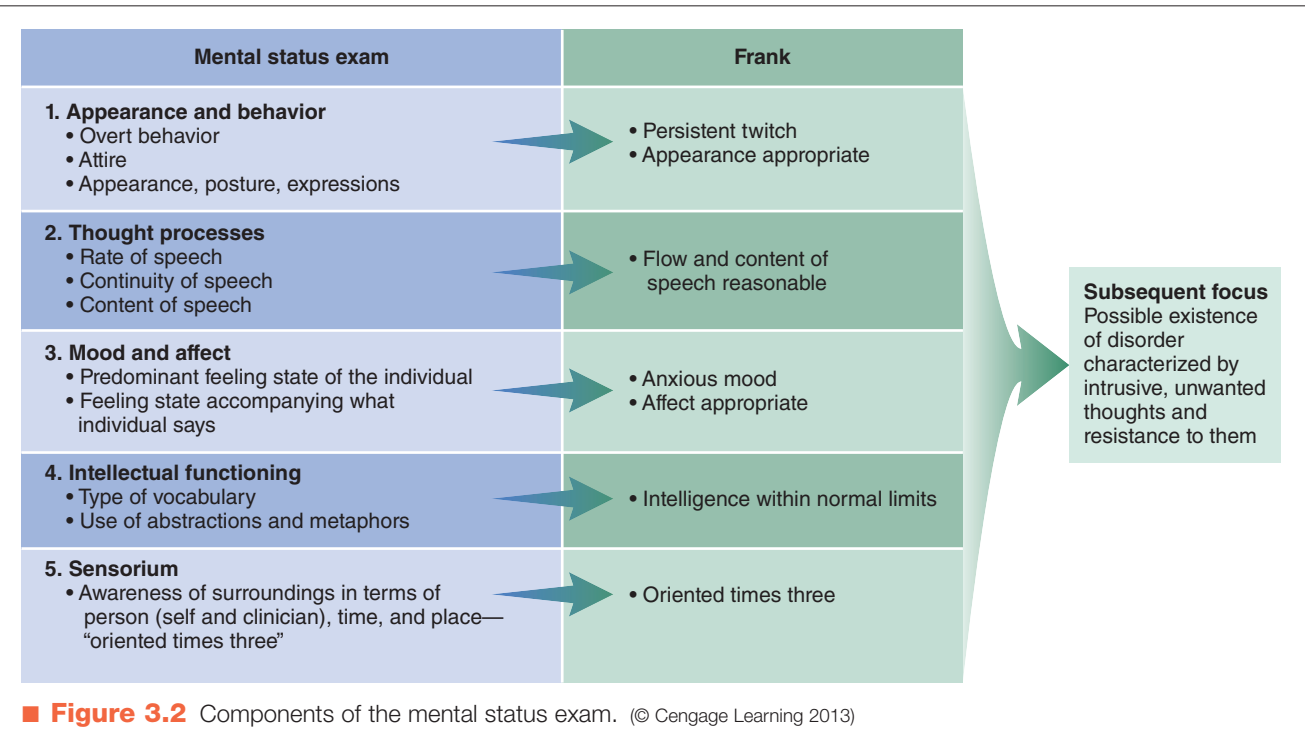
Returning to our case, what have we learned from this mental status exam (■ Figure 3.2)? Observing Frank's persistent motor behavior in the form of a twitch led to the discovery of a connection (functional relationship) with his troublesome thoughts regarding seizures. Beyond this, his appearance was appropriate, and the flow and content of his speech was reasonable; his intelligence was well within normal limits, and he was oriented times three. He did display an anxious mood; however, his affect was appropriate to what he was saying. These observations suggested that we attempt to identify the possible existence of a disorder characterized by intrusive, unwanted thoughts and the attempt to resist them—in other words, *obsessive-compulsive disorder (OCD)*. Later we describe some assessment strategies we would use with Frank.

Patients usually have a good idea of their major concerns in a general sense ("I'm depressed" or "I'm phobic"); occasionally, the problem reported by the patient may not be the major issue. The case of Frank illustrates this point well: He complained of distress relating to marital problems, but the clinician decided that the principal difficul-

validity Degree to which a technique measures what it purports to measure.

standardization Process of establishing specific norms and requirements for a measurement technique to ensure it is used consistently across measurement occasions. This includes instructions for administering the measure, evaluating its findings, and comparing these to data for large numbers of people.

mental status exam Relatively coarse preliminary test of a client's judgment, orientation to time and place, and emotional and mental state; typically conducted during an initial interview.



ties lay elsewhere. Frank wasn't attempting to hide anything from the clinician. Frank just didn't think his intrusive thoughts were the major problem; in addition, talking about them was difficult for him because they were quite frightening.

This example illustrates the importance of conducting the clinical interview in a way that elicits the patient's trust and empathy. Psychologists and other mental health professionals are trained in methods that put patients at ease and facilitate communication, including nonthreatening ways of seeking information and appropriate listening skills. Information provided by patients to psychologists and psychiatrists is protected by laws of "privileged communication" or confidentiality in most states. The only exception occurs when the clinician judges that some harm or danger to either the patient or someone else is imminent. At the outset of the initial interview, the therapist should inform the patient of the confidential nature of their conversation and the (rare) conditions under which that confidence would not hold.

Despite these assurances of confidentiality and the clinician's interview skills, patients sometimes find it difficult to volunteer sensitive information. In our own files is the case of a man in his early 20s who came to therapy once a week for 5 months. He wanted help with what he viewed as deficient interpersonal skills and anxieties that were impeding his ability to relate to other people. Only after 5 months, and by chance, did he reveal his secret. He was strongly sexually attracted to small boys and confessed that he found their feet and associated objects such as socks and shoes to be nearly irresistible. Although he had never actually approached any young boys, he had hidden in his home a large collection of small socks and shoes. Confiden-

tiality had been assured, and the therapist was there to help. Nevertheless, the patient found it almost impossible to volunteer this information.

Semistructured Clinical Interviews

Unstructured interviews follow no systematic format. *Semistructured interviews* are made up of questions that have been carefully phrased and tested to elicit useful information in a consistent manner so that clinicians can be sure they have inquired about the most important aspects of particular disorders (Summerfeldt, Kloosterman, & Antony, 2010). Clinicians may also depart from set questions to follow up on specific issues—thus the label "semistructured." Because the wording and sequencing of questions has been worked out over a number of years, the clinician can feel confident that a semistructured interview will accomplish its purpose. The disadvantage is that it robs the interview of some of the spontaneous quality of two people talking about a problem. Also, if applied too rigidly, a semistructured interview may inhibit the patient from volunteering information that is not directly relevant to the questions being asked. Because of these few drawbacks, structured interviews administered wholly by a computer have not caught on, although they are used in some settings.

An increasing number of mental health professionals, however, do routinely use semistructured interviews. Some are quite specialized. For example, Frank's clinician might use the *Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV)* (DiNardo, Brown, & Barlow, 1994). According to this interview schedule, the clinician first asks if the patient is bothered by thoughts, images, or impulses (obsessions) or feels driven to experience some behavior or thought repeatedly (compulsions). Based on an 8-point rating scale that

ranges from “never” to “constantly,” the clinician then asks the patient to rate each obsession on two measures: persistence–distress (how often it occurs and how much distress it causes) and resistance (types of attempts the patient makes to get rid of the obsession). For compulsions, the patient provides a rating of their frequency.

Physical Examination

Many patients with problems first go to a family physician. If the patient presenting with psychological problems has not had a physical exam in the past year, a clinician might recommend one. Many problems presenting as disorders of behavior, cognition, or mood may have a clear relationship to a temporary toxic state. This toxic state could be caused by bad food, the wrong amount or type of medicine, or onset of a medical condition. For example, thyroid difficulties, particularly hyperthyroidism (overactive thyroid gland), may produce symptoms that mimic certain anxiety disorders, such as generalized anxiety disorder. Withdrawal from cocaine often produces panic attacks, but many patients presenting with panic attacks are reluctant to volunteer information about their addiction, which may lead to an inappropriate diagnosis and improper treatment.

If a current medical condition or substance abuse situation exists, the clinician must ascertain whether it is merely coexisting or is causal, usually by looking at the onset of the problem. If a patient has suffered from severe bouts of depression for the past 5 years but within the past year has also developed hypothyroid problems or begun taking a sedative drug, then the clinician would not conclude the depression was caused by the medical or drug condition. If the depression developed simultaneously with the initiation of sedative drugs and diminished considerably when the drugs were discontinued, the clinician would be likely to conclude the depression was part of a substance-induced mood disorder.

Behavioral Assessment

The mental status exam is one way to begin to sample how people think, feel, and behave and how these actions might contribute to or explain their problems. **Behavioral assessment** takes this process one step further by using direct observation to assess an individual's thoughts, feelings, and behavior in specific contexts. Behavioral assessment may be more appropriate than any interview in terms of assessing individuals who are not old enough or skilled enough to report their problems and experiences.

In behavioral assessment, target behaviors are identified and observed with the goal of determining the factors that seem to influence them. It may seem easy to identify what is bothering a particular person (that is, the target behavior), but even this aspect of assessment can be challenging. For example, when the mother of a 7-year-old child with a severe conduct disorder came to one of our clinics for assistance, she told the clinician, after much prodding, that her son “didn’t listen to her” and he sometimes had an “at-

titude.” The boy’s schoolteacher, however, painted a different picture. She spoke candidly of his threats toward other children and to herself. To get a clearer picture of the situation at home, the clinician visited one afternoon. Approximately 15 minutes after the visit began, the boy got up from the kitchen table without removing the drinking glass he was using. When his mother meekly asked him to put the glass in the sink, he picked it up and threw it across the room, sending broken glass throughout the kitchen. He giggled and went into his room to watch television. “See,” she said. “He doesn’t listen to me!”

Obviously, this mother’s description of her son’s behavior at home didn’t portray what he was really like. It also didn’t accurately describe her response to his violent outbursts. Clearly this was more than simple disobedience. We developed strategies to teach the mother how to make requests of her son and how to follow up if he was violent.

Getting back to Frank and his anxiety about his marriage, what would we find if we observed Frank and his wife interacting in their home or if they had a typical conversation in front of us in a clinical setting? Most clinicians assume that a complete picture of a person’s problems requires direct observation in naturalistic environments. But going into a person’s home, workplace, or school isn’t always possible or practical, so clinicians sometimes arrange *analog*, or similar, settings (Haynes, Yoshioka, Kloeze-man, & Bello, 2009). For example, one of us studies children with autism (a disorder characterized by social withdrawal and communication problems). The reasons for self-hitting (called *self-injurious*) behavior are discovered by placing the children in simulated classroom situations, such as sitting alone at a desk, working in a group, or being asked to complete a difficult task (Durand & Hieneman, 2008). Observing how the children behave in these different situations helps determine why they hit themselves. Other researchers are using hypnosis to produce analog assessments (conditions that mimic real-life clinical symptoms or situations) by inducing symptoms of psychopathology in healthy individuals to study these characteristics in a more controlled way (Oakley & Halligan, 2009). In one example, researchers studied delusions (a symptom of schizophrenia) while conducting brain scans in volunteers by hypnotizing them to believe some other force was controlling their arm movement (Blakemore, Oakley, & Frith, 2003). As you can see, researchers are using a variety of new creative techniques to study psychological disorders.

The ABCs of Observation

Observational assessment is usually focused on the here and now. Therefore, the clinician’s attention is usually directed to the immediate behavior, its antecedents (what happened just before the behavior), and its consequences

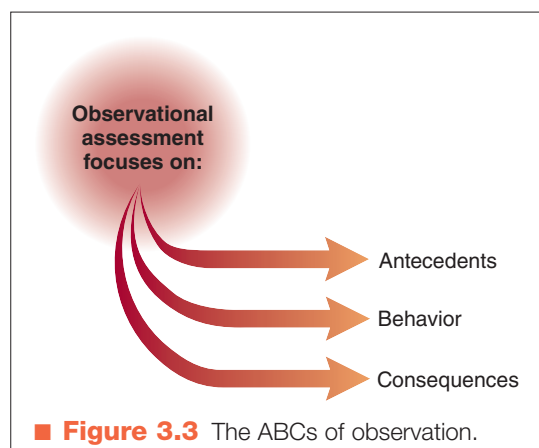
behavioral assessment Measuring, observing, and systematically evaluating (rather than inferring) the client’s thoughts, feelings, and behavior in the actual problem situation or context.

(what happened afterward) (Haynes et al., 2009). To use the example of the violent boy, an observer would note that the sequence of events was (1) his mother asking him to put his glass in the sink (antecedent), (2) the boy throwing the glass (behavior), and (3) his mother's lack of response (consequence). This antecedent–behavior–consequence sequence (the ABCs) might suggest that the boy was being reinforced for his violent outburst by not having to clean up his mess. And because there was no negative consequence for his behavior (his mother didn't scold or reprimand him), he will probably act violently the next time he doesn't want to do something (■ Figure 3.3).

This is an example of a relatively *informal observation*. A problem with this type of observation is that it relies on the observer's recollection, and interpretation, of the events. *Formal observation* involves identifying specific behaviors that are observable and measurable (called an *operational definition*). For example, it would be difficult for two people to agree on what "having an attitude" looks like. An operational definition, however, clarifies this behavior by specifying that this is "any time the boy does not comply with his mother's reasonable requests." Once the target behavior is selected and defined, an observer writes down each time it occurs, along with what happened just before (antecedent) and just after (consequence). The goal of collecting this information is to see whether there are any obvious patterns of behavior.

Self-Monitoring

People can also observe their own behavior to find patterns, a technique known as **self-monitoring** or *self-observation* (Haynes et al., 2009). People trying to quit smoking may write down the number of cigarettes they smoke and the times when and places where they smoke. This observation can tell them exactly how big their problem is and what situations lead them to smoke more (for example, talking on the phone) (Piasecki, Hufford, Solhan, & Trull, 2007). When behaviors occur only in private (such as purging by people with bulimia), self-monitoring is essential.



A more formal and structured way to observe behavior is through checklists and *behavior rating scales*, which are used as assessment tools before treatment and then periodically during treatment to assess changes in the person's behavior (Blacker, 2005; Myers & Collett, 2006). Of the many such instruments for assessing a variety of behaviors, the *Brief Psychiatric Rating Scale* (Clarkin, Howieson, & McClough, 2008), assesses 18 general areas of concern. Each symptom is rated on a 7-point scale from 0 (not present) to 6 (extremely severe). The rating scale screens for moderate to severe psychotic disorders and includes such items as somatic concern (preoccupation with physical health, fear of physical illness), guilt feelings (shame, remorse for past behavior), and grandiosity (exaggerated self-opinion, conviction of unusual power or abilities) (American Psychiatric Association, 2006).

A phenomenon known as *reactivity* can distort any observational data. Any time you observe how people behave, the mere fact of your presence may cause them to change their behavior (Haynes et al., 2009). To test reactivity, you can tell a friend you are going to record every time she says the word *like*. Just before you reveal your intent, however, count the times your friend uses this word in a 5-minute period. You will probably find that your friend uses the word less often when you are recording it. The same phenomenon occurs if you observe your own behavior, or self-monitor. Behaviors people want to increase, such as talking more in class, tend to increase, and behaviors people want to decrease, such as smoking, tend to decrease when they are self-monitored (for example, Hufford, Shields, Shiffman, Paty, & Balabanis, 2002).

Psychological Testing

We are confronted with so-called psychological tests in the popular press almost every week: "12 Questions to Test Your Relationship," "Every Guy's Private Marriage Checklist," "Are You a Type 'Z' Personality?" Many such tests are no more than entertainment. They are typically made up for the purposes of the article and include questions that, on the surface, seem to make sense. In reality, they usually tell us little.

In contrast, the tests used to assess psychological disorders must meet the strict standards we have noted: They must be reliable and valid.

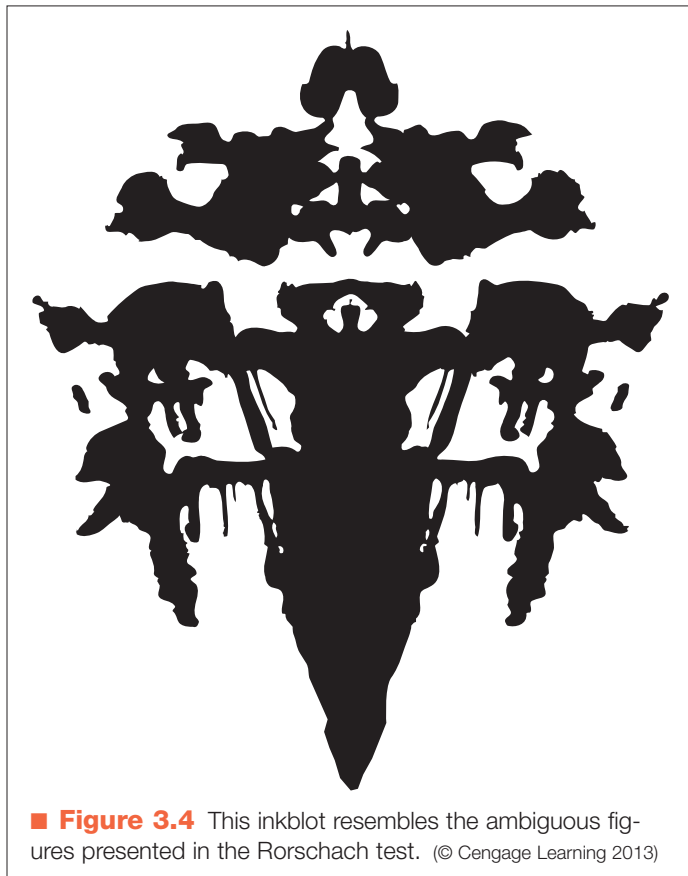
Psychological tests include specific tools to determine cognitive, emotional, or behavioral responses that might be associated with a specific disorder and more general ones that assess long-standing personality features, such as a tendency to be suspicious. Specialized areas include intelligence testing to determine the structure and patterns of cognition. Neuropsychological testing determines the possible contribution of brain damage or dysfunction to the patient's condition. Neuroimaging uses sophisticated technology to assess brain structure and function.

Projective Testing

To assess unconscious processes in psychological disorders, psychoanalysts have developed assessment measures known as **projective tests**. They include a variety of methods in which ambiguous stimuli, such as pictures of people or things, are presented to people who are asked to describe what they see. The theory here is that people project their own personality and unconscious fears onto other people and things—in this case, the ambiguous stimuli—and, without realizing it, reveal their unconscious thoughts to the therapist.

Because these tests are based in psychoanalytic theory, they are controversial. Even so, the use of projective tests is common, with a majority of clinicians administering them at least occasionally (Butcher, 2009). Three of the more widely used are the Rorschach inkblot test, the Thematic Apperception Test, and the sentence-completion method.

The *Rorschach inkblot test* is one of the early projective tests. In its current form, the test includes 10 inkblot pictures that serve as the ambiguous stimuli (■ Figure 3.4). The examiner presents the inkblots one by one to the person being assessed, who responds by telling what he or she sees. Unfortunately, much of the early use of the Rorschach is extremely controversial because of the lack of data on reliability or validity, among other things. Until relatively recently, therapists administered the test any way they saw fit, although one of the most important tenets of assessment is that the same test be given in the same way



■ **Figure 3.4** This inkblot resembles the ambiguous figures presented in the Rorschach test. (© Cengage Learning 2013)

each time—that is, according to standardized procedures. If you encourage someone to give more detailed answers during one testing session but not during a second session, you may get different responses as the result of your administering the test differently on the two occasions—not because of problems with the test or administration by another person (interrater reliability).

To respond to the concerns about reliability and validity, John Exner developed a standardized version of the Rorschach inkblot test, called the *Comprehensive System* (Exner, 2003). Exner's system of administering and scoring the Rorschach specifies how the cards should be presented, what the examiner should say, and how the responses should be recorded (Clarkin et al., 2008). Varying these steps can lead to varying responses by the patient. Still, critics of the Rorschach question whether research on the Comprehensive System supports its use for people with psychological disorders (Garb, Wood, Lilienfeld, & Nezworski, 2005; Hunsley & Mash, 2011).

The *Thematic Apperception Test (TAT)* is perhaps the best-known projective test after the Rorschach (Clarkin et al., 2008). It consists of a series of 31 cards: 30 with pictures on them and 1 blank card, although only 20 cards are typically used during each administration. The instructions ask the person to tell a dramatic story about the picture. The tester presents the pictures and tells the patient, "This is a test of imagination, one form of intelligence." The person being assessed can "let your imagination have its way, as in a myth, fairy story, or allegory" (Stein, 1978, p. 186). Again like the Rorschach, the TAT is based on the notion that people will reveal their unconscious mental processes in their stories about the pictures.

Several variations of the TAT have been developed for different groups, including a Children's Apperception Test (CAT) and a Senior Apperception Technique (SAT). In addition, modifications of the test have evolved for use with a variety of racial and ethnic groups (Bellak, 1975; Dana, 1996). These modifications have included changes not only in the appearance of people in the pictures, but also in the situations depicted. Like the Comprehensive System used with the Rorschach, researchers have developed formal scoring systems for TAT stories, including the Social Cognition and Object Relations Scale (Westen, 1991).

Unfortunately, the TAT and its variants continue to be used inconsistently. How the stories people tell about these pictures are interpreted depends on the examiner's frame of reference and what the patient may say. It is not surpris-

self-monitoring The action by which clients observe and record their own behaviors as either an assessment of a problem and its change or a treatment procedure that makes them more aware of their responses. Also known as *self-observation*.

projective tests Psychoanalytically based measure that presents ambiguous stimuli to clients on the assumption that their responses can reveal their unconscious conflicts. Such tests are inferential and lack high reliability and validity.

ing, therefore, that questions remain about its use in psychopathology (Hunsley & Mash, 2011).

Most clinicians who use projective tests have their own methods of administration and interpretation. When used to get people to open up and talk about how they feel, the ambiguous stimuli in these tests can be valuable tools. However, their relative lack of reliability and validity makes them less useful as diagnostic tests.

Personality Inventories

The questions in psychological tests published in mainstream magazines typically make sense when you read them. This is called having *face validity*: The wording of the questions seems to fit the type of information desired. But is this necessary? Paul Meehl (1945) pointed out that what is necessary from these types of tests is not whether the questions make sense on the surface but, rather, what the answers predict. If we find that people who have schizophrenia tend to respond “true” to “I have never been in love with anyone,” then it doesn’t matter whether we have a theory of love and schizophrenia. What matters is if people with certain disorders tend, as a group, to answer a variety of questions in a certain way, this pattern may predict who else has this disorder. The content of the questions becomes irrelevant. This insight gave rise to a whole field of study on **personality inventories**.

Although many personality inventories are available, the most widely used personality inventory in the United States is the *Minnesota Multiphasic Personality Inventory (MMPI)*, which was developed in the late 1930s and early 1940s and first published in 1943 (Hathaway & McKinley, 1943). In stark contrast to projective tests, which rely heavily on theory for an interpretation, the MMPI and similar inventories are based on an *empirical* approach—that is, the collection and evaluation of data. The administration of the MMPI is straightforward. The individual being assessed reads statements and answers either “true” or “false.” Following are some statements from the MMPI:

Cry readily
Often happy for no reason
Am being followed
Fearful of things or people that can’t hurt me

There is little room for interpretation of MMPI responses. A problem with administering the MMPI, however, is the time and tedium of responding to the 550 items on the original version and now the 567 items on the MMPI-2 (published in 1989). A version of the MMPI that is appropriate for adolescents is also available—MMPI-A (published in 1992)—and other versions are being adapted for people in different cultures (Okazaki, Okazaki, & Sue, 2009). Individual responses on the MMPI are not examined; instead, the pattern of responses is reviewed to see whether it resembles patterns from groups of people who have specific disorders. Each group is represented on separate standard scales (Butcher & Perry, 2008) (Table 3.1).

Fortunately, clinicians can have these responses scored by computer; the program also includes an interpretation of the

results, thereby reducing problems of reliability. One concern that arose early in the development of the MMPI was the potential of some people to answer in ways that would downplay their problems; skilled individuals would ascertain the intent of statements such as “Worry about saying things that hurt people’s feelings” and fake the answers. To assess this possibility, the MMPI includes additional scales that determine the validity of each administration. For example, on the Lie scale, a statement such as “Have hurt someone when angry,” when answered “false” might be an indication that the person may be falsifying answers to look good. The other scales are the Infrequency scale, which measures false claims about psychological problems or determines whether the person is answering randomly, and the Subtle Defensiveness scale, which assesses whether the person sees herself in unrealistically positive ways (Butcher & Perry, 2008).

■ Figure 3.5 is an MMPI *profile* or summary of scores from an individual being clinically assessed. Before we tell you why this 27-year-old man (we’ll call him James S.) was being evaluated, let’s see what his MMPI profile tells us about him (note that these scores were obtained on the original version of the MMPI). The first three data points represent scores on the validity scales; the high scores on these scales were interpreted to mean that James S. made a naive attempt to look good for the evaluator and may have been trying to fake an appearance of having no problems. Another important part of his profile is the very high score on the psychopathic deviation scale, which measures the tendency to behave in antisocial ways. The interpretation of this score from the assessing clinician is that James S. is “aggressive, unreliable, irresponsible; unable to learn from experience; may initially make a good impression but then psychopathic features will surface in longer interactions or under stress.”

James S. was a young man with a criminal record that began in his childhood. He was evaluated as part of his trial for kidnapping, raping, and murdering a middle-aged woman. Throughout his trial, he made up a number of contradictory stories to make himself look innocent (remember his high scores on the validity scales). However, there was overwhelming evidence of his guilt, and he was sentenced to life in prison. His answers on the MMPI resembled those of others who act in violent and antisocial ways.

The MMPI is one of the most extensively researched assessment instruments in psychology (Cox, Weed, & Butcher, 2009). The original standardization sample—the people who first responded to the statements and set the standard for answers—included many people from Minnesota who had no psychological disorders and several groups of people who had particular disorders. The more recent versions of this test, the MMPI-2 and the MMPI-A, eliminate problems with the original version (Ranson, Nichols, Rouse, & Harrington, 2009). For example, some questions were sexist. One item on the original version asks the respondent to say whether she has ever been sorry she is a girl (Worell & Remer, 1992). Another item states, “Any man who is willing to work hard has a good chance of succeeding” (Hathaway & McKinley, 1943). The MMPI-2 has also been

Table 3.1 Scales of the MMPI-2

Validity Scales	Characteristics of High Scorers
“Cannot say” score	Reading difficulties, guardedness, confusion and distractibility, depression, rebellion, or obsessiveness
Response inconsistency	Responding to questions in a manner inconsistent with psychological disorder
Infrequency	Exhibit randomness of responses or psychotic psychopathology
The back side F	Changing the way the questions are answered at the end of the test
Psychiatric infrequency	Claiming more psychiatric symptoms than expected
Lie	Dishonest, deceptive, and/or defended
Subtle defensiveness	Defensive through presenting themselves as healthier than they are
Superlative self-presentation	Claiming extreme positive characteristics and high moral values, and denying adjustment problems
Clinical Scales	Characteristics of High Scorers
Hypochondriasis	Somatizers, possible medical problems
Depression	Dysphoric, possibly suicidal
Hysteria	Highly reactive to stress, anxious, and sad at times
Psychopathic deviate	Antisocial, dishonest, possible drug abusers
Masculinity–femininity	Exhibit lack of stereotypical masculine interests, aesthetic and artistic
Paranoia	Exhibit disturbed thinking, ideas of persecution, possibly psychotic
Psychasthenia	Exhibit psychological turmoil and discomfort, extreme anxiety
Schizophrenia	Confused, disorganized, possible hallucinations
Mania	Manic, emotionally labile, unrealistic self-appraisal
Social introversion	Very insecure and uncomfortable in social situations, timid

*Excerpted from the MMPI(R)-2 (Minnesota Multiphasic Personality Inventory (R)-2) Manual for Administration. Copyright © 2001 by the Regents of the University of Minnesota. Used by permission of the University of Minnesota Press. All rights reserved. “MMPI-2” and “Minnesota Multiphasic Personality Inventory-2” are trademarks owned by the Regents of the University of Minnesota.

standardized with a sample that reflects the 1980 U.S. Census figures, including African Americans and Native Americans for the first time. In addition, new items have been added that deal with contemporary issues such as type A personality, low self-esteem, and family problems.

Intelligence Testing

In 1904 a French psychologist, Alfred Binet, and his colleague, Théodore Simon, were commissioned by the French government to develop a test that would identify “slow learners” who would benefit from remedial help. The two psychologists identified a series of tasks that presumably measured the skills children need to succeed in school, including tasks of attention, perception, memory, reasoning, and verbal comprehension. Binet and Simon gave their original series of tasks to a large number of children; they then eliminated tasks that did not separate the slow learners from the children who did well in school. After several revisions and sample administrations, they had a test that was relatively easy to administer and that did what it was designed to do—predict academic success. In 1916, Lewis Terman of Stanford University translated a

revised version of this test for use in the United States; it became known as the *Stanford-Binet test*.

The test provided a score known as an **intelligence quotient**, or **IQ**. Initially, IQ scores were calculated by using the child’s *mental age*. For example, a child who passed all questions on the 7-year-old level and none of the questions on the 8-year-old level received a mental age of 7. This mental age was then divided by the child’s *chronological age* and multiplied by 100 to get the IQ score. However, there were problems with using this type of formula for calculating an IQ score. Current tests use what is called a *deviation IQ*. A person’s score is compared only to scores of others of the same age. The IQ score, then, is an estimate of how much a child’s performance in school will deviate

personality inventories Self-report questionnaire that assesses personal traits by asking respondents to identify descriptions that apply to themselves.

intelligence quotient (IQ) Score on an intelligence test estimating a person’s deviation from average test performance.

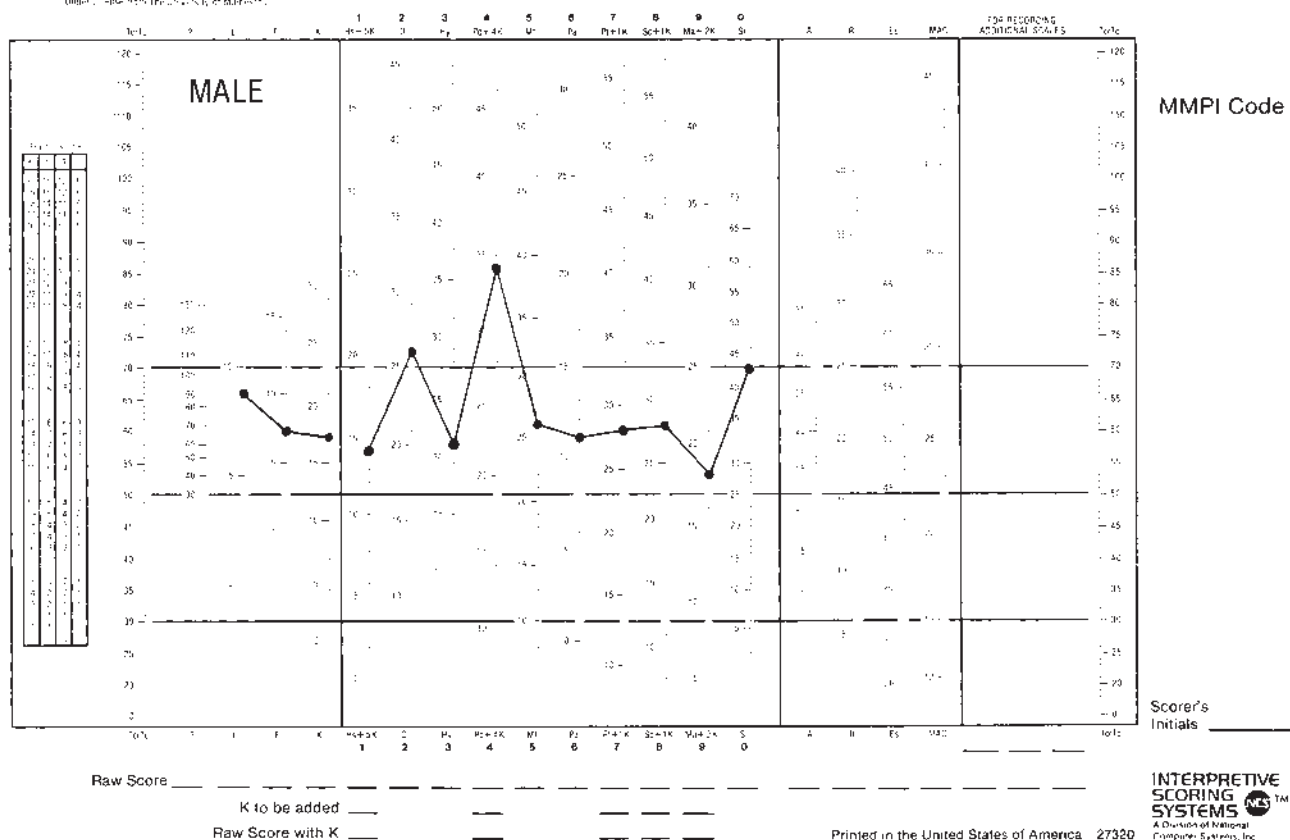


MINNESOTA MULTIPHASIC
PERSONALITY INVENTORY
S.R. Hathaway and J.C. McKinley
PROJECT

NAME _____
ADDRESS _____
OCCUPATION _____ DATE TESTED ____/____/____
EDUCATION _____ AGE _____
MARITAL STATUS _____ REFERRED BY _____

MINNESOTA MULTIPHASIC PERSONALITY INVENTORY
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■ **Figure 3.5** Minnesota Multiphasic Personality Inventory Profile Form. (Copyright © 1942, 1943, 1948, 1970, 1976, 1982, by the Regents of the University of Minnesota. Used by permission of the University of Minnesota Press. All rights reserved. "MMPI" and "Minnesota Multiphasic Personality Inventory" are trademarks owned by the Regents of the University of Minnesota.)

from the average performance of others of the same age (Gottfredson & Saklofske, 2009).

In addition to the revised version of the Stanford-Binet (*Stanford-Binet V*; Roid & Pomplun, 2005), there is another widely used set of intelligence tests, developed by psychologist David Wechsler. The Wechsler tests include versions for adults (*Wechsler Adult Intelligence Scale*, third edition, or *WAIS-III*), children (*Wechsler Intelligence Scale for Children*, fourth edition, or *WISC-IV*), and young children (*Wechsler Preschool and Primary Scale of Intelligence*, third edition, or *WPPSI-III*). All these tests contain *verbal scales* (which measure vocabulary, knowledge of facts, short-term memory, and verbal reasoning skills) and *performance scales* (which assess psychomotor abilities, nonverbal reasoning, and ability to learn new relationships) (Hunsley & Mash, 2011).

One of the biggest mistakes nonpsychologists make is to confuse IQ with intelligence. An IQ score significantly higher than average means the person has a significantly greater than average chance of doing well in our educa-

tional system. By contrast, a score significantly lower than average suggests the person will probably not do well in school. Does a lower-than-average IQ score mean a person is not intelligent? Not necessarily. First, there are numerous reasons for a low score. For example, if the IQ test is administered in English and that is not the person's native language, the results will be affected.

Perhaps more important, however, is the continued development of models that answer the question "What constitutes intelligence?" Remember that the IQ tests measure abilities such as memory, reasoning, and verbal comprehension. But do these skills represent the totality of what we consider intelligence? Some recent theorists believe that what we think of as intelligence involves more, including the ability to adapt to the environment, the ability to generate new ideas, and the ability to process information efficiently (Gottfredson & Saklofske, 2009). In general, however, IQ tests tend to be reliable, and to the extent that they predict academic success, they are valid assessment tools.



©Ellen B. Senis/The Image Works

▲ This child is concentrating on a standard psychological assessment test.

Neuropsychological Testing

Sophisticated tests now exist that can pinpoint the location of brain dysfunction. Fortunately, these techniques are generally available and relatively inexpensive, and technological advances in interactive teleconferencing have led to efforts to conduct such assessments for people in remote areas (Swanda & Haaland, 2009). **Neuropsychological tests** measure abilities in areas such as receptive and expressive language, attention and concentration, memory, motor skills, perceptual abilities, and learning and abstraction.

A fairly simple neuropsychological test often used with children is the *Bender Visual-Motor Gestalt Test* (Brannigan & Decker, 2006). A child is given a series of cards on which are drawn various lines and shapes. The task is for the child to copy what is drawn on the card. The errors on the test are compared to test results of other children of the same age; if the number of errors exceeds a certain amount, brain dysfunction is suspected. Two advanced tests of organic (brain) damage that allow more precise determinations of the location of the problem are the *Luria-Nebraska Neuropsychological Battery* (Golden, Hammeke, & Purisch, 1980) and the *Halstead-Reitan Neuropsychological Battery* (Reitan & Davison, 1974). These tests assess a variety of skills in adolescents and adults. For example, the Halstead-Reitan Neuropsychological Battery includes the *Rhythm Test* (which asks the person to compare rhythmic beats, thus testing sound recognition, attention, and concentration), the *Strength of Grip Test* (which compares the grips of the right and left hands), and the *Tactile Performance Test* (which requires the test taker to place wooden blocks in a form board while blindfolded, thus testing learning and memory skills) (McCaffrey, Lynch, & Westervelt, 2011).

Research on the validity of neuropsychological tests suggests they may be useful for detecting organic damage. One study found that the Halstead-Reitan and the Luria-Nebraska test batteries were equivalent in their abilities to detect damage and were about 80% correct (Goldstein &

Shelly, 1984). However, these types of studies raise the issue of **false positives** and **false negatives**. For any assessment strategy, there will be times when the test shows a problem when none exists (false-positive results) and times when no problem is found even though some difficulty is present (false-negative results). Neuropsychological tests therefore are used primarily as screening devices and are routinely paired with other assessments to improve the likelihood that real problems will be found.

Neuroimaging: Pictures of the Brain

In recent years we have developed the ability to look inside the brain and take increasingly accurate pictures of its structure and function using a technique called **neuroimaging** (Kim, Schulz, Wilde, & Yudofsky, 2008). Neuroimaging can be divided into two categories: (1) procedures that examine the structure of the brain, such as the size of various parts and whether there is any damage, and (2) procedures that examine the actual functioning of the brain by mapping blood flow and other metabolic activity.

Images of Brain Structure

The first neuroimaging technique, developed in the early 1970s, uses multiple X-ray exposures of the brain from different angles. As with any X ray, these are partially blocked or attenuated more by bone and less by brain tissue. The degree of blockage is picked up by detectors in the opposite side of the head. A computer then reconstructs pictures of various slices of the brain. This procedure, which takes about 15 minutes, is called a *computerized axial tomography (CAT) scan* or *CT scan*. CT scans are particularly useful in locating brain tumors, injuries, and other structural and anatomical abnormalities. One difficulty, however, is that these scans, like all X rays, involve repeated X radiation, which poses some risk of cell damage (Kim et al., 2008).

Several more recently developed procedures give greater accuracy than a CT scan without the inherent risks of X-ray tests. In nuclear *magnetic resonance imaging (MRI)*, the patient's head is placed in a high-strength magnetic field through which radio-frequency signals are transmitted. These signals "excite" the brain tissue, altering the protons in the hydrogen atoms. The alteration is measured, along with the time it takes the protons to "relax" or return to normal. Where there are lesions or damage, the signal is lighter or darker (Kim et al., 2008). Technology now exists that allows the computer to view the brain in

neuropsychological testing Assessment of brain and nervous system functioning by testing an individual's performance on behavioral tasks.

false positive Assessment error in which pathology is reported (that is, test results are positive) when none is actually present.

false negative Assessment error in which no pathology is noted (that is, test results are negative) when one is actually present.

neuroimaging Sophisticated computer-aided procedure that allows noninvasive examination of nervous system structure and function.



Richard Price/Getty Images

▲ The patient is being positioned for an MRI scan.

layers, which enables precise examination of the structure. Although an MRI is more expensive than a CT scan and originally took as long as 45 minutes, this is changing as technology improves. Another disadvantage of MRI at present is that someone undergoing the procedure is totally enclosed inside a narrow tube with a magnetic coil surrounding the head. People who are somewhat claustrophobic often cannot tolerate an MRI.

Images of Brain Functioning

Several widely used procedures are capable of measuring the actual functioning of the brain. The first is called *positron emission tomography (PET) scan*. Subjects undergoing a PET scan are injected with a tracer substance attached to radioactive isotopes, or groups of atoms that react distinctively. This substance interacts with blood, oxygen, or glucose. When parts of the brain become active, blood, oxygen, or glucose rushes to these areas of the brain, creating “hot spots” picked up by detectors that identify the location of the isotopes. Thus, we can learn what parts of the brain are working and what parts are not. These images can be superimposed on MRI images to show the precise location of the active areas. PET scans are used

increasingly to look at varying patterns of metabolism that might be associated with different disorders. Recent PET scans have demonstrated that many patients with early Alzheimer’s-type dementia show reduced glucose metabolism in the parietal lobes. Other intriguing findings have been reported for obsessive-compulsive disorder and bipolar disorder. Because PET scanning is expensive, these facilities are available only in large medical centers.

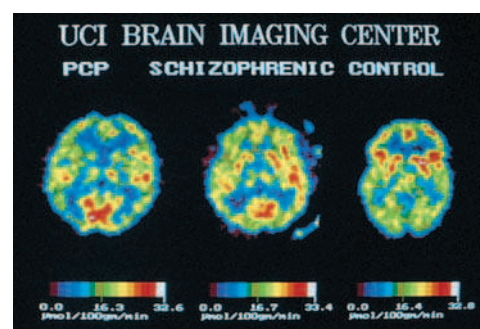
A second procedure used to assess brain functioning is called *single photon emission computed tomography (SPECT)*. It works much like PET, although a different tracer substance is used and this procedure is somewhat less accurate. It is also less expensive, however, and requires far less sophisticated equipment to pick up the signals. Therefore, SPECT is used more often than PET scans.

The most exciting advances involve MRI procedures that have been developed to work more quickly than the regular MRI (Kim et al., 2008). These procedures take only milliseconds and therefore can actually take pictures of the brain at work, recording its changes from one second to the next. Because these procedures measure the functioning of the brain, they are called *functional MRI*, or *fMRI*. fMRI procedures have largely replaced PET scans in the leading brain-imaging centers because they allow researchers to see the immediate response of the brain to a brief event, such as seeing a new face. BOLD-fMRI (Blood-Oxygen-Level-Dependent fMRI) is currently the most common fMRI technique used to study psychological disorders (Kim et al., 2008).

Psychophysiological Assessment

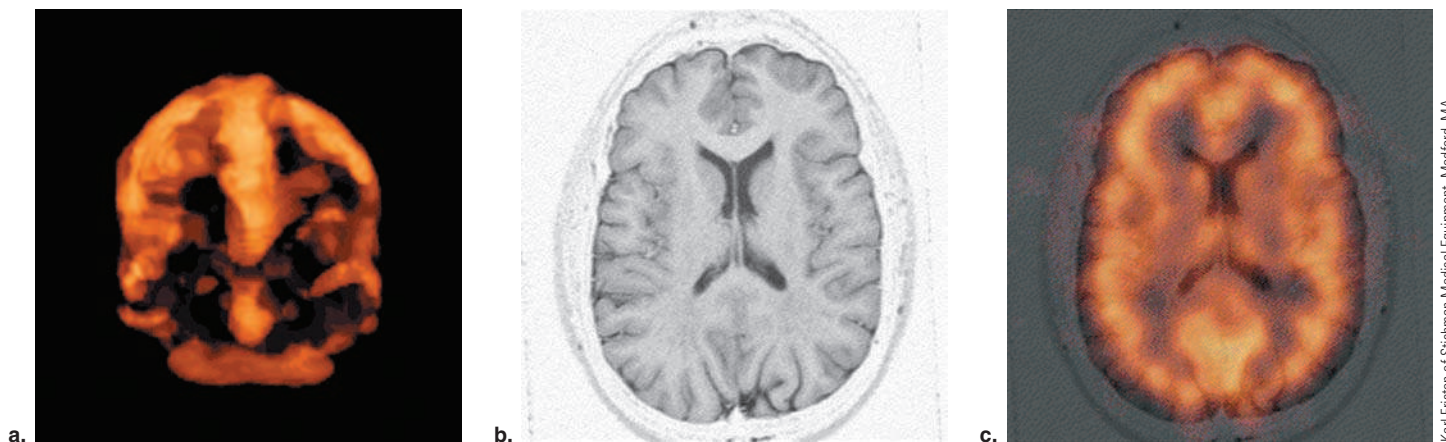
Yet another method for assessing brain structure and function specifically and nervous system activity generally is called **psychophysiological assessment**. As the term implies, *psychophysiology* refers to measurable changes in the nervous system that reflect emotional or psychological events. The measurements may be taken either directly from the brain or peripherally from other parts of the body.

Frank feared that he might have seizures. If we had any reason to suspect he might have periods of memory loss or



Dr. Mony Buchsbaum/Peter Arnold, Inc./Photo Library

▲ The PET scans compare activity in the brain of a drug abuser (*left*), a person with schizophrenia (*center*), and in a normal brain (*right*).



▲ A horizontal brain section (a) in a SPECT image clearly reveals parietal lobe damage in a person with schizophrenia. Images (b) and (c) are MRI photographs. SPECT images show metabolic activity and thus indicate the relationship between the person's brain and the person's behavior. The higher-resolution MRI images show tissue variations.

exhibit bizarre, trancelike behavior; if only for a short period, it would be important for him to have an **electroencephalogram (EEG)**. Measuring electrical activity in the head related to the firing of a specific group of neurons reveals brain wave activity; brain waves come from the low-voltage electrical current that runs through the neurons. In an EEG, electrodes are placed directly on various places on the scalp to record the different low-voltage currents.

We have learned much about EEG patterns in the past decades (Kim et al., 2008). Usually we measure ongoing electrical activity in the brain. When brief periods of EEG patterns are recorded in response to specific events, such as hearing a psychologically meaningful stimulus, the response is called an *event-related potential (ERP)* or *evoked potential*. EEG patterns are often affected by psychological or emotional factors and can be an index of these reactions.

In a normal, healthy, relaxed adult, waking activities are characterized by a regular pattern of changes in voltage termed *alpha waves*. Many types of stress-reduction treatments attempt to *increase* the frequency of the alpha waves, often by relaxing the patients in some way. The alpha wave pattern is associated with relaxation and calmness. During sleep, we pass through several stages of brain activity, at least partially identified by EEG patterns. During the deepest, most relaxed stage, typically occurring 1 to 2 hours after a person falls asleep, EEG recordings show a pattern of *delta waves*. These brain waves are slower and more irregular than the alpha waves, which is normal for this stage of sleep. If frequent delta wave activity occurred during the waking state, it might indicate dysfunction of localized areas of the brain.

Psychophysiological assessment of other bodily responses may also play a role in assessment. These responses include heart rate, respiration, and *electrodermal responding*, formerly referred to as *galvanic skin response (GSR)*, which is a measure of sweat gland activity con-

trolled by the peripheral nervous system. Assessing psychophysiological response to emotional stimuli is important in many disorders, one being posttraumatic stress disorder. Stimuli such as sights and sounds associated with the trauma evoke strong psychophysiological responses, even if the patient is not fully aware that this is happening.

Physiological measures are also important in the assessment and treatment of conditions such as headaches and hypertension (Nicassio, Meyerowitz, & Kerns, 2004); they form the basis for the treatment we call *biofeedback*. In biofeedback, levels of physiological responding, such as blood pressure readings, are fed back to the patient (provided on a continuous basis) by meters or gauges so that the patient can try to regulate these responses.

Physiological assessment requires a great deal of skill and some technical expertise. Even when administered properly, the measures sometimes produce inconsistent results because of procedural or technical difficulties or the nature of the response itself. Therefore, only clinicians specializing in certain disorders in which these measures are particularly important are likely to make extensive use of psychophysiological recording equipment, although more straightforward applications, such as monitoring heart rate during relaxation exercises, are more common. More sophisticated psychophysiological assessment is most often used in theoretical investigations of the nature of certain psychological disorders, particularly emotional disorders (Barlow, 2002; Ovsiew, 2005).

psychophysiological assessment Measurement of changes in the nervous system reflecting psychological or emotional events such as anxiety, stress, and sexual arousal.

electroencephalogram (EEG) Measure of electrical activity patterns in the brain, taken through electrodes placed on the scalp.

Concept Check 3.1

Part A

The mental status exam includes five categories: (a) appearance and behavior, (b) thought processes, (c) mood and affect, (d) intellectual functioning, and (e) sensorium. Identify which part of the mental status exam is being performed in the following situations.

1. Dr. Swan listened carefully to Joyce's speech pattern, noting its speed, content, and continuity. He noticed no loose association but did hear indications of delusional thoughts and visual hallucinations. _____
2. Andrew arrived at the clinic accompanied by police, who had found him dressed only in shorts although the temperature was 23°F. He was reported to the police by someone who saw him walking slowly down the street, making strange faces, and talking to himself. _____
3. When Lisa was brought to Dr. Miller's office, he asked if she knew the date and time, her identity, and where she was. _____

4. Dr. Jones viewed as inappropriate Tim's laughter after discussing his near-fatal incident and noted that Tim appeared to be elated. _____
5. Holly's vocabulary and memory seemed adequate, leading Dr. Adams to estimate that she was of average intelligence. _____

Part B

Check your understanding of reliability and validity by marking each test R (reliable) or NR (not reliable) and V (valid) or NV (not valid).

6. ___, ___ EEG to show electrical activity in the brain of someone who has seizures
7. ___, ___ Rorschach inkblots
8. ___, ___ Structured interviews with definite answers
9. ___, ___ Sentence completion

Diagnosing Psychological Disorders

› How is psychiatric diagnosis carried out?

Thus far, we have looked at Frank's functioning on an individual basis—that is, we have closely observed his behavior, cognitive processes, and mood, and we have conducted semistructured interviewing, behavioral assessment, and psychological tests. These operations tell us what is unique about Frank, not what he may have in common with other individuals.

Learning how Frank may resemble other people in terms of the problems he presents is important for several reasons. If in the past people came in with similar problems or psychological profiles, we can go back and find a lot of information from their cases that might be applicable to Frank's case. We can see how the problems began for those other individuals, what factors seemed influential, and how long the problem or disorder lasted. Did the problem in the other cases just go away on its own? If not, what kept it going? Did it need treatment? Most important, what treatments seemed to relieve the problem for those other individuals? These general questions are useful because they evoke a wealth of clinical and research information that enables the investigator to make certain inferences about what will happen next and what treatments may work. In other words, the clinician can form general conclusions and establish a *prognosis*, a term we discussed in

Chapter 1 that refers to the likely future course of a disorder under certain conditions.

Both strategies are essential in the study and treatment of psychopathology. If we want to determine what is unique about an individual's personality, cultural background, or circumstances, we use what is known as an **idiographic strategy**. This information lets us tailor our treatment to the person. But to take advantage of the information already accumulated on a particular problem or disorder, we must be able to determine a general class of problems to which the presenting problem belongs. This is known as a **nomothetic strategy**. When we identify a specific psychological disorder, we are making a diagnosis. We can also identify a general class or grouping of problems by determining a particular personality profile on a psychological test such as the MMPI. Before proceeding, let's define some additional terms more precisely.

The term **classification** itself is broad, referring simply to any effort to construct groups or categories and to assign objects or people to these categories on the basis of their shared attributes or relations—a nomothetic strategy. If the classification is in a scientific context, it is most often called **taxonomy**, which is the classification of entities for scientific purposes, such as insects, rocks, or—if the sub-

ject is psychology—behaviors. If you apply a taxonomic system to psychological or medical phenomena or other clinical areas, you use the word **nosology**. All diagnostic systems used in health-care settings, such as those for infectious diseases, are nosological systems. The term **nomenclature** describes the names or labels of the disorders that make up the nosology (for example, anxiety or mood disorders). Most mental health professionals use the classification system contained in the *DSM-IV-TR* (American Psychiatric Association, 2000). During the past several years, there have been enormous changes in how psychopathology is classified. Because these developments affect so much of what clinicians do, we examine carefully the processes of classification and diagnosis as they are used in psychopathology. We look first at different approaches, examine the concepts of reliability and validity as they pertain to diagnosis, and then discuss our current system of classification, the *DSM-IV*.

Classification Issues

Classification is at the heart of any science, and much of what we have said about it is common sense. When we are dealing with human behavior or human behavioral disorders, however, the subject of classification becomes controversial. Some people have questioned whether it is proper or ethical to classify human behavior. Even among those who recognize the necessity of classification, major controversies have arisen in several areas. Within psychopathology, for example, definitions of “normal” and “abnormal” are questioned, as is the assumption that a behavior or cognition is part of one disorder and not another. Some would prefer to talk about behavior and feelings on a continuum from happy to sad or fearful to nonfearful rather than to create such categories as mania, depression, and phobia. For better or worse, classifying behavior and people is something we all do. Few of us talk about our own emotions or those of our friends by using a number on a scale (where 0 is totally unhappy and 100 is totally happy), although this approach might be more accurate. (“How do you feel about that?” “About 65.”) Rather, we talk about being happy, sad, angry, depressed, fearful, and so on.

Categorical and Dimensional Approaches

How can we classify human behavior? We have already alluded to two possibilities. We can have distinct categories of disorders that have little or nothing in common with one another; for example, you either hear voices talking to you from the refrigerator (auditory hallucination) and have other symptoms of schizophrenia or you don’t. Alternatively, we can quantify the various attributes of a psychological disorder along several dimensions, coming up with a composite score. An MMPI profile is a good example; another is “dimensionalizing” a disorder—for example, depression—on a continuum of severity, from feeling mildly depressed in the morning (something most of us experience once in a while) to feeling so deeply depressed and hopeless that suicide is the only solution. Each system

has both strengths and faults (Brown & Barlow, 2005; Helzer et al., 2008; Widiger & Edmundson, 2011; Widiger & Samuel, 2005).

The **classical** (or pure) **categorical approach** to classification assumes that every diagnosis has a clear underlying pathophysiological cause, such as a bacterial infection or a malfunctioning endocrine system, and that each disorder is unique. When diagnoses are thought of in this way, the causes could be psychological or cultural instead of pathophysiological, but there is still only one set of causative factors per disorder, which does not overlap with those of other disorders. Because each disorder is fundamentally different from every other, we need only one set of defining criteria, which everybody in the category has to meet. If the criteria for a major depressive episode are (1) the presence of depressed mood, (2) significant weight loss or gain when not dieting, (3) diminished ability to think or concentrate, and seven additional specific symptoms, then, to be diagnosed with depression, an individual would have to meet all of the criteria. In that case, according to the classical categorical approach, the clinician would know the cause of the disorder.

Classical categorical approaches are useful in medicine. It is extremely important for a physician to make accurate diagnoses. If a patient has a fever accompanied by stomach pain, the doctor must determine quickly whether the cause is stomach flu or an infected appendix. To understand the cause of symptoms (infected appendix) is to know what treatment will be effective (surgery). But if someone is depressed or anxious, is there a similar type of underlying cause? Probably not. Most psychopathologists believe psychological and social factors interact with biological factors to produce a disorder. Therefore, the mental health field has not adopted a classical categorical model of psychopathology (Frances & Widiger, 1986; Helzer et al., 2008; Regier, Narrow, Kuhl, & Kupfer, 2009; Widiger & Edmundson, 2011).

A second strategy is a **dimensional approach**, in which we note the variety of cognitions, moods, and be-

idiographic strategy A close and detailed investigation of an individual emphasizing what makes that person unique. (Compare with *nomothetic strategy*.)

nomothetic strategy Identification and examination of large groups of people with the same disorder to note similarities and develop general laws.

classification Assignment of objects or people to categories on the basis of shared characteristics.

taxonomy System of naming and classification (for example, of specimens) in science.

nosology Classification and naming system for medical and psychological phenomena.

nomenclature In a naming system or nosology, the actual labels or names that are applied. In psychopathology, these include mood disorders and eating disorders.

classical categorical approach Classification method founded on the assumption of clear-cut differences among disorders, each with a different known cause. Also known as *pure categorical approach*.

dimensional approach Method of categorizing characteristics on a continuum rather than on a binary, either-or, or all-or-none basis.

haviors with which the patient presents and quantify them on a scale. For example, on a scale of 1 to 10, a patient might be rated as severely anxious (10), moderately depressed (5), and mildly manic (2) to create a profile of emotional functioning (10, 5, 2). Although dimensional approaches have been applied to psychopathology, they have been relatively unsatisfactory until now (Brown & Barlow, 2009; Frances, 2009; Regier et al., 2009; Widiger & Edmundson, 2011). Most theorists have not been able to agree on how many dimensions are required: some say 1 dimension is enough; others have identified as many as 33 (Millon, 1991, 2004).

A third strategy for organizing and classifying behavioral disorders has found increasing support in recent years. It combines some features of each of the former approaches. Called a **prototypical approach**, this alternative identifies certain essential characteristics of an entity so that you (and others) can classify it, but it also allows certain nonessential variations that do not necessarily change the classification. For example, if someone were to ask you to describe a dog, you could easily give a general description, but you might not exactly describe a specific dog. Dogs come in different colors, sizes, and even species, but they all share certain doggy characteristics that allow you to classify them separately from cats. Thus, requiring a certain number of prototypical criteria and only some of an additional number of criteria is adequate. This system is not perfect because there is a greater blurring at the boundaries of categories, and some symptoms apply to more than one disorder. However, it has the advantage of fitting best with the current state of our knowledge of psychopathology, and it is relatively user-friendly.

DSM Disorder Criteria Summary

Major Depressive Episode

Features of a major depressive episode include the following:

- Depressed mood most of the day (or irritable mood in children or adolescents)
- Markedly diminished interest or pleasure in most daily activities
- Significant weight loss when not dieting or weight gain, or significant decrease or increase in appetite
- Ongoing insomnia or hypersomnia
- Psychomotor agitation or retardation
- Fatigue or loss of energy
- Feelings of worthlessness or excessive guilt
- Diminished ability to think or concentrate
- Recurrent thoughts of death, suicide ideation, or suicide attempt

Source: Based on DSM-IV-TR. Reprinted with permission from *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text revision). © 2000 American Psychiatric Association.



▲ Despite their wide physical variation, all dogs belong to the same class of animals.

DSM-IV-TR

When a prototypical approach is used in classifying a psychological disorder, many possible features or properties of the disorder are listed and any candidate must meet enough of them to fall into that category. Consider the *DSM-IV-TR* criteria defining a major depressive episode.

As you can see, the criteria include many nonessential symptoms, but if you have either depressed mood or marked loss of interest or pleasure in most activities and at least four of the remaining eight symptoms, you come close enough to the prototype to meet the criteria for a major depressive episode. One person might have depressed mood, significant weight loss, insomnia, psychomotor agitation, and loss of energy, whereas another person who also meets the criteria for major depressive episode might have markedly diminished interest or pleasure in activities, fatigue, feelings of worthlessness, difficulty thinking or concentrating, and ideas of committing suicide. Although both have the requisite five symptoms that bring them close to the prototype, they look different because they share only one symptom. This is a good example of a prototypical category. The *DSM-IV-TR* is based on this approach.

Reliability

Any system of classification should describe specific subgroups of symptoms that are clearly evident and can be readily identified by experienced clinicians. If two clinicians interview the patient at separate times on the same day (and assuming the patient's condition does not change during the day), the two clinicians should see, and perhaps measure, the same set of behaviors and emotions. The psychological disorder can thus be identified reliably. If the disorder is not readily apparent to both clinicians, the resulting diagnoses might represent bias. For example, someone's clothes might provoke some comment. One of your friends might later say, "She looked kind of sloppy tonight." Another might comment, "No, that's just a real funky look—she's right in style." Perhaps a third friend would say, "Actually, I thought she was dressed kind of neatly." You might wonder if they had

all seen the same person. In any case, there would be no reliability to their observations. Getting your friends to agree about someone's appearance would require a careful set of definitions that they all accept.

As we noted before, unreliable classification systems are subject to bias by clinicians making diagnoses. One of the most unreliable categories in current classification is the area of personality disorders—chronic, traitlike sets of inappropriate behaviors and emotional reactions that characterize a person's way of interacting with the world. Although great progress has been made, particularly with certain personality disorders, determining the presence or absence of this type of disorder during one interview is still difficult.

Validity

In addition to being reliable, a system of nosology must be valid. Earlier we described *validity* as whether something measures what it is designed to measure. There are several types of diagnostic validity. For one, the system should have *construct validity*. This means the signs and symptoms chosen as criteria for the diagnostic category are consistently associated and what they identify differs from other categories. Someone meeting the criteria for depression should be discriminable from someone meeting the criteria for social phobia. This discriminability might be evident not only in presenting symptoms, but also in the course of the disorder and possibly in the choice of treatment. It may also predict **familial aggregation**, the extent to which the disorder would be found among the patient's relatives (Blashfield & Livesley, 1991; Cloninger, 1989; Kupfer, First, & Regier, 2002).

In addition, a valid diagnosis tells the clinician what is likely to happen with the prototypical patient; it may predict the course of the disorder and the likely effect of one treatment or another. This type of validity is referred to often as *predictive validity* and sometimes as *criterion validity*, when the outcome is the criterion by which we judge the usefulness of the diagnostic category. Finally, there is *content validity*, which simply means that if you create criteria for a diagnosis of, say, social phobia, it should reflect the way most experts in the field think of social phobia, as opposed to, say, depression. In other words, you need to get the label right.

Diagnosis before 1980

Early efforts to classify psychopathology arose out of the biological tradition, particularly the work of Kraepelin. Kraepelin first identified what we now know as the disorder of schizophrenia. His term for the disorder at the time was *dementia praecox*. Dementia praecox refers to deterioration of the brain that sometimes occurs with advancing age (dementia) and develops earlier than it is supposed to, or "prematurely" (praecox). This label (later changed to *schizophrenia*) reflected Kraepelin's belief that brain pathology is the cause of this particular disorder. Kraepelin's landmark 1913 book (*Psychiatry: A Textbook for Students and Physicians*) described not only dementia praecox but also bipolar disorder, then called *manic depressive psychosis*. Kraepelin also

described a variety of organic brain syndromes. Other well-known figures in their time, such as French psychiatrist Philippe Pinel, characterized psychological disorders, including depression (melancholia), as separate entities, but Kraepelin's theorizing that psychological disorders are basically biological disturbances had the greatest impact on the development of our nosology and led to an early emphasis on classical categorical strategies.

It was not until 1948 that the World Health Organization (WHO) added a section classifying mental disorders to the sixth edition of the *International Classification of Diseases and Related Health Problems (ICD)*. However, this early system did not have much influence. Nor did the first *Diagnostic and Statistical Manual (DSM-I)*, published in 1952 by the American Psychiatric Association. Only in the late 1960s did systems of nosology begin to have some real influence on mental health professionals. In 1968 the American Psychiatric Association published a second edition of its *Diagnostic and Statistical Manual (DSM-II)*. In 1969, WHO published the eighth edition of the *ICD*. Nevertheless, these systems lacked precision, often differing substantially from one another and relying heavily on unproven theories of etiology not widely accepted by all mental health professionals. To make matters worse, the systems had little reliability. In these countries, the same disorders would be labeled and interpreted differently.

DSM-III and DSM-III-R

The year 1980 brought a landmark in the history of nosology: the third edition of the *Diagnostic and Statistical Manual (DSM-III)* (American Psychiatric Association, 1980). *DSM-III* departed radically from its predecessors. Three changes stood out. First, *DSM-III* relied on precise descriptions of the disorders as they presented to clinicians rather than on psychoanalytic or biological theories of etiology. For example, rather than classifying phobia under the broad category "neurosis," defined by intrapsychic conflicts and defense mechanisms, it was assigned its own category within a new broader group, "anxiety disorders."

The second major change in *DSM-III* was that the specificity and detail with which the criteria for identifying a disorder were listed made it possible to study their reliability and validity. Although not all categories in *DSM-III* achieved perfect reliability and validity, this system was a vast improvement over what was available before. Third, *DSM-III* allowed individuals with possible psychological disorders to be rated on five dimensions, or axes. The disorder itself, such as schizophrenia or mood disorder, was represented only on the first axis. More enduring (chronic)

prototypical approach System for categorizing disorders using both essential, defining characteristics and a range of variation on other characteristics.

familial aggregation The extent to which a disorder would be found among a patient's relatives.

disorders of personality were listed on Axis II. Axis III consisted of any physical disorders and conditions that might be present. On Axis IV the clinician rated, in a dimensional fashion, the amount of psychosocial stress the person reported, and the current level of adaptive functioning was indicated on Axis V. This framework, called the *multiaxial system*, allowed the clinician to gather information about the individual's functioning in a number of areas rather than limiting information to the disorder itself.

DSM-IV and DSM-IV-TR

By the late 1980s, clinicians and researchers realized the need for a consistent, worldwide system of nosology. The 10th edition of the *International Classification of Diseases (ICD-10)* would be published in 1993, and the United States is required by treaty obligations to use the *ICD-10* codes in all matters related to health. To make the *ICD-10* and *DSM* as compatible as possible, work proceeded more or less simultaneously on both the *ICD-10* and the fourth edition of the *DSM (DSM-IV)* published in 1994. The *DSM-IV* task force attempted to review the literature in all areas pertaining to the diagnostic system (Widiger et al., 1996, 1998) and to identify large sets of data that might have been collected for other reasons but that, with reanalysis, would be useful to *DSM-IV*. Finally, 12 independent studies or field trials examined the reliability and validity of alternative sets of definitions or criteria and, in some cases, the possibility of creating a new diagnosis.

Perhaps the most substantial change in *DSM-IV* is that the distinction between organically based disorders and psychologically based disorders that was present in previous editions has been eliminated. Even disorders associated with known brain pathology are substantially affected by psychological and social influences. Similarly, disorders previously described as psychological in origin have biological components.



Courtesy of the University of Pittsburgh School of Medicine

▲ David Kupfer is the chair of the task force for the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, which is due to appear in 2013.

The Multiaxial Format in DSM-IV

The multiaxial system remained in *DSM-IV*, with some changes in the five axes. Specifically, only personality disorders and mental retardation were now coded on Axis II. Pervasive developmental disorders, learning disorders, motor skills disorders, and communication disorders, previously coded on Axis II, were now all coded on Axis I. Axis IV, which rated the patient's amount of psychosocial stress, was not useful and was replaced. The new Axis IV is used for reporting psy-

chosocial and environmental problems that might have an impact on the disorder. Axis V was essentially unchanged.

In 2000 a committee updated the text that describes the research literature accompanying the *DSM-IV* diagnostic category and made minor changes to some of the criteria themselves to improve consistency (First & Pincus, 2002; American Psychiatric Association, 2000). This text revision (*DSM-IV-TR*) helped clarify many issues related to the diagnosis of psychological disorders.

The use of dimensional axes for rating—for example, severity of the disorder in a uniform manner across all disorders—will be greatly expanded in *DSM-5* (Regier et al., 2009). A variety of proposals for creating these cross-cutting or superordinate dimensions are currently under evaluation. Another proposal, for example, is to rate the presence of anxiety in a global sense across disorders. Thus, one might diagnose bipolar disorder and provide a dimensional rating of the degree of anxiety also present because a greater degree of anxiety seems to predict a poorer response to treatment (Howland et al., 2009).

DSM-IV and Frank

In Frank's case, initial observations indicate an anxiety disorder on Axis I, specifically obsessive-compulsive disorder. However, he might also have long-standing personality traits that lead him to avoid social contact. If so, there might be a diagnosis of schizoid personality disorder on Axis II. Unless Frank has an identifiable medical condition, there is nothing on Axis III. Job and marital difficulties would be coded on Axis IV, where clinicians note psychosocial or environmental problems that are not part of the disorder but might make it worse. Frank's difficulties with work would be noted by checking "occupational problems" and specifying "threat of job loss"; for "problems with primary support group," "marital difficulties" would be noted. On Axis V, the clinician would rate the highest overall level of Frank's current functioning on a 0-to-100 scale (100 indicates superior functioning in a variety of situations). At present, Frank's score is 55, which indicates moderate interference with functioning at home and at work.

It is important to emphasize that impairment is a crucial determination in making any diagnosis. For example, if someone, such as Frank, has all of the symptoms of obsessive-compulsive disorder but finds them only mildly annoying because the intrusive thoughts are not severe and don't occur that often, that person would not merit criteria for a psychological disorder. It is essential that the various behaviors and cognitions comprising the diagnosis interfere with functioning in some substantial manner. Thus, the criteria for disorders include the provision that the disorder must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. As noted earlier, one change in *DSM-5* will be to make this judgment of severity and impairment more systematic by using a dimensional scale. In one of our own clinics, we have been doing something similar to this—that is, in addition to rating overall impairment on Axis V, impairment specifically associated with the Axis I disorder (if

present) is also rated. A scale of 0 to 8 is used, where 0 is no impairment and 8 is severely disturbing or disabling (usually housebound and barely functional). The disorder must be rated at least a 4 in severity (definitely disturbing or disabling) to meet criteria for a psychological disorder. Many times, disorders such as obsessive-compulsive disorder would be rated a 2 or 3, meaning that all of the symptoms are there but in too mild a form to impair functioning; in this case, the disorder would be termed *sub-threshold*. Using Frank as an example again, the severity of his obsessive-compulsive disorder would be rated 5. In a diagnostic report, a summary of Frank's profile based on the multi-axial formulation of *DSM-IV* would look like this:

Axis I	Obsessive-compulsive disorder
Axis II	Schizoid personality disorder
Axis III	None
Axis IV	Occupational problems: threat of job loss; problems with primary support group: marital difficulties
Axis V	55 (current)

Social and Cultural Considerations in DSM-IV

By emphasizing levels of stress in the environment, *DSM-III* and *DSM-IV* facilitate a more complete picture of the individual. Furthermore, *DSM-IV* corrects a previous omission by including a plan for integrating important social and cultural influences on diagnosis. The plan, referred to as the “cultural formulation guidelines,” allows the disorder to be described from the perspective of the patient's personal experience and in terms of the primary social and cultural group, such as Hispanic or Chinese. Answering the following suggested culture-related questions will help accomplish these goals (Mezzich et al., 1993, 1999):

1. What is the primary cultural reference group of the patient? For recent immigrants to the country, and other ethnic minorities, how involved are they with their “new” culture versus their old culture? Have they mastered the language of their new country, or is language a continuing problem?
2. Does the patient use terms and descriptions from his or her “old” country to describe the disorder? For example, *ataques de nervios* in the Hispanic subculture is a type of anxiety disorder close to panic disorder. Does the patient accept Western models of disease or disorder for which treatment is available in health-care systems, or does the patient also have an alternative health-care system in another culture (for example, traditional herbal doctors in Chinese subcultures)?
3. What does it mean to be “disabled”? Which kinds of “disabilities” are acceptable in a given culture and which are not? For example, is it acceptable to be physically ill but not to be anxious or depressed? What are the typical family, social, and religious supports in the culture? Are they available to the patient?

These cultural considerations must not be overlooked in making diagnoses and planning treatment, and they are

assumed throughout this book. But, as yet, there is no research supporting the use of these cultural formulation guidelines (Alarcon et al., 2002). The consensus is that we have a lot more work to do in this area to make our nosology truly culturally sensitive, and *DSM-5V* has commissioned a number of reviews addressing cultural variations (for example, Lewis-Fernandez et al., 2009).

Criticisms of DSM-IV and DSM-IV-TR

DSM-IV (and the closely related *ICD-10* mental disorder section) is the most advanced, scientifically based system of nosology ever developed. Nevertheless, any nosological system should be considered a work in progress (Brown & Barlow, 2005; Millon, 2004; Regier et al., 2009; Smith & Oltmanns, 2009). We still have “fuzzy” categories that blur at the edges. As a consequence, individuals are often diagnosed with more than one psychological disorder at the same time, which is called **comorbidity**. How can we conclude anything definite about the course of a disorder, the response to treatment, or the likelihood of associated problems if we are dealing with combinations of disorders (Brown & Barlow, 2009; Follette & Houts, 1996; Kupfer et al., 2002)? Is there a way to identify essential features of comorbid disorders and, perhaps, rate them dimensionally (Brown & Barlow, 2009; Helzer et al., 2008)?

Criticisms center on two other aspects of *DSM-IV* and *ICD-10*. First, the systems strongly emphasize reliability, sometimes at the expense of validity. This is understandable because reliability is so difficult to achieve unless you are willing to sacrifice validity. If the sole criterion for establishing depression were to hear the patient say at some point during an interview, “I feel depressed,” the clinician could theoretically achieve perfect reliability. But this achievement would be at the expense of validity because many people with differing psychological disorders, or none, occasionally say they are depressed. Thus, clinicians could agree that the statement occurred, but it would be of little use (Carson, 1991; Meehl, 1989). Second, as Carson (1996) points out, methods of constructing a nosology of mental disorders have a way of perpetuating definitions handed down to us from past decades. It might be better to start fresh once in a while and create a new system of disorders based on emerging scientific knowledge rather than to simply fine-tune old definitions, but this is unlikely to happen because of the enormous effort and expense involved and the necessity of discarding the accumulated wisdom of previous versions.

A Caution About Labeling and Stigma

A related problem that occurs any time we categorize people is **labeling**. You may remember Kermit the Frog from *Sesame Street* sharing with us that “it's not easy being

comorbidity Presence of two or more disorders in an individual at the same time.

labeling Applying a name to a phenomenon or a pattern of behavior. The label may acquire negative connotations or be applied erroneously to the person rather than that person's behaviors.

green.” Something in human nature causes us to use a label, even one as superficial as skin color, to characterize the totality of an individual (“He’s green . . . he’s different from me”). We see the same phenomenon among psychological disorders (“He’s a schizo”). Furthermore, if the disorder is associated with an impairment in cognitive or behavioral functioning, the label itself has negative connotations and contributes to stigma, which is a combination of stereotypic negative beliefs, prejudices, and attitudes resulting in reduced life opportunities for the devalued group in question, such as individuals with mental disorders (Hinshaw & Stier, 2008).

Once labeled, individuals with a disorder may identify with the negative connotations associated with the label (Hinshaw & Stier, 2008). This affects their self-esteem. We have to remember that terms in psychopathology do not describe people but identify patterns of behavior that may or may not occur in certain circumstances. Thus, whether the disorder is medical or psychological, we must resist the temptation to identify the person with the disorder: Note

the different implications of “John is a diabetic” and “John is a person who has diabetes.”

Beyond *DSM-IV*: Dimensions and Spectra

The process of changing the criteria for existing diagnoses and creating new ones will continue as our science advances. New findings on brain circuits, cognitive processes, and cultural factors that affect our behavior could date diagnostic criteria relatively quickly.

Now the process to create the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* that began formally in 2006 is nearing completion, with publication scheduled for May 2013. The *DSM-5* task force has set clear criteria for reviewing diagnostic categories currently in the appendix in *DSM-IV*. After each category is reviewed, one of the following actions is to be taken for each included disorder: (1) delete the disorder from the appendix, (2) “promote” it to the main manual, or (3) retain it in the appendix. The criteria for one decision or another would be based primarily on new research that would be either sufficient to establish the validity of the diagnosis or not (Kendler, Kupfer, Narrow, Phillips, & Fawcett, 2009). In addition, it is now clear to most professionals involved in this process that an exclusive reliance on discrete diagnostic categories has not achieved its objective in achieving a satisfactory system of nosology (Krueger, Watson, & Barlow, 2005). In addition to problems noted earlier with comorbidity and the fuzzy boundary between diagnostic categories, little evidence has emerged validating these categories, such as discovering specific underlying causes associated with each category (Regier et al., 2009). In fact, not one biological marker, such as a laboratory test, that would clearly distinguish one disorder from another has been discovered (Frances, 2009; Widiger & Samuel, 2005). It is also clear that the current categories lack treatment specificity—that is, certain treatments such as cognitive behavioral therapies or specific antidepressant drugs are effective for a large number of diagnostic categories that are not supposed to be all that similar.

It may therefore be time for a new approach. Most people agree that this approach will incorporate a dimensional strategy to a much greater extent than in *DSM-IV* (Krueger et al., 2005; Kupfer et al., 2002; Widiger & Coker, 2003; Widiger & Sankis, 2000). The term “spectrum” is another way to describe groups of disorders that share certain basic biological or psychological qualities or dimensions. For example, in Chapter 13 you will read about the proposal in *DSM-5* to eliminate the term “Asperger’s syndrome” (a mild form of autism) and combine it with autistic disorder into a new category of “autism spectrum disorder.” It is also clear at this point that research is not sufficiently advanced to attempt a wholesale switch to a dimensional or spectrum approach, so the proposed categories in *DSM-5* look very much like the categories in *DSM-IV* with some updated language and increased preci-



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▲ Would we label this man? Stephen Hawking, one of the world’s leading physicists, is severely disabled by amyotrophic lateral sclerosis, a rare progressive degenerative disease of the spinal cord. Because he cannot activate his voice box or move his lips, Hawking types his words into an electronic voice synthesizer that “speaks” for him. He uses his thumbprint to autograph his books. “I have been lucky,” he says, “I don’t have anything to be angry about.”

sion and clarity. One more substantial change may be the creation of the cross-cutting or superordinate dimensional ratings that we described earlier in the chapter. But, sparked by research and conceptual advances during the process of creating *DSM-5*, more conceptually substantial and consistent dimensional approaches are in development and may be ready for the sixth edition of the *DSM* in 10 to 20 years.

For example, in the area of personality disorders, Livesley, Jang, and Vernon (1998) concluded that these disorders were not qualitatively distinct from the personalities of normal-functioning individuals in community samples. Instead, personality disorders simply represent maladaptive, and perhaps extreme, variants of common personality traits (Widiger & Edmundson, 2011; Widiger, Livesley & Clark, 2009; Widiger & Samuel, 2005). For the anxiety and mood disorders, Brown and Barlow (2009) have proposed a new dimensional system of classification based on previous research (Brown, Chorpita, & Barlow, 1998) demonstrating that anxiety and depression have more in common than previously thought and may best be represented as points on a continuum of negative affect or a spectrum of emotional disorders (see Barlow, 2002; Brown & Barlow, 2005, 2009; Clark, 2005; Mineka, Watson, & Clark, 1998; Watson, 2005). Even for severe disorders with seemingly stronger genetic influences, such as schizophrenia, it appears that dimensional classification strategies or spectrum approaches might prove superior (Charney et al., 2002; Lenzenweger & Dworkin, 1996; Toomey, Faraone, Simpson, & Tsuang, 1998; Widiger & Edmundson, 2011; Widiger, 1997; Widiger & Samuel, 2005).

At the same time, exciting new developments from the area of neuroscience relating to brain structure and function will provide enormously important information on the nature of psychological disorders. This information could then be integrated with more psychological, social, and cultural information into a diagnostic system. But even neuroscientists are abandoning the notion that groups of genes or brain circuits will be found that are specifically associated with *DSM-IV* diagnostic categories. Rather, it is now assumed that neurobiological processes will be discovered that are associated with specific cognitive, emotional, and behavioral patterns or traits

(for example, behavioral inhibition) that do not necessarily correspond closely with current diagnostic categories.

With this in mind, we can turn our attention to the current state of our knowledge about a variety of major psychological disorders. Beginning with Chapter 4, we attempt to predict the next major scientific breakthroughs affecting diagnostic criteria and definitions of disorders. Toward this end, we introduce a new section at the end of each disorder chapter entitled “On the Spectrum” detailing recent work that anticipates important changes in the years to come in how we think about psychological disorders. But first we review the all-important area of research methods and strategies used to establish new knowledge of psychopathology.

Concept Check 3.2

Identify each of the following statements as either true (T) or false (F).

1. ___ The classical categorical approach to classification assumes there is only one set of causative factors per disorder with no overlap between disorders, and the prototypical approach uses essential, defining features and a range of other characteristics.
2. ___ As in earlier versions, *DSM-IV* retains a distinction between organically and psychologically based disorders.
3. ___ The *DSM-IV* eradicated the problem of comorbidity, the identification of two or more disorders in an individual at one time, which was previously caused by imprecise categories.
4. ___ If two or more clinicians agree on a patient's classification, the assessments are said to be valid.
5. ___ A danger in psychological classification is that a diagnostic label might be used to characterize personally the total individual.



Conducting Research in Psychopathology

- › What are the basic components of research in psychopathology?
- › Why are ethical principles so important in the research process?

As you have already seen, abnormal behavior is a challenging subject because of the interaction of biological and psychological dimensions. Rarely are there any simple answers to such questions as “Why do some people have hallucinations?” or “How do you treat someone who is suicidal?”

In addition to the obvious complexity of human nature, another factor that makes an objective study of abnormal behavior difficult is the inaccessibility of many important aspects of this phenomenon. We can't get inside the minds of people except indirectly. Fortunately, some creative individuals have accepted this challenge and have developed

many ingenious methods for studying scientifically what behaviors constitute problems, why people suffer from behavioral disorders, and how to treat these problems. Some of you will ultimately contribute to this important field by applying the methods described in this chapter. Many critical questions regarding abnormal behavior have yet to be answered, and we hope that some of you will be inspired to take them on. However, understanding research methods is extremely important for everyone. You or someone close to you may need the services of a psychologist, psychiatrist, or other mental health provider. You may have questions such as these:

- › Should childhood aggression be cause for concern, or is it a phase my child will grow out of?
- › The *Today* show just reported that increased exposure to sunlight alleviates depression. Instead of seeing a therapist, should I buy a ticket to Hawaii?
- › My brother has been in therapy for 3 years but doesn't seem to be any better. Should I tell him to look elsewhere for help?
- › My mother is still in her 50s but seems to be forgetting things. Friends tell me this is natural as you grow older. Should I be concerned?

To answer such questions, you need to be a good consumer of research. When you understand the correct ways of obtaining information—that is, research methodology—you will know when you are dealing with fact and not fiction.

Basic Components of a Research Study

The basic research process is simple. You start with an educated guess, called a hypothesis, about what you expect to find. When you decide how you want to test this **hypothesis**, you formulate a **research design** that includes the aspects you want to measure in the people you are studying (the dependent variable) and the influences on their behaviors (the independent variable). Finally, two forms of validity are specific to research studies: internal validity and external validity. **Internal validity** is the extent to which you can be confident that the independent variable is causing the dependent variable to change. **External validity** refers to how well the results relate to things outside your study—in other words, how well your findings describe similar individuals who were not among the study participants. Although we discuss a variety of research strategies, they all have these basic elements. Table 3.2 shows the essential components of a research study.

Hypothesis

Human beings look for order and purpose. We want to know why the world works as it does and why people behave the way they do. Robert Kegan (cited in Lefrancois, 1990) describes us as “meaning-making” organisms, constantly striving to make sense of what is going on around us. In an attempt to make sense of these phenomena, be-

Table 3.2 The Basic Components of a Research Study

Component	Description
Hypothesis	An educated guess or statement to be supported by data
Research design	The plan for testing the hypothesis, affected by the question addressed, by the hypothesis, and by practical considerations
Dependent variable	Some aspect of the phenomenon that is measured and is expected to be changed or influenced by the independent variable
Independent variable	The aspect manipulated or thought to influence the change in the dependent variable
Internal validity	The extent to which the results of the study can be attributed to the independent variable
External validity	The extent to which the results of the study can be generalized or applied outside the immediate study

havioral scientists construct hypotheses and then test them. Hypotheses are nothing more than educated guesses about the world. You may believe that watching violent television programs will cause children to be more aggressive. You may think that bulimia is influenced by media depictions of supposedly ideal female body types. You may suspect that someone abused as a child is likely to abuse his or her significant other or child. These concerns are all testable hypotheses.

Once a scientist decides what to study, the next step is to put it in words that are unambiguous and in a form that is testable. Consider a study of how one's self-esteem (how you feel about yourself) affects depression. Ulrich Orth from the University of California–Davis and his colleagues from around the world gathered information from more than 4,000 people over a number of years (Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009). They knew from previous research that at least over a short period of time, having feelings of low self-esteem seems to put people at risk for later depression. In their study, these researchers posed the following hypothesis: “Prior low self-esteem will be a predictor of later depression across all age groups of participants.” The way the hypothesis is stated suggests the researchers already know the answer to their question. They won't know what they will find until the study is completed, but phrasing the hypothesis in this way makes it testable. If, for example, people with high self-esteem are at equal risk for later depression, then other influences must be studied. This concept of **testability** (the ability to support the hypothesis) is important for science because it allows us to say that in this case, either (1) low self-esteem signals later depression, so maybe we can use this informa-

tion for prevention efforts, or (2) there is no relationship between self-esteem and depression, so let's look for other early signs that might predict who will become depressed. The researchers did find a strong relationship between early self-esteem and depression for people in all age groups, which may prove useful for detecting people at risk for this debilitating disorder (Orth et al., 2009).

When they develop an experimental hypothesis, researchers also specify dependent and independent variables. A **dependent variable** is what is expected to change or be influenced by the study. Psychologists studying abnormal behavior typically measure an aspect of the disorder, such as overt behaviors, thoughts, and feelings, or biological symptoms. In the study by Orth and colleagues, the main dependent variable (level of depression) was measured using the person's responses on a questionnaire about their depression (Center for Epidemiologic Studies Depression Scale). Independent variables are those factors thought to affect the dependent variables. The **independent variable** in the study was measured using responses on a questionnaire on self-esteem (the Rosenberg Self-Esteem Scale). In other words, changes in self-esteem over the years were thought to influence later levels of depression.

Internal and External Validity

The researchers in the study on self-esteem and depression used responses on the questionnaires collected from two very large studies conducted in the United States and Germany. Suppose they found that, unknown to them, most people who agree to participate in these types of studies have higher self-esteem than people who do not participate. This would have affected the data in a way that would limit what they could conclude about self-esteem and depression and would change the meaning of their results. This situation, which relates to internal validity, is called a **confound** (or **confounding variable**), defined as any factor occurring in a study that makes the results uninterpretable because a variable (in this instance, the type of population being studied) other than the independent variable (having high or low self-esteem) may also affect the dependent variable (depression).

Scientists use many strategies to ensure internal validity in their studies, three of which we discuss here: control groups, randomization, and analog models. In a **control group**, people are similar to the experimental group in every way except that members of the experimental group are exposed to the independent variable and those in the control group are not. Because researchers can't prevent people from being exposed to many things around them that could affect the outcomes of the study, they try to compare people who receive the treatment with people who go through similar experiences except for the treatment (control group). Control groups help rule out alternative explanations for results, thereby strengthening internal validity.

Randomization is the process of assigning people to different research groups in such a way that each person

has an equal chance of being placed in any group. Researchers can, for example, randomly place people in groups but still end up with more of certain people (for example, people with more severe depression) in one group than another. Placing people in groups by flipping a coin or using a random number table helps improve internal validity by eliminating any systematic bias in assignment, but it does not necessarily eliminate bias in your group. You will see later that people sometimes "put themselves in groups," and this self-selection can affect study results.

Analog models create in the controlled conditions of the laboratory aspects that are comparable (analogous) to the phenomenon under study. Bulimia researchers could ask volunteers to binge eat in the laboratory, questioning them before they ate, while they were eating, and after they finished to learn whether eating in this way made them feel more or less anxious, guilty, and so on. If they used volunteers of any age, gender, race, or background, the researchers could rule out influences on the participants' attitudes about eating that they might not be able to dismiss if the group contained only people with bulimia. In this way, such "artificial" studies help improve internal validity.

In a research study, internal and external validity often seem to be in opposition. On the one hand, we want to be able to control as many things as possible to conclude that the independent variable (the aspect of the study we ma-

hypothesis Educated guess or statement to be tested by research.

research design Plan of experimentation used to test a hypothesis.

internal validity Extent to which the results of a study can be attributed to the independent variable after confounding alternative explanations have been ruled out.

external validity Extent to which research findings generalize, or apply, to people and settings not involved in the study.

testability Ability of a hypothesis, for example, to be subjected to scientific scrutiny and to be accepted or rejected, a necessary condition for the hypothesis to be useful.

dependent variable In an experimental study, the phenomenon that is measured and expected to be influenced (compare with independent variable).

independent variable Phenomenon manipulated by the experimenter in a study and expected to influence the dependent variable.

confound Any factor occurring in a study that makes the results uninterpretable because its effects cannot be separated from those of the variables being studied.

confounding variable Variable in a research study that was not part of the intended design and that may contribute to changes in the dependent variable.

control group Group of individuals in a study who are similar to the experimental subjects in every way but are not exposed to the treatment received by the experimental group. Their presence allows for a comparison of the differential effects of the treatment.

randomization Method for placing individuals into research groups that assures each an equal chance of being assigned to any group, thus eliminating any systematic differences across groups.

analog model Approach to research that employs subjects who are similar to clinical clients, allowing replication of a clinical problem under controlled conditions.



▲ Studying people as part of a group sometimes masks individual differences.

nipulated) was responsible for the changes in the dependent variables (the aspects of the study we expected to change). On the other hand, we want the results to apply to people other than the participants of the study and in other settings; this is **generalizability**, the extent to which results apply to everyone with a particular disorder. If we control all aspects of a study so that only the independent variable changes, the result is not relevant to the real world. For example, if you reduce the influence of gender issues by only studying males, and if you reduce age variables by only selecting people from 25 to 30 years of age, and finally, if you limit your study to those with college degrees so that education level isn't an issue—then what you study (in this case, 25- to 30-year-old male college graduates) may not be relevant to many other populations. Internal and external validity are in this way often inversely related. Researchers constantly try to balance these two concerns and, as you will see later in this chapter, the best solution for achieving both internal and external validity may be to conduct several related studies.

Statistical versus Clinical Significance

In psychological research, statistical significance typically means the probability of obtaining the observed effect by chance is small. As an example, consider a study evaluating whether a drug (naltrexone)—when added to a psychological intervention—helps those with alcohol addiction stay sober longer (Anton et al., 2006). The study found that the combination of medication and psychotherapy helped people stay abstinent 77 days on average and those receiving a placebo stayed abstinent 75 days on average. This difference was statistically significant. But is it an important difference? The difficulty is in the distinction between **statistical significance** (a mathematical calculation about the difference between groups) and **clinical significance**

(whether or not the difference was meaningful for those affected) (Thirithalli & Rajkumar, 2009).

Closer examination of the results leads to concern about the size of the effect. Because this research studied a large group of people dependent on alcohol (1,383 volunteers), even this small difference (75 versus 77 days) was statistically different. However, few of us would say staying sober for 2 extra days was worth taking medication and participating in extensive therapy.

Fortunately, concern for the clinical significance of results has led researchers to develop statistical methods that address not just that groups are different, but also how large these differences are, or **effect size**. Calculating the actual statistical measures involves fairly sophisticated procedures that take into account how much each treated and untreated

person in a research study improves or worsens (Reichardt, 2006). In other words, instead of just looking at the results of the group as a whole, individual differences also are considered. Some researchers have used more subjective ways of determining whether truly important change has resulted from treatment. The late behavioral scientist Montrose Wolf (1978) advocated the assessment of what he called *social validity*. This technique involves obtaining input from the person being treated, and from significant others, about the importance of the changes that have occurred. In the example here, we might ask the participants and family members if they thought the treatment led to truly important improvements in alcohol abstinence. If the effect of the treatment is large enough to impress those who are directly involved, the treatment effect is clinically significant.

The “Average” Client

Too often we look at results from studies and make generalizations about the group, ignoring individual differences. Kiesler (1966) labeled the tendency to see all participants as one homogeneous group the **patient uniformity myth**. This myth leads researchers to make inaccurate generalizations about disorders and their treatments. To continue with our previous example, what if the researchers studying the treatment of alcoholism concluded that the experimental treatment was a good approach? And suppose we found that, although some participants improved with treatment, others worsened. Such differences would be averaged out in the analysis of the group as a whole, but for the person whose drinking increased with the experimental treatment, it would make little difference that “on the average” people improved. Because people differ in such ways as age, cognitive abilities, gender, and history of treatment, a simple group comparison may be misleading.

Concept Check 3.3

In each of the statements provided, fill in the blanks with one of the following: hypothesis, dependent variable, independent variable, internal validity, external validity, or confound.

1. In a treatment study, the introduction of the treatment to the participants is referred to as the _____.
2. After the treatment study was completed, you found that many people in the control group received treatment outside of the study. This is called a _____.
3. A researcher's guess about what a study might find is labeled the _____.
4. Scores on a depression scale improved for a treatment group after therapy. The change in these scores would be referred to as a change in the _____.
5. A relative lack of confounds in a study would indicate good _____, whereas good generalizability of the results would be called good _____.

Types of Research Methods

› What methods are used to conduct research on the causes of behavior?

Researchers who study human behavior use several forms of research when studying the causes of behavior. We now examine individual case studies, correlational research, experimental research, and single-case experimental studies.

Studying Individual Cases

Consider the following scenario: A psychologist thinks she has discovered a new disorder. She has observed several men who seem to have similar characteristics. All complain of a specific sleep disorder: falling asleep at work. Each man has obvious cognitive impairments that were evident during the initial interviews, and all are similar physically, each with significant hair loss and a pear-shaped physique. Finally, their personality styles are extremely egocentric, or self-centered. On the basis of these preliminary observations, the psychologist has come up with a tentative name, the Homer Simpson disorder, and she has decided to investigate this condition and possible treatments. But what is the best way to begin exploring a relatively unknown disorder? One method is to use the **case study method**, investigating intensively one or more individuals who display the behavioral and physical patterns (Borckardt et al., 2008).

One way to describe the case study method is by noting what it is not. It does not use the scientific method. Few efforts are made to ensure internal validity and, typically, many confounding variables are present that can interfere with conclusions. Instead, the case study method relies on a clinician's observations of differences among one person or one group with a disorder, people with other disorders, and people with no psychological disorders. The clinician usually collects as much information as possible to obtain a detailed description of the person. Historically, interview-

ing the person under study yields a great deal of information on personal and family background, education, health, and work history in addition to the person's opinions about the nature and causes of the problems being studied.

Case studies are important in the history of psychology. Sigmund Freud developed psychoanalytic theory and the methods of psychoanalysis on the basis of his observations of dozens of cases. Freud and Josef Breuer's description of Anna O. (see Chapter 1) led to development of the clinical technique known as free association. Sexuality researchers Virginia Johnson and William Masters based their work on many case studies and helped shed light on numerous myths regarding sexual behavior (Masters & Johnson, 1966). Joseph Wolpe, author of the landmark book *Psychotherapy by Reciprocal Inhibition* (1958), based his work with systematic desensitization on more than 200 cases. As our knowledge of psychological disorders has grown, psychological researchers' reliance on the case study method has gradually decreased.

generalizability Extent to which research results apply to a range of individuals not included in the study.

statistical significance Small probability of obtaining the observed research findings by chance.

clinical significance Degree to which research findings have useful and meaningful applications to real problems.

effect size A statistical process that estimates how large a change in measures occurred. Often used before and after a clinical treatment to determine its relative success.

patient uniformity myth Tendency to consider all members of a category as more similar than they are, ignoring their individual differences.

case study method Research procedure in which a single person or small group is studied in detail. The method does not allow conclusions about cause-and-effect relationships, and findings can be generalized only with great caution (contrast with single-case experimental design).

Research by Correlation

One of the fundamental questions posed by scientists is whether two variables relate to each other. A statistical relationship between two variables is called a **correlation**. For example, is schizophrenia related to the size of ventricles (spaces) in the brain? Are people with depression more likely to have negative attributions (negative explanations for their own and others' behavior)? Is the frequency of hallucinations higher among older people? The answers depend on determining how one variable (for example, number of hallucinations) is related to another (for example, age). Unlike experimental designs, which involve manipulating or changing conditions, correlational designs are used to study phenomena just as they occur. The result of a correlational study—whether variables occur together—is important to the ongoing search for knowledge about abnormal behavior.

One of the clichés of science is that correlation does not imply causation. In other words, two things occurring together do not necessarily mean that one caused the other. For example, the occurrence of marital problems in families is correlated with behavior problems in children (Erath, Bierman, & Conduct Problems Prevention Research Group, 2006). If you conduct a correlational study in this area, you will find that in families with marital problems you tend to see children with behavior problems; in families with fewer marital problems you are likely to find children with fewer behavior problems. The most obvious conclusion is that having marital problems will cause children to misbehave. If only it were as simple as that! The nature of the relationship between marital discord and childhood behavior problems can be explained in a number of ways. It may be that problems in a marriage cause disruptive behavior in the children. However, some evidence suggests the opposite may be true: The disruptive behavior of children may cause marital problems (Rutter & Giller, 1984). In addition, evidence suggests genetic influences may play a role in conduct disorders and in marital discord (D'Onofrio et al., 2006; Lynch et al., 2006).

This example points out the problems in interpreting the results of a correlational study. We know that variable A (marital problems) is correlated with variable B (child behavior problems). We do not know from these studies whether A causes B (marital problems cause child problems), whether B causes A (child problems cause marital problems), or whether some third variable, C, causes both (genes influence both marital problems and child problems).

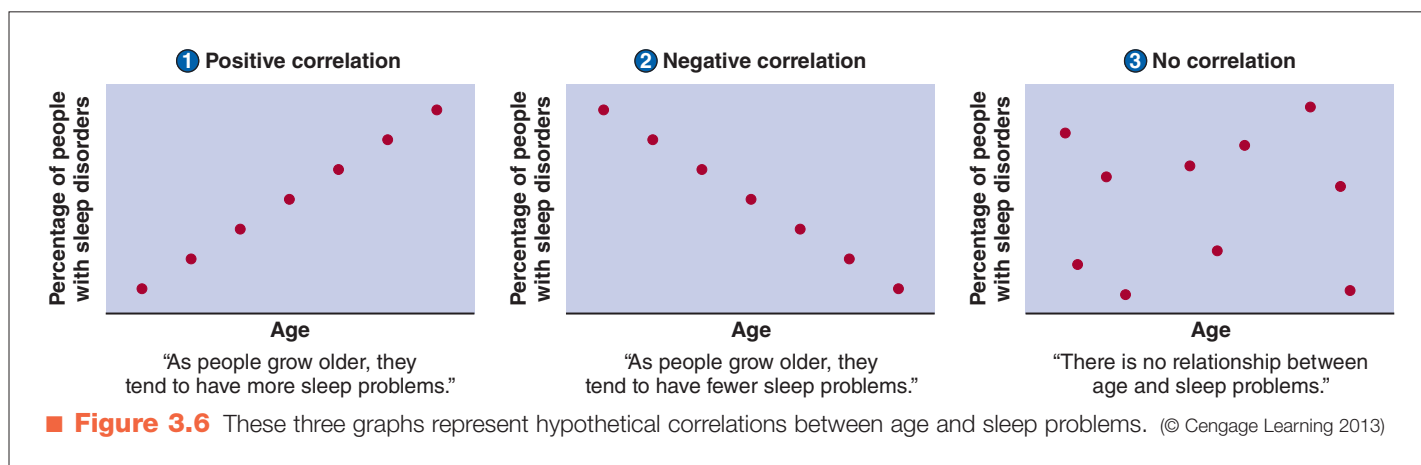
The association between marital discord and child problems represents a **positive correlation**. This means that great strength or quantity in one variable (a great deal of marital distress) is associated with great strength or quantity in the other variable (more child disruptive behavior). At the same time, lower strength or quantity in one variable (marital distress) is associated with lower strength or quantity in the other (disruptive behavior). If you have trouble conceptualizing statistical concepts, you can think

about this mathematical relationship in the same way you would a social relationship. Two people who are getting along well tend to go places together: “Where I go, you will go!” The correlation (or **correlation coefficient**) is represented as +1.00. The plus sign means there is a positive relationship, and the 1.00 means that it is a “perfect” relationship, in which the people are inseparable. Obviously, two people who like each other do not go everywhere together. The strength of their relationship ranges between 0.00 and +1.00 (0.00 means no relationship exists). The higher the number, the stronger the relationship, whether the number is positive or negative (for example, a correlation of +0.80 is “stronger” than a correlation of +0.75). You would expect two strangers, for example, to have a relationship of 0.00 because their behavior is not related; they sometimes end up in the same place together, but this occurs rarely and randomly. Two people who know each other but do not like each other would be represented by a negative sign, with the strongest negative relationship being –1.00, which means, “Anywhere you go, I won’t be there!”

Using this analogy, marital problems in families and behavior problems in children have a relatively strong positive correlation represented by a number around +0.50. They tend to go together. However, other variables are strangers to each other. Schizophrenia and height are not related, so they don’t go together and probably would be represented by a number close to 0.00. If A and B have no correlation, their correlation coefficient would approximate 0.00. Other factors have negative relationships: As one increases, the other decreases. (See ■ Figure 3.6 for an illustration of positive and negative correlations.) We used an example of **negative correlation** in Chapter 2, when we discussed social supports and illness. The more social supports that are present, the less likely it is that a person will become ill. The negative relationship between social supports and illness could be represented by a number such as –0.40.

Epidemiological Research

Scientists often think of themselves as detectives, searching for the truth by studying clues. One type of correlational research that is much like the efforts of detectives is called **epidemiology**, the study of the incidence, distribution, and consequences of a particular problem or set of problems in one or more populations. Epidemiologists expect that by tracking a disorder among many people they will find important clues as to why the disorder exists. One strategy involves determining *prevalence*, the number of people with a disorder at any one time. For example, the prevalence of binge drinking (having five or more drinks in a row) among U.S. college students is about 40% (Beets et al., 2009). A related strategy is to determine the *incidence* of a disorder, the estimated number of new cases during a specific period. For example, incidence of binge drinking among college students has lowered only slightly from 1980 until the present (Substance Abuse and Mental Health Services Administration, 2006), suggesting that despite ef-



forts to reduce such heavy drinking, it continues to be a problem. Epidemiologists study the incidence and prevalence of disorders among different groups of people. For instance, data from epidemiological research indicate that the prevalence of alcohol abuse among African Americans is lower than that among whites (Substance Abuse and Mental Health Services Administration, 2006).

Although the primary goal of epidemiology is to determine the extent of medical problems, it is also useful in the study of psychological disorders. In the early 1900s, a number of Americans displayed symptoms of a strange mental disorder. Its symptoms were similar to those of organic psychosis, which is often caused by mind-altering drugs or great quantities of alcohol. Many patients appeared to be catatonic (immobile for long periods) or exhibited symptoms similar to those of paranoid schizophrenia. Victims were likely to be poor and African American, which led to speculation about racial and class inferiority. However, using the methods of epidemiological research, researcher Joseph Goldberger found correlations between the disorder and diet, and he identified the cause of the disorder as a deficiency of the B vitamin niacin among people with poor diets. The symptoms were successfully eliminated by niacin therapy and improved diets among the poor. A long-term, widespread benefit of Goldberger's findings was the introduction of vitamin-enriched bread in the 1940s (Colp, 2009).

Researchers have used epidemiological techniques to study the effects of stress on psychological disorders. On the morning of September 11, 2001, approximately 3,000 people died from three separate terrorist attacks in lower Manhattan, at the Pentagon, and in Pennsylvania. DeLisi and colleagues (DeLisi et al., 2003) interviewed 1,009 men and women throughout Manhattan to assess their long-term emotional reactions to the attacks, especially given their proximity to the destroyed World Trade Center towers. These researchers found that individuals who had the most negative reactions to this traumatic event were those who had preexisting psychological disorders, those who had the greatest exposure to the attack (for example, being evacuated from the World Trade Center), and women. The most common negative reactions included anxiety and

painful memories. This is a correlational study because the investigators did not manipulate the independent variable. (The attack was not part of an experiment.)

Like other types of correlational research, epidemiological research can't tell us conclusively what causes a particular phenomenon. However, knowledge about the prevalence and course of psychological disorders is extremely valuable to our understanding because it points researchers in the right direction.

Research by Experiment

An **experiment** involves the manipulation of an independent variable and the observation of its effects. We manipulate the independent variable to answer the question of causality. If we observe a correlation between social supports and psychological disorders, we can't conclude which of these factors influenced the other. We can, however, change the extent of social supports and see whether there is an accompanying change in the prevalence of psychological disorders—in other words, do an experiment.

What will this experiment tell us about the relationship between these two variables? If we increase social supports

correlation Degree to which two variables are associated. In a positive correlation, the two variables increase or decrease together. In a negative correlation, one variable decreases as the other increases.

positive correlation Association between two variables in which one increases as the other increases.

correlation coefficient Computed statistic reflecting the strength and direction of any association between two variables. It can range from 21.00 through 0.00 (indicating no association) to 11.00, with the absolute value indicating the strength and the sign reflecting the direction.

negative correlation Association between two variables in which one increases as the other decreases.

directionality Possibility that when two variables, A and B, are correlated variable A causes variable B or variable B causes variable A.

epidemiology Psychopathology research method examining the prevalence, distribution, and consequences of disorders in populations.

experiment Research method that can establish causation by manipulating the variables in question and controlling for alternative explanations of any observed effects.



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▲ The more social supports people have, the less likely it is that they will become ill.

and find no change in the frequency of psychological disorders, it may mean that lack of such supports does not cause psychological problems. However, if we find that psychological disorders diminish with increased social support, we can be more confident that nonsupport does contribute to psychological disorders. However, because we are never 100% confident that our experiments are internally valid—that no other explanations are possible—we must be cautious about interpreting our results. In the following section, we describe different ways in which researchers conduct experiments and consider how each one brings us closer to understanding abnormal behavior.

Group Experimental Designs

With correlational designs, researchers observe groups to see how different variables are associated. In group experimental designs, researchers are more active. They actually change an independent variable to see how the behavior of the people in the group is affected. Suppose researchers design an intervention to help reduce insomnia in older adults, who are particularly affected by the condition (Ancoli-Israel & Ayalon, 2009). They treat a number of individuals and follow them for 10 years to learn whether their sleep patterns improve. The treatment is the independent variable—that is, it would not have occurred naturally. They then assess the treated group to learn whether their behavior changed as a function of what the researchers did. Introducing or withdrawing a variable in a way that would not have occurred naturally is called *manipulating a variable*.

Unfortunately, a decade later the researchers find that the older adults treated for sleep problems still, as a group, sleep less than 8 hours per night. Is the treatment a failure? Maybe not. The question that can't be answered in this study is what would have happened to group members if they hadn't been treated. Perhaps their sleep patterns would have been worse. Fortunately, researchers have devised ingenious methods to help sort out these complicated questions.

A special type of group experimental design is used more and more frequently in the treatment of psychological disorders and is referred to as a *clinical trial* (Durand &

Wang, 2011). A clinical trial is an experiment used to determine the effectiveness and safety of a treatment or treatments. The term clinical trial implies a level of formality with regard to how it is conducted. As a result, a clinical trial is not a design by itself but rather a method of evaluation that follows a number of generally accepted rules. For example, these rules cover how you should select the research participants, how many individuals should be included in the study, how they should be assigned to groups, and how the data should be analyzed—and this represents only a partial list. Also, treatments are usually applied using formal protocols to ensure that everyone is treated the same.

Control Groups

One answer to the what-if dilemma is to use a control group—people who are similar to the experimental group in every way except they are not exposed to the independent variable. In the previous study looking at sleep in older adults, suppose another group who didn't receive treatment was selected. Further suppose that the researchers also follow this group of people, assess them 10 years later, and look at their sleep patterns over this time. They probably observe that, without intervention, people tend to sleep fewer hours as they get older (Cho et al., 2008). Members of the control group, then, might sleep significantly less than people in the treated group, who might themselves sleep somewhat less than they did 10 years earlier. The control group allows the researchers to see that their treatment did help the treated participants keep their sleep time from decreasing further.

Ideally, a control group is nearly identical to the treatment group in such factors as age, gender, socioeconomic backgrounds, and the problems they are reporting. Furthermore, a researcher would do the same assessments before and after the independent variable manipulation (for example, a treatment) to people in both groups. Any later differences between the groups after the change would, therefore, be attributable only to what was changed.

People in a treatment group often expect to get better. When behavior changes as a result of a person's expectation of change rather than as a result of any manipulation by an experimenter, the phenomenon is known as a **placebo effect** (from the Latin, which means "I shall please"). Conversely, people in the control group may be disappointed that they are not receiving treatment. Depending on the type of disorder they experience (for example, depression), disappointment may make them worse. This phenomenon would also make the treatment group look better by comparison.

One way researchers address the expectation concern is through **placebo control groups**. The word *placebo* typically refers to inactive medications such as sugar pills.

The placebo is given to members of the control group to make them believe they are getting treatment (Wampold, Minami, Tierney, Baskin, & Bhati, 2005). A placebo control in a medication study can be carried out with relative ease because people in the untreated group receive something that looks like the medication administered to the treatment group. In psychological treatments, however, it is not always easy to devise something that people believe may help them but does not include the component the researcher believes is effective. Clients in these types of control groups are often given part of the actual therapy—for example, the same homework as the treated group—but not the portions the researchers believe are responsible for improvements.

Note that you can look at the placebo effect as one portion of any treatment (Kendall & Comer, 2011). If someone you provide with a treatment improves, you would have to attribute the improvement to a combination of your treatment and the client's expectation of improving (placebo effect). Therapists want their clients to expect improvement; this helps strengthen the treatment. However, when researchers conduct an experiment to determine what portion of a particular treatment is responsible for the observed changes, the placebo effect is a confound that can dilute the validity of the research. Thus, researchers use a placebo control group to help distinguish the results of positive expectations from the results of actual treatment.

The **double-blind control** is a variant of the placebo control group procedure. As the name suggests, not only are the participants in the study “blind,” or unaware of what group they are in or what treatment they are given (single blind), but so are the researchers or therapists providing treatment (double blind). This type of control eliminates the possibility that an investigator might bias the outcome. For example, a researcher comparing two treatments who expected one to be more effective than the other might “try harder” if the “preferred” treatment wasn't working as well as expected. However, if the treatment that wasn't expected to work seemed to be failing, the researcher might not push as hard to see it succeed. This reaction might not be deliberate, but it does happen. This phenomenon is referred to as an *allegiance effect* (Leykin & DeRubeis, 2009). If, however, both the participants and the researchers or therapists are “blind,” there is less chance that bias will affect the results.

Comparative Treatment Research

As an alternative to using no-treatment control groups to help evaluate results, some researchers compare different treatments. In this design, the researcher gives different treatments to two or more comparable groups of people with a particular disorder and can then assess how or whether each treatment helped the people who received it. This is called **comparative treatment research**. In the sleep study we discussed, two groups of older adults could be selected, with one group given medication for insomnia, the other given a cognitive-behavioral intervention, and the results compared.

The process and outcome of treatment are two important issues to be considered when different approaches are studied. *Process research* focuses on the mechanisms responsible for behavior change, or “why does it work?” In an old joke, someone goes to a physician for a new miracle cold cure. The physician prescribes the new drug and tells the patient the cold will be gone in 7 to 10 days. As most of us know, colds typically improve in 7 to 10 days without so-called miracle drugs. The new drug probably does nothing to further the improvement of the patient's cold. The process aspect of testing medical interventions involves evaluating biological mechanisms responsible for change. Does the medication cause lower serotonin levels, for example, and does this account for the changes we observe? Similarly, in looking at psychological interventions, we determine what is “causing” the observed changes. This is important for several reasons. First, if we understand what the “active ingredients” of our treatment are, we can often eliminate aspects that are not important, thereby saving clients' time and money. For an example, one study of insomnia found that adding a relaxation training component to a treatment package provided no additional benefit—allowing clinicians to reduce the amount of training and focus on only those aspects that really improve sleep (for example, cognitive-behavioral therapy) (Harvey, Inglis, & Espie, 2002). In addition, knowing what is important about our interventions can help us create more powerful, newer versions that may be more effective.

Outcome research focuses on the positive or negative (or both) results of the treatment. In other words, does it work? Remember, *treatment process* involves finding out why or how your treatment works. In contrast, treatment outcome involves finding out what changes occur after treatment.

Single-Case Experimental Designs

B. F. Skinner's innovations in scientific methodology were among his most important contributions to psychopathology. Skinner formalized the concept of **single-case experimental designs**. This method involves the systematic study

placebo effect Behavior change resulting from the person's expectation of change rather than from the experimental manipulation itself.

placebo control group In outcome research, a control group that does not receive the experimental manipulation but is given a similar procedure with an identical expectation of change, allowing the researcher to assess any placebo effect.

double-blind control Procedure in outcome research that prevents bias by ensuring that neither the subjects nor the providers of the experimental treatment know who is receiving treatment and who is receiving a placebo.

comparative treatment research Outcome research that contrasts two or more treatment methods to determine which is most effective.

single-case experimental design Research tactic in which an independent variable is manipulated for a single individual, allowing cause-and-effect conclusions but with limited generalizability (contrast with case study method).

of individuals under a variety of experimental conditions. Skinner thought it was much better to know a lot about the behavior of one individual than to make only a few observations of a large group for the sake of presenting the “average” response. Psychopathology is concerned with the suffering of specific people, and this methodology has greatly helped us understand the factors involved in individual psychopathology (Barlow, Nock, & Hersen, 2009). Many applications throughout this book reflect Skinnerian methods.

Single-case experimental designs differ from case studies in their use of various strategies to improve internal validity, thereby reducing the number of confounding variables. As you will see, these strategies have strengths and weaknesses in comparison with traditional group designs. Although we use examples from treatment research to illustrate the single-case experimental designs, they, like other research strategies, can help explain why people engage in abnormal behavior and how to treat them.

Repeated Measurements

One of the more important strategies used in single-case experimental design is **repeated measurement**, in which a behavior is measured several times instead of only once before you change the independent variable and once afterward. The researcher takes the same measurements repeatedly to learn how variable the behavior is (how much does it change from day to day?) and whether it shows any obvious trends (is it getting better or worse?). Suppose a young woman, Wendy, comes into the office complaining about feelings of anxiety. When asked to rate the level of her anxiety, she gives it a 9 (10 is the worst). After several weeks of treatment, Wendy rates her anxiety at 6. Can we say that the treatment reduced her anxiety? Not necessarily.

Suppose we had measured Wendy’s anxiety each day during the weeks before her visit to the office (repeated measurement) and observed that it differed greatly. On particularly good days, she rated her anxiety from 5 to 7. On bad days, it was up between 8 and 10. Suppose further that, even after treatment, her daily ratings continued to range from 5 to 10. The rating of 9 before treatment and 6 after treatment may only have been part of the daily variations she experienced normally. Wendy could just as easily have had a good day and reported a 6 before treatment and then had a bad day and reported a 9 after treatment, which would imply that the treatment made her worse.

Repeated measurement is part of each single-subject experimental design. It helps identify how a person is doing before and after intervention and whether the treatment accounted for any changes. ■ Figure 3.7 summarizes Wendy’s anxiety and the added information obtained by repeated measurement. The top graph shows Wendy’s original before-and-after ratings of her anxiety. The middle graph shows that with daily ratings her reports are variable and that just by chance the previous measurement was probably misleading. She had good and bad days both before and after treatment and doesn’t seem to have changed much.

The bottom graph shows a different possibility: Wendy’s anxiety was on its way down before the treatment, which

would also have been obscured with just before-and-after measurements. Maybe she was getting better on her own and the treatment didn’t have much effect. Although the middle graph shows how the **variability** from day to day could be important in an interpretation of the effect of treatment, the bottom graph shows how the **trend** itself can also be important in determining the cause of any change. The three graphs illustrate important parts of repeated measurements: (1) the **level** or degree of behavior change with different interventions (*top*); (2) the variability or degree of change over time (*middle*); and (3) the trend or direction of change (*bottom*). Again, before-and-after scores alone do not necessarily show what is responsible for behavioral changes.

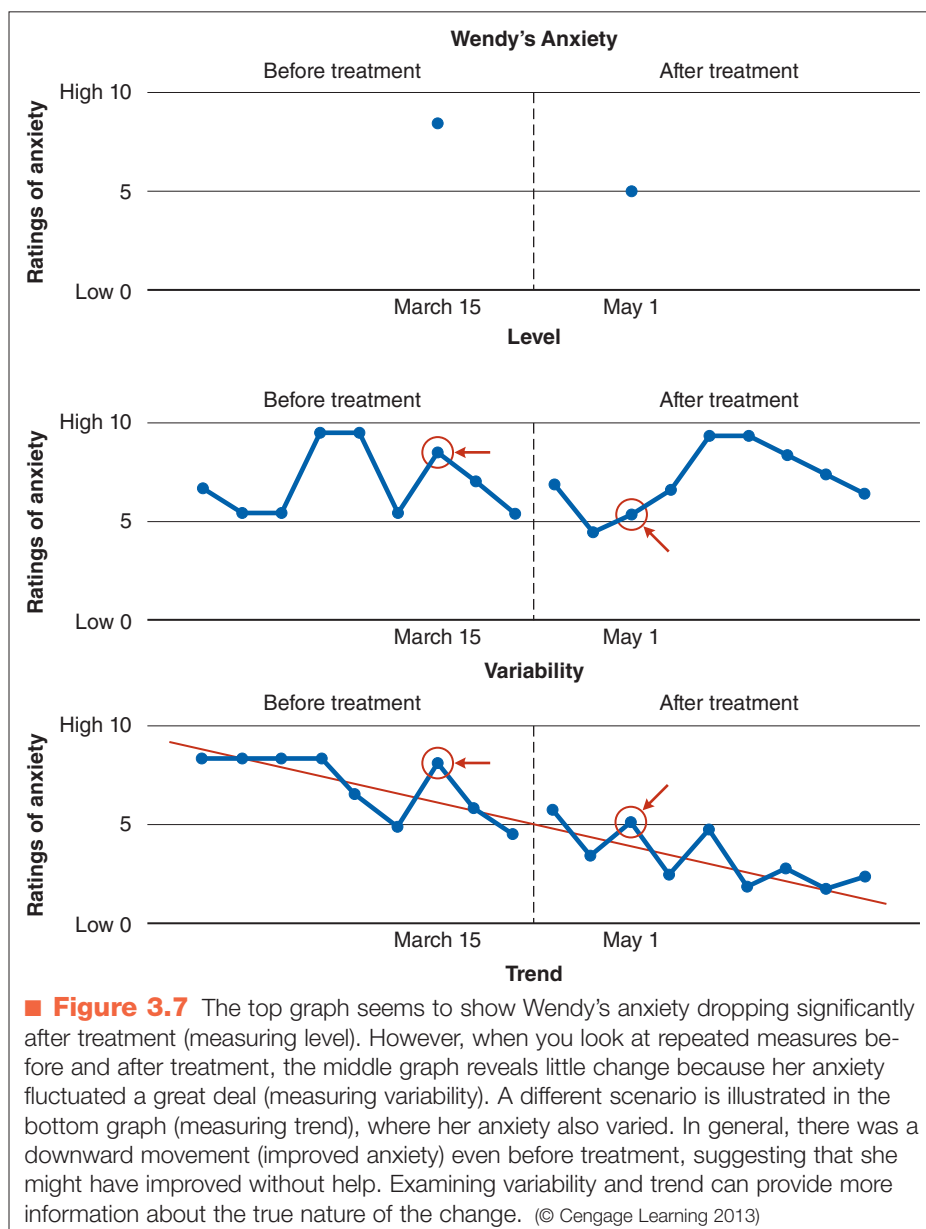
Withdrawal Designs

One of the more common strategies used in single-subject research is a **withdrawal design**, in which a researcher tries to determine whether the independent variable is responsible for changes in behavior. The effect of Wendy’s treatment could be tested by stopping it for some time to see whether her anxiety increased. A simple withdrawal design has three parts. First, a person’s condition is evaluated before treatment to establish a **baseline**. Then comes the change in the independent variable—in Wendy’s case, the beginning of treatment. Last, treatment is withdrawn (“return to baseline”) and the researcher assesses whether Wendy’s anxiety level changes again as a function of this last step. If with the treatment her anxiety reduces in comparison to baseline and then worsens after treatment is withdrawn, the researcher can conclude the treatment has reduced Wendy’s anxiety.

How is this design different from a case study? An important difference is that the change in treatment is designed specifically to show whether treatment caused the changes in behavior. Although case studies often involve treatment, they don’t include any effort to learn whether the person would have improved without the treatment. A withdrawal design gives researchers a better sense of whether or not the treatment itself caused behavior change.

Despite their advantages, withdrawal designs are not always appropriate. The researcher is required to remove what might be an effective treatment, a decision that is sometimes difficult to justify for ethical reasons. In Wendy’s case, a researcher would have to decide there was a sufficient reason to risk making her anxious again. A withdrawal design is also unsuitable when the treatment can’t be removed. Suppose Wendy’s treatment involved visualizing herself on a beach on a tropical island. It would be difficult—if not impossible—to stop her from imagining something. Similarly, some treatments involve teaching people skills, which might be impossible to unlearn. If Wendy learned how to be less anxious in social situations, how could she revert to being socially apprehensive?

Several counterarguments support the use of withdrawal designs (Barlow et al., 2009). Treatment is routinely withdrawn when medications are involved. *Drug holidays* are periods when the medication is withdrawn so that cli-



could begin at work. If she improves only at home after beginning treatment but improves at work after treatment is used there also, we could conclude the treatment was effective. This is an example of using a multiple baseline across settings.

Suppose a researcher wanted to assess the effectiveness of a treatment for a child's problem behaviors. Treatment could focus first on the child's crying, then on a second problem, such as fighting with siblings. If the treatment was first effective only in reducing crying and effective for reducing fighting only after the second intervention, the researcher could conclude that the treatment, not something else, accounted for the improvements. This is a multiple baseline conducted across behaviors.

Single-case experimental designs are sometimes criticized because they tend to involve only a small number of cases, leaving their external validity in doubt. In other words, we can't say the results we saw with a few people would be the same for everyone. However, although they are called *single-case* designs, researchers can and often do use them with several people at once, in part to address the issue of external validity. One of us studied the effectiveness of a treatment for the severe behavior problems of children with autism (Durand, 1999) (■ Figure 3.8). We taught the children to communicate instead of misbehave, using

nicians can determine whether it is responsible for the treatment effects. Any medication can have negative side effects, and unnecessary medication should be avoided. Sometimes treatment withdrawal happens naturally. Withdrawal does not have to be prolonged; a brief withdrawal may still clarify the role of the treatment.

Multiple Baseline

Another single-case experimental design strategy used often that doesn't have some of the drawbacks of a withdrawal design is the **multiple baseline**. Rather than stopping the intervention to see whether it is effective, the researcher starts treatment at different times across settings (home versus school), behaviors (yelling at spouse/partner or boss), or people. After waiting for a while and taking repeated measures of Wendy's anxiety both at home and at her office (the baseline), the clinician could treat her first at home. When the treatment begins to be effective, intervention

repeated measurement When responses are measured on more than two occasions (not just before and after intervention) to assess trends.

variability Degree of change in a phenomenon over time.

trend Direction of change of a behavior or behaviors (for example, increasing or decreasing).

level Degree of behavior change with different interventions (for example, high or low).

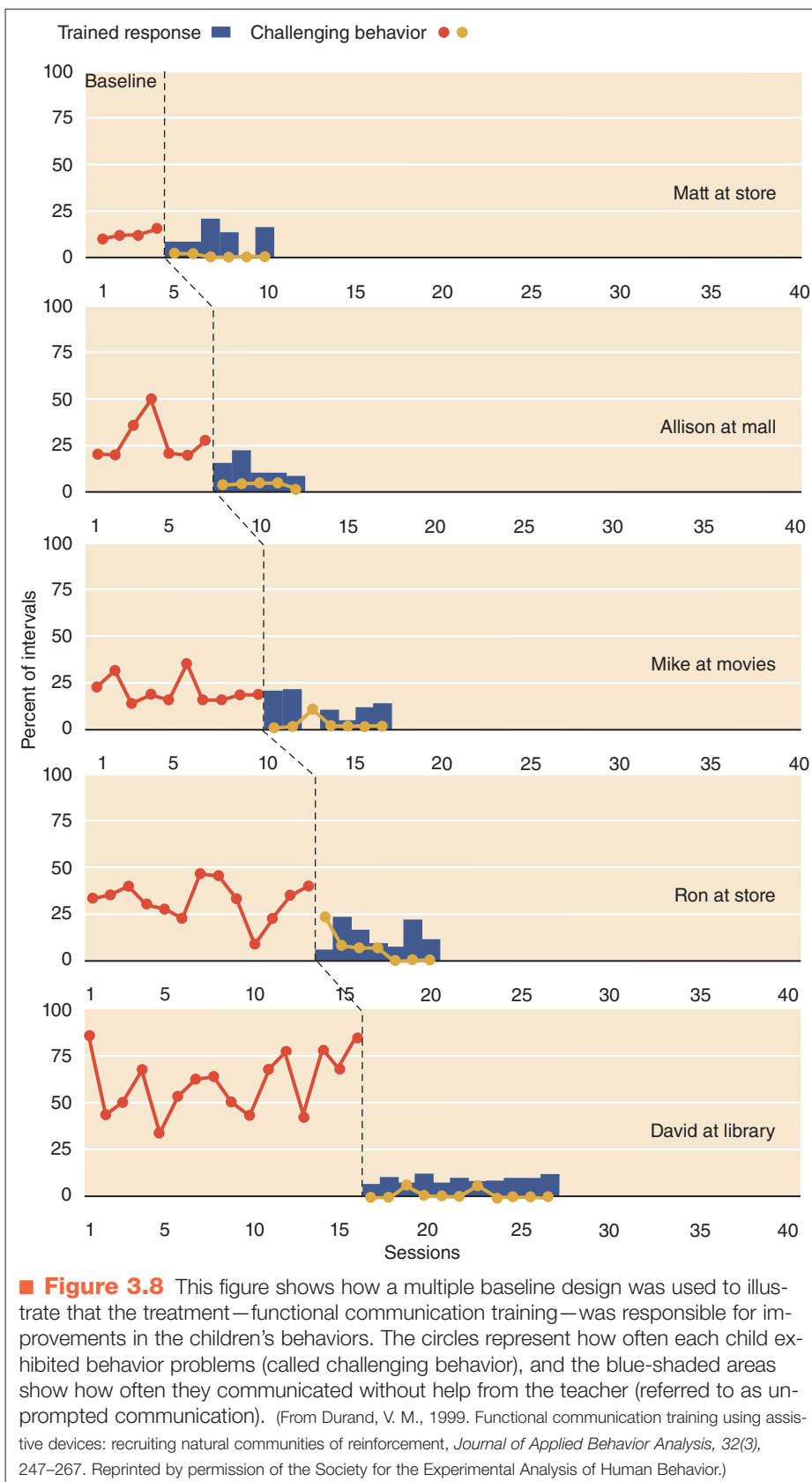
withdrawal design Removing a treatment to note whether it has been effective. In single-case experimental designs, a behavior is measured (baseline), an independent variable is introduced (intervention), and then the intervention is withdrawn. Because the behavior continues to be measured throughout (repeated measurement), any effects of the intervention can be noted.

baseline Measured rate of a behavior before introduction of an intervention that allows comparison and assessment of the effects of the intervention.

multiple baseline Single-case experimental design in which measures are taken on two or more behaviors or on a single behavior in two or more situations. A particular intervention is introduced for each at different times. If behavior change is coincident with each introduction, this is strong evidence the intervention caused the change.

a procedure known as *functional communication training*. Using a multiple baseline, we introduced this treatment to a group of five children. Our dependent variables were the incidence of the children's behavior problems and their

newly acquired communication skills. As Figure 3.8 shows, only when we began treatment did each child's behavior problems improve and communication begin. This multiple baseline design let us rule out coincidence or some



other change in the children's lives as explanations for the improvements.

Among the advantages of the multiple baseline design in evaluating treatments is that it does not require withdrawal of treatment, and, as you've seen, withdrawing treatment is sometimes difficult or impossible. Furthermore, the multiple baseline typically resembles the way treatment would naturally be implemented. A clinician can't help a client with numerous problems simultaneously but can take repeated measures of the relevant behaviors and observe when they change. A clinician who sees predictable and orderly changes related to where and when the treatment is used can conclude the treatment is causing the change.

Concept Check 3.4

Check your understanding of research methods by indicating which would be most appropriate in each of the following situations. Choose from (a) case study, (b) correlation, (c) randomized clinical trials, (d) epi-

demiology, (e) experiment, (f) single-case experimental design.

1. A researcher changes the level of noise several times to see how it affects concentration in a group of people. _____
2. A group of researchers uses chance assignment to include participants in one of two treatment groups and uses published protocols to make sure treatment is applied uniformly. _____
3. A researcher wants to investigate the hypothesis that as children go through adolescence they listen to louder music. _____
4. A researcher is interested in studying a woman who had no contact with civilization and created her own language. _____
5. A researcher wants to know how different kinds of music will affect a 5-year-old who has never spoken. _____

Genetics and Behavior across Time and Cultures

- › How do researchers study the interaction between environment and genetics?
- › Why do researchers study behavior over time and across cultures?

Examining the origin and strategies for treating an individual's behavior problem or disorder requires several factors to be considered so that multiple possible influences are taken into account. The factors include determining any inherited influences, how behavior will change or remain the same over time, and the effects of culture.

Studying Genetics

We tend to think of genetics in terms of what we inherit from our parents: "He has his mother's eyes." "She's thin just like her dad." "She's stubborn like her mother." This simple view of how we become the people we are suggests that how we look, think, feel, and behave is predetermined. Yet we now know that the interaction between our genetic makeup and our experiences is what determines how we will develop. The goal of behavioral geneticists (people who study the genetics of behavior) is to tease out the role of genetics in these interactions.

Genetic researchers examine **phenotypes**, the observable characteristics or behavior of the individual, and **genotypes**, the unique genetic makeup of individual people. For example, a person with Down syndrome typically has some level of mental retardation and a variety of other physical characteristics, such as slanted eyes and a thick tongue.

These characteristics are the phenotype. The genotype is the extra chromosome (21) that causes Down syndrome.

Beginning in 1990, scientists around the world, in a coordinated effort, began the **human genome project** (*genome* means all the genes of an organism). Using the latest advances in molecular biology, scientists working on this project completed a rough draft of the mapping of the approximately 25,000 human genes. This work identified hundreds of genes that contribute to inherited diseases. These exciting findings represent truly astounding progress in deciphering the nature of genetic endowment and its role in psychological disorders.

What follows is a brief review of the research strategies scientists use as they study the interaction between environment and genetics in psychological disorders: family studies, adoption studies, twin studies, genetic linkage analysis, and association studies.

phenotype Observable characteristics or behaviors of an individual.

genotype Specific genetic makeup of an individual.

human genome project Ongoing scientific attempt to develop a comprehensive map of all human genes.

Family Studies

In **family studies**, scientists simply examine a behavioral pattern or emotional trait in the context of the family. The family member with the trait singled out for study is called the **proband**. If there is a genetic influence, presumably the trait should occur more often in first-degree relatives (parents, siblings, or offspring) than in second-degree or more distant relatives. The presence of the trait in distant relatives, in turn, should be somewhat greater than in the population as a whole. In Chapter 1 you met Judy, the adolescent with blood–injury–injection phobia who fainted at the sight of blood. The tendency of a trait to run in families, or familial aggregation, is as high as 60% for this disorder—that is, 60% of the first-degree relatives of someone with blood–injury–injection phobia have the same reaction to at least some degree.

The problem with family studies is that family members tend to live together and there might be something in their shared environment that causes the high familial aggregation. For example, Mom might have developed a bad reaction to blood as a young girl after witnessing a serious accident. Every time she sees blood she has a strong emotional response. Because emotions are contagious, the young children watching Mom probably react similarly. In adulthood, they pass it on, in turn, to their own children.

Adoption Studies

How do we separate environmental from genetic influences in families? One way is through **adoption studies**. Scientists identify adoptees who have a particular behavioral pattern or psychological disorder and attempt to locate first-degree relatives who were raised in different family settings. Suppose a young man has a disorder and scientists discover his brother was adopted as a baby and brought up in a different home. The researchers would then examine the brother to see whether he also displays signs of the disorder. If they can identify enough sibling pairs (and they usually do after a lot of hard work), they can assess whether siblings brought up in different families display the disorder to the same extent as the original participant. If the siblings raised with different families have the disorder more often than would be expected by chance, the researchers can infer that genetic endowment is a contributor.

Twin Studies

Nature presents an elegant experiment that gives behavioral geneticists their closest possible look at the role of genes in development: identical (monozygotic) twins (Johnson, Turkheimer, Gottesman, & Bouchard Jr., 2009). These twins not only look alike, but also have identical genes. Fraternal (dizygotic) twins, however, come from different eggs and have only about 50% of their genes in common, as do all first-degree relatives. In **twin studies**, the obvious scientific question is whether identical twins share the same trait—say, fainting at the sight of blood—more often than fraternal twins. Determining whether a trait is shared is easy with some physical traits, such as height. As Plomin (1990) points out, correlations in height are 0.45

for both first-degree relatives and fraternal twins and 0.90 for identical twins. These findings show that heritability of height is about 90%, so approximately 10% of the variance is the result of environmental factors. But the case of conjoined identical twins with different personalities reminds us that the 90% estimate is the *average* contribution. An identical twin who was severely physically abused or selectively deprived of proper foods might be substantially different in height from the other twin.

Michael Lyons and his colleagues (1995) conducted a study of antisocial behavior among members of the Vietnam Era Twin Registry. The individuals in the study were about 8,000 twin men who served in the military from 1965 to 1975. The investigators found that among identical twins there was a greater degree of resemblance for antisocial traits than among fraternal twins. The difference was greater for adult antisocial behavior—that is, identical twins' behavior was more similar than fraternal twins' behavior in adulthood—than for juvenile antisocial behavior (meaning that nonadult identical and fraternal twin pairs were more similar in childhood than in adulthood). The researchers concluded that the family environment is a stronger influence than genetic factors on juvenile antisocial traits and that antisocial behavior in adulthood is more strongly influenced by genetic factors. In other words, after the individual grew up and left the family of origin, early environmental influences mattered less and less.

This way of studying genetics is not perfect. You can assume identical twins have the same genetic makeup and fraternal twins do not. However, a complicating concern is whether identical twins have the same experiences or environment as fraternal twins. Some identical twins are dressed alike and are even given similar names. Yet the twins themselves influence each other's behavior, and in some cases, identical twins may affect each other more than fraternal twins (Johnson et al., 2009). One way to address this problem is by combining the adoption study and twin study methods. If you can find identical twins, one or both of whom was adopted as an infant, you can estimate the relative roles of genes and the environment (nature versus nurture) in the development of behavioral patterns.

Genetic Linkage Analysis and Association Studies

The results of a series of family, twin, and adoption studies may suggest that a particular disorder has a genetic component, but they can't provide the location of the implicated gene or genes. To locate a defective gene, there are two general strategies: genetic linkage analysis and association studies (Fears, Mathews, & Freimer, 2009).

The basic principle of **genetic linkage analysis** is simple. When a family disorder is studied, other inherited characteristics are assessed at the same time. These other characteristics—called **genetic markers**—are selected because we know their exact location. If a match or link is discovered between the inheritance of the disorder and the inheritance of a genetic marker, the genes for the disorder and the genetic marker are probably close together on the same chromosome. For example, bipolar disorder (manic



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▲ Although family members often resemble one another, genetics has to do with far more than what we inherit from our parents.

depression) was studied in a large Amish family (Egeland et al., 1987). Researchers found that two markers on chromosome 11—genes for insulin and a known cancer gene—were linked to the presence of mood disorder in this family, suggesting that a gene for bipolar disorder might be on chromosome 11. Unfortunately, although this is a genetic linkage study, it also illustrates the danger of drawing premature conclusions from research. This linkage study and a second study that purported to find a linkage between bipolar disorder and the X chromosome (Biron et al., 1987) have yet to be replicated; that is, different researchers have not been able to show similar linkages in other families (Craddock & Jones, 2001).

The second strategy for locating specific genes, **association studies**, also uses genetic markers. Whereas linkage studies compare markers in a large group of people with a particular disorder, association studies compare such people to people without the disorder. If certain markers occur significantly more often in the people with the disorder, it is assumed the markers are close to the genes involved with the disorder. This type of comparison makes association studies better able to identify genes that may only weakly be associated with a disorder. Both strategies for locating specific genes shed new light on the origins of specific disorders and may inspire new approaches to treatment (Fears et al., 2009).

Studying Behavior over Time

Sometimes we want to ask, “How will a disorder or behavior pattern change (or remain the same) over time?” This question is important for several reasons. First, the answer helps us decide whether to treat a particular person. For example, should we begin an expensive and time-consuming program for a young adult who is depressed over the loss of a grandparent? You might not if you knew that with normal social

supports the depression is likely to diminish over the next few months without treatment. However, if you have reason to believe a problem isn’t likely to go away on its own, you might decide to begin treatment. For example, aggression among young children does not usually go away naturally and should be dealt with as early as possible.

It is also important to understand the developmental changes in abnormal behavior because sometimes these can provide insight into how problems are created and how they become more serious. For example, you will see that some researchers identify newborns who are at risk for autism because they are siblings of a child with autism and then follow them through infancy until some develop the disorder themselves. This type of study is showing us that the pattern of the onset of this disorder is actually much different than parents report after the fact (they tend to remember drastic changes in the child’s behavior when, in fact, the changes occur gradually) (Rogers, 2009).

Prevention Research

An additional reason for studying clinical problems over time is that we may be able to design interventions and services to prevent these problems. Clearly, preventing mental health difficulties would save countless families significant emotional distress, and the financial savings could be substantial. Prevention research has expanded over the years to include a broad range of approaches. These different methods can be viewed in four broad categories: positive development strategies (health promotion), universal prevention strategies, selective prevention strategies, and indicated prevention strategies (Daniels, Adams, Carroll, & Beinecke, 2009). *Health promotion* or *positive development strategies* involve efforts to blanket entire populations of people—even those who may not be

family studies Genetic study that examines patterns of traits and behaviors among relatives.

proband In genetics research, the individual displaying the trait or characteristic being studied.

adoption studies In genetics research, the study of first-degree relatives reared in different families and environments. If they share common characteristics, such as a disorder, this finding suggests that those characteristics have a genetic component.

twin studies In genetics research, the comparison of twins with unrelated or less closely related individuals. If twins, particularly monozygotic twins who share identical genotypes, share common characteristics such as a disorder, even if they were reared in different environments, then strong evidence of genetic involvement in those characteristics exists.

genetic linkage analysis Study that seeks to match the inheritance pattern of a disorder to that of a genetic marker. This helps researchers establish the location of the gene responsible for the disorder.

genetic marker Inherited characteristic for which the chromosomal location of the responsible gene is known.

association studies Research strategy for comparing genetic markers in groups of people with and without a particular disorder.

at risk—to prevent later problems and promote protective behaviors. For example, the Seattle Social Development Program targets young children in public elementary schools in the Seattle school system that are in high-crime areas, providing intervention with teachers and parents to engage the children in learning and positive behaviors. Although this approach does not target one particular problem (for example, drug use), long-term follow-up of these children suggests multiple positive effects in achievement and reductions in delinquency (Bailey, 2009; Lonczak, Abbott, Hawkins, Kosterman, & Catalano, 2002). *Universal prevention strategies* focus on entire populations and target certain specific risk factors (for example, behavior problems in inner-city classrooms) without focusing on specific individuals. The third approach to prevention intervention—*selective prevention*—specifically targets whole groups at risk (for example, children who have parents who have died) and designs specific interventions aimed at helping them avoid future problems. Finally, *indicated prevention* is a strategy for those individuals who are beginning to show signs of problems (for example, depressive symptoms) but do not yet have a psychological disorder.

To evaluate the effectiveness of each of these approaches, the research strategies used in prevention research for examining psychopathology across time combine individual and group research methods, including both correlational and experimental designs. We look next at two of the most often used: cross-sectional and longitudinal designs.

Cross-Sectional Designs A variation of correlation research is to compare different people at different ages. For a **cross-sectional design**, researchers take a cross section of a population across the different age groups and compare them on some characteristic. For example, if they were trying to understand the development of alcohol abuse and dependence, they could take groups of adolescents at 12, 15, and 17 years of age and assess their beliefs about alcohol use. In an early comparison, Brown and Finn (1982) made some interesting discoveries. They found that 36% of the 12-year-olds thought the primary purpose of drinking was to get drunk. This percentage increased to 64% with 15-year-olds, but dropped again to 42% for the 17-year-old students. The researchers also found that 28% of the 12-year-olds reported drinking with their friends at least sometimes, a rate that increased to 80% for the 15-year-olds and to 88% for the 17-year-olds. Brown and Finn used this information to develop the hypothesis that the reason for excessive drinking among teens is a deliberate attempt to get drunk rather than a mistake in judgment once they are under the influence of alcohol.

In cross-sectional designs, the participants in each age group are called **cohorts**; Brown and Finn studied three cohorts: 12-year-olds, 15-year-olds, and 17-year-olds. The members of each cohort are the same age at the same time and thus have all been exposed to similar experiences. Members of one cohort differ from members of other cohorts in age and in their exposure to cultural and historical experiences. You would expect a group of 12-year-olds in

the early 1980s to have received a great deal of education about drug and alcohol use (“Just Say No”), whereas the 17-year-olds may not have. Differences among cohorts in their opinions about alcohol use may be related to their respective cognitive and emotional development at these different ages and to their dissimilar experiences. This **cohort effect**, the confounding of age and experience, is a limitation of the cross-sectional design.

Researchers prefer cross-sectional designs to study changes over time partly because they are easier to use than longitudinal designs (discussed next). In addition, some phenomena are less likely to be influenced by different cultural and historical experiences and therefore less susceptible to cohort effects. For example, the prevalence of Alzheimer’s disease among people at ages 60 and 70—assumed to be strongly influenced by biology—is not likely to be greatly affected by different experiences among the study participants.

One question not answered by cross-sectional designs is how problems develop in individuals. For example, do children who refuse to go to school grow up to have anxiety disorders? Researchers cannot answer this question simply by comparing adults with anxiety problems and children who refuse to go to school. They could ask the adults whether they were anxious about school when they were children, but this **retrospective information** (looking back) is usually less than accurate. To get a better picture of how individuals develop over the years, researchers use longitudinal designs.

Longitudinal Designs Rather than looking at different groups of people of differing ages, researchers may follow one group over time and assess change in its members directly. The advantages of **longitudinal designs** are that they do not suffer from cohort effect problems and they allow the researchers to assess individual change. (■ Figure 3.9 illustrates both longitudinal and cross-sectional designs.) Researchers in Australia, for example, conducted a longitudinal study of adolescents who had some symptoms of depression (Sheffield et al., 2006). They compared different prevention strategies—including universal and indicated prevention strategies—to assess if they could prevent these mildly depressed youth from becoming more depressed by giving them problem-solving skills. They followed 2,479 depressed ninth-graders in 34 schools over a 12-month period and found, surprisingly, that the interventions had no significant impact compared to no treatment. Although these results are disappointing, they show the value of longitudinal designs when assessing the durability of treatment.

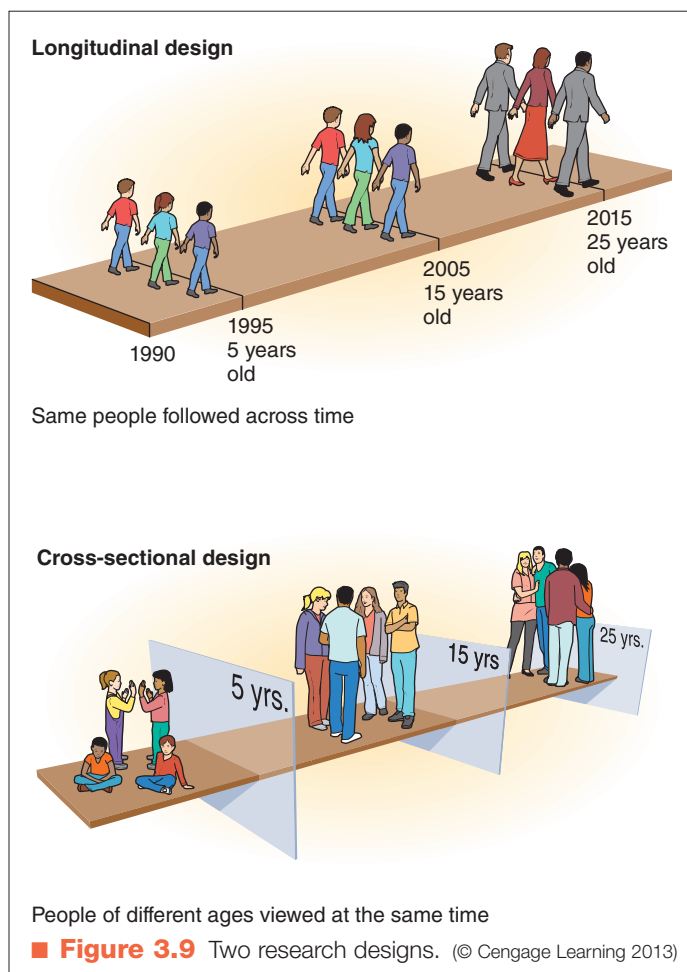
Imagine conducting a major longitudinal study. Not only must the researcher persevere over months and years, but so must the people who participate in the study. They must remain willing to continue in the project, and the researcher must hope they will not move away or die. Longitudinal research is costly and time consuming. Finally, longitudinal designs can suffer from a phenomenon similar to the cohort effect on cross-sectional designs. The **cross-generational effect** involves trying to generalize the findings to groups whose experiences are different from those of the study par-



▲ Longitudinal studies can be complicated by the cross-generational effect; for example, young people in the 1960s shared experiences that were different from those of young people today.

ticipants. For example, the drug-use histories of people who were young adults in the 1960s and early 1970s are vastly different from those of people born in the 1990s.

Sometimes psychopathologists combine longitudinal and cross-sectional designs in a strategy called **sequential design**, which involves repeated study of different cohorts over time. As an example, we will look at work by Laurie Chassin and her colleagues, who study children's beliefs



about cigarette smoking (Chassin, Presson, Rose, & Sherman, 2001). These researchers have followed 10 cohorts of middle- and high-school-age children (cross-sectional design) since the early 1980s (longitudinal design). Through questionnaires, they have tracked how these children (and later, adults) viewed the health risks associated with smoking from their youth into their mid-30s. The results suggest that as middle schoolers (ages 11–14) the children viewed smoking as less risky to them personally and believed that there were positive psychological benefits (for example, making them appear more mature). These beliefs changed as the children went into high school and entered adulthood, but they point to the importance of targeting smoking prevention programs during the middle-school period (Chassin et al., 2005; Chassin et al., 2001).

Studying Behavior across Cultures

Researchers in Malaysia—where psychological disorders are commonly believed to have supernatural origins—have described a disorder they call *sakit gila*, which has some features of schizophrenia but differs in important ways

cross-sectional design Methodology to examine a characteristic by comparing individuals of different ages (contrast with longitudinal design).

cohort Participants in each age group of a study with a cross-sectional design.

cohort effect Observation that people of different age groups differ in their values and experiences.

retrospective information Literally “the view back”; data collected by examining records or recollections of the past. It is limited by the accuracy, validity, and thoroughness of the sources.

longitudinal design Systematic study of changes in the same individual or group examined over time (contrast with cross-sectional design).

cross-generational effect Limit on the generalizability of longitudinal research because the group under study may differ from others in culture and experience.

sequential design Combination of cross-sectional and longitudinal designs involving repeated study of different cohorts over time.

(Barrett et al., 2005). Could we learn more about schizophrenia (and *sakit gila*) by comparing the disorders themselves and the cultures in which they are found? Increasing awareness of the limited cultural scope of our research is creating a corresponding increase in cross-cultural research on psychopathology.

The designs we have described are adapted for studying abnormal behavior across cultures. Some researchers view the effects of different cultures as though they were different treatments (Hobfoll, Canetti-Nisim, & Johnson, 2006). In other words, the independent variable is the effect of different cultures on behavior, rather than, say, the effect of cognitive therapy versus simple exposure for the treatment of fears. The difference between looking at culture as a “treatment” and our typical design, however, is important. In cross-cultural research, we can’t randomly assign infants to different cultures and observe how they develop. People from varying cultures can differ in any number of important ways—their genetic backgrounds, for one—that could explain variations in their behavior for reasons other than culture.

The characteristics of different cultures can also complicate research efforts. Symptoms, or descriptions of symptoms, can be dissimilar in different societies (Gaw, 2008; Marsella & Kaplan, 2002). Nigerians who are depressed complain of heaviness or heat in the head, crawling sensations in the head or legs, burning sensations in the body, and a feeling that the belly is bloated with water (Ebigno, 1982). In contrast, people in the United States report feeling worthless, being unable to start or finish anything, losing interest in usual activities, and thinking of suicide. Natives of China, however, are less likely to report feeling depressed or losing interest in favorite things but may have thoughts of suicide or worthlessness (Phillips et al., 2007). These few examples illustrate that applying a standard definition of depression

across different cultures will result in vastly different outcomes.

An additional complicating factor is varying tolerances, or thresholds, for abnormal behavior. If people in different cultures see the same behaviors differently, researchers will have trouble comparing incidence and prevalence rates. Lambert and colleagues (1992) found that Jamaican parents and teachers report fewer incidents of abnormal child behavior than do their American counterparts. Does this represent a biological or environmental difference in the children themselves, the effects of different thresholds of tolerance in the societies, or a combination of both? Understanding cultural attitudes and customs is essential to such research (Kohn, Wintrob, & Alarcón, 2009).

Finally, treatment research is also complicated by cross-cultural differences. Cultures develop treatment models that reflect their own values. In Japan, psychiatric hospitalization is organized in terms of a family model, with caregivers assuming parental roles. A family model was common in psychiatric institutions in 19th-century North America until it was replaced with the medical model common today (Colp, 2009). In Saudi Arabia, women are veiled when outside the home, which prevents them from uncovering their faces in the presence of therapists; custom thus complicates efforts to establish a trusting and intimate therapeutic client–therapist relationship (Dubovsky, 1983). Because in the Islamic view medicine and religion are inseparable, medical and religious treatments are combined (Baasher, 2001). As you can see, something as basic as comparing treatment outcomes is highly complex in a cross-cultural context.

The Power of a Program of Research

When we examine different research strategies independently, as we have done here, we often have the impression

that some approaches are better than others. It is important to understand that this is not true. Depending on the type of question you are asking and the practical limitations inherent in the inquiry, any of the research techniques would be appropriate. Significant issues often are resolved not by one perfectly designed study but rather by a series of studies that examine different aspects of the problem—in a program of research. The research of one of this book’s authors will be used to illustrate how complex research questions are answered with a variety of different research designs.

One of us (Durand) studies why children with autism spectrum disorders display seemingly irrational behaviors such as self-injury (hitting or biting yourself) or aggression. The expectation is that the more we understand why these behaviors occur, the better the chances of de-



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▲ The same behavior—in this case a woman baring her legs and having her head uncovered in public—would be acceptable in some cultures but not in others.

signing an effective treatment. In an early study we used a single-subject design (withdrawal design) to test the influence of adult attention and escaping from unpleasant educational tasks on these problem behaviors (Carr & Durand, 1985). We found that some children hit themselves more when people ignore them, and others will hit themselves to get out of school assignments that are too difficult, showing that these disturbing behaviors can be understood by looking at them as primitive forms of communication (for example, “Please come here” or “This is too hard.”). This led us to consider what would happen if we taught these children to communicate with us more appropriately (Durand, 1990). The next series of studies again used single-subject designs and demonstrated that teaching more acceptable ways of getting attention or help from others did significantly reduce these challenging behaviors (e.g., Durand & Carr, 1992). Several decades of research on this treatment (called functional communication training) demonstrates its value in significantly improving the lives of people with these once severe behavior problems by reducing the severity of the misbehavior through improving communication skills (Durand, 2011).

One of the questions that researchers face in this area is why some children develop more severe forms of these behavior problems and others do not. To begin to answer this question we conducted a 3-year prospective longitudinal study on more than 100 children with autism to see what factors might cause more problems (Durand, 2001). We studied the children at age 3 and later at age 6 to determine what about the child or the family led to more severe problems. We found the following two factors to be the most important indicators of severe behavior problems in the children: (1) if the parents were pessimistic about their ability to help their child or (2) if the parents were doubtful about their child’s ability to change. These parents would “give up” and allow their child to dictate many of the routines around the house (for example, eating dinner in the living room or not going out to the movies because it would cause tantrums) (Durand, 2001).

This important finding then led to the next question: Could we make pessimistic parents more optimistic, and would this help prevent their children from developing more severe behavior problems? To answer this question we next relied on a randomized clinical trial to see if adding a cognitive behavior intervention (described in more detail in the later chapters on the individual disorders) would help make pessimistic parents more optimistic. We wanted to teach these parents to examine their own pessimistic thoughts (“I have no control of my child.” “My child won’t improve because of his/her autism.”) and replace them with more hopeful views of their world (“I can help my child.” “My child can improve his/her behavior.”). We hypothesized that this cognitive intervention would help them carry out the parenting strategies we offer them (including functional communication training) and in turn improve the outcomes of our behavioral interventions. We randomly assigned groups of pessimistic parents who also had a child with very severe behavior problems to either a

group that taught them how to work with their child or a group that used the same techniques but also helped them explore their pessimistic thinking and helped them view themselves and their child in a better light. The treatments were applied formally, using written protocols to make sure that each group received the treatment as designed (Durand & Hieneman, 2008). What we found was that addition of the cognitive behavioral intervention had the expected effect—improving optimism and improving child outcomes (Durand, Hieneman, Clarke, & Zona, 2009).

As this example indicates, research is conducted in stages, and a complete picture of any disorder and its treatment can be seen only after looking at it from many perspectives. An integrated program of research can help researchers explore various aspects of abnormal behavior.

Replication

Scientists in general, and behavioral scientists in particular, are never really convinced something is “true.” Replicating findings is what makes researchers confident that what they are observing isn’t a coincidence.

The strength of a research program is in its ability to replicate findings in different ways to build confidence in the results. If you look back at the research strategies we have described, you will find that replication is one of the most important aspects of each. The more times researchers repeat a process (and the behavior they are studying changes as expected), the more certain they are about what caused the changes.

Research Ethics

An important final issue involves the ethics of doing research in abnormal psychology. For example, the appropriateness of a clinician’s delaying treatment to people who need it, just to satisfy the requirements of an experimental design, is often questioned. One single-case experimental design, the withdrawal design, can involve removing treatment for some time. Treatment is also withheld when placebo control groups are used in group experimental designs. Researchers across the world—in an evolving code of ethics referred to as the Declaration of Helsinki—are developing guidelines to determine just when it would be appropriate to use placebo-controlled trials (Roberts, Hoop, & Dunn, 2008). The fundamental question is this: When does a scientist’s interest in preserving the internal validity of a study outweigh a client’s right to treatment?

One answer to this question involves **informed consent**—a research participant’s formal agreement to cooperate in a study following full disclosure of the nature of the research

informed consent Ethical requirement whereby research subjects agree to participate in a study only after they receive full disclosure about the nature of the study and their own role in it.

and the participant's role in it (Lubit, 2009). In studies using some form of treatment delay or withdrawal, the participant is told why it will occur and the risks and benefits, and permission to proceed is then obtained. In placebo control studies, participants are told they may not receive an active treatment (all participants are blind to or unaware of which group they are placed in), but they are usually given the option of receiving treatment after the study ends.

True informed consent is at times elusive. The basic components are competence, voluntarism, full information, and comprehension on the part of the participant (Bankert & Madur, 2006). In other words, research participants must be capable of consenting to participation in the research, they must volunteer or not be coerced into participating, they must have all the information they need to make the decision, and they must understand what their participation will involve. In some circumstances, all these conditions are difficult to attain. Children, for example, often do not fully appreciate what will occur during research. Similarly, individuals with cognitive impairments such as mental retardation or schizophrenia may not understand their role or their rights as participants. In institutional settings, participants should not feel coerced into taking part in research.

Research in university and medical settings must be approved by an institutional review board (IRB) (Lubit, 2009). These are committees made up of university faculty

and nonacademic people from the community, and their purpose is to see that the rights of research participants are protected. The committee structure allows people other than the researcher to look at the research procedures to determine whether sufficient care is being taken to protect the welfare and dignity of the participants.

To safeguard those who participate in psychological research and to clarify the responsibilities of researchers, the American Psychological Association has published *Ethical Principles of Psychologists and Code of Conduct*, which includes general guidelines for conducting research (American Psychological Association, 2002). People in research experiments must be protected from both physical and psychological harm. In addition to the issue of informed consent, these principles stress the investigators' responsibility for the research participants' welfare because the researcher must ensure that the welfare of the research participants is given priority over any other consideration, including experimental design.

Psychological harm is difficult to define, but its definition remains the responsibility of the investigators. Researchers must hold in confidence all information obtained from participants, who have the right to concealment of their identity on all data, either written or informal. Whenever deception is considered essential to research, the investigator must satisfy a committee of peers that this judgment is correct. If deception or concealment is used, participants must be debriefed—that is, told in language

Discussing Diversity



Do Psychological Disorders Look the Same across Countries?

Since the end of World War II, researchers have been conducting national surveys to determine what percentages of people in the population have different psychological disorders. In such surveys, researchers typically conduct household, face-to-face diagnostic interviews with a large (approximately 5,000), randomly selected group of people within a given country and use the information obtained to make inferences about what percentage of people in that country have each psychological disorder. (This is similar to the strategy used in political election polls in which a small but randomly selected group of people are polled regarding who they plan to vote for and that information is used to generalize about how the entire population will vote.) Surveys like these are how we know what percentage of the population has the psychological disorder

you learn about later in this book, such as anxiety disorders, mood disorders, and eating disorders. Most of these surveys are done only within individual countries and so have not been able to address whether psychological disorders occur at the same rate or look the same across different countries.

To address such questions, in the late 1990s researchers from 28 countries came together and began a series of coordinated and rigorously implemented population surveys designed to estimate the prevalence of psychological disorders around the world and to identify risk, protective factors, and treatments used for each disorder. This large project, which is called the World Health Organization (WHO) World Mental Health Survey Initiative and is led by Ronald Kessler at Harvard Medical School and T. Bedirhan

Üstün of WHO, is ongoing but already has yielded some noteworthy findings. Of note, the rates of each psychological disorder vary significantly across the 28 countries; however, when they occur, disorders look similar across the countries. For instance, when disorders are present, their age of onset is remarkably consistent cross-nationally, and approximately half of all disorders begin before adulthood in each country. The results of this historic study suggest that despite differences in rates and in the manifestation of different disorders (as discussed in Chapter 2), many characteristics of anxiety, mood, eating, and other psychological disorders look the same across many countries around the world. To learn more about this study and its findings, go to www.hcp.med.harvard.edu/wmh.

they can understand the true purpose of the study and why it was necessary to deceive them.

The Society for Research in Child Development (2007) has endorsed ethical guidelines for research that address some issues unique to research on children. For example, these guidelines not only call for confidentiality, protection from harm, and debriefing but also require informed consent from children's caregivers and from the children themselves if they are age 7 or older. These guidelines specify that the research must be explained to children in language they can understand so that they can decide whether they wish to participate. Many other ethical issues extend beyond protection of the participants, including how researchers deal with errors in their research, fraud in science, and the proper way to give credit to others. Doing a study involves more than selecting the appropriate design. Researchers must be aware of numerous concerns that involve the rights of the people in the experiment, as well as their own conduct.

A final and important development in the field that will help to "keep the face" on psychological disorders is the involvement of consumers in important aspects of this research—referred to as participatory action research (Kendon, Pain, & Kesby, 2007). The concern over not only how people are treated in research studies but also how the information is interpreted and used has resulted in many government agencies providing guidance on how the people who are the targets of the research (for example, those with schizophrenia, depression, or anxiety disorders) should be involved in the process. The hope is that if people who experience these disorders are partners in designing, running, and interpreting this research, the relevance of the research and the treatment of the participants in these studies, will be markedly improved.

Summary

Assessing Psychological Disorders

What are clinical assessment and diagnosis?

- › Clinical assessment is the systematic evaluation and measurement of psychological, biological, and social factors in an individual with a possible psychological disorder; diagnosis is the process of determining that those factors meet all criteria for a specific psychological disorder.
- › Reliability, validity, and standardization are important components in determining the value of a psychological assessment.

What are the main methods used in clinical assessment?

- › To assess various aspects of psychological disorders, clinicians may first interview and take an informal men-

Concept Check 3.5

Part A

The following are some advantages and limitations of methods used in research across time. Sort them out by marking CS for cross-sectional designs and L for longitudinal designs.

Benefits:

1. ___ Shows individual development
2. ___ Easier
3. ___ No cohort effects

Limitations:

4. ___ Cohort effects
5. ___ Cross-generational effect
6. ___ No individual development data

Part B

Indicate whether the following statements are true (T) or false (F).

7. ___ After the nature of the experiment and their role in it are disclosed to the participants, they must be allowed to refuse or agree to sign an informed consent form.
8. ___ If the participant is in the control group or taking a placebo, informed consent is not needed.
9. ___ Research in universities or medical settings must be approved by the institution's review board regarding whether or not the participants lack the cognitive skills to protect themselves from harm.
10. ___ Participants have a right to concealment of their identity on all data collected and reported.
11. ___ When deception is essential to the research, participants do not have to be debriefed regarding the true purpose of the study.

tal status exam of the patient. More systematic observations of behavior are called behavioral assessment.

- › A variety of psychological tests can be used during assessment, including projective tests, in which the patient responds to ambiguous stimuli by projecting unconscious thoughts; personality inventories, in which the patient takes a self-report questionnaire designed to assess personal traits; and intelligence testing, which provides a score known as an intelligence quotient (IQ).
- › Biological aspects of psychological disorders may be assessed through neuropsychological testing designed to identify possible areas of brain dysfunction. Neuroimaging can be used more directly to identify brain structure and function. Finally, psychophysiological assessment refers to measurable changes in the nervous

system, reflecting emotional or psychological events that might be relevant to a psychological disorder.

Diagnosing Psychological Disorders

How is psychiatric diagnosis carried out?

- › The term *classification* refers to any effort to construct groups or categories and to assign objects or people to the categories on the basis of their shared attributes or relations. Methods of classification include classical categorical, dimensional, and prototypical approaches. Our current system of classification, the *Diagnostic and Statistical Manual*, fourth edition, text revision (*DSM-IV*), and in the forthcoming fifth edition (*DSM-5*) is based on a prototypical approach in which certain essential characteristics are identified but certain “nonessential” variations do not necessarily change the classification. The *DSM-IV-TR* categories are based on empirical findings to identify the criteria for each diagnosis. Although this system is the best to date in terms of scientific underpinnings, it is far from perfect, and research continues on the most useful way to classify psychological disorders.

Conducting Research in Psychopathology

What are the basic components of research in psychopathology?

- › Research involves establishing a hypothesis that is then tested. In abnormal psychology, research focuses on hypotheses meant to explain the nature, the causes, or the treatment of a disorder.

Why are ethical principles so important in the research process?

- › Ethics are important to the research process, and ethical guidelines are spelled out by many professional organizations in an effort to ensure the well-being of research participants.
- › Ethical concerns are being addressed through informed consent and through the inclusion of consumers in research design, implementation, and interpretation.

Types of Research Methods

What methods are used to conduct research on the causes of behavior?

- › The individual case study is used to study one or more individuals in depth. Although case studies have an important role in the theoretical development of psychology, they are not subject to experimental control and must necessarily be suspect in terms of both internal and external validity.
- › Research by correlation can tell us whether a relationship exists between two variables, but it does not tell us if that relationship is a causal one. Epidemiological research is a type of correlational research that reveals the incidence, distribution, and consequences of a particular problem in one or more populations.
- › Research by experiment can follow one of two designs: group or single case. In both designs, a variable (or variables) is manipulated and the effects are observed to determine the nature of a causal relationship.

Genetics and Behavior across Time and Cultures

How do researchers study the interaction between environment and genetics?

- › Genetic research focuses on the role of genetics in behavior. These research strategies include family studies, adoption studies, twin studies, genetic linkage analyses, and association studies.
- › Research strategies that examine psychopathology across time include cross-sectional and longitudinal designs. Both focus on differences in behavior or attitudes at different ages, but the former does so by looking at different individuals at different ages and the latter looks at the same individuals at different ages.
- › Prevention research can be viewed in four broad categories: health promotion or positive development strategies, universal prevention strategies, selective prevention strategies, and indicated prevention strategies.

Why do researchers study behavior over time and across cultures?

- › The clinical picture, causal factors, and treatment process and outcome can all be influenced by cultural factors.
- › The more the findings of a research program are replicated, the more they gain in credibility.

Key Terms

clinical assessment, 70
diagnosis, 70
reliability, 71
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standardization, 72
mental status exam, 72

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Answers to Concept Checks

3.1

Part A

1. thought processes; 2. appearance and behavior; 3. sensorium; 4. mood and affect; 5. intellectual functioning

Part B

6. R, V; 7. NR, NV; 8. R, V; 9. NR, NV

3.2

1. T; 2. F; 3. F (still a problem); 4. F (reliable); 5. T

3.3

1. independent variable; 2. confound; 3. hypothesis; 4. dependent variable; 5. internal validity, external validity

3.4

1. e; 2. c; 3. b; 4. a; 5. f

3.5

Part A

1. L; 2. CS; 3. L; 4. CS; 5. L; 6. CS

Part B

7. T; 8. F; 9. T; 10. T; 11. F

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- › *Psychological Assessment:* The psychological team discusses factors in dysfunctional beliefs, family relationships, and behavior patterns that might be contributing to a woman's major depressive disorder.

- › *Research Methods:* David Barlow discusses the protocols and procedures in doing ethical research on clients with psychological problems. He explains the safeguards and the changes in the practices over time.

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- › Reliability/Validity
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- › Mental Status Exam
- › Behavioral Assessment
- › Projective Tests
- › Concept Check—Data-Based Approach
- › Neuropsychological Testing

- › False Positive/False Negative
- › Psychophysiological Assessment
- › Diagnosis/Classification
- › Taxonomy/Nosology/Nomenclature
- › Concept Check—Categorical Versus Dimensional
- › Classification Systems
- › *DSM-IV*
- › Hypothesis/Testability
- › Independent/Dependent Variables
- › Internal/External Validity
- › Statistical Versus Clinical Significance
- › Case Study Method
- › Correlational Research
- › Correlation Coefficient
- › Experiment
- › Placebo Control Group
- › Double-Blind Control
- › Single-Case Experimental Design (Repeated Measures)
- › Genetic Research (Family and Adoptee Studies)
- › Genetic Research (Twin, Genetic Linkage, and Association Studies)
- › Longitudinal and Cross-Sectional Designs

Chapter Quiz

1. During a clinical interview a psychologist notes that a client is not aware of what the date is or even where she is. The psychologist has gained information about what aspect of the client’s mental status?
 - a. reliability
 - b. affect
 - c. sensorium
 - d. intellectual functioning
2. One criticism of the Rorschach inkblot test and other projective assessment techniques is that different therapists administer and interpret them in different ways. Because of that variability, the tests lack what key attribute?
 - a. random sampling
 - b. standardization
 - c. validity
 - d. testability
3. What type of test would you use to explore whether an individual might have some sort of brain damage or injury?
 - a. neuropsychological test
 - b. projective test
 - c. electrodermal test
 - d. personality test
4. Measuring electrical activity in the brain with an electroencephalogram (EEG) would be most appropriate to answer which of the following questions?
 - a. Will this client perform at the same level with his peers in school?
 - b. Does this client have excessive fears and worries?
 - c. Is this client well suited to pursue a career in the creative arts?
 - d. Is this client benefiting from relaxation training?
5. Which approach to diagnostic classification identifies both essential characteristics of a disorder that everyone with the disorder shares and nonessential characteristics that might vary from person to person?
 - a. prototypical
 - b. standardized
 - c. dimensional
 - d. categorical

6. Despite improvements in *DSM-IV* and *DSM-IV-TR*, which of the following criticisms can still be leveled at that classification system?
 - a. It provides no opportunity to describe biological or social factors that might influence psychological health.
 - b. It relies on a purely dimensional approach, and the number of relevant dimensions on which to describe clients is infinite.
 - c. The system emphasizes validity at the expense of reliability.
 - d. It categorizes and labels people, which can be pejorative or even self-fulfilling.
7. In most experiments, researchers explore the expected influence of the _____ on the _____.
 - a. incidence; prevalence
 - b. independent variable; dependent variable
 - c. external validity; internal validity
 - d. testability; generalizability
8. When behavior change occurs because of a person's expectation of change rather than (or in addition to) the result of any manipulation by the experimenter, it is known as the:
 - a. clinical significance
 - b. cohort effect
 - c. placebo effect
 - d. prevalence
9. What type of research design is used if an experiment examines life satisfaction in different groups of 20-, 40-, and 60-year-olds to draw conclusions about age differences?
 - a. cross-sectional
 - b. longitudinal
 - c. multiple baseline
 - d. case study
10. One way that participants in research projects are protected from harm is by making sure they are not coerced into participating and that they have full knowledge of what their participation will involve. What is that ethical protection called?
 - a. internal validity
 - b. positive correlation
 - c. informed consent
 - d. clinical significance(See Appendix A for answers.)

CHAPTER 4

Anxiety Disorders

Chapter Outline

The Complexity of Anxiety Disorders

- Anxiety, Fear, and Panic: Some Definitions
- Causes of Anxiety Disorders
- Comorbidity of Anxiety Disorders

Generalized Anxiety Disorder

- Clinical Description
- Statistics
- Causes
- Treatment

Panic Disorder with and without Agoraphobia

- Clinical Description
- Statistics
- Causes
- Treatment

Specific Phobia

- Clinical Description
- Statistics
- Causes
- Treatment

Social Phobia (Social Anxiety Disorder)

- Clinical Description
- Statistics
- Causes
- Treatment

Posttraumatic Stress Disorder

- Clinical Description
- Statistics
- Causes
- Treatment

Obsessive-Compulsive Disorder

- Clinical Description
- Statistics
- Causes
- Treatment

Abnormal Psychology Live Videos

- Steve, a Patient with Panic Disorder
- Chuck, a Client with Obsessive-Compulsive Disorder
- Virtual Reality Therapy
- Snake Phobia Treatment



Student Learning Outcomes*

Demonstrate knowledge and understanding representing appropriate breadth and depth in selected content areas of psychology:

› Biological bases of behavior and mental processes, including physiology, sensation, perception, comparative, motivation, and emotion (see textbook pages 119–121)

Use the concepts, language, and major theories of the discipline to account for psychological phenomena.

› Describe behavior and mental processes empirically, including operational definitions (see textbook pages 117–119, 123–125, 127–130, 135–139, 141–143, 145–148, 152–155)

Identify appropriate applications of psychology in solving problems, such as:

› Origin and treatment of abnormal behavior (see textbook pages 125–127, 131–135, 139–141, 143–145, 148–151, 155–156)

*Portions of this chapter cover learning outcomes suggested by the American Psychological Association (2007) in their guidelines for the undergraduate psychology major. Chapter coverage of these outcomes is identified by APA Goal and APA Suggested Learning Outcome (SLO).

The Complexity of Anxiety Disorders

› What are the similarities and differences among anxiety, fear, and panic attacks?

Anxiety is complex and mysterious. In some ways, the more we learn about it, the more baffling it seems. “Anxiety” is a specific type of disorder, but it is more than that. It is an emotion implicated so heavily across the full range of psychopathology that we begin by exploring its general nature, both biological and psychological. Next, we consider fear, a somewhat different but clearly related emotion. Related to fear is panic attack, which we propose is fear that occurs when there is nothing to be afraid of and, therefore, at an inappropriate time. With these important ideas clearly in mind, we focus on specific anxiety disorders.

Anxiety, Fear, and Panic: Some Definitions

Have you ever experienced anxiety? That is a silly question, you might say, because most of us feel some anxiety almost every day of our lives. Did you have a test in school today for which you weren’t “perfectly” prepared? Did you have a date last weekend with somebody new? And how about that job interview coming up? Even thinking about that might make you nervous. But have you ever stopped to think about the nature of anxiety? What is it? What causes it?

Anxiety is a negative mood state characterized by bodily symptoms of physical tension and by apprehension about the future (American Psychiatric Association, 2000; Barlow, 2002). In humans it can be a subjective sense of

unease, a set of behaviors (looking worried and anxious or fidgeting), or a physiological response originating in the brain and reflected in elevated heart rate and muscle tension. Because anxiety is difficult to study in humans, much of the research has been done with animals. But is the animals’ experience of anxiety the same as that of humans? It seems to be similar, but we don’t know for sure. Thus, anxiety remains a mystery, and we are only beginning our journey of discovery. Anxiety is also closely related to depression (Barlow, 2000, 2002; Brown & Barlow, 2005, 2009; Clark, 2005; Wilamowska et al., 2010), so much of what we say here is relevant to Chapter 6.

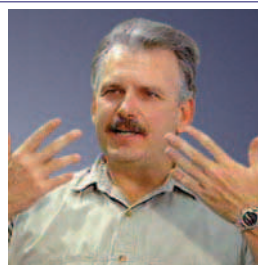
Surprisingly, anxiety is good for us, at least in moderate amounts. Psychologists have known for more than a century that we perform better when we are a little anxious (Yerkes & Dodson, 1908). You would not have done so well on that test the other day if you had had no anxiety. You were a little more charming and lively on that date last weekend because you were anxious. And you will be better prepared for that job interview coming up if you are anxious. In short, social, physical, and intellectual perfor-

anxiety Mood state characterized by marked negative affect and bodily symptoms of tension in which a person apprehensively anticipates future danger or misfortune. Anxiety may involve feelings, behaviors, and physiological responses.

Steve : Panic Disorder

“First time it happened to me, I was driving down the highway, and I had a kind of a knot in my chest. I felt like I had swallowed something and it got stuck, and it lasted pretty much overnight. . . . I felt like I was having a heart attack. . . . I assumed that’s what was happening. I felt very panicky. A flushed feeling came over my whole body. I felt as though I was going to pass out.”

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Abnormal Psychology: Inside Out, Vol. 111.
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is an immediate emotional reaction to current danger characterized by strong escapist action tendencies and, often, a surge in the sympathetic branch of the autonomic nervous system (Barlow, Brown, & Craske, 1994; Craske et al., 2010).

What happens if you experience the alarm response of fear when there is nothing to be afraid of—that is, if you have a false alarm? Consider the case of Gretchen, who appeared at one of our clinics.

Gretchen • Attacked by Panic

I was 25 when I had my first attack. It was a few weeks after I’d come home from the hospital. I had had my appendix out. The surgery had gone well, and I wasn’t in any danger, which is why I don’t understand what happened. But one night I went to sleep and I woke up a few hours later—I’m not sure how long—but I woke up with this vague feeling of apprehension. Mostly I remember how my heart started pounding. And my chest hurt. It felt like I was dying—that I was having a heart attack. And I felt kind of queer, as if I were detached from the experience. It seemed like my bedroom was covered with a haze. I ran to my sister’s room, but I felt like I was a puppet or a robot who was under the control of somebody else while I was running. I think I scared her almost as much as I was frightened myself. She called an ambulance (Barlow, 2002).

This sudden overwhelming reaction came to be known as **panic**, after the Greek god Pan who terrified travelers with bloodcurdling screams. In psychopathology, a **panic attack** is defined as an abrupt experience of intense fear or acute discomfort, accompanied by physical symptoms that usually include heart palpitations, chest pain, shortness of breath, and (possibly) dizziness.

Three basic types of panic attacks are described in *DSM-IV*: situationally bound, unexpected, and situationally predisposed. If you know you are afraid of high places or of driving over long bridges, you might have a panic attack in these situations but not anywhere else; this is a *situationally bound (cued) panic attack*. By contrast, you might experience *unexpected (uncued) panic attacks* if you don’t have a clue when or where the next attack will occur. The third type of panic attack, the *situationally predisposed panic attack*, is between these two types. You are more likely to, but will not inevitably, have an attack where you have had one before (for example, in a large mall). If you don’t know whether it will happen today and it does, the attack is situationally

mances are driven and enhanced by anxiety. Without it, few of us would get much done. Howard Liddell (1949) first proposed this idea when he called anxiety the “shadow of intelligence.” He thought the human ability to plan in some detail for the future was connected to that gnawing feeling that things could go wrong and we had better be prepared for them. This is why anxiety is a future-oriented mood state. If you were to put it into words, you might say, “Something might go wrong, and I’m not sure I can deal with it, but I’ve got to be ready to try. Maybe I’d better study a little harder (or check the mirror one more time before my date, or do a little more research on that company before the interview).”

But what happens when you have too much anxiety? You might actually fail the exam because you can’t concentrate on the questions. All you can think about when you’re too anxious is how terrible it will be if you fail. You might blow the interview for the same reason. On that date with a new person, you might spend the evening perspiring profusely, with a sick feeling in your stomach, unable to think of even one reasonably interesting thing to say. Too much of a good thing can be harmful, and few sensations are more harmful than severe anxiety that is out of control. What makes the situation worse is that severe anxiety usually doesn’t go away—that is, even if we “know” there is nothing to be afraid of, we remain anxious.

All the disorders discussed in this chapter are characterized by excessive anxiety, which takes many forms. In Chapter 2 you saw that **fear** is an immediate alarm reaction to danger. Like anxiety, fear can be good for us. It protects us by activating a massive response from the autonomic nervous system (increased heart rate and blood pressure, for example), which, along with our subjective sense of terror, motivates us to escape (flee) or, possibly, to attack (fight). As such, this emergency reaction is often called the flight or fight response.

There is much evidence that fear and anxiety reactions differ psychologically and physiologically (Barlow, 2002; Bouton, 2005; Craske et al., 2010; Waddell, Morris, & Bouton, 2006). As noted earlier, anxiety is a future-oriented mood state, characterized by apprehension because we cannot predict or control upcoming events. Fear, however,