Abnormal Psychology:
A Scientist-Practioner Approach

FOURTH EDITION

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To our parents

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Thank you for teaching us the value of education and for providing the love and encouragement that allow us to achieve our dreams.

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Student Edition

Books à la Carte
Chapter 1
Abnormal Psychology: Historical and Modern Perspectives

Chapter Learning Objectives

Normal vs. Abnormal Behavior

LO 1.1 Understand why simply being different does not mean abnormality.
LO 1.2 Understand why simply behaving differently is not the same as behaving abnormally.
LO 1.3 Understand why simply behaving dangerously does not always equal abnormality.
LO 1.4 Explain the difference between behaviors that are different, deviant, dangerous, and dysfunctional.
LO 1.5 Identify at least two factors that need to be considered when determining whether a behavior is abnormal.

The History of Abnormal Behavior and Its Treatment

LO 1.6 Discuss ancient spiritual and biological theories of the origins of abnormal behavior.
Current Views of Abnormal Behavior and Treatment

| LO 1.7 | Discuss spiritual, biological, and environmental theories of the origins of abnormal behavior in classical Greek and Roman periods. |
| LO 1.8 | Discuss the spiritual, biological, and environmental theories of the origins of abnormal behavior from the Middle Ages to the Renaissance. |
| LO 1.9 | Discuss the spiritual, biological, psychological, and sociocultural theories of the origins of abnormal behavior in the nineteenth century. |
| LO 1.10 | Identify the psychological, biological, and sociocultural models that characterize the twentieth-century models of abnormal behavior. |
| LO 1.11 | Identify at least two biological mechanisms that are considered to play a role in the onset of abnormal behavior. |
| LO 1.12 | Identify at least two psychological models that may account for the development of abnormal behavior. |
| LO 1.13 | Explain the sociocultural mode of behavior and how it differs from the biological and psychological models. |
| LO 1.14 | Explain how the biopsychosocial model accounts for the limitations in the three unidimensional models (biological, psychological, sociocultural). |

Steve was a member of the U.S. Marine Corps who served during the Vietnam War. One night, the Viet Cong attacked his squad. During the firefight, the marine next to him lost his arm. Steve got his buddy to the medic, but the horrific image never left him. He felt helpless and out of control. After returning from Vietnam, Steve had difficulty sleeping, lost interest in his hobbies, isolated himself from family and friends, and felt helpless and sad. Even 45 years later, he can still see himself in the rice paddy, watching in horror as the grenade hits his friend, amputating his arm. Every night he wakes in yet another cold sweat and with a racing heart—unable to breathe as the nightmare occurs again.

Malcom is 9 years old. He lived in New Orleans with his family. One day Hurricane Katrina ripped through town. Malcom’s family thought they were safe—the floodwalls would protect them. But they were wrong. Trapped in their house, they escaped to the attic. Luckily, his father grabbed an axe and cut a hole through the roof. After 8 hours, soaking wet and hungry, they were rescued by a helicopter. They now live in another state. But Malcom has had difficulties adjusting. He has nightmares about being trapped on the roof. He wants to move to “Iowa—they don’t have hurricanes in Iowa.” His grades have slipped; he refuses to go to school. He insists that he has to sleep with his parents or his older brother.

Rosa is a freshman in college. When she was 6 years old, her family crossed the Mexican border to reach the United States. During the crossing, Rosa was sexually molested by the coyote—the man who helped the family navigate the border crossing. Her family settled in New York, but a year later, both parents, who were working as janitorial staff inside the World Trade Center, were killed in the 9/11 attack. Rosa went to live with her aunt, who assisted her in obtaining U.S. citizenship. Rosa grew up as a shy and very intelligent person. Her transition to college was difficult. It was hard to be separated from her aunt. She has difficulty concentrating and has started to miss classes when feeling depressed and anxious. She has trouble getting out of bed. Rosa gets panicky feelings and has premonitions that something bad might happen to her aunt. At times, she abruptly runs out of classes to check on her.

The physical, cognitive, and behavioral symptoms that Steve, Malcom, and Rosa displayed represent common mental health problems. These behaviors are considered abnormal because most people do not run out of class to check on someone, and they sleep more than 4 hours a night. Most children do not cry when they hear a helicopter. Although often unrecognized, psychological disorders exist in substantial numbers of people across all ages, races, ethnic groups, and cultures and in both sexes. Furthermore, they cause great suffering and impair academic, occupational, and social functioning.
Defining abnormality is challenging because behaviors must be considered in context. For example:

Donna and Matthew were very much in love. They had been married for 25 years and often remarked that they were not just husband and wife but also best friends. Then Matthew died suddenly, and Donna felt overwhelming sadness. She was unable to eat, cried uncontrollably at times, and started to isolate herself from others. Her usually vivacious personality disappeared.

When a loved one dies, feelings of grief and sadness are common, even expected. Donna’s reaction at her husband’s death would not be considered abnormal; rather, its absence at such a time might be considered abnormal. A theme throughout this book is that abnormal behavior must always be considered in context.

Normal vs. Abnormal Behavior

Sometimes it is fairly easy to identify behavior as abnormal, as when someone is still deeply troubled by events that happened 45 years ago or is feeling so hopeless that he or she cannot get out of bed. But sometimes identifying behavior as abnormal is not clear-cut. Put simply, abnormal means “away from normal,” but that is a circular definition. By this standard, normal becomes the statistical average and any deviation becomes “abnormal.” For example, if the average weight for a woman living in the United States is 140 pounds, then women who weigh less than 100 pounds or more than 250 pounds deviate significantly from the average. Their weight would be considered abnormally low or high. For abnormal psychology, defining abnormal behavior as merely being away from normal assumes that deviations on both sides of average are negative and in need of alteration or intervention. This assumption is often incorrect. Specifically, we must first ask whether simply being different is abnormal.

Is Being Different Abnormal?

LO 1.1 Understand why simply being different does not mean abnormality.

Many people deviate from the average in some way. LeBron James is 6 feet 8 inches tall and weighs 262 pounds—far above average in both height and weight. However, his deviant stature does not affect him negatively. To the contrary, he is a successful basketball player in the National Basketball Association. Mariah Carey has an abnormal vocal range—she is one of a few singers whose voice spans five octaves. Because of her different ability, she has sold millions of songs. Professor Stephen Hawking, one of the world’s most brilliant scientists, has an intellectual capacity that exceeds that of virtually everyone else, yet he writes best-selling and popular works about theoretical physics and the universe and appears on popular television shows like The Big Bang Theory. He does this despite suffering from amyotrophic lateral sclerosis (ALS, also known as Lou Gehrig’s disease), a debilitating and progressive neurological disease. Each of these individuals has abilities that distinguish him or her from the general public; that is, they are away from normal. However, their “abnormalities” (unusual abilities) are not negative; rather, they result in positive contributions to society. Furthermore, their unusual abilities do not cause distress or appear to impair their daily functioning (as appears to be the case for Steve, Malcom, and Rosa). In summary, being different is not the same as being psychologically abnormal.

Is Behaving Deviantly (Differently) Abnormal?

LO 1.2 Understand why simply behaving differently is not the same as behaving abnormally

When the definition of abnormal behavior broadens from simply being different to behaving differently, we often use the term deviance. Deviant behaviors differ from prevailing societal standards.
LeBron James, Mariah Carey, and Stephen Hawking differ from most people (in height, vocal range, and intelligence, respectively). However, these differences are not abnormalities and have resulted in positive contributions to society.

On February 9, 1964, four young men from Liverpool, England, appeared on The Ed Sullivan Show and created quite a stir. Their hair was “long,” their boots had “high (Cuban) heels,” and their “music” was loud. Young people loved them, but their parents were appalled.

The Beatles looked, behaved, and sounded deviant in the context of the prevailing cultural norms. In 1964, they were considered outrageous. Today, their music, dress, and behavior appear rather tame. Was their behavior abnormal? They looked different and acted differently, but their looks and behavior did no harm to themselves or others. The same behavior, outrageous and different in 1964 but tame by today’s standards, illustrates an important point: deviant behavior violates societal and cultural norms, but those norms are always changing.

Derek is 7 years old. From the time he was an infant, he was always “on the go.” He has a hard time paying attention and has boundless energy. His parents compensate for his high level of energy by involving him in lots of physical activities (soccer, Tiger Cub Scouts, karate). Derek had an understanding first-grade teacher. Because he could not sit still, the teacher accommodated him with “workstations” so that he could move around the classroom. But now Derek is in second grade, and the new teacher does not allow workstations. She believes that he must learn to sit like all the other children. He visits the principal’s office often for “out-of-seat behavior.”

Understanding behavior within a specific context is known as goodness of fit (Chess & Thomas, 1991). Simply put, a behavior can be problematic or not problematic depending on the environment in which it occurs. Some people change an environment to accommodate a behavior in the same way that buildings are modified to ensure accessibility by everyone. Derek’s situation illustrates the goodness-of-fit concept. At home and in first grade, his parents and teacher changed the environment to meet his high activity level. They did not see his activity as a problem but simply as behavior that needed to be accommodated. In contrast, his second-grade teacher expected Derek to fit into a nonadaptable environment. In first grade, Derek was considered “lively,” but in second grade, his behavior was considered abnormal. When we attempt to understand behavior, it is critical to consider the context in which the behavior occurs.

GROUP EXPECTATIONS The expectations of family, friends, neighborhood, and culture are consistent and pervasive influences on why people act the way they do.
Sometimes the standards of one group are at odds with those of another group. Adolescents, for example, often deliberately behave very differently than their parents do (they violate expected standards or norms) as a result of their need to individuate (separate) from their parents and be part of their peer group. In this instance, deviation from the norms of one group involves conformity to those of another group. Like family norms, cultural traditions and practices also affect behavior in many ways. For example, holiday celebrations usually include family and cultural traditions. As young people mature and leave their family of origin, new traditions from extended family, marriage, or friendships often blend into former customs and traditions, creating a new context for holiday celebrations.

Often, these different cultural traditions are unremarkable, but sometimes they can cause misunderstanding:

Maleah is 12 years old. Her family recently moved to the United States from the Philippines. Her teacher insisted that Maleah’s mother take her to see a psychologist because of “separation anxiety.” The teacher was concerned because Maleah told the teacher that she had always slept in a bed with her grandmother. However, a psychological evaluation revealed that Maleah did not have any separation fears. Rather, children sleeping with parents and/or grandparents is what people normally do (what psychologists call normative) in Philippine culture.

**Culture** refers to shared behavioral patterns and lifestyles that differentiate one group of people from another. Culture affects an individual’s behavior but also is reciprocally changed by the behaviors of its members (Tseng, 2003). We often behave in ways that reflect the values of the culture in which we were raised. For example, in some cultures, children are expected to be “seen and not heard,” whereas in other cultures, children are encouraged to freely express themselves. **Culture-bound syndrome** is a term that originally described abnormal behaviors that were specific to a particular location or group (Yap, 1967); however, we now know that some of these behavioral patterns extend across ethnic groups and geographic areas. How culture influences behavior will be a recurring theme throughout this book. Maleah’s behavior is just one example of how a single behavior can be viewed differently in two different cultures.

**DEVELOPMENT AND MATURITY** Another important context that must be taken into account when considering behavioral abnormality is age. As a child matures (physically, mentally, and emotionally), behaviors previously considered developmentally appropriate and therefore normal can become abnormal.

1. Nick is 4 years old and insists on using a night-light to keep the monsters away.

At age 4, children do not have the cognitive, or mental, capacity to understand fully that monsters are not real. However, at age 12, a child should understand the difference between imagination and reality. Therefore, if at age 12 Nick still needs a night-light to keep the monsters away, his behavior would be considered abnormal and perhaps in need of treatment. Similarly, very young children do not have the ability to control their bladder; bed-wetting is common in toddlerhood. However, after the child achieves a certain level of physical and cognitive maturity, bed-wetting becomes an abnormal behavior and is given the diagnostic label of enuresis (see Chapter 13).

**Eccentricity** What about the millionaire who wills his entire estate to his dog? This behavior violates cultural norms, but it is often labeled eccentric rather than abnormal. Eccentric behavior may violate societal norms but is not always negative or harmful to others. Yet sometimes behaviors that initially appear eccentric cross the line into dangerousness (see “Real People, Real Disorders: James Eagan Holmes”).
REAL People REAL Disorders

James Eagan Holmes

On July 20, 2012, James Eagan Holmes walked into a Colorado movie theater and bought a ticket to the midnight showing of the Batman movie *The Dark Knight Rises*. After the movie began, he left the theater through an emergency exit, came back, and set off gas/smoke canisters and opened fire on the audience, killing 12 people and wounding 58 others. He was quickly arrested, and he warned the police not to go to his apartment. They did but found that he had booby-trapped it before leaving for the theater. At his first legal hearing, he appeared in court with his hair dyed orange, appearing dazed and confused, looking bug-eyed, and spitting on the officers who were escorting him. He called himself The Joker. In August 2015, Holmes was sentenced for his crimes, receiving 12 life sentences plus 3,318 years.

Holmes graduated from the University of California, Berkeley, in the top 1% of his class, with a 3.94 GPA and a degree in neuroscience. Described by some as socially inept and uncommunicative, he described himself as quiet and easygoing on an apartment rental application. He applied to graduate school at the University of Illinois at Urbana-Champaign, and the application included a picture of himself with a llama. The choice of such a picture on something as important as a graduate school application certainly could qualify as eccentric behavior, but does that mean that he was psychologically disturbed?

In 2011, Holmes enrolled as a Ph.D. student in neuroscience at the University of Colorado Anschutz Medical Campus in Aurora. In 2012, his grades declined and he failed his comprehensive examination. Although the university did not plan to dismiss him, he started the process to withdraw from the university. At the same time, he purchased large quantities of guns and more than 6,000 rounds of ammunition. Is this irrational behavior? Is it potentially dangerous behavior?

He asked someone if he or she had ever heard of a disorder called dysphoric mania and told a graduate student to stay away from him because he was “bad news.” His answering machine recording was described as “freaky, guttural sounding, incoherent, and rambling.” He dyed his hair orange, called himself The Joker, and went to the movie theater. Does this behavior prove that Holmes had a psychological disorder?

From all accounts, Holmes evolved from being a brilliant if socially awkward neuroscience student to a mass murderer. Whatever label is applied, he evolved from behaving differently to behaving dangerously (perhaps as a result of disordered thinking). In this instance, his behavior was extremely harmful to others and could no longer be considered merely eccentric. It is also important to point out that most people who have psychological disorders are not dangerous and do not commit crimes or attempt to harm other people.

Is Behaving Dangerously Abnormal?

**LO 1.3 Understand why simply behaving dangerously does not always equal abnormality**

The police arrive at the emergency room of a psychiatric hospital with a man and a woman in handcuffs. Jon is 23 years old. He identifies himself as the chauffeur for Melissa, who is age 35 and also in handcuffs. They are both dressed in tight leather pants and shirts, have unusual “spiked” haircuts, and wear leather “dog collars” with many silver spikes. Jon and Melissa live in the suburbs but spent a day in the city buying clothes and getting their hair cut. As they were leaving the parking garage to return home, Melissa began to criticize Jon’s hair. Jon became angry and ran the car (which belonged to Melissa) into the wall of the parking garage—several times. When a clinician asked the police officer why they were brought to the psychiatric emergency room, the officer replied, “Well, would a sane person keep ramming a car into the wall of a parking garage?” Neither Jon nor Melissa had any previous history of psychological disorders. An interview revealed that Jon’s behavior was the result of a lover’s quarrel, and although their relationship was often volatile, they denied any incidents of physical aggression toward each other or anyone else.

Certainly, repeatedly ramming a car into the wall of a parking garage is dangerous, is outside of societal norms, and could be labeled abnormal. Dangerous behavior can result from intense emotional states, and in Jon’s case, the behavior was directed outwardly (toward another person or an inanimate object). In other cases, dangerous behavior such as suicidal thoughts may be directed toward oneself. However, it is important to understand that most people with psychological disorders do not engage in dangerous behavior (Linaker, 2000;
Monahan, 2001). Individuals with seriously disordered thinking rarely present any danger to society even though their behaviors may appear dangerous to others. Therefore, behavior that is dangerous may signal the presence of a psychological disorder, but dangerous behavior alone is not necessary or sufficient for the label of abnormality to be assigned.

**Is Behaving Dysfunctionally Abnormal?**

**LO 1.4** Explain the difference between behaviors that are different, deviant, dangerous, and dysfunctional.

Thus far, simply being different, behaving differently, or behaving dangerously clearly does not constitute abnormal behavior. A final consideration when attempting to define abnormal behavior is whether that behavior causes distress or dysfunction for the individual or others. Consider the examples of Robert and Stan (see “Side-by-Side Case Studies”).

Both Robert and Stan engage in checking behaviors, but Robert’s behavior falls into the category of what is called “normal checking” (Rachman & Hodgson, 1980). Stan’s routine of checking the house before he leaves for work or goes to bed is different from the way in which most people lock up their house before going to work, so his behavior deviates from the norm. Even though simple deviance is not abnormal, Stan’s behavior differs from Robert’s in another way: Stan’s checking occurs more frequently. Frequency alone does not mean a behavior is maladaptive, but frequency can lead to two other conditions: distress and dysfunction. Specifically, Stan’s worries are so frequent and pervasive that they cause him to feel anxious and lose sleep at night. In this case, maladaptive behavior results in distress; Stan’s worries result in a negative mood (anxiety) and cause him to lose sleep. Frequently, they also cause him to arrive late for work or for social engagements. Thus, his behaviors create occupational and social dysfunction. When one of these conditions is evident, the presence of a psychological disorder must be considered.

**A Definition of Abnormal Behavior**

**LO 1.5** Identify at least two factors that need to be considered when determining whether a behavior is abnormal.

To summarize, to define abnormal behavior, we need to consider several factors. Merely being different or behaving differently is not enough, although the latter certainly might

**SIDE by SIDE Case Studies**

**Dimensions of Behavior: From Adaptive to Maladaptive**

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**Adaptive Behavior Case Study**

**Example A**

Robert is a very cautious person. He does not like to make mistakes and believes that the behavior standards that he sets for himself are high but fair. He is concerned about safety and worried that other people might take advantage of him if he makes a mistake. Before leaving his house or going to sleep, he walks through the house, checking to make sure that every door and window is locked and the oven and stove are turned off. This usually takes about 5 minutes.

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**Maladaptive Behavior Case Study**

**Example B**

Stan also is cautious and very concerned. When away from home, he worries that he forgot to lock a door and that his house has been robbed. Often he returns home to check that the house is locked. But even after he checks, he remains doubtful and spends hours each day checking and rechecking. He has an elaborate system of checking the locks, the doors, the garage door, and the burglar alarm system. He checks the stove seven times to make sure that the oven and the burners are off. Thoughts of a burglar in his house or his house burning down cause him great distress, sometimes interfering with his sleep. He is often late for work or for social engagements because he needs to go back to the house to check and recheck.
be a signal that something is wrong. Some abnormal behaviors are dangerous, but dangerousness is not necessary for a definition of abnormality. In this book, we define abnormal behavior as behavior that is inconsistent with the individual’s developmental, cultural, and societal norms and creates emotional distress or interferes with daily functioning.

The following chapters will examine many different types of abnormal behavior. As a guide, the behaviors are considered using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association, 2013), commonly known as the DSM-5. This diagnostic system uses an approach that focuses on symptoms and the scientific basis for the disorders, including their clinical presentation (what specific symptoms cluster together?), etiology (what causes the disorder?), developmental stage (does the disorder look different in children than it does in adults?), and functional impairment (what are the immediate and long-term consequences of having the disorder?). The DSM system uses a categorical approach to defining abnormal behavior. A categorical approach assumes that a person either has a disorder or does not, just as one is pregnant or not pregnant. Although this method is somewhat controversial (see “Research Hot Topic: Categorical vs. Dimensional Approaches to Abnormal Behavior”), it remains the most widely accepted diagnostic system in the United States.

ABNORMAL BEHAVIOR IN THE GENERAL POPULATION  Psychological disorders are common in the general population. Approximately 47% of adults in the United States have suffered from a psychological disorder at some time in their lives (Kessler, Berglund, Demler, Jin, et al., 2005). The most commonly reported disorders in the United States are anxiety disorders and depressive disorders (see Figure 1.1). More than 20% of adults will suffer from major depression, and more than 14% will struggle with alcohol dependence at some point in their lives. Anxiety disorders are also common, affecting more than 28% of adults during their lifetimes. What most people do not know is that mental disorders rank as one of the most substantial causes of death (Walker et al., 2015). People with mental disorders have a mortality rate that is 2.2 times higher than people without mental disorders, and the median years of potential life loss is 10 years. Clearly, many people suffer from serious psychological disorders; this emphasizes the need for more understanding of these conditions and the development of effective treatments.

Figure 1.1 Lifetime Prevalence of Various DSM-IV Psychiatric Disorders at Different Ages in Adulthood.

FACTORS INFLUENCING THE EXPRESSION OF ABNORMAL BEHAVIORS

Contextual factors play an important role when considering if and when abnormal behaviors may develop. Some factors include personal characteristics such as sex and race or ethnicity. For example, women are more likely to suffer from anxiety disorders (see Chapter 4) and mood disorders (see Chapter 7), and men are more likely to suffer from alcohol and drug abuse (see Chapter 10; Kessler et al., 2005a). With respect to race and ethnicity, whites and African Americans suffer equally from most types of psychological disorders. Hispanics are more likely to have mood disorders such as depression than are non-Hispanic whites. In addition, as we shall see throughout this book, culture may influence how symptoms are expressed.

Socioeconomic status (SES), defined by family income and educational achievement, is another important factor that affects the prevalence of psychological disorders in the general population. Except for drug and alcohol abuse, which occurs more often among people with the middle education level (a high school graduate but no college degree), psychological disorders occur most frequently among those with the lowest incomes and the least education. A continuing debate is whether psychological disorders are the result of lower SES. Do more education and higher income serve to protect someone against psychological disorders by providing more supportive resources? An alternative hypothesis is that the impairment that results from a psychological disorder (inability to sleep, addiction to alcohol) leads to job loss or limited educational achievement, a phenomenon known as downward drift. Another alternative is that a third factor, such as genetic predisposition, contributes both to the onset of a psychiatric disorder and to the inability to achieve academically or occupationally.

Few studies address the relationship of SES to psychological disorders specifically, but one study of the development of psychological disorders in children does help us understand this relationship. In this study, children were interviewed at yearly intervals, in some cases for 9 consecutive years. During that time, children from all SES groups developed

Research HOT Topic

Categorical vs. Dimensional Approaches to Abnormal Behavior

The current diagnostic system, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), presents a primarily categorical approach to understanding psychological disorders. The DSM assumes that a person either has a disorder or does not, just as one is pregnant or not pregnant. The current DSM is superior to previous diagnostic systems, which were tied to theory but not necessarily to data. However, two issues continue to present problems for a categorical approach: (1) symptoms rarely fall neatly into just one category and (2) symptoms often are not of sufficient severity to determine that they represent a psychological disorder despite distress and impairment.

In fact, people in psychological distress rarely have only one psychological disorder (Nathan & Langenbucher, 1999). A woman struggling with an eating disorder often feels depressed as well. Does she have two distinct disorders, or is her depression merely part of her abnormal eating pattern? Making these distinctions is more than just an academic exercise—it affects whether someone receives treatment. It may, for example, determine whether a psychologist decides to refer a depressed patient for medication treatment or just monitors her sadness to see whether it disappears when the eating disorder is successfully treated.

The second issue—deciding when one has “enough” of a symptom to have a diagnosis—can be illustrated through the following example. Shyness and sadness are two behaviors that may be personality dimensions rather than a distinct category. When is one “sad enough” or “shy enough” to be diagnosed with a psychological disorder? Is shyness a personality feature or a psychological disorder? Currently, one is considered to have a psychological disorder when the distress is severe enough or when functional impairment results. However, in many instances, this is an artificial distinction and may deny people with moderate distress the opportunity to seek services. Scientifically, a dimensional approach would allow an understanding of how abnormal behavior varies in severity over time, perhaps increasing and decreasing, or how behaviors change from one disorder to another.

Researchers continue to investigate the most accurate way to describe abnormal behavior. The DSM-5 emphasizes the need to consider not just the presence of symptoms but also whether those symptoms affect functioning when attempting to understand abnormal behavior.
psychological disorders at the same rate (Wadsworth & Achenbach, 2005). However, once the disorder was present, children from the lower SES category were less likely to overcome or recover from their disorder. Lower income usually means fewer economic resources and less access to treatment. Over time, reduced recovery resulted in more children from the lower SES group having more psychological disorders.

As the preceding example illustrates, children as well as adults suffer from psychological disorders, and we know that age and developmental stage are important factors affecting abnormal behaviors. The Great Smoky Mountains Study examined the presence of psychological disorders in children who were assessed yearly, in some cases for up to 7 consecutive years (Costello et al., 2003). Figure 1.2 illustrates the prevalence of psychological disorders in children and adolescents.

It may be quite surprising that by age 16, one of three children and adolescents (36%) has suffered from a psychological disorder. As illustrated in Figure 1.3, the prevalence of disorders is highest among 9- to 10-year-old children, lower at age 12, and higher again in adolescence. Psychologists know that developmental maturity affects when and how symptoms develop, what types of symptoms develop, and even what kinds of disorders occur. The idea that the common symptoms of a disorder vary according to a person’s age is known as the developmental trajectory (a trajectory is a path or progression). For example, compared with children who are diagnosed with depression, adolescents with depression are more likely to feel hopelessness/helplessness, to lack energy or feel tired, to sleep too much, and to commit serious suicidal acts (Yorbik et al., 2004). Therefore, the symptoms of depression may change as a child matures. Even among adults, age also plays a role in the frequency of specific depressive symptoms. As adults mature, they are less likely to report feelings of sadness or negative thoughts about themselves or others (Goldberg et al., 2003). Therefore, even an emotion as common as sadness can appear differently at different ages.

Inattention to developmental differences may result in inaccurate detection of psychological disorders. For example, social anxiety disorder is characterized by a behavioral pattern of pervasive social timidity (see Chapter 4). Adults with social anxiety disorder report extreme fear when asked to give a speech. Young children rarely have to give a speech, and because they have no experience in the situation, they deny fear of giving speeches. However, a similar childhood activity would be reading aloud in front of the
class. Children with social anxiety disorder often report great fear when asked to read aloud. Therefore, accurately diagnosing social anxiety disorder depends on understanding not only the disorder but also how the disorder appears at different ages. As noted above, older adults with depression are less likely to report feelings of sadness and negative thoughts, but all adults (regardless of age) report physical symptoms of depression (inability to sleep or eat or being easily tired). Therefore, a clinician who assesses depression only by asking about sadness may overlook depression in older adults. Throughout this book, we often will return to this issue of developmental psychopathology and how the same disorder may appear differently across the life span.

This developmental perspective also illustrates why the prevalence of psychological disorders varies by age (see Figure 1.3). Certain disorders that are common in childhood (separation anxiety disorder, attention deficit/hyperactivity disorder; see Chapters 4 and 13) become less common as children mature physically, cognitively, and emotionally. During adolescence, other disorders begin to emerge (depression, alcohol and drug use, eating disorders, panic disorder, and generalized anxiety disorder; see Chapters 4, 7, 8, and 10). The emergence of some disorders has practical and societal components (e.g., older adolescents are more likely to have access to alcohol, which is a prerequisite to developing substance abuse). The emergence of other disorders coincides with cognitive maturity. Generalized anxiety disorder is defined, in part, by worry about future events (American Psychiatric Association, 2013). This requires the ability to understand the concept of “future,” a cognitive skill that usually emerges around age 12 (see Alfano et al., 2002). Therefore, although it is possible for younger children to suffer from generalized anxiety disorder, many more cases occur later as cognitive maturity is achieved. Finally, biological changes also influence the emergence of psychological disorders. Hormonal changes associated with puberty may increase the likelihood of the emergence of eating disorders (anorexia and bulimia nervosa) in those who are at high risk for the development of these disorders.

Learning Objective Summaries

LO 1.1 Understand why simply being different does not mean abnormality.

Abnormal behavior is sometimes difficult to define. It is not just behavior that is different because differences can sometimes be positive for the individual and perhaps for society. Being different does not necessarily mean that a person is suffering from a psychological disorder. In some cases, being different can create significant advantages or opportunities for someone.

LO 1.2 Understand why simply behaving differently is not the same as behaving abnormally.

Behaving differently also does not mean that one is suffering from a psychological disorder. Behavior that is deviant...
may be different but not necessarily abnormal. New trends often start as deviant but then become accepted by mainstream society. Determining the presence of abnormal behavior requires evaluation of the behavior in terms of its developmental, cultural, and societal contexts.

LO 1.3 Understand why simply behaving dangerously does not always equal abnormality.

Dangerous behavior may be abnormal, but many individuals who have psychological disorders do not engage in dangerous behavior. In some instances, people who are suffering from psychological disorders may behave in dangerous ways, such as James Eagan Holmes. However, not all people who behave in a dangerous fashion or commit crimes suffer from mental disorders, and the vast majority of people who suffer from mental disorders do not commit crimes. Behaving dangerously is not always the result of a psychological disorder.

LO 1.4 Explain the difference between behaviors that are different, deviant, dangerous, and dysfunctional.

Two primary considerations for determining whether a behavior is abnormal are whether it creates dysfunction (interferes with daily activities) and/or emotional distress. When behavior interferes with the ability to achieve goals, hold down a job, or socialize with others, the behavior is referred to as dysfunctional. If one’s emotional or cognitive state results in dysfunctional behavior, then the behavior may be considered abnormal.

LO 1.5 Identify at least two factors that need to be considered when determining whether a behavior is abnormal.

Abnormal behavior is defined as behavior that is inconsistent with the individual’s developmental, cultural, and societal norms and creates significant emotional distress or interferes with daily functioning. Behavior must always be considered in context. Context includes culture as defined by both individual and social spheres of influence as well as cultural traditions. It also includes consideration of developmental age, physical and emotional maturity, and SES. What might be considered abnormal in adults may not be considered abnormal in children.

Critical Thinking Question

At different ages, the same disorder may appear with very different symptoms. Young children are still developing in many ways. How might immature physical and cognitive development affect the emotional expression of psychological disorders?

The History of Abnormal Behavior and Its Treatment

Throughout history, certain behaviors have been recognized as abnormal—often the same ones we recognize today. However, the explanations for these abnormal behaviors have evolved, ranging from an imbalance of bodily fluids to possession by demons, genetic abnormalities, and traumatic learning experiences. Today, new technologies allow us to watch the brain as it processes sights, smells, and sounds; solves problems; and experiences emotions. As this knowledge has increased, some of the earlier ideas about abnormal behavior seem outlandish or quaint. Here, we review those theories and show how scientific advances have changed our understanding of abnormal behavior.

Ancient Theories

LO 1.6 Discuss ancient spiritual and biological theories of the origins of abnormal behavior.

Much of what we know about ancient theories of abnormal behavior is based on available archeological evidence and ancient texts. Ancient Egyptians believed that spirits controlled much of the environment as well as aspects of a person’s behavior. Even
before the Egyptians, some cultures engaged in a practice called trephination, using a circular instrument to cut away sections of the skull. One interpretation of trephination is that it was a treatment for abnormal behaviors. Opening up the skull, it may have been thought, released the evil spirits that had assumed control of the person (Selling, 1940). This is only an assumption. Trephination might simply have been used to treat head wounds received in battles (Maher & Maher, 1985). Even today, we are not sure why ancient peoples practiced it.

Classical Greek and Roman Periods

LO 1.7 Discuss spiritual, biological, and environmental theories of the origins of abnormal behavior in classical Greek and Roman periods.

The ancient Greeks believed that the gods controlled abnormal behavior and that defiance of the deities could result in mental illness. Around the thirteenth century BC, the physician Melampus of Plius introduced an organic model of illness to explain psychological symptoms and provided treatment using plants and other natural substances. He prescribed root extract for “agitated uterine melancholia” and iron powder for “traumatic impotence” (Roccataglione, 1997). Asclepius, best known as a Greek god, is now believed to have been a historical figure whose healing abilities were so widely respected that he was elevated to the status of a god (http://www.nlm.nih.gov/hmd/greek/greek_asclepius.html). Many temples were established throughout Greece to honor Asclepius, one of which was the first known sanctuary for mental disorders, offering biological (mandrake root and opium), physical (music, massage, drama), and psychological treatments (dream interpretation; Roccataglione, 1997). During this period, mental illnesses were considered to result from either traumatic experiences or an imbalance in fluids (such as blood) found within the body. These fluids were called humors.

Often considered the father of medicine, Hippocrates (460–377 BC) was the most famous Greek physician. He produced both a diagnostic classification system and a model by which to explain abnormal behavior. Hippocrates identified common psychological symptoms such as hallucinations (hearing or seeing things not evident to others), delusions (beliefs with no basis in reality), melancholia (severe sadness), and mania (heightened states of arousal that can result in frenzied activity). All of these symptoms are still recognized today. He also introduced the term hysteria, now called conversion disorder (see Chapter 6). See Table 1.1 for a brief summary. The term hysteria was used to describe patients who appeared to have blindness or paralysis for which there was no organic cause. Hippocrates, assuming incorrectly that the condition occurred only in women, attributed it to an empty uterus wandering throughout the body searching for conception. The external symptoms indicated where the uterus was lodged internally. He believed that the cure for hysteria was an environmental one: marriage or pregnancy. Of course, with advanced understanding of human anatomy and physiology, the “wandering uterus” theory was discarded. But even in very recent times, the term hysteria continued to describe an intense, dramatic pattern of behavior once associated with women.

Hippocrates believed that other abnormal behaviors resulted when environmental factors (changes of seasons) and/or physical factors (fever, epilepsy, and shock) created an imbalance in four bodily humors. In his model, the four humors were yellow bile, black bile, blood, and phlegm. Blood was associated with a courageous and hopeful outlook on life, and phlegm was associated with a calm and unemotional attitude. Excessive yellow bile caused mania, and excessive black bile caused melancholia, which was treated with a vegetarian diet, a tranquil existence, celibacy, exercise, and sometimes bleeding (controlled removal of some of the patient’s blood). Hippocrates advocated the removal of patients from their families as an element of treatment, foreshadowing the practice of humane treatment and institutionalization.
Table 1.1 The Diagnostic Criteria of Hippocrates

<table>
<thead>
<tr>
<th>Psychological Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hallucinations</td>
<td>hearing or seeing things not evident to others</td>
</tr>
<tr>
<td>Delusions</td>
<td>beliefs with no basis in reality</td>
</tr>
<tr>
<td>Melancholia</td>
<td>severe sadness</td>
</tr>
<tr>
<td>Hysteria</td>
<td>blindness or paralysis with no organic cause</td>
</tr>
</tbody>
</table>

Another very influential Greek physician was Galen, the personal physician of the Roman emperor Marcus Aurelius. Although the terms we use today differ from those used in ancient times, Galen’s writings (which still survive) indicate that his areas of expertise included many fields of medicine: neurophysiology and neuroanatomy, neurology, pharmacology, psychiatry, and philosophy (Roccatagliata, 1997; http://www.nlm.nih.gov/hmd/greek/greek_galen.html). An important distinction can be made between Hippocrates’s and Galen’s descriptions of hysteria. Because Galen had studied human anatomy, he discounted the “wandering uterus” theory. Galen attributed hysteria to a psychological cause, believing it to be a symptom of unhappiness in women who had lost interest in and enjoyment of sexual activity.

After the fall of the Roman Empire, demonology again dominated theories of mental illness in Europe, but the enlightened thinking of Hippocrates and Galen remained influential in Islamic countries. There, Avicenna (AD 980–1037; Namanzi, 2001), known as the “prince and chief of physicians” and “the second teacher after Aristotle,” wrote approximately 450 works, including the Canon of Medicine, considered the most influential textbook ever written. Avicenna considered depression to result from a mix of humors, and he believed that certain physical diseases were caused by emotional distress. He stressed the beneficial effects of music on emotional disturbance. His approach to mental illness foreshadowed what would take an additional 600 years to appear in Europe—humane treatment of the mentally ill.

The Middle Ages Through the Renaissance

LO 1.8 Discuss the spiritual, biological, and environmental theories of the origins of abnormal behavior from the Middle Ages to the Renaissance.

In medieval Europe, demons were considered to be the source of all evil, preying on the “captive and outwitted minds of men” (Tertullian, in Sagan, 1996). There were many challenges (wars, plagues, social oppression, famine) to survival during the Middle Ages, and people often sought reasons for these events. Church officials interpreted negative behavior as the work of the devil or as witchcraft, even when other, less dramatic, explanations existed. As a result of the church’s powerful influence, witchcraft became a prominent theory to explain abnormal behavior. Over a 300-year period (1400s to 1700s), at least 200,000 people in Europe were accused of witchcraft and 100,000 were put to death, approximately 80 to 85% of whom were women (Clark, 1997). In fact, many of those accused probably suffered from psychological disorders (Zilboorg, 1939, cited in Clark, 1997). Once accused of being a witch, the person was tried and always found guilty. Thankfully, the Renaissance period brought new attitudes toward science and the church that challenged the reality of witches. Accusations of witchcraft were not limited to European countries. “Witches” were also executed in Massachusetts in the seventeenth century. However, as illustrated by today’s stories of alien abductions, beliefs in the supernatural/paranormal still exist in our modern world.

During the Middle Ages, episodes of mass hysteria would sweep through large groups of people. People affected were convinced that
they were afflicted or possessed by a demonic spirit (again, similar to beliefs regarding alien abduction). One of the first recorded cases (originating in Italy in the early thirteenth century) is known as tarantism, caused by the belief that the bite of a wolf spider (also known as a tarantula) would cause death unless a person engaged in joyous, frenetic dancing. Another form of the legend was that the spider’s bite would cause frenetic dancing, jumping, or convulsing (Sigerist, 1943). In fact, the spider’s bite was harmless, and people’s responses were fueled by mass hysteria. Another form of mass madness was lycanthropy, in which individuals believed that they were possessed by wolves. The belief was so strong that those affected would act like a wolf, even to the point of believing that their bodies were covered in fur.

There is a scientific basis for mass hysteria. Group emotional contagion is defined as the sharing and transferring of moods among the members of a group (Barsade, 2002). When these overt behaviors converge, emotions come together as well. These mimicking behaviors are not under voluntary control but nevertheless serve to influence behavior. Although many people may no longer believe that wolves or spider bites are responsible for abnormal behaviors, the process of emotional contagion remains a powerful influence on behavior (see “Examining the Evidence: Modern-Day Mass Hysteria”).

The Renaissance period (fourteenth to seventeenth century) marked a second time of enlightenment in the treatment of mental illnesses in Europe. Much of this transformation can be traced back to the Dutch physician Johann Weyer (1515–1588) and the Swiss physician Paracelsus (1493–1541). Weyer was the first physician to specialize in the treatment of mental illness, and Paracelsus refuted the idea that abnormal behaviors were linked to demonic possession. Paracelsus believed that mental disorders could be hereditary and that some physical illnesses had a psychological origin (Tan & Yeow, 2003).

These changing views toward mental illness altered treatment approaches as well. A movement that was genuinely concerned with providing help arose, and its goal was to separate those with mental illness from those who engaged in criminal behavior (Sussman, 1998). Beginning in the sixteenth century, people with mental illness were housed in asylums—separate facilities designed to isolate them from the general public. Although the concept of asylums was based on good intentions, the asylums quickly filled to capacity (and overcapacity). The lack of effective treatments turned the facilities into warehouses, often called madhouses. One of the most famous was St. Mary of Bethlehem in London. Treatment consisted of confinement (chains, shackles, isolation in dark cells), torturous practices (ice-cold baths, spinning in chairs, severely restricted diets), and “medical” treatments (emetics, purgatives, and bloodletting). For a small price, people in London could visit the asylum to view the inmates (Tan & Yeow, 2004). They called the place Bedlam (a contraction of “Bethlehem”), a word that came to describe chaotic and uncontrollable situations. Similar conditions existed in other parts of Europe as well as eventually in North America.

The Nineteenth Century and the Beginning of Modern Thought

**LO 1.9** Discuss the spiritual, biological, psychological, and sociocultural theories of the origins of abnormal behavior in the nineteenth century.

A turning point for the medical treatment of mental illness occurred during the late eighteenth century when the French physician Philippe Pinel (1745–1826) and the English Quaker William Tuke (1732–1822) radically changed the approach to treating mental illness. In 1793, Pinel was the director of Bicêtre, an asylum for men. In his *Memoir on Madness*, he proposed that mental illness was often curable and that to apply appropriate treatment, the physician must listen to the patient and observe his behavior. Both would help the physician to understand the natural history of the disease and the events that led to its development. Pinel advocated calm and order within the asylum (Tan & Yeow, 2004). He removed the chains from the patients, both at Bicêtre and at the women’s asylum known as Salpêtrière. Instead of using restraints, Pinel advocated daytime activities such as work or occupational therapy to allow for restful sleep at night.

At the same time, across the English Channel, William Tuke established the York Retreat (Edginton, 1997), a small country house deliberately designed to allow people with mental
illnesses to live, work, and relax in a compassionate and religious environment. Instead of bars on the windows, Tuke used iron dividers to separate the glass windowpanes and even had the dividers painted to look like wood. The Retreat was built on a hill, and although it contained a hidden ditch and a wall to ensure confinement, the barriers could not be seen from the buildings; this gave the illusion of a home rather than an institution (Scull, 2004). The work of both Pinel and Tuke heralded moral treatment, “summed up in two words, kindness and occupation” (W. A. F. Browne, 1837, cited in Geller & Morrissey, 2004). Moral treatment was quite comprehensive. In the United States, it included removal of the patient from the home and former associates as well as respectful and kind treatment that included “manual labor, religious services on Sunday, the establishment of regular habits and of self-control, and diversion of the mind from morbid trains of thought” (Brigham, 1847, p. 1, cited in Luchins, 2001).

Moral treatment in the United States is most commonly associated with Benjamin Rush (1745–1813) and Dorothea Dix (1802–1887). Rush was a well-known physician at Pennsylvania Hospital and a signor of the Declaration of Independence. He limited his practice to mental illness, which he believed had its causes in the blood vessels of the brain

Examine the EVIDENCE

Modern-Day Mass Hysteria

- **The Facts** Although we tend to think of mass hysteria as occurring in an unenlightened era, episodes of emotional contagion still occur today.

- **The Evidence** In 2012, a high school cheerleader in Le Roy, New York, awoke from a nap to find that something was wrong. Her chin was jutting forward, and her face had spasms. A few weeks later, her best friend, the captain of the cheerleading squad, awoke from a nap stuttering and twitching, her arms and legs flailing. Soon other cheerleaders had similar symptoms. Eventually, 18 teenage girls in a school of 600 students had uncontrollable twitches, spasms, and vocal outbursts. Despite an exhaustive search for environmental toxins, no medical or environmental reason was identified. Mass psychogenic illness was suggested to be the cause.

- **Let’s Examine the Evidence** Evidence that emotional contagion and mass psychogenic illness may have been the basis for the symptom reports includes the following:
  1. Initial symptom onset occurred in the same dramatic manner among the first girls who developed the illness—upon awakening from a nap. If environmental toxins were the cause, there is no reason why the toxin would repeatedly activate only upon awakening from a nap.
  2. The town began to receive a lot of media coverage, including a visit from Erin Brockovich. The girls were interviewed on TV. All of the girls began to get better once the media coverage disappeared and the YouTube videos were removed from the Internet.

- **Conclusion** It is important to note that the individuals experienced the symptoms they reported; it is incorrect to deny that the symptoms occurred. What is at issue, however, is the cause of the symptoms. In this case, after exhausting all possible environmental alternatives, the most likely explanation for the large outbreak of illness was emotional contagion, producing mass psychogenic illness (Laub, 2012; National Public Radio, 2012).
(Farr, 1994). Although this theory was later disproved, Rush believed that the human mind was the most important area of study, and he became known as the father of American psychiatry (Haas, 1993).

In the United States, perhaps no name is more closely associated with humane care than that of Dorothea Dix, the Boston schoolteacher who devoted her life to the plight of the mentally ill and the need for treatment reform. Through her efforts, 32 institutions that included programs in psychiatric treatment, research, and education were established (Gold, 2005). Dix believed that asylums, correctly designed and operated, would allow for treatment and perhaps even cure. Although Dix brought the plight of the mentally ill to public attention, moral treatment alone did not cure most forms of mental illness. In fact, mental hospitals became associated with permanent institutionalization, custodial care, isolation, and very little hope.

During the late 1700s in Europe, the treatment of mental disorders went beyond providing rest and humane care. The German physician Franz Anton Mesmer (1734–1815) hardly followed the conventional medical establishment. His academic thesis explored the clinical implications of astrology (McNally, 1999). Mesmer proposed that the body was a magnet and that using the physician’s body as a second magnet could achieve a cure for mental illness (Crabtree, 2000). Mesmer believed that a substance called animal magnetism existed within the body. When it flowed freely, the body was in a healthy state; however, when the flow of this energy force was impeded, disease resulted. The cure involved “magnetic passes” of the physician’s hands over the body (McNally, 1999). Mesmerism was roundly criticized by a committee of scientists and physicians that included Benjamin Franklin and the noted French chemist Antoine Lavoisier.

Nonetheless, Mesmer’s experiments constitute an important chapter in psychology. Although his theory of animal magnetism and his flamboyant cures (including a cape, music, magic poles used to touch various parts of the body, and magnetized water) were ultimately debunked, they illustrate the power of the placebo effect in which symptoms are diminished or eliminated not because of any specific treatment but because the patient believes that a treatment is effective. A placebo can be in the form of pills with inert ingredients such as cornstarch. It can also be in the form of a therapist or physician who displays an attitude of caring about the patient. However, it is important to add that although placebos may change how patients feel, the effect is usually temporary. Placebos are not the same as actual treatment.

A significant event for establishing a biological basis for some psychological disorders occurred in the latter part of the nineteenth century. Scientists discovered that syphilis (a sexually transmitted disease caused by a bacterium) led to the chronic condition called general paresis manifested as physical paralysis and mental illness and eventually death. The discovery that a physical disease could cause a psychological disorder was a significant advance in understanding abnormal behavior, but we now know that bacteria are not the cause of most psychological disorders, even though in some cases psychological symptoms may have a medical basis.

The work of the German psychiatrist Emil Kraepelin (1856–1926) was another important chapter in the history of abnormal behavior. During medical school, Kraepelin attended lectures in the laboratory of Wilhelm Wundt, the founder of modern scientific psychology (Decker, 2004). He applied Wundt’s scientific methods to measure behavioral deviations, hoping to provide the theoretical foundations that he considered to be lacking in psychiatry (compared with general medicine and psychology). On Wundt’s advice, Kraepelin began to study “the abnormal” (Boyle, 2000). In 1899, after observing hundreds of patients, he introduced two diagnostic categories based not just on symptom differentiation but also on the etiology (cause) and prognosis (progression and outcome) of the disease. Dementia praecox, now called schizophrenia (see Chapter 11), was Kraepelin’s term for a type of mental illness characterized by mental deterioration. Manic-depressive insanity was defined as a separate disorder with a more favorable outcome. Kraepelin was best known for his studies of dementia praecox, which he believed resulted from auto-intoxication, the self-poisoning of
brain cells as a result of abnormal body metabolism. With new studies documenting the contribution of genetic and biological factors to the onset of schizophrenia, Kraepelin’s contributions, in terms of both a classification system and a description of schizophrenia, cannot be overstated.

Another physician interested in the brain was Jean-Martin Charcot (1825–1893), who established a school of neurology at La Salkétrière in Paris (Haas, 2001). Charcot was interested in hysteria, and he believed that it was caused by degenerative brain changes. However, at the same time, other researchers, Ambrose August Liébeault (1823–1904) and Hippolyte Bernheim (1840–1919) in Nancy, France, were conducting experiments to determine whether hysteria was a form of self-hypnosis. Debate raged between Charcot and the physicians collectively called the Nancy School. Eventually, most scientific data supported the views of the Nancy School. To his credit as a scientist, once the data were established, Charcot became a strong proponent of this view.

At about the same time, the Viennese physician Josef Breuer (1842–1925) was studying the effect of hypnotism. Breuer used hypnosis to treat patients with hysteria, including a young woman named Anna O., who had cared for her ailing father until his death. Shortly thereafter, she developed blurry vision, trouble speaking, and difficulty moving her right arm and both her legs. Breuer discovered that when under hypnosis, Anna O. would discuss events and experiences that she was unable to recall otherwise. Furthermore, after discussing these distressing events, her symptoms disappeared. Breuer called his treatment the talking cure, laying the foundation for a new approach to mental disorders.

The Twentieth Century

LO 1.10 Identify the psychological, biological, and sociocultural models that characterize the twentieth-century models of abnormal behavior.

Although biological theories were still influential, two psychological models of abnormal behavior dominated the early part of the twentieth century: psychoanalytic theory and behaviorism. In this section, we examine the roots of these theories and how they set the stage for modern-day approaches to understanding abnormal behavior.

PSYCHOANALYSIS Sigmund Freud (1856–1939) was trained as a neurologist. His career in psychiatry began in France, where he worked with Charcot. After settling in Vienna, Freud published Studies in Hysteria in 1895 with Josef Breuer. He introduced psychoanalysis, a comprehensive theory that attempts to explain both normal and abnormal behavior. Freud believed that the roots of abnormal behavior were established in the first 5 years of life. Because they happened so early, he believed that the person would retain no conscious memory of them—yet the unconscious memories would exert a lifelong influence on behavior. Psychoanalytic theory has three important aspects: the structure of the mind, the strategies used to deal with threats to the stability of the mind, and the stages of psychosocial development crucial for the development of normal (or abnormal) behavior.

In psychoanalytic theory, the mind consists of three regions: the id, ego, and super ego. Basic instinctual drives and the source of psychic energy, called libido, are found in the id. Always seeking pleasure, the id is totally unconscious, so its urges and activities are outside our awareness. Think of the id as a professional athlete—"I want a big salary; I want a signing bonus." The ego develops when the id comes in contact with reality. Think of the ego as a sports agent who mediates between the id’s impulses (the athlete’s desires) and the demands and restrictions of reality (the owner’s contract offer). Rather than always seeking pleasure, the ego copes with reality or, as Freud put it, the ego obeys the reality principle. The ego has both conscious and unconscious components, so we are often aware of its actions. The third region of the mind is the superego. Similar to a conscience, the superego imposes moral restraint on the id’s impulses (particularly those of a sexual or an aggressive nature). Think of the superego as the team owner or the league commissioner who doles out monetary fines for breaking team or league
rules. When moral rules are violated, the superego punishes with guilt feelings. Like the ego, the superego is partly conscious and partly unconscious and tries to manage or inhibit the id’s impulses. Because these three intrapsychic forces are constantly competing, there is ever-changing conflict, creating a dynamic, in this case, a psychodynamic system.

Freud proposed that through the use of defense mechanisms, the mind’s negative or distressing thoughts and feelings were disguised to emerge to consciousness in a more acceptable form. Some defense mechanisms prevented the onset of abnormal behavior. Other defense mechanisms (such as regression) may result in abnormal or age-inappropriate behaviors. Some of the defense mechanisms identified by Freud are presented in Table 1.2.

Almost as well known as the id, ego, and superego are Freud’s stages of psychosexual development. According to the theory, each person passes through these stages between infancy and 5 years of age. How a child copes with each stage has important effects on psychological development. The oral phase occurs during the first 1½ years of life. Sucking and chewing are pleasurable experiences; aggressive impulses emerge after the development of teeth. The anal phase (from age 1½ to 3 years) coincides with toilet training. During this time, parents emphasize discipline and control issues, and power struggles develop. Aggressive impulses on the part of the child could lead to personality traits of negativism and stubbornness as well as the emergence of hostile, destructive, or sadistic behaviors. During the phallic phase (ages 3 to 5), psychosexual energy centers on the genital area and children derive pleasure from touching or rubbing the genitals. During this phase, children may develop romantic fantasies or attachments toward their opposite-sex parent. The two additional stages, the latency phase (the formant stage of psychosexual development when children are disinterested in the opposite sex) and the genital phase (the mature stage of psychosexual development), are considered to play a more limited role in abnormal behavior.

**Table 1.2 Defense Mechanisms and Their Function**

<table>
<thead>
<tr>
<th>Defense</th>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denial</td>
<td>Dealing with an anxiety-provoking stimulus by acting as if it doesn’t exist</td>
<td>Rejecting a physician’s cancer diagnosis</td>
</tr>
<tr>
<td>Displacement</td>
<td>Taking out impulses on a less-threatening target</td>
<td>Slamming a door instead of hitting someone</td>
</tr>
<tr>
<td>Intellectualization</td>
<td>Avoiding unacceptable emotions by focusing on the intellectual aspects of an event</td>
<td>Focusing on a funeral’s details rather than the sadness of the situation</td>
</tr>
<tr>
<td>Projection</td>
<td>Attributing your own unacceptable impulses to someone else</td>
<td>Making a mistake at work but, instead of admitting it, blaming it on a coworker whom you call “incompetent”</td>
</tr>
<tr>
<td>Rationalization</td>
<td>Supplying a plausible but incorrect explanation for a behavior rather than the real reason</td>
<td>Saying you drink three martinis every night because it lowers your blood pressure</td>
</tr>
<tr>
<td>Reaction formation</td>
<td>Taking the opposite belief because the true belief causes anxiety</td>
<td>Overtly embracing a particular race to the extreme by someone who is racially prejudiced</td>
</tr>
<tr>
<td>Regression</td>
<td>Under threat, returning to a previous stage of development</td>
<td>Not getting a desired outcome results in a temper tantrum</td>
</tr>
<tr>
<td>Repression</td>
<td>Burying unwanted thoughts out of conscious thought</td>
<td>Forgetting aspects of a traumatic event (such as sexual assault)</td>
</tr>
<tr>
<td>Sublimation</td>
<td>Acting out unacceptable impulses in a socially acceptable way</td>
<td>Acting out aggressive tendencies by becoming a boxer</td>
</tr>
<tr>
<td>Suppression</td>
<td>Pushing unwanted thoughts into the unconscious</td>
<td>Actively trying to forget something that causes anxiety</td>
</tr>
<tr>
<td>Undoing</td>
<td>Attempting to take back unacceptable behavior or thoughts</td>
<td>Insulting someone and then excessively praising him or her</td>
</tr>
</tbody>
</table>

In psychoanalytic theory, anxiety and depression are caused by negative experiences. Depending on the age at which the experience occurs, individuals become fixated (stalled) at a stage of psychosexual development. This leaves a psychological mark on the unconscious. For example, harsh parenting during toilet training results in a toddler who withholds his feces as a reaction. As an adult, this person will be stingy with money or gifts. In psychoanalytic theory, even though the individual is unaware of the early experience, it still influences daily functioning. In short, the individual behaves psychologically at the stage of development when the fixation occurred.

The goals of psychoanalysis, the treatment Freud developed, include insight, bringing the troubling material to consciousness, and catharsis, releasing psychic energy. Several techniques are used to achieve these goals. In free association, the person minimizes conscious control and, without selection or censorship, tells the analyst everything that comes to mind, allowing the analyst to draw out information regarding unconscious conflicts. In dream analysis, individuals are encouraged to recall and recount their dreams, which are discussed in the analytic sessions. Freud called dreams the royal road to the unconscious. He believed that dream content included many symbolic images that revealed the meaning of unconscious conflict. Another technique is interpretation. In psychoanalytic treatment, the analyst's silence encourages the patient's free association. The analyst offers interpretations about these associations to uncover the patient's resistance to treatment, to discuss the patient's transference feelings, or to confront the patient with inconsistencies. Interpretations may focus on present issues or draw connections between the patient's past and the present. The patient's dreams and fantasies are also sources of material for interpretation.

Freud's ideas were very controversial. His belief that much of human behavior was controlled by unconscious, innate biological and sexual urges that existed from infancy outraged Viennese Victorian society. Freud believed that the first 5 years of life were very important and events that occurred during that time could even influence adult behavior. He was one of the first theoreticians to highlight the role of environmental factors in abnormal behavior, but he considered the early environment to consist almost exclusively of one's mother and father. This belief sometimes led to detrimental and undeserved blaming of parents as the cause of abnormal behavior. For Freud, the key therapeutic ingredient was the achievement of insight. Overcoming psychological difficulties meant understanding their causes and meaning. Unlike Breuer, Freud did not view hypnosis as necessary to achieve insight, but he did believe in the talking cure, a lengthy relationship between therapist and patient.

BEHAVIORISM In 1904, Ivan Pavlov (1849–1936) received the Nobel Prize for his research on the physiology of dog digestion, which in turn led to his discovery of conditioned responses. A landmark moment for psychology was Pavlov's discovery of classical conditioning, in which an unconditioned stimulus (UCS) produces an unconditioned response (UCR). For example, you touch a hot stove (UCS) and immediately withdraw your hand (UCR). A conditioned stimulus (CS) is something neutral that does not naturally produce the UCR. In the classical conditioning paradigm, the UCS is repeatedly paired with a CS, resulting in the UCR. After sufficient pairings, the CS, presented alone, becomes capable of eliciting a conditioned response (CR), which is similar in form and content to the UCR. In Pavlov's paradigm, food powder was the UCS that produced salivation (UCR) in his dogs. Pavlov paired a neutral stimulus, a ringing bell (CS), with the food powder. After a sufficient number of pairings, the CS (the bell alone) produced salivation (CR) (see Figure 1.4).

This paradigm seems simple, but it is both powerful and more complex than it first appears. We will return to the conditioning theory of emotional disorders later in the chapter.
Figure 1.4 Classical Conditioning.

In 1908, John B. Watson (1878–1958), a well-known animal psychologist, joined the faculty of Johns Hopkins University. Watson believed that the only appropriate objects of scientific study were observable behaviors, not inner thoughts or feelings. This view, known as behaviorism, is based on principles that consider all behavior (normal or abnormal) to be learned as a result of experiences or interactions with the environment. Watson is most famous for his work with his student Rosalie Rayner. In 1920, they published the case of Little Albert, which demonstrated that emotional responses such as fear could be acquired through classical conditioning. In this case, Little Albert’s fear of a white rat was established by pairing the white rat with a loud, aversive noise (Watson & Rayner, 1920). In addition, not only was an extreme emotional response established, but it generalized to other objects that, like the rat, were white and furry (a rabbit, a Santa Claus beard).

Unfortunately, Little Albert and his mother left Johns Hopkins soon after the experiments were completed, and for many years, psychologists were unsure about his fate. We now know that Little Albert’s real name was Douglas Merritte, and he died at age 6 from congenital hydrocephalus, the condition in which the cavities of the brain have an excess of cerebrospinal fluid. Although initial reports suggested that Douglas’s hydrocephalus was acquired later in his life as a result of a disease such as encephalitis or meningitis or the development of a brain tumor (Beck et al., 2009), it is now believed that Douglas was born with this brain condition (Fridlund et al., 2012).
Although Watson never attempted to eliminate Albert/Douglas's fear, 4 years later, one of his students, Mary Cover Jones, used conditioning procedures to eliminate a fear of furry objects in a 2-year-old, Little Peter, who had been conditioned to fear these objects. Jones brought a rabbit into the room where Peter was playing. However, instead of trying to associate a neutral object with fear, she brought in other children who were not afraid of rabbits. When other children were in the room, Peter's fear of the rabbit seemed to decrease. Every time that Peter's fear lessened, she would bring the rabbit a little closer and wait for his fear to diminish again. Eventually, Peter was able to touch and play with the rabbit, which would suggest that he was no longer fearful. The research of Pavlov, Watson, Rayner, and Jones constituted powerful demonstrations that behaviors (even abnormal behaviors) could be learned and unlearned using conditioning principles. This view of abnormal behavior is very different from psychoanalytic theory. Yet, as we shall see, both theories continue to exert significant influence on our current views of abnormal behavior.

ETHICS AND RESPONSIBILITY  Watson and Rayner’s (1920) study of Little Albert is considered a landmark study, for it changed the understanding of how abnormal behavior could be acquired. However, this type of research could not be conducted today. Before beginning research with human subjects, particularly children, scientists must submit their proposed research to a committee usually known as a human subjects committee or institutional review board (see Chapter 15). This committee reviews the research plan to make sure that the research will not harm the potential participants. Research studies designed to demonstrate that a scientist can create a psychological disorder in someone, particularly a child, would not be permitted today. Scientists must now be more creative in their research designs and in many instances use less direct methods to examine how disorders might develop. Although less direct methods sometimes cannot produce the same data as Watson and Rayner produced, protecting research participants from harm is the most important consideration.
Learning Objective Summaries

LO 1.6 Discuss ancient spiritual and biological theories of the origins of abnormal behavior.

Historically, spirit possession was among the first proposed causes of abnormal behavior. Ancient theories held that spirits controlled aspects of human behavior and that the biological seat of abnormal behavior was the brain.

LO 1.7 Discuss spiritual, biological, and environmental theories of the origins of abnormal behavior in classical Greek and Roman periods.

As early as the classical Greek and Roman periods, biological and environmental explanations were given for some of the major psychiatric disorders (depression, schizophrenia). We know from writings from the classical Greek and Roman period that many psychological disorders that exist today were also present then. Hippocrates proposed that abnormal behavior resulted from an imbalance of bodily humors, indicating a biological cause. Other physicians, such as Galen and Avicenna, proposed that psychological factors also played a role.

LO 1.8 Discuss the spiritual, biological, and environmental theories of the origins of abnormal behavior from the Middle Ages to the Renaissance.

Such theories fell out of favor in Western Europe shortly afterward, although they continued to flourish in the Middle East. During medieval times, there was a return to theories of spirit possession, and charges of witchcraft were common. This was also the time when people with psychological disorders were locked up in institutional settings with little or no access to care. During the Renaissance period, theories based on biology and environmental factors re-emerged in Europe.

LO 1.9 Discuss the spiritual, biological, psychological and sociocultural theories of the origins of abnormal behavior in the nineteenth century.

The nineteenth century marked the beginning of humane treatment advanced by leaders such as Pinel, Tuke, Rush, and Dix. During this time, Kraepelin also introduced a system for the classification of mental disorders, and Charcot introduced psychological treatments.

LO 1.10 Identify the psychological, biological, and sociocultural models that characterize the twentieth-century models of abnormal behavior.

During the twentieth century, biological theories still looked to abnormalities in the mind or brain as the basis for abnormal behavior. Psychological theories predominated, particularly psychoanalysis and behaviorism. Sociocultural models remind us that behavior exists within a context. Behaviors that are considered problematic or abnormal in one culture may not be viewed that way in a different culture.

Critical Thinking Question

Central figures in abnormal psychology during the twentieth century were Freud, Pavlov, and Watson. How does Freud’s theory of the development of abnormal behavior differ from those of Pavlov and Watson?

Current Views of Abnormal Behavior and Treatment

This journey through the history of theories and treatments of abnormal behavior leads us to several conclusions. First, scientific advances lead to new and more sophisticated approaches to understanding human behavior. Research findings allow unsupported theories to be discarded and provide new hypotheses to be tested and evaluated. This is the core of a scientific approach to abnormal behavior. Scientists form hypotheses and conduct controlled experiments to determine whether their hypotheses are supported. If empirical evidence supports the hypotheses, then those theories continue. If the evidence does not provide support, the theory is discarded or changed, and the process begins again.
Second, scientific discoveries in areas other than psychology may later provide insight into abnormal behavior. For example, the Human Genome Project officially completed in 2003 sequenced the entire human genome, although analyses will continue for many years. As our understanding of this map develops, new techniques (see Chapter 2) allow us to examine genetic abnormalities that may be associated with specific psychological disorders, such as schizophrenia and autism spectrum disorder. Similarly, new technologies such as magnetic resonance imaging (see Chapter 2) lead us to examine the brain in ways never before possible. Although not developed to study abnormal behavior, these technologies help us to identify brain areas that we now know are involved in specific emotions such as sadness or fear. These examples illustrate how, as science advances, newer insights replace older theories such as demonology. Furthermore, as scientifically advanced as our current theories appear, they too will be replaced as new discoveries emerge.

For the past 70 years, psychologists who study abnormal behavior have been trained in the scientist-practitioner model, meaning that when providing treatment, psychologists rely on the findings of research. In turn, when conducting research, the psychologist investigates topics that help to guide and improve psychological care. Psychologists who utilize this perspective have a unique advantage because their scientific training allows them to differentiate fact from opinion when evaluating new theories, new treatments, and new research findings. This perspective also allows psychologists to apply research findings in many different areas to develop more comprehensive models of abnormal behavior. Critically applying a scientific perspective to theories of etiology and examining the evidence behind proposed theories prevent us from adopting explanations that are without a firm scientific basis (such as witchcraft and demonology). “Treatments” based on such nonscientific ideas could have quite negative results and in some cases might even be deadly. As you read through this book, keep the scientist-practitioner model in mind.

For undergraduates, one of the most frustrating aspects of studying abnormal behavior is that psychologists often cannot provide a simple explanation for why a behavior occurs. What causes people to become so depressed that they commit suicide? Society often wants answers to these questions, but the answers are not simple. Unlike medical illness, abnormal behavior cannot be explained by bacteria or viruses that infect the body. Clinical descriptions and research findings have identified many different, and sometimes conflicting, factors. The different findings have given rise to perspectives, known as models, which try to weave coherent explanations from the available clinical observations and research findings. These models consist of basic assumptions that provide a framework for organizing information and a set of procedures and tools that can be used to test aspects of that framework (Kuhn, 1962).

In this chapter, we introduce some of the different models that try to explain abnormal behavior. You might wonder why so many different models exist. The answer is that abnormal behavior is very complex, and no one model appears capable of providing a comprehensive explanation. Using a scientific approach, researchers develop, examine, and discard models as new facts emerge. Next we examine some of the currently accepted models of abnormal behavior.

### Biological Models

**LO 1.11 Identify at least two biological mechanisms that are considered to play a role in the onset of abnormal behavior.**

The biological model assumes that abnormal behavior results from biological processes of the body, particularly the brain. Although long suspected to be the seat of abnormal behavior, only in the past 20 or 30 years have scientific advances allowed us to observe brain mechanisms directly. One area of scientific breakthrough has been in our understanding of genetics. As already noted, through genetic mapping, we are beginning to understand whether psychological disorders such as schizophrenia or manic-depressive disorder have a genetic basis and, if so, how that understanding might lead to better intervention and prevention efforts. Technology breakthroughs such as computerized axial tomography (CAT) scans, magnetic resonance imaging (MRI), and functional MRI (fMRI) allow direct examination of brain structure and activity. With this direct observation, we now have a much greater understanding of the role of the brain in abnormal behavior.
THE BRAIN’S MESSAGING SYSTEM  Although we often refer to the brain as if it were a single entity, it is a very complex organ. In fact, about 100 billion neurons (brain cells) make up the brain. Between the neurons are spaces known as synapses. Neurons (see Figure 1.5) communicate when neurotransmitters (chemical substances) are released into the synapse (i.e., the neuron fires) and land on a receptor site of the next neuron. That neuron then fires, sending an electrical impulse down the axon, releasing neurotransmitters into the next synapse, and so the process begins again. Neurotransmitter activity is the basis for brain activity (thinking, feeling, and motor activity) and is related to many physical and mental disorders. Until recently, the activity of neurotransmitters in the brain had to be assessed indirectly from their presence in other parts of the body (blood or spinal fluid). However, it was always unclear how accurately chemicals in blood or spinal fluid really reflected neurotransmitter activity in the brain. Through advances in neuroscience, we now rely less on assumptions and indirect measures to understand the structure and function of the nervous system and its interaction with behavior. We can now directly observe many aspects of the brain’s functioning, just as we do external behavior.

![Watch HOW NEURONS WORK](image)

**Figure 1.5** The Neuron Fires, Sending an Impulse to the Next Neuron.

Each individual neuron transmits information that is vital for virtually every aspect of our functioning.
THE BRAIN’S STRUCTURE  Imaging tests such as the CAT scan and MRI examine the morphology (structure) of the brain and are used to determine whether parts of the brain are structurally different in those with and without psychological disorders. For example, the brains of patients with Alzheimer’s disease have two structural abnormalities, plaques and tangles, which exist in greater number than among older people without Alzheimer’s disease (see Chapter 14). For other psychological disorders, the evidence is less definitive. In disorders such as depression, the biological, psychological, and cognitive changes may be the result of, not the cause of, the disorder (Wichers et al., 2010). In other words, years of living with the disorder cause changes in the brain, a process sometimes known as biological scarring. In other instances, when compared to people with no disorder, the brains of people with schizophrenia show structural brain abnormalities that could have occurred before birth (Malla & Payne, 2002; Sallet et al., 2003; see Chapter 11). Although we do not know for certain how these structural abnormalities may influence behavior, they illustrate how our understanding of the brain and abnormal behavior has changed as a result of new technologies.

THE BRAIN’S FUNCTIONS  Although some abnormal behaviors may be related to structural abnormalities, studies of brain functioning appear to be a more promising avenue of research. Advanced neuroimaging techniques such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI; see Chapter 2) allow for mapping various areas of the brain and identifying brain areas that might be associated with various disorders. Differences in brain functioning have been reported for adults with schizophrenia and depression (A. J. Holmes et al., 2005; Milak et al., 2005), adults and children with anxiety disorders (Baxter, 1992; Bellis, 2004), eating disorders (van Kuyck et al., 2009), and many other psychiatric disorders. These studies are numerous and will be reviewed throughout this book.

POTENTIAL CAUSES OF ABNORMAL BRAIN STRUCTURE OR FUNCTION  Although neuroscience data provide exciting new avenues for further research, it is still too soon to conclude that brain abnormalities cause psychological disorders. First, not all studies that compare people with and without a disorder find differences in brain structure or function. Furthermore, even when differences are detected, the abnormalities are not always found in a second trial, meaning that the abnormalities are not consistent. Second, to date, when differences exist, they are sometimes found in several different disorders. This means that whatever difference exists probably does not cause a specific disorder. Just like a fever that may be associated with many different physical illnesses, abnormal brain functioning may indicate that something is wrong, but not specifically what is wrong. Third, in most instances, few data indicate that these structural or functional abnormalities existed before the disorder occurred (schizophrenia and autism may be exceptions). It is just as likely that some disorders, such as PTSD, may cause changes in brain functioning, if not necessarily brain structure. Over the next decade, continued research in these areas coupled with the development of even more sophisticated assessment devices and strategies may help clarify some of these issues.

The inheritance of physical traits such as hair color, eye color, height, and even predispositions to some diseases (e.g., breast cancer, type 1 diabetes) is well established. It is perhaps less well known that some behavioral traits, both healthy ones and those that deviate from normal, are heritable. The field of behavioral genetics emerged with works by Sir Francis Galton (1822–1911) and his 1869 publication, Hereditary Genius. Since that time, behavioral genetics has explored the role of both genes and environment in the transmission of behavioral traits. Models of genetics research are presented in Chapter 2, and specific genetic findings for the various psychological disorders will be presented in other chapters.

Severe behavioral disorders, such as autism in children and schizophrenia in adults, continue to defy simple explanations of biological or environmental etiology. Based on animal models that have found links between early viral infections and later behavioral changes, some researchers have proposed a viral infection theory. Specifically, during the prenatal period or shortly after birth, viral infections might cause brain abnormalities that later lead to behavioral abnormalities (see Chapters 11 and 13). However, we
cannot yet say that this is a definitive cause, for the results of one study sometimes directly contradict those of another. Such contradictory findings are not unusual for psychology or any other science. As research continues, disparate findings are either reconciled or the theory is revised or discarded.

Even if future research confirms a relationship between viral infection and the onset of psychological disorders, there are still several different pathways that may produce this relationship. First, the virus may act directly by infecting the central nervous system (CNS). Similarly, infection elsewhere in the body could trigger the onset of a CNS disease. Second, viruses may act indirectly by changing the immune system of the mother or the fetus, thereby making one or both more susceptible to other biological or environmental factors. Third, both mechanisms may be involved (Libbey et al., 2005). Although some animal models suggest a possible relation between certain viruses and changes in the brain, evidence that the virus triggers the onset of a disorder has proved elusive. The etiology of most psychological disorders is likely to be complex—not traceable to a single genetic, biological, or environmental factor. Other variables, yet to be discovered, may be responsible for triggering or modifying the course of illness.

**Psychological Models**

**LO 1.12** Identify at least two psychological models that may account for the development of abnormal behavior.

The biological model seeks the causes of abnormal behavior in the workings of the brain or body. In contrast, psychological approaches emphasize how environmental factors such as family and cultural factors may influence the development and maintenance of abnormal behavior. In actuality, parental influence may be biological or psychological. Parents pass on their genes, but their influence is much broader. Parents can affect their children’s behavior in at least four ways:

- direct interaction
- responses to a child’s behavior
- modeling certain behaviors
- giving instructions

Of course, a child’s environment extends far beyond parents or even immediate family. The impact of other environmental factors, such as SES, was illustrated earlier in the chapter. To provide another example, environmental events such as separation from biological parents increase the likelihood of depression in adolescents (Cuffe et al., 2005). Furthermore, in some cases, environmental and cultural influences may produce behavior that is considered abnormal in one culture but not in another, as in the earlier case of Maleah, in which intergenerational bed sharing was a commonly accepted practice in the Philippines. Cultural influences such as these are addressed subsequently (see “Sociocultural Models”).

**MODERN PSYCHOANALYTIC MODELS** Modern psychoanalysts no longer discuss the id or fixation at the phallic stage. They do, however, still agree that much of mental life is unconscious and that personality patterns begin to form in childhood. They propose that mental representations (views) of the self and others guide our interactions and may lead to psychological symptoms. Finally, they believe that personality development involves not only learning to regulate sexual and aggressive feelings but also having mature interpersonal relationships with others (Westen, 1998).

Freud’s ideas have influenced a number of other theorists. Initially, he named Carl Gustav Jung (1875–1961) as his successor. However, they disagreed over several key theoretical components, and Jung broke away to develop analytic therapy. Unlike Freud, Jung believed that behavioral motivators were psychological and spiritual (not sexual) and that future goals rather than past events motivated behavior. Another former colleague, Alfred
Adler (1870–1937), also broke with Freud to develop his own psychoanalytic school called individual psychology. Less comprehensive than Freud, Adler introduced several concepts that are part of everyday language and are associated with abnormal behavior: sibling rivalry, the importance of birth order, and the inferiority complex, by which real or perceived inferiority leads to efforts to compensate for the deficiency.

More contemporary models of psychoanalysis, such as ego psychology, deviate from Freud by their increased focus on conscious motivations and healthy forms of human functioning. Object relations theory, for example, addresses people’s emotional relations with important objects (in this sense, people or things to which the person is attached). This theory emphasizes that people have a basic drive for social interactions and that motivations for social contact are more than simply to satisfy sexual and aggressive instincts. Therapy uses the patient’s relationship with the therapist to examine and build other relationships in their lives.

**BEHAVIORAL MODELS** Unlike the psychodynamic perspective, where internal mental elements exert an influence on behavior, learning theory stresses the importance of external events in the onset of abnormal behaviors. According to learning theory, behavior is the product of an individual’s learning history. Abnormal behavior is therefore the result of maladaptive learning experiences. Behavioral theories do not ignore biological factors; instead, they acknowledge that biology interacts with the environment to influence behavior. Strict behaviorists focus on observable and measurable behavior and do not examine inner psychic causes. They believe that abnormal behavior results from environmental events that shape future behavior, such as the conditioning events that led to Little Albert’s fear. In contrast to psychoanalytic theory’s emphasis on the first 5 years of life, according to behavioral theory, significant experiences can occur at any point in life.

Despite the pioneering work of Pavlov, Watson, Rayner, and Jones, behavior therapy remained in its infancy until the 1950s. Then a South African psychiatrist, Joseph Wolpe (1915–1997), dissatisfied with psychoanalysis, began to study experimental neurosis (anxiety) in animals. Using a classical conditioning paradigm, a dog learned that food followed the presentation of a circle but not an ellipse. Then Wolpe altered the shape of the circle and the ellipse so that discrimination (and, therefore, the signal for food) became increasingly difficult (is it a circle? is it an ellipse?). The dog struggled, became agitated, barked violently, and attacked the equipment, behaviors that would indicate the presence of negative emotions. Once Wolpe demonstrated how classical conditioning principles could account for the development of anxiety, he applied the same principles to eliminate fear. In his landmark book *Psychotherapy by Reciprocal Inhibition* (Wolpe, 1958), he proposed that a stimulus will not elicit anxiety if an incompatible behavior (such as feeling relaxed) occurs at the same time. In other words, it is not possible to feel anxious and relaxed (or anxious and happy) at the same time; they are incompatible emotions. Mary Cover Jones treated Peter by selecting a situation that she thought would promote relaxation (other children playing in the room). In contrast, Wolpe specifically taught his patient how to relax. Then he deliberately paired relaxation (the incompatible response) with the fear-producing event. With repeated pairings, he eliminated anxiety.

Just as Jones began treatment of Little Peter by placing the rabbit at the opposite corner of the room and then moving it progressively closer, Wolpe used a hierarchy, in which elements of the anxiety-producing object are presented in a gradual fashion. For someone who fears flying, the hierarchy might include going to the airport, sitting in the boarding area, getting on the plane, taking off, and so on. Relaxation is paired with each step in the hierarchy. This therapy, called systematic desensitization, is very effective for a range of anxiety problems. Although used less frequently today than 30 to 40 years ago, systematic desensitization still forms the foundation for many current behavior therapy procedures.

"The more often I tell him to sit down, the more he stands up." This line, which could have been spoken by Derek’s second-grade teacher, illustrates the powerful effect of attention. Sometimes yelling at a child for bad behavior actually increases it. To understand
why, it is necessary to first understand the work of B. F. Skinner (1904–1990). He observed that many behaviors occurred without first being elicited by a UCS. Using animal models, Skinner demonstrated that behavior could be acquired or changed by the events that happened afterward. Known as operant conditioning, these principles are relevant to the behaviors of individuals, groups, and entire societies.

The basic principle behind operant theory is reinforcement, which is defined as a contingent event that strengthens the behavior that precedes it. In its simplest form, a reinforcer may be considered to be a reward—a child does household chores and the reward is a weekly allowance. If the allowance is contingent upon (occurs only after) the completion of the chores, it is likely that the child will do chores again. The allowance is a reinforcer because it functions to increase behavior. Skinner identified several principles of reinforcement. First, reinforcers are always individual: What is a reinforcer for one person is not necessarily a reinforcer for another person (chocolate is not a reinforcer for everyone). Second, there are primary and secondary reinforcers. Primary reinforcers are objects such as food, water, or even attention. They have their own intrinsic value (i.e., they satisfy basic needs of life or make one feel good). Secondary reinforcers are objects that have acquired value because they become associated with primary reinforcers. Money is a secondary reinforcer because it symbolizes the ability to acquire other reinforcers (heat in cold weather, a cold drink when thirsty). Much of Skinner’s work was devoted to schedules of reinforcement, which established the “when” and “how” of reinforcement and set forth conditions under which behavior was more likely to be acquired or less likely to be extinguished. Skinner’s work has applications for parenting, education, psychology, and many other aspects of behavior. How does this work apply to Derek? For children, adult attention is a powerful reinforcer. If every time Derek stands up, the teacher calls out his name (gives him attention) and asks him to sit down (or, even worse, calls him aside and spends time asking him why he keeps standing up), this positive attention could be reinforcing, increasing the likelihood that when Derek wants attention, he will stand up again.

Whereas reinforcement serves to increase the frequency of a behavior, punishment has the opposite effect: It decreases or eliminates a behavior. Punishment can be the application of something painful (spanking) or the removal of something positive (no television). Sometimes punishment is necessary to quickly eliminate a very dangerous behavior, for example, a child with severe mental retardation engages in self-mutilating behaviors. The withdrawal of something positive, such as in a time-out (having a child sit in a corner for a few minutes), is often effective for behaviors such as tantruming. Skinner advocated the use of reinforcement rather than punishment. Punishment suppresses a behavior, but if an alternative, substitute behavior is not acquired, the punished behavior reemerges. Therefore, when punishment is used to suppress a behavior, reinforcement of an alternative, positive behavior must also occur.

How do the dolphins in captivity learn to leap into the air, spin around three times, and then slide on a ramp to receive the applause of a human audience? The trainers use a procedure called shaping, a process whereby closer steps, or successive approximations, to a final goal are rewarded. Dolphin trainers begin by reinforcing (with food) any initial attempt or slight movement that resembles a turn. Gradually, the trainer requires a larger turn before providing reinforcement until finally the dolphin must completely spin around before receiving reinforcement. Shaping is an effective procedure for the acquisition of new behaviors in children and adults and will be discussed in several other chapters in this book.
We have reviewed two types of learning so far: classical conditioning and operant conditioning. A third type of learning was described by Albert Bandura (1925–) and his colleagues at Stanford University during the early 1960s. Vicarious conditioning is characterized by no trial learning—the person need not actually do the behavior in order to learn it. Learning occurs when the person watches a model, that is, someone who demonstrates a behavior. Observation of another person can have a disinhibiting or inhibiting effect on current behaviors or can teach new behaviors. This kind of social learning can explain the acquisition of abnormal behaviors such as aggression.

Behavior therapists focus therapy on the elimination of abnormal behaviors and on the acquisition of new behaviors and skills. Treatment targets the patient’s current symptoms. Although the past is considered important in understanding the present and the patient’s current psychological distress, behavior therapy does not focus specifically on the early years of life. Furthermore, achieving insight is not considered sufficient to produce behavior change. Rather, behavior therapists focus directly on helping patients change their behavior in order to alleviate their psychological problems.

THE COGNITIVE MODEL The cognitive model proposes that abnormal behavior is a result of distorted cognitive (mental) processes, not internal forces or external events. According to cognitive theory, situations and events do not affect our emotions and behavior; rather, the way we perceive or think about those events does. Imagine that you fail the first test in your abnormal psychology class. If you think to yourself, “Well, that was a hard test, but now I know what the instructor wants and I’ll do better the next time,” you are likely to feel okay about yourself and study harder for the next test. If, however, after you fail the test, you think, “I’m an idiot; why did I ever think I could be a psychologist?” you may feel sad and lose your enthusiasm for the class. You may even decide that you should drop out. In each case, the situation was the same. It was what you thought about the situation, and yourself, that affected your mood and your future behavior. That is the core of cognitive theory. According to Aaron Beck (1921–), the originator of cognitive therapy, people with depression have three types of negative thoughts: a negative view of the self, the world, and the future. Beck called this the negative cognitive triad. These negative assumptions are often called cognitive distortions. People may have many different types of distorted cognitive processes that affect their mood and behavior (see Table 1.3).

To change abnormal behaviors, cognitive therapy is directed at modifying the distorted thought processes. Therapists assign behavioral experiments in which the patient engages in a certain activity and then examines the thoughts that accompany the activity. With therapist assistance, the patient learns to challenge negative thoughts, to assess the situation more realistically, and to generate alternative, more positive thoughts. Cognitive therapy and behavior therapy share many similarities, but there are some differences. First, cognitive therapy is based on the assumption that internal cognitive processes must be the target of therapy, whereas behavior therapy assumes that changing behavior will lead to a change in cognitions. Second, cognitive therapy relies more on the use of traditional talk psychotherapy and insight than does traditional behavior therapy. Despite some theoretical differences, comparisons of behavior therapy and cognitive therapy suggest that they are equally effective treatments for most psychological disorders. In many cases, treatment procedures originally developed under one model or the other are now used together, thus the term cognitive–behavior therapy.
Table 1.3 Common Cognitive Distortions

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-or-nothing thinking</td>
<td>If I don’t go to an Ivy League school, I’ll be a bum.</td>
</tr>
<tr>
<td>Overgeneralizing</td>
<td>Everything I do is wrong.</td>
</tr>
<tr>
<td>Mental filtering</td>
<td>The instructor said the paper was good, but he criticized my example on page 6. He really hated the paper.</td>
</tr>
<tr>
<td>Disqualifying the positive</td>
<td>Sure, I got an A, but that was pure luck. I’m not that smart.</td>
</tr>
<tr>
<td>Jumping to conclusions</td>
<td>The bank teller barely looked at me. She really hates me.</td>
</tr>
<tr>
<td>Magnifying or minimizing</td>
<td>I mispronounced that word in my speech. I really screwed up.</td>
</tr>
<tr>
<td>OR</td>
<td>I can dance well, but that’s not really important—being smart is what’s important, and I’m not smart.</td>
</tr>
<tr>
<td>Catastrophizing</td>
<td>I failed this quiz. I’ll never graduate from college.</td>
</tr>
<tr>
<td>Reasoning emotionally</td>
<td>I feel hopeless, so this situation must be hopeless.</td>
</tr>
<tr>
<td>Making “should” statements</td>
<td>I should get an A in this class even though it is really hard.</td>
</tr>
<tr>
<td>Mislabeled</td>
<td>I failed this quiz. I’m a complete and total idiot.</td>
</tr>
<tr>
<td>Personalizing</td>
<td>We did not get that big account at work. It’s all my fault.</td>
</tr>
</tbody>
</table>


THE HUMANISTIC MODEL  Based on phenomenology, a school of thought that holds that one’s subjective perception of the world is more important than the actual world, humanists believe that people are basically good and are motivated to self-actualize (develop their full potential). Abnormal behaviors occur when there is a failure in the process of self-actualization, usually as a result of people’s failure to recognize their weaknesses and establish processes and strategies to fulfill their potential for positive growth.

The psychologist most closely associated with humanistic psychology is Carl Rogers (1902–1987). His theory of abnormal behavior begins with the assumption that psychopathology is associated with psychological incongruence, or a discrepancy between one’s self-image and one’s actual self. The greater the discrepancy, the more emotional and real-world problems one experiences. Incongruence results from the experience of conditional positive regard—a person is treated with respect and caring only when meeting the standards set by others (i.e., conditionally). The person comes to believe that he or she is worthy only when meeting those standards. Because this is an inaccurate, overly demanding image, emotional or behavioral problems result.

The goal of Rogers’ psychotherapy, called client-centered therapy, is to release the individual’s existing capacity to self-actualize (reach full potential) through interactions with the therapist. Therapy is based on three components. Genuineness means that the therapist relates to the person in an open, honest way and does not hide behind a professional mask. Empathic understanding means that the therapist understands the client’s world as the client sees it. Finally, the therapist expresses unconditional positive regard by genuinely accepting the client with full understanding, trusting the client’s resources for self-understanding and positive change. Whereas psychoanalytic therapy focuses on understanding the patient’s past experiences, client-centered therapy focuses on present experiences, believing that the reestablishment of awareness and trust in that experience will lead to positive change.

Sociocultural Models

LO 1.13 Explain the sociocultural mode of behavior and how it differs from the biological and psychological models.

All of the models of abnormal behavior discussed so far begin with the assumption that abnormality lies within the individual. Instead, sociocultural models propose that abnormal
behavior must be understood within the context of social and cultural forces, such as gender roles, social class, and interpersonal resources. From this perspective, abnormal behavior does not simply result from biological or psychological factors but also reflects the social and cultural environment in which a person lives. Many social and cultural forces may influence behavior; we discuss only a few here.

One well-studied social factor is gender role, defined as the cultural expectations regarding accepted behaviors for men and women, boys and girls. These differing role expectancies often exert a powerful influence on the expression of abnormal behavior. Consider the fact that girls (and women) are much more likely than boys (or men) to admit to having a phobia. Could gender role expectations, rather than biology, explain this difference? In Western cultures, girls are allowed to express emotions openly, whereas society discourages such behavior among boys—consider the phrases “boys don’t cry” or “take it like a man.” The implication is that showing emotion is not appropriate behavior for males and therefore not accepted in Western society. So boys learn to hide or deny emotions, such as fear. Other disorders possibly influenced by gender role are eating disorders, which are more common in girls and may be triggered in some cases by pervasive sociocultural pressures on females to be thin (see Chapter 8).

In addition to gender role, other social factors such as hunger, work, and domestic violence may make women more vulnerable to psychological distress (López & Guarnaccia, 2000). More than 60% of women in developing countries do not have adequate food. In both developed and developing countries, women do not receive equal pay even when they are performing dangerous, labor-intensive jobs, and more often than men, they are victims of domestic violence. These factors, perhaps in combination with others, are perceived to play a significant role in the development of psychological disorders, perhaps placing women at higher risk, not because of their biology but because of the social context in which they live.

SES is another social factor that may affect the development of psychological disorders. After Hurricane Andrew, rates of one type of psychological disorder, PTSD, were higher among African American and Hispanic children than among white children (LaGreca et al., 1996). On first glance, this difference might be attributed to race or ethnicity, but another important factor might be SES. Why might SES be important? People from the lowest income bracket are more likely to live in housing that is easily damaged by strong winds and therefore are more likely to be homeless after a storm. In 2005, Hurricane Katrina hit the city of New Orleans. Although all areas of New Orleans were affected by the storm, the areas of the city that were closest to the floodplain housed some of the city’s poorest families. Coupled with the limited economic resources that existed before the storm, residents faced continuing economic hardship and slow recovery (Meyers, 2008). With few social or economic resources, the likelihood of emotional distress and psychological disorders increases.

Interpersonal support is another social factor that helps people during times of emotional distress. Although many of the people most affected by Hurricane Katrina had little money, they had deep neighborhood roots. Now, even years later, many remain displaced from their homes and their former social support systems, leading to the development of psychological disorders such as depression, anxiety, and PTSD. As is obvious from this brief review, many different social factors can affect the onset
of psychological distress, and throughout this volume, we return to these issues as we attempt to understand abnormal behavior.

Along with social factors, the sociocultural model also includes cultural influences such as race and ethnicity. Historically, these variables were used unfairly to stereotype groups. In the early nineteenth century, for example, the brains of Africans, Native Americans, and Asians were considered to be simple and crude, leading to lower rates of insanity (Raimundo Oda et al., 2005). Insanity was believed to result from having to cope with the stressful Western civilized life and to require sophisticated cognitive abilities. Today, that explanation has been discarded, but context and culture are still important influences on behavior, including abnormal behavior.

Cultural factors may affect symptom expression and diagnosis. With respect to symptom expression, several different variables are important. First, behaviors that are considered abnormal in one culture may be considered normal in other cultures. In Puerto Rico, dissociation (a feeling of being detached from one's body—sometimes called an out-of-body experience) is considered a normal part of spiritual and religious experiences, but it would be regarded as abnormal in other Western cultures (Lewis-Fernandez, 1998; Tsai et al., 2001). Similarly, behaviors that suggest extreme suspiciousness and mistrust of others may justifiably be labeled paranoia in some patients. Among other cultures and groups, however, suspiciousness may simply be an adaptive response from people who have been marginalized because of sociodemographic factors or who have been the victims of stereotype or racial discrimination (Whaley, 1998).

Researchers with a sociocultural perspective examine how psychological disorders may express themselves differently in different cultures. Certain conditions that are specific to a culture are known as culture-bound syndromes (López & Guarnaccia, 2007; Miranda & Fraser, 2002). One such disorder, koro, occurs among people of South and East Asia and consists of intense anxiety that the penis (or vulva and nipples in women) will disappear or cause one's death (American Psychiatric Association, 2013).

As researchers gain a better understanding of the important roles that social and cultural factors play in the onset, expression, and treatment of psychological disorders, they are developing culturally sensitive treatments for many different disorders. These treatment approaches incorporate cultural values and expressions that may enhance the therapeutic process by increasing the number of people who seek and benefit from these enhanced interventions. Consider the cultural context that surrounds suicide. U.S.-born Latino adolescents are twice as likely to attempt suicide as foreign-born Latino youth (CDC, 2006). Although many factors are involved in the decision to attempt suicide, familismo may be one important factor. Familismo (or familism), a concept common in Latino cultures, emphasizes the centrality of and obligation to family over self or peers (Lugo Steidel & Contreras, 2003). This orientation differs from that of mainstream U.S. teen culture, which emphasizes peer relationships, individualism, and moving away from the family (Goldston et al., 2008). It is possible that Latino teens born in the United States experience weakening of familism values when constantly exposed to the mainstream U.S. culture of individualism. Less emphasis on familial obligation may be a factor that leads to higher rates of suicide among U.S.-born Latino youth. Familism may also be an important factor when providing treatment to Hispanic families. Currently, several interventions developed for depressed adolescents have been modified by

Although Hurricane Sandy affected many residents of New York and New Jersey, people pulled together to help one another, creating a social network that could prevent or lessen the hurricane’s impact.
including more direct involvement of parents in the treatment program. Although much more research is needed, culturally sensitive interventions are likely to increase the acceptance of, and therefore the effectiveness of, psychological interventions for psychological disorders.

The Biopsychosocial Model

**LO 1.14 Explain how the biopsychosocial model accounts for the limitations in the three unidimensional models (biological, psychological, sociocultural).**

In this chapter, we have examined biological, psychological, social, and cultural factors that affect the development and expression of abnormal behaviors. One reason there are so many different models is that no one perspective is able to explain all aspects of behavior and certainly not all cases of abnormal behavior.

Current approaches to physical medicine assume that all illnesses are based on biological processes that can be reduced to a biological cause even if the specific physical process has not yet been determined. For example, we know that cancer occurs when abnormal cells develop and attack the body’s systems even though we do not know yet what physical processes caused these cells to develop. In contrast, in the case of mental disorders, there is no single model of abnormal behavior even though scientists continue to search for such single explanations (Lake, 2007). Instead, there are as many different models, and often the training backgrounds of mental health professionals result in different perspectives being emphasized. Modern scientists now recognize that (1) abnormal behavior is complex, (2) abnormal behavior cannot be understood using a single theoretical explanation, and (3) understanding abnormal behavior will advance only if we embrace and integrate the various conceptual models (Kendler, 2005). A significant challenge to understanding abnormal behavior is to understand how the mind and the brain interact and how to combine these very different perspectives to create a coherent theory of psychological disorders. In fact, modern scientists have moved past trying to reduce all behavior to one singular explanation. It is clear that causality can begin in the brain or the mind and can set off a chain of events that ultimately affects both components, leading to the onset of abnormal behavior (Kendler, 2005). Other researchers (Lake, 2007) have argued that integrating the perspectives of biomedicine, human consciousness, and neuroscience will lead to significant advances in understanding and treating psychological disorders.

Currently, most mental health clinicians subscribe to a **biopsychosocial perspective**, which acknowledges that many different factors probably contribute to the development of abnormal behavior and that different factors may be important for different people. This perspective utilizes a **diathesis-stress model of abnormal behavior**, which begins with the assumption that psychological disorders may have a preexisting vulnerability (see Figure 1.6). The presence of a biological or psychological predisposition to a disease or disorder is called a diathesis. However, just having a predisposition for a disorder does not mean that a person will actually develop it. Rather, the predisposition is assumed to lie dormant (as if it does not exist) until stressful environmental factors create significant distress for the individual. People react differently to stressful events. The combination of a biological or psychological predisposition and the presence of environmental stress creates psychological disorders. The diathesis-stress model integrates biological, psychological, and sociocultural systems to provide explanations that are consistent with what we know are complex human behaviors. We will return to this biopsychosocial model and the diathesis-stress model many times throughout this volume.
Figure 1.6 The Diathesis-Stress Model.

In this model, a diathesis, or vulnerability, interacts with individual stressors to produce a psychological disorder. The biopsychosocial model uses the concept of diathesis-stress to acknowledge that many different factors (biological, psychological, and social) may contribute to the development of a disorder.

Learning Objective Summaries

**LO 1.11** Identify at least two biological mechanisms that are considered to play a role in the onset of abnormal behavior.

The biological model of abnormal behavior assumes that abnormal behavior is rooted in a person’s biology. The basis may be a genetic abnormality, abnormal brain structures, or abnormal brain functioning.

**LO 1.12** Identify at least two psychological models that may account for the development of abnormal behavior.

Within the psychological model are several distinctive approaches, including modern psychoanalytic, behavioral, and cognitive models. Rather than looking to biology as the basis for psychological disorders, these models assume that environmental events and the way we interpret and react to them play a causal role in the onset of abnormal behavior.

**LO 1.13** Explain the sociocultural mode of behavior and how it differs from the biological and psychological models.

Sociocultural models are based on a broader perspective, proposing that broad social and cultural forces (not individual or unique environmental events) contribute to the onset of psychological disorders.

**LO 1.14** Explain how the biopsychosocial model accounts for the limitations in the three unidimensional models (biological, psychological, sociocultural).

The biopsychosocial perspective incorporates a diathesis-stress model, in which biology is thought to lay the foundation for the onset of the disorder through the presence of biological abnormalities. However, biology alone is insufficient; environmental, social, and cultural factors are always part of the equation that leads to the onset of psychological disorders. Today biological, psychological, sociocultural, and biopsychosocial explanations dominate the explanations for the development of abnormal behavior. Each of the etiological theories has strengths and weaknesses, and each alone is inadequate to fully explain the presence of abnormal behavior. Determining abnormal behavior is complex, and it is likely that a combination of factors is responsible for any specific psychological disorder. There are many competing theories, and as science progresses, new theories will be developed and others will be discarded.

Critical Thinking Question

Using a biopsychosocial perspective, what factors might influence the development of a psychological disorder in a member of the military who served in Operation Iraqi Freedom?
Real SCIENCE Real LIFE

Olivia—How One Disorder Might Have Been Understood and Treated Throughout the Ages

Feelings of depression have been documented since the beginning of recorded history, and depression is a common psychological disorder, affecting 17% of the general population.

THE PATIENT

Olivia just started college. She grew up in a small town but enrolled in a major state university far from home. Her family has few financial resources, and the university scholarship was her only opportunity for a college education. She was reluctant to leave home, but her family and teachers encouraged her because it was a tremendous opportunity. When Olivia was a child, she went to camp one summer and was very homesick for an entire week. Now Olivia is having those same feelings again as she tries to adjust to college life in a new town. She is very sad, cries for no reason, and has stopped attending classes. She believes that she is a failure for being unable to adjust and is afraid to tell her parents how she feels. She barely talks to her roommate, who is very concerned about the change in her behavior. Olivia no longer takes a shower, sometimes does not get out of bed, and will go for several days without eating. She talks about being “better off dead.”

Depression can be conceptualized from various perspectives, each of which would provide a unique approach toward treatment. If we were to convene a panel of experts to discuss various approaches to Olivia’s treatment, we might hear a number of perspectives over time.

ASSESSING THE SITUATION

How would the following people think about and treat Olivia?

- Hippocrates
- A Roman Catholic Priest from the Middle Ages
- Philippe Pinel, M.D.
- Sigmund Freud, M.D.
- B. F. Skinner, Ph.D.
- A Cognitive Psychologist in 2005
- A Biological Psychiatrist in 2006
- A Biopsychosocial Psychologist in 2016

THE TREATMENT

Hippocrates (380 BC): “It is obvious that the patient is suffering from an excess of black bile, which causes feelings of melancholia. To restore the humors to a balanced state, she needs to eat a vegetable diet and engage in physical activity. She also needs a tranquil existence, which would include a period of celibacy.”

Roman Catholic Priest (1596): “Her symptoms are a direct result of possession by a demon with whom she has engaged in illicit relations. Her failure to follow the rules of authority (go to class) and her wish to die are sinful acts and clearly indicate that she is in league with the devil. She may even be a witch.”

Philippe Pinel, M.D. (1800): “Mental illness is curable if we take the time to understand it. Olivia must be taken away from the environment that caused this problem and placed in the hospital, where she will be assigned to work in the garden. This physical activity will allow her to rest in the evening, and her spirit will be restored.”

Sigmund Freud, M.D. (1920): “Although on one level, Olivia is grateful for the opportunity to study at the university, on a deeper, more unconscious level, she may feel anger and resentment toward her parents for not having the resources to allow her to study at a more prestigious school that was closer to home. This anger was particularly scary because her mother was suffering from breast cancer. Her superego, whose job it is to keep these unacceptable emotions in check, turned the anger she felt toward her parents back onto herself, resulting in depression, which especially because of her mother’s condition, is a more socially acceptable emotion.”

B. F. Skinner, Ph.D. (1965): “Olivia has learned depressive behaviors through a series of reinforcing experiences. She probably receives significant attention from her family every time that she calls home and tells them she is homesick. She may feel sad, but the way to change emotion is to change behavior and the contingencies that control it. I suggest that all those who interact with her provide positive reinforcement for ‘nondepressive’ behaviors (e.g., engaging in social activities, completing assignments) and extinguish, or ignore, depressive behaviors (e.g., not going to class, staying in her dorm room).”

Cognitive Psychologist, Ph.D. (2005): “Olivia’s depression is the result of her negative perspective regarding herself and the world. Many college students have trouble adjusting to new environments. However, Olivia’s cognitive schema has falsely interpreted this adjustment difficulty as a sign of personal weakness and failure. In therapy, we will examine these dysfunctional beliefs and help Olivia develop a more positive, functional perspective.”

Biological Psychiatrist, M.D. (2006): “This patient meets diagnostic criteria for major depressive disorder, single episode. She has no history of mania. Her family history is positive for depression (mother, maternal aunt, possibly grandmother), and her paternal grandfather committed suicide. Because her mother had a positive response to a selective serotonin reuptake inhibitor, I recommend a course of fluoxetine (Prozac) 20 mg/day as an initial dose.”

Biopsychosocial Psychologist (2016): “Olivia’s depression clearly shows how numerous factors combine to create her
distress. Her family history indicates the presence of a genetic predisposition, leaving her vulnerable to the development of depression. However, she did not have any difficulties until she went to college, and the stress from (1) moving far away from home for the first time and (2) needing to keep her grades high so that she could maintain her scholarship are most likely environmental and social factors that triggered the actual onset of the negative mood. Medication may be useful in the short term, but Olivia needs to learn how to cope with stress so that she has the tools to counteract her biological predisposition and prevent future episodes because she will face stressors throughout her lifetime.

Key Terms

abnormal behavior, p. 8
animal magnetism, p. 17
behavioral genetics, p. 26
behaviorism, p. 21
biological scarring, p. 26
biopsychosocial perspective, p. 34
classical conditioning, p. 20
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Chapter 2
Research Methods in Abnormal Psychology

Chapter Learning Objectives

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LO 2.7 Describe the strengths and limitations of case studies.

LO 2.8 Identify two types of single-case designs and the strengths and limitations of each.

LO 2.9 Understand the principles of correlational research and their application to the study of abnormal behavior.

LO 2.10 Describe the factors that influence outcomes of randomized controlled trials.

LO 2.11 Understand the importance of diversity in group-based research in abnormal psychology.

LO 2.12 Explain the difference between cross-sectional and longitudinal cohorts and the strengths and limitations of each.

LO 2.13 Differentiate incidence and prevalence as these terms relate to understanding abnormal behavior.

LO 2.14 Recognize the types of epidemiological research as they relate to understanding abnormal behavior.

I was taking introductory psychology, and we had the option of participating in research to get extra credit. There was an information board in the department where we could read about studies and sign up. There were lots of studies to choose from. I saw one that caught my interest and signed up.

I read the information sheet and signed the consent form. On the first day of the study, I met with a researcher who asked me all sorts of questions about my family history of alcohol use and about my own drinking patterns. I also had to fill out several questionnaires—mostly about alcohol and drug use.

She then scheduled me to come back the next day, and I was told not to eat for 1.5 hours before I came in and also not to smoke or brush my teeth!

On the second day I had to taste 10 different sweet solutions. She told me to sip the solution, swirl it around in my mouth, and spit it out. Then I had to rate the solution, rinse my mouth with distilled water, and proceed to the next solution. For each solution, I had to rate how sweet and how pleasurable the taste was.

That was pretty much it. Afterward, the researcher told me that she was studying the association between a family history of alcoholism and sweet taste preference.

A few years later, I was checking around on the Internet to see if anything ever came of the study, and I typed in the researcher’s name. To my surprise, she published a paper on the study and concluded that people with a family history of alcoholism actually do prefer sweeter tastes! The theory is that sweet taste preference is associated with risk of developing alcohol-related problems. It was pretty incredible to have been a participant in a study that actually got published.


In introductory classes, psychology is often described as the scientific study of behavior and mental processes. To understand human behavior, psychologists require research volunteers such as the participant described above. Much of what we know about abnormal behavior is based on studies conducted using college students. Although there are biases inherent in such research (i.e., college students are not representative of the entire population), such studies do provide important starting points for further research. In much of psychological research, investigators are looking at individuals’ observable behaviors.
However, for abnormal psychology, a scientific approach requires research of human behavior at all levels (genes, biological indices such as heart rate, internal events such as thoughts and feelings, observable behaviors such as interacting with another person, and population trends). The National Institutes of Health (NIH) emphasize the critical importance of understanding health and disease by conducting research at every level—from a single cell to society. Translational research is a scientific approach that focuses on communicating between basic science and applied clinical research. The NIH states:

To improve human health, scientific discoveries must be translated into practical applications. Such discoveries typically begin at the bench with basic research—in which scientists study disease at a molecular or cellular level—then progress to the clinical level, or the patient’s bedside. The translational approach is really a two-way street. Basic scientists provide new tools for use with patients, and clinical researchers make novel observations about the nature and progression of disease that often stimulate basic investigations. Translational research has proven to be a powerful process that drives the clinical research engine.

Our introductory case illustrates one type of basic research—understanding how taste mechanisms may be related to alcoholism. This case illustrates another important point as well. The goal of most research is to publish the results so that other investigators can use the data to generate new hypotheses and further our understanding of abnormal behavior. The public—those who do not do research—also needs to be aware of research findings that have implications for their lives.

Consistent with a translational approach, this chapter begins with research strategies that focus on factors at the cellular and neuroanatomical level and that affect behavior in the entire organism. We then examine research at the individual and group level, where most scientific inquiry in the area of abnormal psychology occurs. Finally, we turn to studies examining behavior at the population level. Each approach provides a unique perspective on mental illness. Combined, they allow us to understand broadly the biological, psychological, and societal aspects of mental illness.

Ethics and Responsibility in Research
Core Principles of Ethics in Research

**LO 2.1** Describe three core principles of ethics in the scientific study of abnormal behavior.

Our research participant read an information sheet before deciding to participate in the study and signing a consent form. One of the core principles in the scientific study of abnormal behavior is that the research must be conducted in an ethical manner in accord with the principles outlined in the Belmont Report (see Chapter 15 for details). The report covers three fundamental ethical principles. First is respect for persons. That means that individuals participating in a study must be capable of making decisions about themselves. Anyone lacking that ability is entitled to protection: A parent or guardian must give consent for that person to participate. Second is the principle of beneficence. This means that researchers not only must respect participants’ decisions and protect them from harm but also must attempt to secure their well-being. This obligates the researcher to do no harm and to maximize possible benefits and minimize possible harms. The third ethical principle, justice, emphasizes “fairness in distribution” or “what is deserved.” An injustice occurs when a benefit to which a person is entitled is denied without good reason or when an unnecessary burden is imposed. It would be unjust, for example, for a person who is qualified and willing to participate in a study to be excluded.

The Informed Consent Process

**LO 2.2** Understand important features of informed consent.

A researcher who designs a study and develops the consent form makes sure that all potential participants can easily understand the informed consent document and clarifies that
participation in the research project is voluntary. The researcher also takes time to consider all foreseeable risks and benefits of participating in the project. Risks may include side effects of medication or discomfort in answering questions about sensitive topics. Finally, the researcher must ensure that participants are selected through a fair process. An institutional review board (IRB), also known as an independent ethics committee (IEC) or ethical review board (ERB), must review and approve all research conducted on humans. In turn, in the United States, the Office for Human Research Protections (OHRP) within the Department of Health and Human Services governs these boards and committees. Separate committees exist to oversee the ethics of laboratory animal research. The Institutional Animal Care and Use Committee (IACUC) is a separate committee established by institutions that use laboratory animals for research or instructional purposes. These committees oversee and evaluate all aspects of the institution’s animal care and use program. These bodies both approve and oversee all research to ensure that researchers adhere to all mandated ethical principles.

Explore ETHICS AND RESPONSIBILITY

Learning Objective Summaries

**LO 2.1** Describe three core principles of ethics in the scientific study of abnormal behavior.

One core ethical principle is respect for persons, which means that individuals participating in a study must be capable of making decisions about themselves. A second principle is beneficence, which means that researchers must respect participants’ decisions, protect them from harm, and attempt to secure their well-being. The third ethical principle, justice, emphasizes “fairness in distribution” or “what is deserved.”

**LO 2.2** Understand important features of informed consent.

All potential participants must be able to understand the informed consent document and recognize that participation is voluntary. The researcher also needs to consider risks and benefits of participating in the project and ensure that participants are selected fairly. An IRB must review and approve all research conducted on humans.

Critical Thinking Question

You are serving as a member of the IRB at your college. One of the professors submitted a request to conduct a study of children who have separation anxiety. She is hoping to measure the children’s psychological responses when their parents leave them in a playroom alone. Considering the three core principles of ethics reviewed here, what questions do you have for this professor?
Research in Abnormal Psychology at the Cellular Level

Research at the cellular level is an exciting and rapidly advancing area of study for abnormal psychology and intersects with the field of neuroscience. Although the idea that the brain is the site of abnormal behavior dates back to ancient times, only recently have we had the tools to study the brain and the nervous system accurately. Before discussing these new research findings, we will review the workings of the nervous system and the other parts of the body that influence behavior.

Neuroanatomy

**LO 2.3** Identify the two main parts of the nervous system and brain/body components of each.

The two main parts of the human nervous system are the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS consists of the brain and the spinal cord. As noted in Chapter 1, the brain contains approximately 100 billion nerve cells, or neurons. Each neuron extends along distinct and specific pathways, creating a complex but ordered web of neural circuitry. Typical neurons are composed of the soma, or the cell body, which contains the nucleus. The *dendrites* are fingerlike projections that extend from the soma. Dendrites branch out and receive information from other neurons. The fiber through which a cell transports information to another cell is called the *axon*. *Axon terminals* are the branched features at the end of the axon that form *synapses*, or points of communication with dendrites or cell bodies of other neurons (see Figure 2.1).

Having a general understanding of the structure of the brain is important because as we discuss the various psychological disorders, you will see that we are starting to understand the relationship between specific parts of the brain and specific disorders. An evolutionary perspective helps us to understand which parts of the brain appeared earliest in the course of human evolution and govern the most basic aspects of our functioning.

Starting with the oldest parts of the brain, at its base is the *brain stem*, which controls most of the fundamental biological functions associated with living, such as breathing. The brain stem has several sections with separate functions (see Figure 2.2). At its base is the *hindbrain*, consisting of the *medulla, pons*, and *cerebellum*. These structures regulate breathing, heartbeat, and motor control: activities required for life that occur...
Figure 2.1 The Neuron.
The cell body contains the nucleus and has projections called dendrites, which branch out and receive information from other neurons. Nerve impulses pass down the neuron. The gap between the axon terminals and the dendrites of the next neuron is called the synapse. Chemicals called neurotransmitters enable the nerve impulse to cross the gap to the receptors of the next neuron.

automatically. You do not need to think about breathing or making your heart beat in order for those processes to occur. The term lesion refers to an area of damage or abnormality. We can tell a lot about the function of a particular brain structure by observing what happens to people when a specific structure is lesioned. For example, the cerebellum is critical for motor coordination. When lesions occur in the cerebellum, they result in disorders of fine movement, balance, and motor learning.

The midbrain portion of the brain stem has two important functions. First, it is a coordinating center that brings together sensory information with movement. It also houses the reticular activating system, which regulates our sleep and arousal systems.

Figure 2.2 The Brain Stem.
The oldest part of the brain, located at its base, controls most basic biological functions, such as breathing.
Figure 2.3 The Thalamus, Hypothalamus, and Limbic System.

The thalamus is the brain’s relay system, directing sensory information to the cortex; the hypothalamus regulates bodily functions; and the limbic system is a major center for human emotion.

Moving upward structurally and evolutionarily from the brain stem are the **thalamus** and the **hypothalamus** (see Figure 2.3). Think of the thalamus as the brain’s relay station because it directs nerve signals that carry sensory information to the cortex. A primary function of the hypothalamus is **homeostasis**, which is the regulation of bodily functions such as blood pressure, body temperature, fluid and electrolyte balance, and body weight.

Moving further up the evolutionary ladder from the midbrain to the **forebrain**, we find the **limbic system**, an umbrella term for several brain structures that are very important for the study of abnormal psychology. The **limbic system** includes the **amygdala**, the **cingulate gyrus**, and the **hippocampus**. The limbic system deals primarily with emotions and impulses. It is involved with the experience of emotion, the regulation of emotional expression, and the basic biological drives such as aggression, sex, and appetite. The hippocampus also has a role in memory formation and has been linked with the memory deficits that are characteristic of Alzheimer’s disease (see “Real People, Real Disorders: Henry Gustav Molaison [H.M.]”).

The **basal ganglia** are also at the base of the human forebrain. Structures within the basal ganglia include the **caudate**, **putamen**, **nucleus accumbens**, **globus pallidus**, **substantia nigra**, and **subthalamic nucleus**. In general, these structures are thought to inhibit
movement. Diseases that affect the basal ganglia are characterized by abnormal movements; these include Parkinson’s disease (rigidity and tremor), bradykinesia (slow movements), and Huntington’s disease (uncontrollable dance-like movements of the face and limbs).

Moving even further up the evolutionary ladder, we encounter the largest part of the forebrain, the cerebral cortex. Here we find the structures that contribute to the abilities that make us uniquely human, such as reasoning, abstract thought, perception of time, and creativity. The cerebral cortex is divided into two hemispheres, known as the left and right. Popular psychology commonly refers to people as “left brained” or “right brained,” but brain functioning is more complicated than that simple distinction. Although the two

REAL People, REAL Disorders

**Henry Gustav Molaison (H.M.)**

The brain of Henry Gustav Molaison (H.M.) from Thibodaux, Louisiana, has been studied more than that of any person in history. For reasons of confidentiality, he was known to psychologists only as “H.M.” until his death. Born in 1926 and raised in Connecticut, H.M. was an ordinary bicycle-riding, ice-skating boy. At age 9, he banged his head hard after being hit by a bicycle rider in his neighborhood. At approximately age 16, he developed epilepsy and experienced many grand mal (severe) seizures. In 1953, he underwent major surgery in which parts of his medial temporal lobe were removed on both sides of his brain. His doctor, William Scoville, wanted to remove this part of the brain because it was where the seizures originated.

Two thirds of H.M.’s hippocampus was removed; leading neurologists assumed that this part of the brain was entirely nonfunctional. After the surgery, however, H.M. suffered from a form of amnesia in which he could not save new experiences as long-term memories. Much to the joy of his doctors, H.M. was able to complete tasks that required recall from his short-term memory (Corkin, 1968). He was also able to recall long-term memories of events that occurred before his operation. But he could not recall events that occurred after the operation.

Henry Molaison died on December 2, 2008, of respiratory failure in a nursing home in Connecticut. Although he was unsure of exactly how old he was, had to be reintroduced to his doctors every day, and repeatedly grieved when he heard about the death of his mother, he had a positive outlook on life. He was quoted as saying that he hoped his medical condition would help others and allow researchers to learn more about memory.

Scientific research has benefited greatly from H.M.’s experience. It has resulted in two key findings: short-term memories do not depend on a functioning hippocampus, but long-term memories must go through the hippocampus in order to be permanently stored (Kolb & Whishaw, 1996). These findings have forever changed the way scientists view the formation, retention, and recall of short- and long-term memory.
hemispheres look structurally similar, they appear to oversee different processes. Indeed, some people tend to favor one type of processing over the other.

The left hemisphere is primarily responsible for language and cognitive functions and tends to process information in a more linear and logical manner. The left hemisphere processes information in parts, sequentially, and uses both language and symbols (including numbers). The right hemisphere processes the world in a more holistic manner, a spatial context (i.e., the relationship of an object to other objects around it), and is more associated with creativity, imagery, and intuition. Considerable communication occurs between the hemispheres, and, in some cases, they can also compensate for each other by taking over some of the functions of the damaged area.

Each hemisphere consists of four lobes: temporal, parietal, occipital, and frontal (see Figure 2.4). The temporal lobe is associated with processing and therefore understanding auditory and visual information, and it plays a role in the naming or labeling of objects and verbal memory. The parietal lobe integrates sensory information from various sources and may also be involved with visuospatial processing (e.g., when you imagine rotating a three-dimensional object in space). The occipital lobe, located at the back of the skull, is the center of visual processing. The frontal lobe is the seat of reasoning and plays a critical role in impulse control, judgment, language, memory, motor function, problem solving, and sexual and social behavior. Frontal lobes are instrumental in planning, coordinating, inhibiting, and executing behavior. The corpus callosum connects the two sides of the brain, allowing them to communicate. A severed corpus callosum is not entirely incapacitating, but it can lead to an inability to integrate certain brain functions. For example, if an image of a key is flashed in the right field of vision, a person whose corpus callosum has been severed might recognize the image but not be able to correctly name it. A flash in the opposite field of vision could yield the correct label, but the person would not be able to discuss its function.

Beyond the brain and the spinal cord, the other major division of the human nervous system is the PNS. It is subdivided into the sensory-somatic nervous system and the autonomic nervous system. The sensory-somatic nervous system consists of the cranial nerves,

Figure 2.4 The Cerebrum.

The four lobes of the cerebrum (temporal, parietal, occipital, and frontal) control sensory, motor, speech, and reasoning functions. The outer ("gray matter") layer of the cerebrum is known as the cerebral cortex.
which control sensation and muscle movement. The *autonomic nervous system* includes the sympathetic and parasympathetic nervous systems. The *sympathetic nervous system* (SNS) primarily controls involuntary movements. It serves to activate the body, creating a state of physical readiness. The SNS stimulates heartbeat; raises blood pressure; dilates the pupils; diverts blood away from the skin and inner organs to the skeletal muscles, brain, and heart; and inhibits digestion and peristalsis in the gastrointestinal tract, creating a bodily state of arousal that could indicate the presence of stress or anxiety (see Chapter 4). In contrast, the *parasympathetic nervous system* returns the body functions to resting levels after the SNS has activated them.

Finally, the body’s *endocrine system* regulates bodily functions but uses hormones rather than nerve impulses to do so (see Figure 2.5). Endocrine glands produce **hormones**, which are chemical messengers released directly into the bloodstream and act on target organs. The pituitary gland, located at the base of the brain, is known as the “master gland.” It controls many endocrine functions including those central to the female menstrual cycle, pregnancy, birth, and lactation. (Another gland, the hypothalamus, regulates the pituitary gland.) The adrenal glands (located on top of the kidneys) release epinephrine (adrenaline) in response to external and internal stressors such as fright, anger, caffeine, or low blood sugar. Thyroid hormones regulate metabolism including body temperature and weight. The pancreas includes a gland (islets of Langerhans) that secretes insulin and glucagon to regulate blood sugar level. A number of studies have demonstrated that certain hormones (e.g., cortisol, prolactin) are elevated in people with depression, anxiety, and other psychological symptoms.

**Figure 2.5 The Endocrine System.**

This system includes glands, such as the thyroid, gonads, adrenal, and pituitary, and the hormones they produce, such as thyroxin, estrogen, testosterone, and adrenaline. Hormones are chemical messengers that transmit information and instructions throughout the bloodstream, targeting cells that are genetically programmed to receive and respond to specific messages.
Neurotransmitters

LO 2.4 Explain the role of neurotransmitters as they relate to abnormal behavior.

Clearly, many different minisystems exist within the overall nervous system. To understand human emotions, we need to know how these various systems operate and cooperate. Communication in the nervous system is both electrical and chemical. Neurons do not actually touch each other, but chemicals called neurotransmitters relay the electrical signals from one neuron to the next (see Figure 2.6). When the electrical signal reaches the axon terminal, the neurotransmitters are released. They travel across the space between the neurons (called the synapse) and land on the surface of the neighboring neuron, at which point they trigger the second neuron to “fire,” releasing the electrical impulse. Research on neurotransmitters has revolutionized psychiatry because most drug treatments affect one or more of the core neurotransmitters by influencing their availability and/or their action in the brain. This highly active field of research is constantly identifying new substances that function as neurotransmitters. Specific neurotransmitter systems have been widely studied and will be discussed in the chapters on specific disorders.

Understanding the basics of the nervous system, we are ready to begin the journey from the individual cell to the level of society. Throughout this journey, we will examine the many different procedures that psychologists use to study human behavior at each of these levels. The brief case description that follows provides a context for those strategies.

Monica is 26 years old. She has been feeling sad, helpless, and hopeless and crying for no reason. She has thought about taking her life. She has trouble falling asleep at night, and when she finally does, she wakes up several times. She has lost 20 pounds in 2 months because she does not feel like eating. Her primary care physician sent her to a psychologist who diagnosed her with depression.

We will look closely at depressive disorders in Chapter 7, but here we will explore the methodologies that researchers typically use to study this disorder.

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**Figure 2.6 How Neurotransmitters Work.**

The electrical signal reaches the end of the first neuron, causing it to fire and release the neurotransmitters from their vesicles at the presynaptic membrane. The neurotransmitters travel across the synapse and land on receptors on the postsynaptic membrane. This initiates a signal in the second neuron, relaying the message.
Neuroimaging

**LO 2.5** Recognize new techniques used to study abnormal psychology at the cellular or neuroanatomical level.

You may wonder how scientists know how the brain functions and which of its structures are responsible for human abilities and activities. Much of our early information came from unique cases such as accident victims or survivors of surgery (like H.M.) that allowed us to understand what functions were lost if a certain part of the brain was damaged or removed. More recently, understanding the structure and the function of the brain has been facilitated by advances in **neuroimaging** technology, which creates detailed images of the brain. Tests such as CT or CAT (computerized axial tomography) scans and MRI (magnetic resonance imaging) provide static images like snapshots. With such images, clinicians can detect lesions or damaged areas in the brain. For a CAT scan, the patient is injected with a radioactive dye, and specialized X-ray equipment photographs the brain from different angles. The computerized CAT (left) and MRI (right) scans, in which X-ray or radio waves scan the brain, produce images that reveal brain anatomy.
images create a cross-sectional picture of the brain. MRI uses radiofrequency waves and a strong magnetic field to provide highly detailed pictures of the brain. MRI is superior to CT technology because it does not require the use of radiation. Instead, radiofrequency waves are directed at protons in a strong magnetic field. The protons are first “excited” and then “relaxed,” emitting radio signals that can be computer processed to form an image.

CAT and MRI technology explore neuroanatomy (brain structure). These tests are sometimes referred to as structural neuroimaging procedures. Other tests are used to detect brain function, usually referred to as functional neuroimaging. A positron emission tomography (PET) scan creates images based on the detection of radiation from the emission of positrons. Before the scan occurs, the patient is given a radioactive biochemical substance. As the radioactive isotope in the substance decays, it emits tiny particles that can be measured. PET brain imaging enables scientists to trace neurotransmitter pathways in the brain and from these data to determine which brain structures and pathways are involved in specific aspects of human behavior. Functional MRI (fMRI) identifies increases in blood flow that are associated with increases in neural activity in various parts of the brain. This technique allows not only a map of brain anatomy but also a map of brain function. fMRI allows the researcher to isolate specific brain activity in response to an event or stimulus (e.g., flashing an image of a spider to someone with a fear of spiders or examining the brain activity of someone experiencing auditory hallucinations, or “hearing voices”).

Neuroimaging is an elegant, sophisticated, and expensive research tool. In typical clinical practice, neuroimaging is not needed to diagnose depression.

However, Monica and all those with psychological disorders are benefiting greatly from neuroimaging studies that help mental health professionals understand which brain structures and functions appear to be affected when someone is depressed. In turn, understanding altered brain functioning has helped with the development of interventions that target specific brain areas and functions.

Genetics

LO 2.6 Understand the differences between family, adoption, and twin studies (which do not study genes directly) and molecular genetics research (which does directly study genes) and the strengths and limitations of each approach.

Studies of brain structure and function provide many insights about the brain and its relationship to psychological disorders. However, knowing that brain activity is altered does not fully explain why abnormal behavior occurs. Scientists must still explain how and why brain abnormalities exist. Applying genetics to the study of behavior has revolutionized abnormal psychology, and research on genetic factors now reaches from the cell to the population level. Behavioral genetics approaches include family, twin, and adoption studies and allow critical glimpses into whether certain behavioral traits or mental disorders run in families and the extent to which these familial patterns are due to genetics (are heritable) or environment. Modern molecular genetic approaches including genome-wide methods of examining genetic associations have allowed scientists to discover genetic loci (specific places on specific chromosomes) that are associated with many complex traits. We now know that single genes rarely cause behavioral traits and mental disorders. Instead, research suggests that many genes and environmental factors that exert small to moderate effects influence most behavioral traits (known as complex traits) and disorders.

GENETICS BASICS Recall from your high school biology class that the “building block of life” is deoxyribonucleic acid (DNA). The collection of DNA that exists in humans is called the human genome. Thanks to the Human Genome Project, we know that approximately 20,000 to 25,000 genes make up each person. Each gene is a section of DNA, and together, genes make an organism unique. In humans, the genes are contained on 23 pairs of chromosomes—22 somatic (bodily) chromosome pairs and 1 sex chromosome pair, either XX (female) or XY (male) (see Figure 2.7). The mother always contributes an X chromosome to the sex
chromosome pair. If the father’s contribution is also an X chromosome, then the baby is a girl. If he contributes a Y chromosome, then the baby is a boy. Genes can exist in several different forms, called alleles, and specific alleles create variation in species (e.g., height, hair color, eye color, personality, disease risk).

Genes follow several laws. Gregor Mendel (1822–1884), a Czech monk, working with the common garden pea, discovered two genetic laws of heredity. The law of segregation states that an individual receives one of two elements from each parent. One of the elements could be dominant (in which case the trait would be expressed in offspring), or the element could be recessive (genetically present but usually not expressed in offspring). If a child receives two recessive elements—one from each parent—then the recessive element or trait is expressed. In the case of eye color, brown is a dominant trait and blue is a recessive trait. So, a person with blue eyes must have inherited two recessive elements, one from each parent.

Mendel’s second law, the law of independent assortment, states that the alleles (variations) of one gene assort independently from the alleles of other genes. For example, the alleles for height and eye color do not always travel together. Not every short person has blue eyes. Short people may have brown eyes or hazel eyes. Similarly, people with blue eyes can be short, average, or tall. In short, genes for eye color and height assort independently.

Although Mendel laid the foundation for our understanding of genetics, his work was criticized by later scientists (Fisher, 1936), who suggested that Mendel’s results were too good to be true. Others scientists supported Fisher’s observations. Nevertheless, Mendel’s laws provided an important first step toward understanding the basic principles of genetics.

Although the influence of genes on characteristics such as height, eye color, and various diseases has been known for generations, more recently, behavior geneticists have studied genetic effects on personality, attitudes, and abnormal behavior such as extraversion, depression, and schizophrenia.

With so many genes in the human genome, how do we even begin the search for genes that may increase the risk for developing certain psychological conditions? This is the province of scientists in the field of behavioral genetics, which refers to the study of the relationship between genetics and environment in determining individual differences in behavior. Approaches in this category include family, twin, and adoption studies. Basically, these studies focus on whether traits and disorders run in families and, if so, why.
FAMILY STUDIES  Do psychological disorders “run in families”? Familial aggregation studies examine whether the family members of someone with a particular disorder (called the proband) are more likely to have that disorder than are family members of people without the disorder. If the disorder is more commonly found among the proband’s family, the disorder is considered to be familial or to “aggregate in families.” Family studies can take two forms. The family history method uses information from one or a few family members to provide information about other family members. You are probably familiar with this method if you have completed a checklist in your physician’s office about your family’s medical history. The family study method involves direct interviews with each consenting family member. This method is considered to be more reliable because it involves direct interviews.

In Monica’s case, a clinician conducting a diagnostic interview might use the family history method to ask her about the presence of depressive symptoms in any members of her family. If Monica were participating in a family study about the causes of depression, the researchers might invite her relatives to participate in individual interviews to determine whether any of them ever suffered from depression.

From a scientific perspective, determining whether symptoms run in families is an important first step in understanding whether genes might influence a disorder. However, family members also share environmental experiences and cultural contexts, including families, which can have an important influence on behavior (see Chapter 1). Therefore, any observed familial aggregation could be due to either genetic or shared environmental factors (environmental factors that family members share) or most likely some combination of these influences. Large family studies can be used to explore the extent to which genes or environment contribute to liability to a disorder or trait; however, the relative contributions of genetic and environmental factors can be best determined by adoption and twin study designs (see Figure 2.8).

ADOPTION STUDIES  Adoption creates a unique situation in which genetically related individuals live in separate families and, therefore, do not share a common family environment. In such cases, similarities between biological parents and their adopted-away

Figure 2.8 Family Pedigree of Disorders.
offspring are assumed to represent the genetic contribution to a given trait or behavior. By contrast, similarities between the adopted child and his or her adoptive parents measure the environmental contribution to parent–child similarity.

Adoption studies represent a middle ground when it comes to examining behavioral genetic models: they are more able to separate genetic from environmental effects than family studies, but they have their pitfalls and biases as well. One bias is that adoption placement is not always random. Often adoption is selective, meaning that babies are placed with adoptive families who resemble their own biological parents on a number of dimensions such as race, religion, and socioeconomic status. As international adoptions become increasingly popular, additional issues arise including what conditions the adoptee faced before placement. Many of these conditions, such as placement in orphanages and lack of early attachment experiences, can lead to serious developmental consequences that can confound the interpretation of adoption studies.

**TWIN STUDIES** The scientific study of twins was another important step in understanding the contribution of genes and environment to abnormal behavior (Cederlöf et al., 1982; Kendler, 2001; Martin et al., 1997). These studies revolutionized our understanding of several major psychiatric conditions and modernized approaches to treatment (Polderman et al., 2015). For example, three decades ago, it was widely believed that autism and schizophrenia resulted solely from environmental trauma or parental deficits. However, based on a body of scientific evidence (Folstein & Rosen-Sheidley, 2001; Polderman et al., 2015; Sullivan, 2008), we now know that these disorders have critically important genetic components.

Twin studies examine the similarities and differences between monzygotic (MZ, or identical) and dizygotic (DZ, or fraternal) twin pairs to identify genetic and environmental contributions to psychological disorders. MZ twins start out as a single embryo (fertilized egg). At some stage in the first 2 weeks after conception, the zygote (fertilized egg) separates and yields two embryos that are, for most intents and purposes, genetically identical. Therefore, behavioral differences between MZ twins, who essentially share all of their genes, allow examination of the role of environmental influences (Plomin et al., 1994). By contrast, DZ twinning results from the fertilization of two eggs by different spermatozoa. DZ twins are no more similar genetically than other siblings and share, on average, one half of their genes. Thus, behavioral differences between DZ twins can result from genetic and/or environmental effects.

The most rigorous twin research design uses MZ twins who were separated in infancy and reared apart (i.e., in different environments). In this case, genes and familial environment are

Identical (MZ) twins separated at birth and raised apart have been found to show strong similarities in adulthood.
distinctly separated, and studies can examine nonshared environmental factors (environmental factors not shared between twins). Two large studies of MZ twins reared apart in Minnesota (Bouchard et al., 1990) and Sweden (Pedersen et al., 1985) were critical in demonstrating the strength of genetic factors in determining IQ. In addition, reunited MZ twins have discovered similarities on dimensions not usually considered to be under genetic control including where they have moles on their body, the age they started balding, their occupation, their choice of cars and motorcycles, and even their favorite beer.

**Molecular Genetics** Whereas twin and adoption studies can tell us whether genes are involved in a particular trait or disorder, they do not tell us which of the 20,000 to 25,000 identified genes might be related to the presence of the disorder. To actually identify risk genes, research needs to drill down to the molecular level. **Molecular genetics** uses three primary methods: genome-wide linkage analyses, candidate gene association studies, and genome-wide association studies (Slagboom & Meulenbelt, 2002; Wang et al., 2005). **Genome-wide linkage analysis** allows researchers to narrow the search for genes from the entire genome to specific areas on specific chromosomes. To conduct a linkage analysis, researchers need large families in which many individuals have a particular disorder or large samples of “affected relative pairs.” These are pairs of relatives who both have the illness under study. Researchers then look for regions of the genome that the affected relatives share. Then they can narrow their search for genes on these areas of increased sharing.

In a **candidate gene association study**, scientists compare specific genes in a large group of individuals who have a specific trait or disorder with a well-matched group of individuals who do not have that trait or disorder. In this approach, the researcher chooses one or several genes in advance based on some knowledge of the biology of the trait or the function of the gene. For example, we know that serotonin may be involved in depression, so a candidate gene study might compare one or a few serotonergic genes in a large sample of people with the disorder (called cases) versus people who do not have the disorder but are similar to the cases in other ways (called controls). If scientists find that one variant of the gene is more common in the ill group, there is evidence that this gene might be associated with the illness. By and large, candidate gene studies tend to be initially very exciting when they emerge in the literature, but often other groups fail to replicate (repeat) the findings. For this reason the single-gene candidate gene approach is falling out of favor for more comprehensive and powerful approaches discussed next.

A **genome-wide association study** (GWAS) also uses large samples of cases and well-matched controls. Given that most genes implicated in psychiatric disorders are of small effect, tens and even hundreds of thousands of cases and controls are needed to achieve adequately powered sample sizes. Unlike the candidate gene studies in which only one or a few genes are studied at one time, in GWAS, hundreds of thousands of possible genetic variants scattered across the genome are tested for association in the same study. This is a key advantage of GWAS. In the candidate gene studies, a researcher must choose a gene or genes based on some prior knowledge of biology. GWAS does not require any such choice and yields a relatively unbiased search of the genome that can discover new genetic associations. Given that so many comparisons are made, rigorous controls must be implemented to ensure that significant results are truly significant and not just chance occurrences. The conventional significance level for GWAS is $5 \times 10^{-8}$ as illustrated by the red line in the fictional Manhattan plot (Figure 2.9). Loci above that strict threshold are considered to be “associated” with the disorder or trait under investigation and are targeted for further study related to their function and impact on biology. For many diseases, including psychiatric disorders, GWAS has unlocked new biological pathways that had not been considered in the past (O'Donovan, 2015; Sullivan, 2012).

| Studying Monica's genes would not be part of the usual clinical assessment to determine the diagnosis of depression. However, certain researchers (usually working in medical school settings) may be conducting a study on genetics and depression, and someone with symptoms like Monica's might be asked to participate by giving a sample of her blood or providing a saliva sample—both of which contain DNA. |
Figure 2.9 Manhattan Plot.
The red-dotted line represents the significance level of $5 \times 10^{-8}$. Loci on chromosomes 5, 6, 8, 12, and 19 are significantly associated with the condition under study.

Epigenetics focuses on heritable changes in the expression of genes, which are not caused by changes in actual DNA sequence but rather by environmental exposures (Petronis, 2010). Unlike your actual genetic sequence, the epigenome has the ability to react and adapt to a rapidly changing environment. What this means is that the environment has the ability to influence which genes are activated and which are silenced. Intriguingly, these changes may actually be passed down to succeeding generations.

Psychiatric genomics have truly revolutionized our perspectives on abnormal psychology and have spawned further more granular investigations on every level of biological functioning representing the palette of "-omics" inquiries. These approaches include, but are not limited to, genomics (the study of genes and their function), transcriptomics (RNA transcripts that are produced by the genome), proteomics (the study of proteins), metabolomics (the study of molecules involved in cellular metabolism), and a host of other "-omic" approaches representing collective technologies used to explore the roles, relationships, and actions of the various types of molecules that make up the cells of an organism. As research in these areas advances at lightning pace, researchers are challenged to translate observations on the cellular level to understanding the expression of abnormal behaviors at the individual level. These processes are complex, but the tools we have to answer these questions make this an exciting time for scientific discovery in this field (Kendler, 2013).

Learning Objective Summaries

**LO 2.3** Identify the two main parts of the nervous system and brain/body components of each.

The two main parts of the nervous system are the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS consists of the brain and the spinal cord. The PNS includes the sensory-somatic and autonomic nervous systems. The autonomic nervous system includes the sympathetic and parasympathetic systems.

**LO 2.4** Explain the role of neurotransmitters as they relate to abnormal behavior.

Neurotransmitters are chemicals that relay electrical signals from one neuron to the next. They travel across the synapse from one neuron to another, triggering the second neuron to release an electrical impulse. Most drug treatments for abnormal behavior affect one or more of the core neurotransmitters.

**LO 2.5** Recognize new techniques used to study abnormal psychology at the cellular or neuroanatomical level.

Neuroimaging technology allows us to create detailed images of the brain. Tests such as the CAT (computerized axial tomography) and MRI (magnetic resonance imaging) provide snapshot images of brain structure (structural neuroimaging). PET (positron emission tomography) and fMRI (functional MRI) allow us to see neurotransmitter pathways and changes in blood flow (functional neuroimaging).
**LO 2.6** Understand the differences between family, adoption, and twin studies (which do not study genes directly) and molecular genetics research (which does directly study genes) and the strengths and limitations of each approach.

Family studies examine whether the family members of someone with a particular disorder (proband) are more likely to have that disorder than family members of people without the disorder. Adoption studies allow us to examine genetically related individuals who live in separate families, which helps to separate the potential effects of genetic and environmental factors. Twin studies compare concordance rates between monozygotic (MZ, or identical) and dizygotic (DZ, or fraternal) twin pairs to quantify genetic and environmental contributions to variance in liability to a trait. In candidate gene association studies, scientists compare one or a few specific genes in a large group of individuals who have a specific trait or disorder with a well-matched group of individuals who do not have that trait or disorder. A genome-wide association study (GWAS) is also a case-control design but compares millions of genetic variants across the genome.

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**Critical Thinking Question**

Genome-wide association studies, a key tool in understanding the genetics of psychiatric illness, require researchers to study the DNA of thousands of individuals. The only way they can achieve this is by collecting biological samples from individuals with and without the illness under study. Although many individuals willingly participate in such studies hoping that the contribution of their blood samples will alleviate suffering in the future, others fear the invasion of personal privacy that such research could entail. Discuss the ethical complications of human genetic research into psychiatric disorders.

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**Research in Abnormal Psychology at the Individual Level**

Studies of brain structure and function and genetics are sophisticated research tools, but they are time-consuming and not always cost-effective. Most research in abnormal psychology has been based on comparing groups of people who have different characteristics, are tested in different ways, or receive different treatments. Conclusions are drawn based on the average responses for the group. Research at the individual level also helps identify general principles about abnormal behavior and its treatment. In fact, the practice of clinical psychology is generally directed toward the individual. Valuable information can be learned from intensive study of individual people, families, or small groups of people who can be considered a single unit. This research complements large group-based studies by allowing for richer examination of details and the development of hypotheses and theories that can later be tested in group designs. At the individual level, the two main methods of study are case studies and single-case designs.

**The Case Study**

**LO 2.7** Describe the strengths and limitations of case studies.

The brief description of H.M. presented earlier in the chapter is drawn from a case study, a comprehensive description of an individual (or group of individuals) using clinical data typically drawn from a clinician's practical experience. The case study provides a detailed narrative of abnormal behavior and/or its treatment. It is sometimes accompanied by a quantitative measurement (such as measuring the frequency of a problematic behavior), but it does not allow us to draw conclusions about causes of behavior. In the case study, nothing is manipulated by the observer. The individual's story is simply recounted. Nevertheless, case studies are useful for the study of abnormal behavior.

**BENEFITS OF CASE STUDIES** As the case of H.M. illustrates, case studies allow the examination of rare phenomena, when group-based research would be nearly impossible
simply because an inadequate number of cases are available (Kazdin, 2003). In her memoir, The Center Cannot Hold, author Elyn Saks provides another example of a case study approach. Saks’s chronology of the development of schizophrenia and the vivid descriptions of its symptoms allowed millions to experience the psychological descent into schizophrenia firsthand. Her story is one of triumph—despite the presence of this disease, she is a law professor at the University of Southern California.

Case studies also can generate hypotheses for group studies. In the true spirit of the scientist–practitioner model, clinical observations can lead to the development of testable theories and/or treatment using group designs. For example, John B. Watson’s detailed study of Little Albert and Mary Cover Jones’s report of Little Peter (see Chapter 1) served as the basis for the development of treatments for anxiety disorders that have been tested scientifically and are still used today.

Finally, case studies illustrate important clinical issues that are not readily apparent in a group-based report. An example is a case report of five patients who had both anxiety/depression and chronic obstructive pulmonary disease, a lung disorder (Stanley et al., 2005), and participated in a large treatment trial. The case report provided more details about their specific clinical symptoms and their specific responses to treatment than was possible in the full clinical report (Kunik et al., 2008). This increased detail can be useful for clinicians who seek to use empirically supported treatments.

VARIATIONS AND LIMITATIONS OF CASE STUDIES The amount and type of data included in case studies vary considerably. Some of them simply provide case descriptions. Others illustrate clinical points using standardized measures of behaviors or symptoms, allowing comparisons with other larger studies.

Monica’s symptoms of depression are more severe than those of patients included in most large studies of depression treatments.

Scientifically rigorous case reports also attempt to standardize (keep consistent) the types of assessment and treatment procedures reported. Such reports enable other researchers or clinicians to attempt to replicate the same findings with another patient. Standardizing procedures for assessment or treatment also makes it possible to combine results from a small group of patients into a single report. In addition, standardized procedures make comparing symptoms or the amount of change over time easier than what might be observed in studies of large groups of patients.

Through the course of Monica’s work with her therapist, she regularly answered a set of questions that helped the therapist evaluate how severe her symptoms were. Over time, as Monica tried different medications and non-medication treatments, her scores gradually decreased, showing that her symptoms were improving.

With all their advantages, however, the ability of case studies to help us understand abnormal behavior is limited. Most importantly, although case studies allow us to develop hypotheses about what might have caused certain symptoms or what type of treatment might be helpful, they do not allow us to make any firm conclusions about the cause(s) of symptoms or change following treatment. For example, improvement in a patient’s symptoms could result from the specific treatment or from other factors that are unrelated to that treatment. These factors could include the simple passage of time, attention from a therapist, or subjective biases on the part of the patient or clinician. To draw conclusions about the causes of symptoms or change, an experimental control condition is needed. At the individual level of research, experimental control is provided by the single-case design.
Single-Case Designs

LO 2.8 Identify two types of single-case designs and the strengths and limitations of each.

Single-case designs are experimental studies conducted at the individual level (i.e., with a single person). This approach uses quantitative measurement and incorporates control conditions that allow clearer demonstration of causal relationships in a single individual. Single-case designs control for alternative hypotheses (i.e., that something other than the treatment caused the change), and unlike case histories, they can lead to causal inferences. They require fewer resources than group-based research (see “Research in Abnormal Psychology at the Group Level”) and allow more detailed attention to individual patterns of change. In the single-case design, each person is a complete experiment, at various times participating in both the treatment and the comparison (or control) condition. The goal of the experiment is to examine whether behavior changes systematically, depending on whether the participant is in the treatment or the comparison phase.

Single-case design research begins with a baseline assessment that measures the behavior targeted for change (e.g., how often a child has a tantrum, how frequently panic attacks occur) before implementing any experimental or control condition. An interesting challenge for this type of research is that sometimes merely asking a person to monitor a behavior may change how often or how long the behavior occurs. For example, asking a smoker to count the number of cigarettes smoked per day often results in decreased smoking. Why? Simply becoming aware of how many cigarettes one smokes each day can motivate a person to decrease his or her smoking. Behavior change that results from self-monitoring, however, is only temporary. Therefore, baseline monitoring (i.e., assessment that occurs before beginning treatment) continues until the behavior pattern is stable. Next, a treatment is applied and withdrawn with continuous assessment of the target behavior. If the target behavior decreases with treatment and then returns to baseline when the treatment is withdrawn, the researcher can conclude that the treatment may have been effective (provided alternative explanations can be ruled out). If other researchers do similar research with the same results, the finding is replicated and confidence in it increases. Providing sufficient details about the patient, therapist, setting, and nature of the intervention aids in the replication of findings, which reinforces the study’s conclusions. Regardless of the number of replications, however, the focus remains on describing individual patterns of behavior for one person, not aggregate data from multiple patients.

DESIGN STRATEGIES The most common single-case design is known as the ABAB, or reversal, design in which A represents a baseline phase and B represents a treatment phase. In this model, the two phases are alternated to examine their impact on behavior. Behavior is first evaluated at baseline until stability is demonstrated (A). The treatment is then applied (B), and assessment continues until behavior stability is achieved. Next the treatment is withdrawn (A). Behavior that returns to baseline during the second A phase is evidence that the treatment was the cause of the behavior change. Even more evidence for the power of the treatment is obtained when the intervention is applied again (another phase B) and another behavior change takes place. Each AB sequence is considered a replication, and each time the B phase has the same effect provides additional evidence that the treatment is the agent of change (Kazdin, 2003). The ABAB design can be used with patients of all ages, but it often is a particularly useful strategy to test the effects of behavioral treatments for children.

Caitlin is 3 years old. Since she was 15 months old, she has pulled out the hair on her head. Her pediatrician diagnosed her with trichotillomania, a disorder characterized by repetitive hair pulling (see Chapter 5). He referred Caitlin and her family to a psychologist who worked with them to develop a behavioral treatment plan using a single-case design to try to stop this behavior.

Because most of Caitlin’s hair pulling occurred at night, the psychologist directed her mother to collect the hair from her pillow each morning, put it in a plastic bag, and label it by the day of
the week. The number of hairs pulled each night would be used to determine whether treatment was effective. The treatment plan was as follows:

Caitlin had a pair of pink mittens that she liked to wear, and her favorite food was cherry jam. If Caitlin wore her mittens all night (which would prevent her from pulling her hair) and they were still on her hands in the morning, she could have cherry jam for breakfast.

Using an ABAB design, the effectiveness of the treatment was evaluated (see Figure 2.10). The A phase was the baseline phase (no pink mittens or cherry jam). The B phase was the actual treatment (cherry jam for breakfast if Caitlin was wearing her mittens in the morning). Her mother continued to collect the hair each morning and recorded the average number of hairs pulled per night. See Figure 2.10 for the number of hairs on Caitlin’s pillow each morning (averaged over the week) during the treatment program. Each phase was 3 weeks in length. As Caitlin’s hair began to return, the treatment program was gradually withdrawn. Six months later, she had a full head of hair.

Some interventions produce learning that cannot easily be reversed. For example, relaxation training to reduce the frequency of panic attacks may produce changes in physical state (lower blood pressure) that do not quickly revert to baseline levels. Moreover, once a person has learned to use a particular coping skill, the skill cannot be “removed.” When a behavior cannot be reversed, a multiple baseline design may be used (Morgan & Morgan, 2001). This design applies only one AB sequence, but the sequence is repeated across individuals, settings, or behaviors. When the multiple baseline design is conducted across individuals, the treatment is introduced at a different time for each person. This is often done by varying the length of the baseline assessment for each participant so that the cause of any improvement cannot be attributed to the duration of any standard baseline period. As in the ABAB design, repeating the AB sequence across people increases confidence in the conclusions.

Multiple baseline studies can also be conducted with a single individual as the intervention is applied independently across behaviors (e.g., first smoking, then overeating) or settings (e.g., first home, then school, then on the playground). If the B phase consistently produces the same behavior change (or is replicated), this is evidence that the intervention is effective.

LIMITATIONS OF SINGLE-CASE DESIGNS Single-case designs allow clinicians working in full-time practice to use experimental strategies to determine whether a treatment is efficacious (reduces psychological symptoms) for a particular patient. These strategies are also useful for situations in which it is unethical to withhold treatment completely but testing the causal relationship between the treatment and a person’s behavior is needed. Single-case designs do not allow researchers to generalize the results to heterogeneous groups of people, however. Furthermore, they do not address the impact of individual differences (related to age, sex, ethnicity), which may be very important in determining treatment response. Group-based research, discussed in the next section, is best suited to address these types of questions.
ETHICS AND RESPONSIBILITY In some cases, reversing a treatment is unethical or impractical. For example, it would be unethical to remove a treatment that reduces self-injurious behavior, such as head banging in children with developmental disabilities.

In Monica’s case, it would be unethical to remove a medication that eliminated her depressive symptoms, including her suicidal thoughts.

Learning Objective Summaries

**LO 2.7** Describe the strengths and limitations of case studies.

Case studies allow the examination of rare phenomena when group-based research would be nearly impossible. They also can be used to generate hypotheses for group studies and illustrate important clinical issues that are not readily apparent in a group-based report. Case studies vary with regard to the amount and type of data included, but they do not allow us to determine causes of symptoms or change following treatment.

**LO 2.8** Identify two types of single-case designs and the strengths and limitations of each.

Single-case designs are experimental studies at the individual level (i.e., with a single person). The most common single-case design is the ABAB, or reversal, design. In this design, two phases (A and B) are alternated such that treatment occurs only during the B phase. If behavior changes occur only during B phases, we can conclude that the treatment was effective. This design, however, cannot be used if learning during the B phase cannot be reversed. In these cases, multiple baseline designs may be used to examine separate AB sequences across individuals, settings, or behaviors.

Critical Thinking Question

Paul does not like school and throws a temper tantrum every day when it is time to walk to the school bus. If you were a therapist in private practice, how would you set up an experimental test to determine whether a treatment program you designed for Paul’s parents was working to decrease the tantrums?

Research in Abnormal Psychology at the Group Level

Studies based on groups of people are the most common types of research used in abnormal psychology. Using groups allows researchers to draw conclusions based on the average performance across all participants. For example, an investigator recruits a large number of patients with depression for a study of a new treatment. The investigator measures depressive symptoms before and after treatment. After the experiment, depression decreases by 50%, suggesting that, on average, patients who participated improved to that degree. The results do not mean, however, that each patient improved by 50%. Some patients benefited less from the treatment and others more. Because the results of the study are based on the average score of the group, they do not allow us to predict the behavior of any single individual. However, this type of research allows us to develop conclusions about important outcomes such as the impact of different treatments on different people and the prevalence of various disorders in different groups of people. Group-based studies may be correlational or controlled in nature.

Correlational Methods

**LO 2.9** Understand the principles of correlational research and their application to the study of abnormal behavior.

Many important questions in abnormal psychology use correlations, or relationships, between different variables or conditions to understand aspects of behavior. Perhaps
Figure 2.11 Examples of Correlational Relations.

When data are graphed as points, the shape of the distribution reveals the correlation (or lack of correlation).

- **a. Strong positive correlation**
- **b. Strong negative correlation**
- **c. Correlation = 0** no relation
- **d. Correlation = 0** curvilinear relation

An investigator wants to know whether the severity of depressive symptoms increases with age. To examine this relationship, the investigator can graphically plot subjects’ ages and scores on a depression symptom inventory with age on one axis (perhaps the X axis) and depression scores on the other (Y) axis. Then, using mathematical calculations, the investigator fits a line to the points to determine the degree of association (see Figure 2.11). A statistical concept known as a correlation coefficient indicates the direction and strength of the relationship. The direction of the relationship is considered positive or negative. When a positive correlation exists, an increase in one variable is associated with an increase in another variable (e.g., increased use of caffeine is associated with increased depression in children/adolescents; Benko et al., 2011). In contrast, a negative correlation means that an increase in one variable is associated with a decrease in another variable (e.g., increased levels of cognitive engagement such as reading, playing card games, and doing crossword puzzles are associated with decreased risk for Alzheimer’s disease; Morris, 2005). The strength of a relationship is determined by the value of the correlation coefficient, which ranges from -1.0 to 1.0. Values close to those end points at 1.0 and -1.0 indicate a stronger relationship. A correlation of 0.0 indicates no linear relationship (see Figure 2.11). It is important to note that a strong relationship can be either positive or negative.

Interpreting the significance of a correlation depends on different factors. The first factor involves the size and heterogeneity of the study sample. If the sample of people studied is not sufficiently diverse with regard to the variables of scientific interest, the data may lead to inaccurate conclusions. For example, the relationship between age and memory would appear very different if data were collected from a sample of people between the ages of 18 and 85 compared to a sample of people between the ages of 60 and 70. In the latter group, the restricted age range would lead to correlations that did not represent the true relation between these two variables for the population as a whole.

Another factor important in interpreting correlational data is the way participants are selected. If study participants are chosen because they have a certain psychiatric disorder or because they come from a particular ethnic group, results will generalize only to that subset of people. The study findings may not be relevant for other diagnostic groups or other ethnicities.

Sometimes the relationship between two variables does not appear as a straight line, that is, it is not linear in nature. For example, a popular theory about the association between stress and performance proposes an inverted-U relationship. For testing situations or athletic performances, moderate levels of stress are associated with optimal performance. Much higher and lower levels of stress create poor performance (Muse et al., 2003). This is known as a curvilinear relationship. Plotting a straight line through an inverted-U shape would yield a linear correlation coefficient near 0 (see Figure 2.11d). This would lead to a false conclusion that no relation exists between the two variables.

**CORRELATION IS NOT CAUSATION** Often correlations are inaccurately interpreted to imply a causal relationship. Correlations explain only the degree to which a change in one
variable is associated with a change in the other; they do not allow you to conclude that one variable causes the second. A strong positive correlation between variables X and Y, for example, may be the result of X causing Y, Y causing X, or a third variable (Z) that influences both X and Y. In this example, the variable Z would be referred to as a moderator variable. For example, a significant correlation exists between moderate alcohol use (up to three drinks a day) and reduced risk of dementia in people age 55 and over (Ruitenberge et al., 2002). Often inaccurately reported in the media as causal (e.g., drinking moderately can prevent dementia), the data merely suggest that these two phenomena are related. In fact, moderate alcohol use may have a direct impact on cognitive functioning through the release of a neurotransmitter (acetylcholine, or ACTH) in the hippocampus (a center for learning and memory). Alcohol use might also influence cognitive status indirectly through its effects on cardiovascular risk factors, decreasing the possibility of high blood pressure or stroke, both of which in turn could affect cognitive functioning. Other explanations might implicate different variables that could influence both alcohol use and the development of dementia (e.g., exercise level, education, genetic predispositions, type of dementia). Any of these alternatives could be the moderator variable (Z) that affects the relationship between alcohol and dementia.

It is even more tempting to assume a causal relationship when a significant correlation occurs between two variables that are measured at different points in time (e.g., SAT scores and college grades). In these cases, terms such as risk factor or predictor are used to describe this temporal relationship. For example, it is generally well known that cigarette smoking and lack of exercise are risk factors for elevated cholesterol and heart disease. However, other intervening factors may affect the relationship (e.g., nutrition). Because it would be unethical to conduct an experiment in which people were assigned to smoke a certain number of cigarettes per day, we can understand these relationships only through the use of correlational data.

Similarly, the severity of a disorder before treatment is often interpreted to predict treatment response. In most cases, more severe symptoms are associated with less positive treatment response, but it is not always clear that more severe symptoms cause the less positive response. This is an important point to understand because although predict may imply causality in everyday language, in psychology it simply indicates that certain levels of Variable X, assessed at Time 1, are significantly associated with certain levels of Variable Y assessed at Time 2. Predict in this sense does not mean cause.

In treatment-focused research, correlational analyses can be very useful. By investigating the relationship between patient characteristics (e.g., demographics, clinical severity, social support resources) and improvement as a result of treatment, investigators find correlational analyses useful both theoretically and practically. For example, identifying groups of patients
who do not respond to a treatment may lead to the development of alternative treatments. Although correlational designs may yield important information, these studies can measure only covariation between predictors and outcomes. To draw conclusions about causality, controlled group designs must be used.

**Controlled Group Designs**

**LO 2.10** Describe the factors that influence outcomes of randomized controlled trials.

Most research in psychology uses controlled group designs that expose groups of participants to different conditions that the investigator manipulates and controls. In these designs, participants in at least one experimental group are typically compared with at least one control group. These groups are usually designed to be highly similar with regard to as many variables as possible (e.g., age, sex, education) and to vary only on the independent variable (IV) that the experimenter controls. For example, one group of depressed patients (the experimental group) receives a treatment and the other group (the control group) does not, but in all other ways the groups are similar. The impact of the IV on some dependent variable (DV), or outcome measure, is then assessed. Statistical analyses examine whether group differences on the DV occur more often than chance. If so, and if the groups differed only on the IV, one can conclude that the IV is likely to have caused the differences. The strongest inferences about causality come from randomized controlled designs.

**RANDOMIZED CONTROLLED DESIGNS** The most critical feature of this design is the random assignment of participants to groups. When assignment is truly random, each participant has an equal probability of being assigned to either group. In addition to random assignment, other features of randomized controlled designs can affect the study's conclusions. These include participant selection procedures, internal and external validity, and assessment strategies. When deciding how to select participants, an important consideration is whether to recruit an analogue or a clinical sample. Analogue samples (just like an analogy) are people who have the characteristics of interest and resemble treatment-seeking populations but are not seeking clinical services. Researchers interested in social anxiety, for example, may recruit an analogue sample by placing an ad in the paper seeking people with public speaking anxiety. Analogue samples are most often recruited from college campuses or community groups. In contrast, clinical samples are people who are seeking services for a specific problem. A researcher in an anxiety disorders clinic may approach patients in the clinic to ask them to participate in a treatment study.

The decision to recruit an analogue or clinical sample is based on both theoretical and practical issues (e.g., what question will be addressed and what resources are available), but the decision has significant implications for the study's conclusions. Consider, for example, an investigator who wishes to examine the efficacy of a treatment for depression in young adults. Conclusions may be dramatically different if the sample is recruited from a general college population (who may have a wide range of feelings of sadness) or from the student counseling center, where higher levels of depression may be more common (because the students are motivated to seek treatment). Results based on one sample simply may not generalize (be relevant) to the other.

The diversity and representativeness of the recruited sample also affect whether study findings can be generalized. For instance, many studies fail to include a sufficient number of participants representing underrepresented minority groups; findings therefore may not be relevant for large segments of the population. Guidelines from the NIH, in fact,
have emphasized the importance of including diverse groups of participants in clinical research to represent the population adequately in terms of age, sex, and ethnicity.

Another issue of critical importance when examining the data from any study is the concept of validity. **Internal validity** is the extent to which the study design allows conclusions that the IV (intervention) caused changes in the DV (outcome). To increase internal validity, the researcher tries to control (keep constant) all variables except the one being tested (the IV). Limiting a study sample to women only, for example, increases internal validity and our ability to draw causal conclusions because potential differences in response based on sex need not be considered. To increase internal validity in a treatment study, a researcher would want to make sure that both subgroups of participants (those getting treatment and those not getting treatment) have exactly the same experiences over the course of the study with the exception of the actual treatment being tested. For example, to increase internal validity in a study of depression treatment, it would be important to ensure that participants in both groups receive no additional services or experiences that might reduce depression (e.g., support groups at church, medication from a primary care doctor) during the study period.

When internal validity increases, however, **external validity**, or the ability to generalize study findings to situations and people outside the experimental setting, often decreases because study conditions that are well controlled often fail to represent the “real world.” For example, results of a study based only on women participants may be relevant only to women but not to men, and studies of depression treatment that restrict participants’ activities outside of the experimental treatment may not represent what happens in real life.

A major challenge for researchers is to strike an adequate balance between internal and external validity. Researchers want to be able to draw adequate conclusions about causal relationships, yet they also want results that are relevant to real-life phenomena. In treatment outcome research, internal and external validity are differentially emphasized in **efficacy** versus **effectiveness research** (Roy-Byrne et al., 2003). **Efficacy research** attempts to maximize internal validity, allowing the researcher to feel confident in identifying causal relationships. Patients are carefully selected to represent a homogeneous group (i.e., to have only the disorder the investigators want to study and no other conditions); specialized providers use a highly structured intervention; and comparison groups are chosen carefully to control for key elements of the treatment approach. These well-controlled studies allow the researcher to draw solid conclusions about the impact of the specific treatment, but sometimes the research procedures do not reflect real-world patients and clinics. In effectiveness research, which focuses more on external validity than efficacy research, patients are more heterogeneous and more similar to the types of patients treated in routine care. Treatment is often provided in typical health care settings (e.g., primary care) by clinicians who work in those settings; control conditions more often consist of the type of care typically offered in that clinic; and more emphasis is given to the cost–benefit ratio of treatment. These studies are sometimes less well controlled with respect to research design, but the results are more representative of what might happen when treatments are used in the real world. Efficacy and effectiveness designs are best viewed as complementary approaches to treatment research.

Conclusions from randomized controlled designs also depend on the assessment strategies researchers use. First and foremost, assessment instruments must be **reliable** (measure a particular variable consistently over time and across patients) and **valid** (measure a variable accurately) (see Chapter 3 for more detailed information about reliability and validity). Using more than one assessment method is also important. For example, some measures of depression emphasize physical symptoms, such as sleep, whereas others emphasize difficulties in thinking, such as concentration and memory problems. Depression can be evaluated using self-report (typically through standardized questionnaires or surveys), global ratings by expert evaluators, direct observations of behavior, and psychobiological measures. Choosing measures that represent different methods of assessment also increases the confidence and generalizability of study findings.

Two other important issues related to our ability to draw conclusions from controlled research studies include the use of **placebo control** conditions and the consideration of blinded assessment. Even in controlled research, the expectations or biases of the researcher and the participants can affect study findings (participants who think they are getting a
good treatment may get better just because they expect to do so). A placebo control group is one in which an inactive treatment is provided; all aspects of this treatment are like those of the experimental condition but without the active ingredients of the treatment. For example, in medication studies, the placebo control group receives a pill that looks exactly like the real medication but in fact has no real medication (i.e., is like a “sugar pill”). Because a significant proportion of patients get better with a placebo treatment (called placebo response), this type of control condition allows the researcher to estimate what percent of improvement is actually due to the medication. Only if the experimental treatment produces greater response than the placebo can we say that the active ingredients of the treatment are important. In placebo-controlled studies, it is important for patients and any people who rate the degree of improvement to remain blinded to (unaware of) the condition to which the patient has been assigned.

For example, what if Monica agreed to participate in a research treatment study for depression, but she and the researchers knew that she had been assigned to the “placebo group”? How would Monica evaluate her improvement if she knew that she was not receiving active treatment?

To reduce bias that may influence study findings, it is important to keep research participants and evaluators blinded, or uninformed, about study goals and hypotheses as well as their assigned treatment condition (active treatment, placebo, or no treatment control). Completely blind assessment is not always feasible, but this assessment strategy is helpful for enhancing study validity because it reduces bias regarding treatment outcome.

CLINICAL VS. STATISTICAL SIGNIFICANCE Another important consideration when evaluating clinical research is clinical versus statistical significance.

Suppose that after treatment, people in the treatment condition report that it now takes only 2 hours to fall asleep compared with 2.2 hours for people in the control group.

*Statistical significance* refers to the mathematical probability that after treatment, changes that occurred in the treatment group did not occur by chance but were actually due to the treatment. Statistically significant findings show that the treatment changed the target behavior. But an equally important question is whether the significant findings have any practical or clinical value. Sometimes statistical significance indicates the presence of important clinical changes but not always. In some studies, particularly those with large samples, statistically significant differences may actually be quite small (as in the sleep example just mentioned) and have no real implications for patient care.

By contrast, *clinical significance* examines whether significant findings have practical or clinical value. For example, do treatments that reduce symptom severity have a meaningful impact on patients’ lives?

Does a patient such as Monica, who was so depressed that she could not get out of bed before treatment, now not only feel less depressed but also feel well enough to be able to return to work?

Clinical significance addresses whether the patient’s functioning is improved as a result of treatment and the patient no longer has symptoms of a disorder. When statistically significant change occurs without major impact on patients’ functioning, its clinical value is questionable. From a statistical perspective, various measures of the magnitude of the treatment effect are known as *effect sizes*. The larger the effect size, the greater the difference between the active treatment and the control group.
Improvement of Diversity in Group-Based Research

**LO 2.11 Understand the importance of diversity in group-based research in abnormal psychology.**

As noted earlier, one major limitation of group-based research in abnormal psychology is the failure to include sufficiently diverse samples with regard to race, ethnicity, and culture. For many years, samples were also restricted with regard to sex and age. Much medical and clinical research conducted well into the 1980s, for example, excluded women. There are several reasons for this exclusion. One was the difficulty inherent in controlling for biological differences between the sexes, increasing the complexity and costs of any research design. Another concern, especially with medication trials, is the unknown effect of many new medications on the developing fetus and the difficulties inherent in ensuring that women participating in a clinical trial do not become pregnant during the course of the trial. Third, phase of the menstrual cycle can influence response to many interventions and is another variable that needs to be either incorporated into the study design or controlled. Although many of these reasons for exclusion are practical and defensible from a legal and ethical perspective, they have resulted in our knowing less about the efficacy of some medications in women. Older adults were often excluded from research as well because of the complex medical, psychological, and social changes that accompany aging. Such exclusion criteria made it impossible to draw conclusions relevant to diverse groups of people. Similarly, the overabundance of research in abnormal psychology that has been conducted with white individuals (often those attending college) may have little relevance for understanding abnormal behavior in people of other races, ethnicities, and cultures.

A growing body of research has begun to document differences in the expression, prevalence, and treatment response of mental health symptoms across different racial and ethnic groups, but recruiting adequate samples is still a challenge. As a result of a series of unethical practices that occurred during the first half of the twentieth century (see Chapter 15), lack of trust and fear of stigmatization make some participants from ethnically diverse backgrounds reluctant to participate in research (Shavers et al., 2002). In addition, recruitment strategies often are inadequate for engaging minority participants (Sheikh, 2006). To encourage sex, age, racial, and ethnic diversity in research samples, the NIH and other agencies that fund research now require all grant applications to include specific recruitment plans targeting traditionally underrepresented groups. Some agencies also focus solely on funding research that addresses diversity (e.g., National Institute of Minority Health and Health Disparities). Increasing diversity in research samples will enhance our ability to generalize study findings to more people. Furthermore, using a diverse sample provides a context for evaluating cultural differences that may affect assessment and treatment. Including diverse participants in research may require increased recruitment resources to target underrepresented groups. It also requires cultural sensitivity to explain the purpose of the research and ensure that assessment instruments are available for persons who speak different languages and come from different educational backgrounds. Recent research that focuses on the development of partnerships between academic researchers and community agencies (e.g., primary care clinics, social service agencies, community centers) is one key way to increase diversity and address issues of primary concern to minority groups (Jameson et al., 2012).
Cross-Sectional and Longitudinal Cohorts

**LO 2.12** Explain the difference between cross-sectional and longitudinal cohorts and the strengths and limitations of each.

One question that has long fascinated researchers who conduct group-based research is how mental illness has changed in the population over time. It appears that some disorders are more common today than they once were, but how do we know this for sure? A related question is whether disorders occur only in one phase of life, such as childhood, or continue to be present once they appear. Specific types of group-based studies, often called cohort studies, can be used to answer such questions.

**WHAT IS A COHORT?** A cohort is a group of people who share a common characteristic and move forward in time as a unit. Examples include a birth cohort (e.g., all individuals born in a certain geographic area in a given year), an inception cohort (e.g., all individuals enrolled in a study at a given point in time based on a unifying factor such as place of work or school of attendance), and an exposure cohort (e.g., individuals sampled based on a common exposure such as witnessing the traumatic events of 9/11 [2001] in New York City or exposure to lead paint in childhood). Cohort designs are used to study incidence (onset of new cases, see “Epidemiology”), causes, and prognosis (outcome). Because they measure events in chronological order, they can help us to distinguish more clearly between cause and effect. For example, if we observe that experience of a traumatic event precedes the onset of posttraumatic stress disorder (PTSD), we can be more confident that the traumatic events might play a causal role in the development of the disorder than if we had no information on which came first—the trauma or the symptoms. Cohort designs can include longitudinal studies to measure outcomes over time. Longitudinal designs measure the same cohort of individuals on several occasions (see “Longitudinal Design”).

**CROSS-SECTIONAL DESIGN** A cross-sectional design provides a snapshot in time. In a cross-sectional design’s most basic form, participants are assessed once for the specific variable under investigation. This design is efficient and can sample large numbers of individuals; however, cause and effect can rarely be determined. Expanding the design to include several cohorts of different ages who are assessed at the same point in time (e.g., all children enrolled in classes in a specific school district) provides a more complex picture of the variable of interest. The Centers for Disease Control and Prevention (CDC) collects data about suicide rates per year. See Figure 2.12 for the percentages of individuals who

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**Figure 2.12** Suicide Rate in the United States, 2005–2014.

![Graph showing suicide rate trends from 2005 to 2014]
committed suicide between 2005 and 2014. This research design provides a cross-sectional landscape of people over a period of 9 years, but it does not follow the same people over this period of time. This design does not identify changes that might occur across years.

**LONGITUDINAL DESIGN** A longitudinal design is a study that takes place over time. This design includes at least two and often more measurement periods with the same individuals at different times. Many longitudinal studies have provided valuable data about the development of mental illness across the life span. Longitudinal cohorts can be assessed over the years by using age-appropriate measures at each measurement interval. A longitudinal birth cohort might sample all babies born during a certain month in a given area and follow those babies well into adulthood. Early assessments will be based on parental observations of the child, and later assessments will include age-appropriate assessments that the children complete themselves—as well as reports from parents and teachers. Outcomes measured in a longitudinal study may include incidence rates of disease, descriptions of the natural course of a variable of interest, and observations of risk factors. For example, in the birth cohort just mentioned, we could observe the incidence of autism spectrum disorder (or the number of newly diagnosed cases during the observation period), the natural course of autism spectrum disorder (how symptoms develop over the course of the 20-year observation period), and factors that were measured before the onset of the illness that are associated with those individuals who develop autism spectrum disorder (e.g., older parents). Although longitudinal studies are slow and expensive to complete, their findings are valuable because they show us what happens to the same people over a long period of time.

In a longitudinal study of data from the Swedish Adoption/Twin Study of Aging (SATSA), statistical analyses examined the different contributions of genetic and environmental variables on the experience of anxiety symptoms in older adulthood (Petkus et al.,

Babies born at the same time represent a birth cohort. If such a cohort is followed over the years, the result is a longitudinal study.
2015). The study sample included same-sex twin pairs who were born in Sweden between 1886 and 1958. The twins were interviewed between the years of 1984 and 2010 at which time they were 50 to 89 years old. Some of the twins grew up in the same home, whereas others were raised in different homes, allowing the researchers to look at potential separate genetic and environmental causes. Results suggested that genetic and environmental contributions to anxiety may change over time. An increase in the role of genetic factors seemed to occur between the ages of 60 and 64 years as well as between ages 70 and 75 years. New contributions of environmental factors also were apparent for adults in their 70s. Interestingly, as has been found in other genetic research, environmental contributions to the experience of anxiety were not due to the home environments where the twins were raised. This kind of longitudinal study allows us to learn about not only potential causes of anxiety in older people but also changes that might occur in these causal factors over time.

Learning Objective Summaries

**LO 2.9** Understand the principles of correlational research and their application to the study of abnormal behavior.

Correlational research helps us understand abnormal behavior by examining relations between variables or conditions. A correlation coefficient is a statistic that tells us whether the relation between two variables is positive or negative and how strong the relation is. Correlational research, however, tells us nothing about whether one variable causes the other.

**LO 2.10** Describe the factors that influence outcomes of randomized controlled trials.

The outcomes of randomized controlled trials are influenced by how participants are selected, the internal validity and external validity of the study (how well controlled the variables are and how representative conditions are to the real world), and assessment strategies (most importantly, whether they are blinded).

**LO 2.11** Understand the importance of diversity in group-based research in abnormal psychology.

Generalizability of findings from group-based research is influenced by how diverse the study sample is. For many years, studies of abnormal behavior excluded women, older people, and racial and ethnic minorities. To encourage improved diversity research, the NIH and other funding agencies now require studies to include specific recruitment plans for traditionally underrepresented groups.

**LO 2.12** Explain the difference between cross-sectional and longitudinal cohorts and the strengths and limitations of each.

Cross-sectional research allows us to compare groups of people (cohorts) who are assessed at the same point in time. Longitudinal research examines changes in a single group of people over time. Cross-sectional research is efficient and cost-effective, whereas longitudinal designs allow us to examine changes in people over time.

Critical Thinking Question

In a new study, the investigators examine the impact of cognitive behavior therapy (CBT) for depression in a group of children ages 7 to 17 years. Half of the children will receive CBT, and the other half will get “supportive treatment” (i.e., they will spend time talking to the therapist about whatever they want). The investigators are interested in how well the treatment affects depressive symptoms and quality of life. What are the independent and dependent variables in this investigation?

Research in Abnormal Psychology at the Population Level

When a researcher’s goal is to understand abnormal psychology at the broadest possible level, the “group” of interest can become the general population. To achieve this bird’s-eye view, we use the research tools associated with epidemiological research, which examines abnormal behavior at its most global level, that of entire populations.
Epidemiology

LO 2.13 Differentiate incidence and prevalence as these terms relate to understanding abnormal behavior.

Epidemiology focuses on disease patterns in human populations and factors that influence those patterns (Lilienfeld & Lilienfeld, 1980). As applied to abnormal psychology, epidemiology focuses on the occurrence of psychological disorders by time, place, and persons. Several concepts are key to understanding epidemiological research. The first is **prevalence**, which is the total number of cases of a disorder in a given population at a designated time. **Point prevalence** refers to the number of individuals with a disorder at a specified point in time. **Lifetime prevalence** refers to the total number of individuals in a population known to have had a particular disorder at some point during their lifetimes. For example, the lifetime prevalence for major depression is the number of people in the United States who have had an episode of major depressive disorder at any point in their lives.

In contrast, **incidence** refers to the number of new cases that emerge in a given population during a specified period of time. An example of incidence could be the number of new cases of anorexia nervosa reported by pediatricians in the United States over the period of 1 year. Both incidence and prevalence are valuable in understanding patterns of occurrence of psychological disorders across time and across populations, and we will refer to these concepts throughout this book.

Epidemiological Research Designs

LO 2.14 Recognize the types of epidemiological research as they relate to understanding abnormal behavior.

Researchers studying the epidemiology of a disorder typically ask questions including these: How often do certain disorders occur in the population? Are certain characteristics of people or places more likely to be associated with certain kinds of disorders? Can we do anything to change certain patterns of prevalence and incidence? These research designs can be observational (the researcher simply observes what is happening) or experimental (the researcher tries to change something and examine the effects).

**OBSERVATIONAL EPIDEMIOLOGY** The most basic form of epidemiological research is **observational epidemiology**, which documents the presence of physical or psychological disorders in human populations. For psychological disorders, the most common method of documentation is to conduct diagnostic interviews using a structured interview format in which all people interviewed are asked the same questions. Using randomly selected segments of the population, this design allows researchers to determine the point or lifetime prevalence of various psychological disorders. Quite simply, it answers these questions: How many people suffer from a disorder (e.g., depression)? Are certain subsets of the population (e.g., women) more likely than others to suffer from the disorder? Data from epidemiological studies were presented in Chapter 1 in the discussion of rates of psychological disorders in the United States.

Research HOT Topic

**National Comorbidity Survey Replication (NCS-R)**

How prevalent are mental illnesses in the United States? At what point do persons suffering from these disorders seek treatment? In 2005, four articles published in the *Archives of General Psychiatry* (Kessler, Birnbaum, et al., 2005) reported on a breakthrough national investigation of mental illness in the United States. The study is an extension of the 1990 National Comorbidity Survey, a landmark study that estimated the prevalence of mental disorders in a large nationally representative sample.

A large sample size is one of the strengths of the NCS-R study: the researchers surveyed and collected data on 9,282 individuals living in the United States. To be considered for the study, participants had to be at least 18 years old, belong to a U.S. household, and speak English. Researchers used
the International World Health Organization—Composite International Diagnostic Interview to determine which respondents met the criteria for psychological diagnoses. Four categories of disorders were assessed: anxiety, mood, impulse control, and substance use disorders. Researchers also collected information on treatment use, barriers to treatment, and satisfaction with treatment.

Results indicated that mental illnesses are common in the United States: 26% of respondents met diagnostic criteria for a mental disorder within the past year. Comorbidity is the term used to describe the presence of at least two mental disorders affecting an individual. The NCS-R found that 45% of people with one mental disorder also met criteria for at least one other disorder. Unfortunately, the study revealed that long time intervals often occur between the time a person's mental disorder begins and his or her first attempt to seek treatment. Even more startling was the finding that only 41.1% of people with symptoms characteristic of a mental illness diagnosis received treatment. Untreated mental disorders were associated with problems in school, teenage pregnancy and unstable marriages, and unemployment later in life. Long-term effects of mental illness include reduced educational attainment, lower employment, and increased suicide-related outcomes (Borges et al., 2007; Mojtabai et al., 2015).

The findings in this study make it clear that although mental illnesses are common in U.S. households, prompt and ongoing treatment is not. The NCS-R was conducted with a large representative sample and indicated that mental illnesses are highly comorbid; it also revealed that for most people, symptoms of mental disorders begin appearing early in life. Because of the chronic nature and high prevalence of mental illness, it is imperative to expand and improve treatment for all persons in the United States who need it.

One highly informative study funded by the NIH, the National Comorbidity Survey (1990–1992), was a nationally representative mental health survey in the United States that used a standard set of questions to assess the prevalence and associated characteristics of psychological disorders. The cohort was first interviewed in 1990–1992 and then re-interviewed in 2001–2002 (NCS-2) to study patterns and predictors of the course of mental disorders. The study also evaluated whether certain primary mental disorders predicted the onset and course of secondary disorders (e.g., whether people with depression developed alcohol abuse). One of the subsequent studies was the NCS-R in which diagnostic interviews were conducted on a new sample of 10,000 respondents focusing on areas not covered in the original study [see

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**Examining the EVIDENCE**

**Can Obesity Be Prevented in Children?**

- **The Facts**  The Girls health Enrichment Multi-site Studies (GEMS) was aimed at preventing the onset of obesity in African American girls (Ebbeling & Ludwig, 2010; Klesges et al., 2010; Robinson et al., 2010).

- **The Evidence**  At one site (Memphis), girls ages 8 to 10 years were randomly assigned to either a group that used group behavioral counseling to promote healthy eating and increased physical activity (obesity prevention program) or a self-esteem and social efficacy group (control group). At the second site (Stanford), girls ages 8 to 10 years and their families were randomly assigned to either after-school hip-hop, African, or step dance classes and programs to reduce screen media use (obesity prevention program) or information-based health education (control group). Girls participated in the programs for 2 years. Despite the carefully controlled investigations, culturally appropriate interventions, inclusion of families, and many community and government resources, changes in body mass index (the primary outcome variable that is calculated as weight in kilograms divided by height in meters squared (kg/m²) were the same for the prevention and control groups, indicating that treatment had no effect. What went wrong?

- **Examining the Evidence**  First, this was a trial to prevent obesity, but a number of the girls were already obese (40.6% in Memphis; 33.0% in Stanford). The results may have been different if obese children had not been included in the sample. Second, although the study focused on healthy eating and exercise, many of the girls lived in low-income communities where fresh foods were not available, school lunches were not always nutritious, fast food was common, and neighborhoods were not necessarily safe places for children to play outdoors. These negative environmental factors may have been more powerful than the positive effects of the intervention. Third, the diet and exercise programs may have been too complicated for 8- to 10-year-old girls to understand.

- **Conclusion**  It would be easy to conclude from this study that obesity cannot be prevented, but that would be incorrect. Although it did not produce the expected results, the research provided a number of important clues that researchers can use to develop potentially more effective prevention trials.
"Research Hot Topic: National Comorbidity Survey Replication (NCS-R)"). In the NCS-A (adolescent) study, researchers interviewed 10,000 adolescents to determine the prevalence and correlates of mental disorders in youth. The NCS series has provided invaluable information for clinicians and policy makers by establishing the magnitude of the public health burden of mental disorders and documenting the need to plan services accordingly.

EXPERIMENTAL EPIDEMIOLOGY In experimental epidemiology, the scientist manipulates exposure to either causal or preventive factors. A scientist might want to assess whether various environmental manipulations would be effective in producing weight loss (see "Examining the Evidence: Can Obesity Be Prevented in Children?"). The focus in this instance is on weight loss for a community as a whole, not for any one individual person. Ten geographically separated communities could be randomly assigned to a community-based weight control program focusing on increasing walking to school, decreasing fast-food consumption, and decreasing video game and TV time. The active intervention communities could be saturated with billboards, newspaper ads, local television commercials, and direct mailings, all promoting healthy approaches to weight control. The control communities would receive no intervention. Population-level outcomes would include the extent to which people were reached by the intervention and the extent to which the intervention was effective in producing both behavior and weight change.

Learning Objective Summaries

**LO 2.13** Differentiate incidence and prevalence as these terms relate to the understanding of abnormal behavior.

Incidence refers to the number of new cases that emerge in a given population during a specified period of time (e.g., the number of new cases of depression over the past year). Prevalence is the total number of cases of a disorder in a given population at a designated time (e.g., the number of people with depression at any specified point in time or over their lifetime).

**LO 2.14** Recognize the types of epidemiological research as they relate to understanding abnormal behavior.

Observational epidemiology documents the presence of psychological disorders in human populations usually by administration of diagnostic interviews. Experimental epidemiology involves documenting the presence of psychological disorders after the researcher manipulates exposure to causal or preventative factors.

Critical Thinking Question

A researcher wants to design a study to determine how frequently anxiety occurs in adults and whether the frequencies change as people get older. What type of study would be best to conduct, and how might you design it?

Real SCIENCE Real LIFE

Susan—A Participant in a Randomized Controlled Trial

Susan had been having episodes of depression and finally went to see her primary care doctor for advice. She gave Susan brochures about a therapy trial for depression at a nearby university and suggested that she call for more information. The following describes Susan's experience as a participant in the clinical psychotherapy trial.

SCREENING CALL

Today I called the research coordinator for information. She told me that the study was for women between 20 and 40 and was designed to compare two different psychotherapies for depression. She described the two treatments to me—one was based on something called cognitive-behavioral therapy, and the other one was based on interpersonal psychotherapy. She explained that I would not be able to choose which treatment I received, but it would be decided by a procedure that was like a flip of a coin [randomization]. She asked me a bunch of questions on the phone about my mood; how long I had been feeling this way; my sleep, appetite, energy levels; whether I was suicidal; and whether I was on any medications. Then, based on my answers to those questions,
she said we could set up an appointment for an initial evaluation.

INITIAL EVALUATION

I got to the clinic and was greeted by the research coordinator. She spent a lot of time explaining the study to me and gave me an information sheet. I read it, and she asked if I had any questions. Then came all of the forms! First I filled out a consent form agreeing to the terms of the study and indicating that I understand my rights as a participant. I was assured that I could withdraw from the study at any time. Then I had to sign a HIPAA form, which was all about the privacy of my records and who could have access to them. This worried me a little bit because I certainly did not want my boyfriend to find out, so I talked with the research coordinator about it. She explained that HIPAA stood for the Health Insurance Portability and Accountability Act and that I could be completely assured that my boyfriend would not be able to have access to my records. Just when I thought I was finished filling out forms, she gave me a packet of questionnaires that asked all sorts of questions—not only about my mood but also about anxiety, eating, my family, and all sorts of questions about what sort of person I am. Some of them were really hard to answer, but I had to choose yes or no. That took about an hour and a half.

Then I had a little break, and the coordinator explained that the next step would be a comprehensive evaluation by a psychiatrist. The psychiatrist, she explained, would not be the person who would be seeing me for therapy but would conduct interviews with me throughout the study to see how I was progressing. The psychiatrist would not know which treatment I was receiving. In the evaluation, the psychiatrist asked a lot of the same questions that were on the questionnaires. This was a little irritating, but I guess the psychiatrist went into more depth than the questionnaires. She even asked about the first time I ever felt depressed when I was very young. She also asked questions about whether I heard voices or saw things that other people did not see, asked about my drug and alcohol use (I was honest with her about almost everything—I just couldn't bring myself to tell her about that one experience with Ecstasy, though—I barely know the woman and it was kind of embarrassing). She also asked all sorts of questions about my health and medications.

I met with the research coordinator again, she invited me into the study, and then she got an envelope that had my participant number on it, opened it, and told me I was randomized to cognitive-behavioral therapy.

BASELINE WEEK

At the end of the evaluation day, the research coordinator instructed me on how to "self-monitor" my mood for the baseline week. She gave me a special personal digital assistant (PDA) into which I was supposed to type in how depressed I felt every time it prompted me. I thought that was kind of cool—but worried about whether it would wake me up at night. She explained that the PDA was programmed for 8 a.m. to 10 p.m. and that I would not be bothered by prompts any other time. So off I went with my PDA for a week of recording before my first appointment. I also left with the card of my therapist, Dr. McIntosh, whom I would see the following Thursday. For a week I dutifully responded every time it pinged me. It was kind of interesting. I noticed that my mood ratings always seemed to be worse in the afternoon.

COURSE OF THERAPY

I went to the clinic, and Dr. McIntosh greeted me. The first session went well. I liked her. She had a positive attitude and seemed like she really believed that the therapy had the potential to help. She took her time and explained everything clearly. She also told me that I needed to continue responding to the PDA throughout the study. For the first 2 weeks we met twice a week. She gave me a workbook and we worked through it step by step. Every session she started off reviewing how things had gone since the last session and whether I had done all of my self-monitoring and homework. It felt a little bit like school, but she really seemed to care about how I was feeling. She helped me start to recognize how negative my thinking was, and she challenged me to start doing some of those fun things that I had lost interest in recently. I never realized how much I catastrophized from the smallest of things or, as Dr. McIntosh said, really made mountains out of molehills. I also had not realized how much my mood improved when I did some of the things on my fun list (even if I had to really push myself to do them in the first place). After the eighth session, I met with the psychiatrist again for another assessment. She went over many of the same questions as in the beginning, and I had to fill out MORE questionnaires. After eight sessions, I felt as if my mood was getting better. I still had some bad days, but it did not feel like the same oppressive cloud that had been there before. I had eight more sessions—first once a week and then once every 2 weeks. Dr. McIntosh and I spent a lot of time working on strategies for what to do if I feel like my mood was slipping again—like identifying early warning signs and taking immediate action. By the end I really felt like I understood how much my own thinking patterns contributed to my staying depressed.

FOLLOW-UP

At the end of treatment I met with the psychiatrist again for an interview and I filled out more questionnaires. The research coordinator also asked me lots of questions about how I liked the treatment and whether I would have it again or recommend it to others. I came back at 6 months and 1 year for follow-up appointments when I met with the psychiatrist again and filled out more papers. Each time, the research coordinator checked in with me to see how things were going and to update my contact information. The second time, I ran into Dr. McIntosh. It was great to see her and to report that I was still feeling really well. When I look back on the whole experience of being in the study, honestly, I had been a little worried about being a "guinea pig," but truth be told, I felt really taken care of. So many people seemed to care about my well-being, and they were all involved with my treatment. It was an amazing experience.
Key Terms

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