



Psychological Disorders

15

Chapter Outline

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Chapter Review

Challenge Your Assumptions

TRUE OR FALSE?

- Most people who suffer from mental illness are dangerous.
- Mental disorders are relatively rare and most families are free of mental disorders.
- Extreme stress can make you depressed.
- Schizophrenia is a disorder of split personalities.
- All the great artists in history can be viewed as psychologically disturbed.

Answers can be found at the end of the chapter.

Langley and Homer Collyer were brothers who lived in a large three-story house in New York City (Frost & Steketee, 2010). In March 1947, police were called to their “mansion” because a neighbor reported that one of the brothers had died in the house. The police, however, could not enter through the front door or any other doors or windows on the first floor. All entrances were blocked with household items and appliances—newspapers, boxes, pianos, and car parts, to name but a few examples. When the fire department used ladders and finally gained entrance on the second and third floors, what they found (after workers spent a total of 3 weeks cleaning out the house) was astonishing: a car, a horse-drawn carriage, 14 grand pianos, a rusted bicycle, even a two-headed fetus. All in all, more than 170 tons (340,000 pounds) of stuff was removed from the house. The entire house was filled from floor to ceiling, and the only way to move around was through tunnels. As it turned out, the booby-trapped boxes the brothers had set up to prevent anyone from coming in had apparently caused Langley’s death. Homer, however, was blind and relied on Langley to feed him; and so when Langley died, Homer gradually starved to death. The Collyer brothers were among the first widely publicized compulsive hoarders—people who collected stuff to the point that it interfered with everyday functioning.

Ted Bundy was a handsome, well-educated, and charming man, who also happened to be one of the worst serial killers in U.S. history—murdering somewhere between 20 and 100 women, though most likely about 35 (Keppel, 2005; Sullivan, 2009). Between 1974 and 1978, he charmed young female students between the ages of 15 and 25 with a story of being hurt and needing help to carry his books. Once they were in his car he would often batter them with a baseball bat or crowbar and sometimes have sex with the body.

Vincent van Gogh and Paul Gauguin—the artists—had an intense argument on December 23, 1888, a Sunday evening in the middle of winter. Over what they argued, we do not know. What we do know is how it ended: Van Gogh, in a fit of rage, took a razor and cut off the lower portion of his left ear. He then wrapped the earlobe in a newspaper and gave it to a prostitute named Rachel, telling her to “keep this object carefully” (Runyan, 1981).

That the Collyer brothers, Bundy, and van Gogh each had some kind of disordered behavior is apparent. What is not so easy to agree on, however, is how to define psychological disorder in general and how to specify the concrete criteria for particular disorders.

Clearly, these three examples are extreme cases, but behavior varies along a continuum from more to less disordered. In this chapter, we describe many psychological disorders and explain some of what is known about how they develop. As we discuss the causes of these disorders, we will focus on explanations that intertwine the biological with the environmental (Kendler, 2005; Moffitt, Caspi, & Rutter, 2005; Uher & McGuffin, 2010). We will begin by considering what it means for behavior to be disordered and how disorders are diagnosed. At the end of the chapter we will explore the topic of creativity and psychological disorders and consider whether artists are more likely than the general population to suffer from a psychological disorder. ■



DEFINING PSYCHOLOGICAL DISORDERS

Human behavior is complex and highly variable. Certain ways of behaving in the world are shown by more of the population on a regular basis and seem to be well adapted for functioning well in their environments. These might be behaviors we call *normal*. Less common ways of behaving might either reveal exceptional talent or somehow not be well suited for the normative environment. In the case of the latter, we might consider them disordered, because they do not function well in the world. It is with the context in mind that we use the term *psychological disorders*.

As an attempt to understand and treat psychological disorders, psychologists and psychiatrists aimed to group them into a smaller set of categories. Classification and diagnosis of psychological disorders is fraught with ambiguity and disagreement. The first attempt to do so in the United States began with the government census of 1840 and simply had one category: “idiocy/insanity” (Greenberg, Shuman, & Meyer 2004). The first official attempt at diagnosing mental disorders in the United States came in 1952 with the publication of the *Diagnostic and Statistical Manual (DSM)*. It was not until the third edition of that book in 1980 that diagnoses became grounded in scientific evidence and clinical observations rather than theory. Currently in its fifth edition, the *DSM-5* has continued the tradition of defining disorders based on a combination of scientific evidence and clinical observations (APA, 2013).

How do psychologists define *mental disorder*? Following a long-standing tradition, the *DSM-5* defines a mental disorder as a syndrome—a set of related conditions—of clinically significant disturbances of thoughts, feelings, or behaviors. More specifically, they argue for the “4 Ds” of determining whether something is a mental disorder (APA, 2013). There has to be

disturbance of thought, emotion, or behavior
dysfunction of biological or developmental processes



Van Gogh painted *Self-Portrait With Bandaged Ear* (1889) after cutting off part of his ear following a violent disagreement with his friend and fellow painter Paul Gauguin.



Looking at this photograph, we might think this person has a psychological disorder. However, behavior must be deviant, distressing to the individual, and dysfunctional to be classified as disordered.

distress or disability in everyday life (especially relationships, work, or other activities)

deviant (different from the norm) thought, emotion, or behavior, but only if also dysfunctional; deviance alone is not enough

Let's look at each of these a little more closely. Psychological disorders are distinguished by their clinically significant *disturbance* of psychological processes of thought, emotion, and behavior. Mental disorders are distinguished from physical disorders that affect physiological and bodily structures and processes. *Distressing* behavior leads to real discomfort or anguish, either in the person directly or in others. The distressing element is one reason we say a person is "suffering" from a disorder. It causes pain to the person and/or other people, especially family members. *Dysfunctional* behavior interferes with everyday functioning and occasionally can be a risk to oneself or others. The term *dysfunctional* also implies it prevents one from participating in everyday social relationships, holding a regular job, or being productive in other ways. *Deviant* literally means "different from the norm," or different from what most people do. It is important to point out, as the *DSM-5* does, that deviant behavior can be classified as disordered only if it is also dysfunctional. Albert Einstein was deviant in his intelligence and creativity, but he was not suffering from a psychological disorder. Behaviors that possess only one or even two of these "4 Ds" are not typically classified as disordered. Finally, if a behavior is culturally accepted it cannot be a disorder, such as hallucinations of shamans in some cultures.

Most people suffering from psychological disorders do not pose a risk to others, but some do. For instance, people who are sexually attracted to children (pedophiles) and individuals with violent impulse disorder could be a very real danger to others. Others may pose a risk to themselves; for example, people with severe depression are at heightened risk of attempting suicide (APA, 2013).

To be sure, the *DSM-5* stems from an American perspective of psychological illness. More than previous editions, the *DSM-5* tries to expand beyond the U.S. perspective by aiming to be consistent with international standards for disorder classification and discussing the rates of prevalence of certain disorders in different countries around the world. Some disorders are found only in certain cultures, and others are usually found in certain other cultures. For instance, in some southeast Asian cultures, certain men suffer from *koro*, the debilitating belief that one's genitals are retracting into one's body. In parts of the Middle East, some people suffer from *zar*—the belief that they are possessed by spirits—and run around in fits of laughter, shouting, and singing (Watters, 2010).

Additionally, some disorders spread from culture to culture (Watters, 2010). For example, in China anorexia nervosa has been extremely rare; when it was described, the fear of being fat was not a symptom. Sufferers most frequently complained of having bloated stomachs. However, a single widely publicized case of anorexia in 1994 that led to the death of a Hong Kong teenager suddenly made anorexia a much more commonly reported disorder—rates of the disorder increased dramatically by the late 1990s. Moreover, because the journalists in Hong Kong who were covering the story tended to use the American *DSM* to describe the disorder, with the increase in prevalence also came a change in symptoms. After the publicity surrounding this case, more and more Chinese people with anorexia began to complain mostly of their fear of being fat and not of bloated stomachs. In short, their disorder became more Americanized.

Connections

Dementia and Alzheimer's disease are neurocognitive disorders related to age.

Other disorders, such as sleep disorders, can occur at any time in a person's life.

See "Late Adulthood,"

Chapter 5, "Human Development," p. 212,

and "Disorders of Sleep,"

Chapter 6, "Consciousness," p. 246.



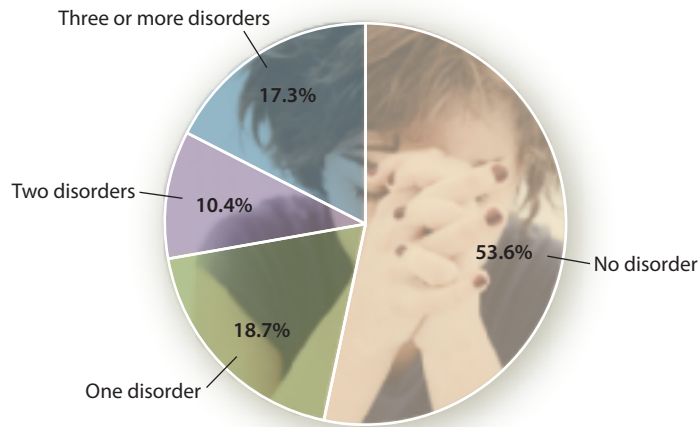


FIGURE 15.1

PERCENTAGE OF AMERICAN ADULTS WHO WILL EXPERIENCE A PSYCHOLOGICAL DISORDER AT SOME POINT DURING THEIR LIVES. Of the 46% of the population who will suffer a psychological disorder during their lifetime, more than half will suffer from at least two different disorders. (Source: Kessler et al., 2005)

How common are mental disorders? The answer is they are surprisingly common (see Figure 15.1). In a given year, 26% of the U.S. population suffers from a diagnosable disorder. So even though these are non-normative patterns of behavior, they are not rare. Over the course of their entire lifetime, almost half (46%) of the adults in the United States will suffer from at least one psychological disorder. Similar percentages have been reported in New Zealand and Spain (Moffitt et al., 2010; Serrano-Blanco et al., 2010). In the United States, more than half of those 46% will suffer from two or more disorders (Kessler et al., 2005). The existence of two or more disorders at the same time is called **comorbidity**. Some recent research suggests that fear-based disorders (phobias and panic disorder) may often develop first and predict onset of other disorders later in life (Kessler et al., 2012).

comorbidity
occurrence of two or more disorders at the same time.

The *DSM-5* describes 21 major categories of disorders covering more than 350 distinct disorders. Figure 15.2 on page 592 lists the major ones. In this chapter, we examine 10 of the 21 major types of disorders:

- neurodevelopmental disorders
- schizophrenia
- depressive disorders
- bipolar disorder
- anxiety disorders
- obsessive–compulsive disorder
- post-traumatic stress disorder
- dissociative disorders
- somatic symptom disorders
- personality disorders

NEURODEVELOPMENTAL DISORDERS

Although most clinical diagnoses are reserved for adults (older than 18), a number of disorders are prominent in childhood. The *DSM-5* refers to these as *neurodevelopmental disorders*, and includes intellectual disabilities (formerly mental retardation) and learning disabilities. We discuss two of them: attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder. See Figure 15.3 for an overview of these two disorders.

Subtypes of Neurodevelopmental Disorders

Jade seldom can work more than a few minutes on any given task, whether it is homework, reading, or even watching television. At school, she is constantly

FIGURE 15.2

MAJOR PSYCHOLOGICAL DISORDERS. Although *DSM-V* describes more than 350 disorders, these are the most common. (Source: APA, 2013)

	Description
Disorders usually first diagnosed in infancy, childhood, or adolescence	Attention deficit hyperactivity disorder, autistic spectrum disorders, learning disorders, conduct and oppositional disorder, separation anxiety disorder, and feeding, tic, and elimination disorders.
Anxiety disorders	Characterized by motor tension, hyperactivity and apprehensive expectation/thoughts. Include generalized anxiety disorder, panic disorder, phobic disorder, and post-traumatic stress disorder.
Somatic symptom disorders	Occur when psychological symptoms take a physical form even though no physical causes can be found. Include hypochondriasis and conversion disorder.
Factitious disorders	Characterized by the individual's deliberate fabrication of a medical or mental disorder to gain medical attention.
Dissociative disorders	Involve a sudden loss of memory or change of identity.
Delirium, dementia, amnesic, and other cognitive disorders	Disorders involving problems in consciousness and cognition, such as substance-induced delirium or dementia related to Alzheimer's disease.
Mood disorders	Characterized by a primary disturbance in mood; include depressive disorders and bipolar disorders (sometimes called manic depression).
Schizophrenia and other psychotic disorders	Characterized by distorted thoughts and perceptions, odd communication, inappropriate emotion, and other unusual behaviors.
Substance-related disorders	Characterized by abuse or dependence on drugs, such as alcohol, cocaine, and hallucinogens.
Sexual and gender-identity disorders	Consist of three main types of disorders: gender-identity disorders (person is not comfortable with identity as a female or male), paraphilias (person has a preference for unusual sexual acts to stimulate sexual arousal), and sexual dysfunctions (impairments in sexual functioning).
Eating disorders	Include anorexia nervosa and bulimia nervosa (see Chapter 12).
Sleep disorders	Consist of primary sleep disorders, such as insomnia and narcolepsy, and sleep disorders due to a general medical condition, such as sleep apnea (see Chapter 6).
Impulse-control disorders not elsewhere classified	Include kleptomania, pyromania, and compulsive gambling.
Adjustment disorders	Characterized by distressing emotional or behavioral symptoms in response to an identifiable stressor.
Intellectual disability	Low intellectual functioning and an inability to adapt to everyday life (see Chapter 10).
Personality disorders	Develop when personality traits become inflexible and maladaptive.
Other conditions that may be a focus of clinical attention	Include relational problems (with a partner, sibling, and so on), problems related to abuse or neglect (physical abuse of a child, for example), or additional conditions (such as bereavement, academic problems, and religious or spiritual problems).





FIGURE 15.3
SYMPTOMS AND BEHAVIORS OF TWO CHILDHOOD DISORDERS. (Source: APA, 2013)

Disorder	Major symptoms	Behaviors
Attention deficit hyperactivity (ADHD)	<ul style="list-style-type: none"> Inattention Hyperactivity Impulsivity 	<ul style="list-style-type: none"> Often fails to give close attention to details or makes careless mistakes, cannot sustain attention, does not listen when spoken to, does not follow through on instructions Fidgets with hands or feet, leaves seat in classroom when sitting is expected, inappropriate and excessive running or climbing, talks excessively Blurts out answers before question is complete, cannot wait turn, often intrudes or interrupts others
Autism spectrum disorder	<ul style="list-style-type: none"> Impaired social interaction Impaired communication Repetitive and stereotypic behaviors 	<ul style="list-style-type: none"> Has impaired eye-to-eye gaze and facial expressions, fails to develop peer relationships, lacks sharing interests Has impaired or severely delayed speech; language use is stereotypic or repetitive Shows preoccupation and repetitive interests or behaviors (such as finger or hand flapping), inflexible routines or rituals

fidgeting in her chair and blurts out whatever she is thinking. Jade’s teacher regularly must ask her to be quiet and stop disrupting others. Her homework is full of careless mistakes, even though she usually knows the answers. With these symptoms, psychologists would probably diagnose Jade as suffering from **attention deficit hyperactivity disorder (ADHD)**. To receive the diagnosis of ADHD, the child must have displayed these symptoms before age 12. Between 5% and 10% of American school-age children, 8% of children in the United Kingdom, and 3%–5% of children worldwide meet the diagnostic criteria of ADHD (Alloway, Elliott, & Holmes, 2010; Kessler et al., 2005). Boys are more likely to be diagnosed with ADHD than girls by a ratio of about 2 to 1 (APA, 2013).

Now, let us consider Antoine, who until age 1 behaved in ways that seemed “normal.” At the end of that year, however, subtle signs indicated that his development wasn’t typical: He didn’t babble or point to objects, he made very little eye contact, and he was hardly speaking at 18 months. When he did speak he often simply repeated what someone else said, and later he would say “you” when he meant “I.” Moreover, he would regularly flap his hands. Finally, he became very interested in the details and sensory experience of objects. He often would smell and taste toys. Psychologists would diagnose Antoine with **autistic spectrum disorder (ASD)**, formally known as **autism** from *autos*, meaning “self”). Autism spectrum disorder is characterized by severe language and social impairment combined with repetitive habits and inward-focused behaviors.

attention deficit hyperactivity disorder (ADHD) childhood disorder characterized by inability to focus attention for more than a few minutes, to remain still and quiet, to do careful work.

autistic spectrum disorder childhood disorder characterized by severe language and social impairment along with repetitive habits and inward-focused behaviors.

Evidence suggests that people with autism spectrum disorder are extremely sensitive to sensory stimulation or have trouble integrating multiple sources of sensory information, such as sight, sound, and touch (Iarocci & McDonald, 2006; Reynolds & Lane, 2008). Children with ASD are also more interested in things and inanimate objects than in people and social activities and have difficulty with joint attention (Baron-Cohen et al., 2001). **Joint attention** is the ability to make eye contact with others and to look in the same direction as someone else. For example, if a mother points at something she is interested in, if her child has ASD, then the child is less likely to look in the same direction. In fact, researchers who were not aware of diagnoses and who closely examined eye contact made by children on their first-birthday home videos were able to correctly classify children as having autism spectrum disorder or not 77% of the time (Osterling & Dawson, 1994). Historically, approximately 5 to 6 children in 1,000 in the United States met the criteria for ASD, but during the 1990s and first decade of this century the rate increased at least 10 times to 60 per 1,000 (Rice, 2007). Rates also increased in other countries, such as Israel (Davidovitch, Hemo, Manning-Courtney, & Fombonne, 2013). Some researchers believe the disorder may be overdiagnosed; however, the evidence suggests the rise is mostly due to increased awareness of the disorder (Rutter, 2005; Wing & Potter, 2002).

joint attention
ability to make eye contact with others and to look in the same direction as someone else.

Autism is a range of disorders, from severe disability to high functioning. On the high-functioning end of the spectrum, children have impaired social interest and skills and restricted interests, but they may be quite advanced in their speech and have above-average intelligence (APA, 2013). For instance, children on the

high-functioning end of the spectrum may engage adults in long-winded and “professorial” discussions on one rather narrow topic. As Hans Asperger (1944/1992) first described this type of high-functioning autistic behavior, it became known as Asperger’s syndrome. The *DSM-5* eliminated Asperger’s syndrome as a separate diagnostic category, although many people previously diagnosed as such still identify with the term and may call themselves “Aspies.”



People at the high-functioning end of the spectrum of autistic disorders may have independent, productive lives in spite of their social impairments and narrow interests. One such individual is Temple Grandin, who earned a PhD in animal science and became a professor at Colorado State University. A leading animal rights advocate, Grandin has designed humane facilities for livestock and written and spoken extensively about animal rights.

Causes of Neurodevelopmental Disorders

Neurodevelopmental disorders stem from genetic factors that may remain latent unless triggered by some environmental condition (Howe, 2010; Larsson, Larsson, & Lichtenstein, 2004). For ADHD, one of the environmental factors is whether the mother smokes while pregnant. Yet, smoking during pregnancy leads to conduct and impulse problems only if the child has one form of a dopamine gene but not another (Kahn et al., 2003). Neither prenatal smoke exposure alone nor the dopamine genotype alone is significantly associated with increased behavior disorders. One environmental factor long suspected by many parents to cause ADHD is excessive sugar consumption (Bussing et al., 2007). Controlled clinical studies, however, do not bear out this belief (Krummel, Seligson, & Guthrie, 1996; Whalen & Henker, 1998).

Brain activity in general is less pronounced in people with ADHD than in those without it (Zametkin et al., 1990; Zang et al., 2005). An understimulated brain explains the “paradoxical” effects of giving children with ADHD a stimulant to calm them



down. The stimulant elevates their abnormally low nervous system activity and they require less stimulation and activity from the outside.

Head size is a marker of possible autism spectrum disorder. Often the brain is smaller than normal at birth but grows much faster during the first few years of life than the brains of nonautistic children (Courchesne, Campbell, & Solso, 2010). The brain of a 5-year-old with ASD is the same size as that of a typical 13-year-old (Blakeslee, 2005). Although we do not yet know which genes are involved, this abnormal rate of brain growth is almost certainly due to genetic influences. In addition, the frontal lobes, where much processing of social information occurs, are less well connected in children with ASD than in normal children (Belmonte et al., 2004). Finally, recent evidence shows that the amygdala in children with ASD is 13% larger than in children without the disorder (Bachevalier, 2011; Mosconi et al., 2009).

A promising theory about the origins of autism spectrum disorder is based on the mirror neurons (Ramachandran & Oberman, 2006). As we saw in earlier chapters, mirror neurons fire both when a person performs a particular behavior (such as reaching for an object) and when he or she simply watches someone else performing the same behavior. Mirror neurons are thought to be involved in many, if not most, social behaviors, such as observational learning, imitation, and even language learning. Because children with ASD are deficient in these skills, neuroscientists predicted that mirror neurons malfunction in autistic children; research results show that this is indeed the case (Ramachandran & Oberman, 2006). People at the high-functioning end of the spectrum of autistic disorders may have independent, productive lives in spite of their social impairments and narrow interests. One such individual is Temple Grandin, who earned a PhD in animal science and became a professor at Colorado State University. A leading animal rights advocate, Grandin has designed humane facilities for livestock and written and spoken extensively about animal rights.

Quick Quiz 15.1: Neurodevelopmental Disorders

1. Jolo is a 5-year-old boy who does not speak, waves his arms around a lot, does not make eye contact, and does not seem to connect with other kids or adults. Jolo may have which disorder?
 - a. autistic spectrum disorder
 - b. ADHD
 - c. childhood depression
 - d. theory of mind
2. Kelly fidgets a lot, blurts out what she is thinking, and makes many careless mistakes in her homework, even when she knows the answers. Kelly most likely would be diagnosed with which childhood disorder?
 - a. low IQ
 - b. autistic spectrum disorder
 - c. anxiety disorder
 - d. ADHD

Answers can be found at the end of the chapter.

schizophrenia
psychotic disorder characterized by significant disturbances in thought and emotion, specifically problems with perception, including hallucinations.

SCHIZOPHRENIA

Some disorders are characterized by disturbances in thought and perception and as a group these are known as **psychotic disorders**. They are characterized by an inability to distinguish real from imagined perceptions. One very serious psychotic disorder is **schizophrenia**, which involves profound disturbances in thought and emotion—in particular, impairments in perception, such as hallucinations. Emil Kraepelin, who coined the term *schizophrenia* (literally “split mind”) in the 1890s, viewed the disorder as a split from reality, not a split

psychotic disorders
psychological disorders of thought and perception, characterized by inability to distinguish between real and imagined perceptions.



attitude or split personality, as is sometimes mistakenly assumed. According to the National Institute of Mental Health (NIMH, 2007), approximately 1% of the American population is afflicted with this disorder at any given time, making schizophrenia much less common than depression. Genetically, however, if a first-degree relative (biological parent, sibling, or child) has the disorder, the odds of a person having the disorder rise to 10% (NIMH, 2007).

Major Symptoms of Schizophrenia

For a diagnosis of schizophrenia, at least one of the following symptoms must persist for 1 month. Moreover, at least one of these symptoms must come from the first three (delusions, hallucinations, or disorganized speech; APA, 2013):

- delusions
- hallucinations
- disorganized speech
- grossly disorganized behavior, or catatonic behavior (immobile and unresponsive, though awake)
- negative symptoms (such as not speaking or being unable to experience emotion)

Symptoms of schizophrenia fall into three major categories: positive, negative, and cognitive. Note that “positive” and “negative” in this context do not mean “good” and “bad” but rather “presence” and “absence” of behaviors. The bizarre perceptual experiences associated with schizophrenia are known as **positive symptoms**. These include hallucinations, delusional thinking, and disorganized thought and speech. Typically, perception is poorly integrated as well. Look, for instance, at the pictures of watches in Figure 15.4. People with schizophrenia have trouble putting the fragmented image together and perceiving it as a watch.

Hallucinations are convincing sensory experiences that occur in the absence of an external stimulus. Auditory hallucinations are the most common form of hallucination in schizophrenia, typically taking the form of hearing voices in one’s head in the absence of external auditory stimulation. The following account from a person with schizophrenia describes an auditory hallucination:

Recently my mind has played tricks on me, creating The People inside my head who sometimes come out to haunt me and torment me. They surround me in rooms, hide behind trees and under the snow outside. They taunt me and scream at me and devise plans to break my spirit. The voices come and go, but The People are always there, always real. (“I Feel I Am Trapped”)

People with schizophrenia experience such voices as real and are convinced that someone is living inside their heads. Indeed, this is a defining feature of psychosis (Nolen-Hoeksema, 2007). Similar to but distinct from hallucinations, **delusions** are false beliefs, often exaggerated claims, that a person holds in spite of evidence to the contrary, such as the idea that one is Jesus Christ.

Other patients experience less flamboyant, but no less disabling, symptoms that are characterized by an absence of what

positive symptoms (of schizophrenia) the perceptual experiences associated with schizophrenia, including hallucinations, delusional thinking, and disorganized thought and speech.

delusion one of the symptoms of schizophrenia: a false belief or exaggeration held despite evidence to the contrary, such as the idea that one is a famous person.

hallucinations convincing sensory experiences that occur in the absence of an external stimulus.

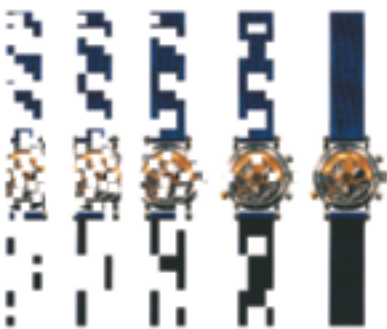


FIGURE 15.4
INABILITY TO PERCEIVE FRAGMENTS IN SCHIZOPHRENIA. Perceiving fragments as parts of a whole can be difficult for people with schizophrenia. When normal subjects view fractured images like those above in sequence, they identify the object quickly, but individuals with schizophrenia often cannot make that leap swiftly. (Source: Javitt & Coyle, 2004)



negative symptoms (of schizophrenia)
symptoms that include nonresponsiveness, emotional flatness, immobility, catatonia, problems with speech, and inability to complete tasks.

would be considered appropriate behavior. These **negative symptoms** include nonresponsiveness, emotional flatness, immobility or the striking of strange poses (catatonia), reduction of speaking, and inability to complete tasks. Traditionally, negative symptoms have been harder to diagnose and treat than positive symptoms.

People with schizophrenia show cognitive symptoms including problems with working memory, attention, verbal and visual learning and memory, reasoning and problem solving, speed of processing, and disordered speech (Barch, 2005). For example, the speech of a person with schizophrenia often follows grammatical rules, but the content makes little sense. Such utterances are referred to as **word salad**. Similarly, patients sometimes make up new words. In the following example, a woman who believed she was the only female professor at the “University of Smithsonian” (no such place) in England uses new words to produce a word salad.

I am here from a foreign university . . . and you have to have a “plausity” of all acts of amendment to go through for the children’s code . . . and it is no mental disturbance or “putenance.” . . . it is an “amorition” law. . . . It is like their “privatilinea” and the children have to have this “accentuative” law so they don’t go into the “mortite” law of the church. (Vetter, 1968, p. 306)

word salad
term for the speech of people with schizophrenia, which may follow grammatical rules but be nonsensical in terms of content.

Nature and Nurture Explanations of Schizophrenia

Schizophrenia offers a perfect, though tragic, illustration of the dynamic interplay between biology and experience in the development of a psychological disorder. Historically, this explanation has been called the **diathesis–stress model**. *Diathesis* is the Greek word for “predisposition,” so the diathesis–stress view is that biological predispositions plus stress or abusive environments together produce psychological disorders. Some researchers describe the diathesis–stress interaction between biological dispositions and environmental forces as a two-stage model (Kandel, 2000a; Lewis & Levitt, 2002). Stage one is the biological–genetic foundation, or disposition, and stage two is an environmental event that occurs at some point after conception, such as maternal infection, chronic stress, or using certain drugs (such as marijuana or amphetamines) at certain critical points in development (Fergusson, Horwood, & Ridder, 2005).

Although genetic factors play an important role in the development of schizophrenia, they do not make it inevitable. The heritability rates are 80% to 85%, suggesting the disorder is due largely to genetic influences (Cardno & Gottesman, 2000; Harrison & Owen, 2003; Kandel, 2000a; Lewis & Levitt, 2002; Vyas et al., 2010). Scientists have identified as many as 19 genes that contribute to schizophrenia, but the mechanisms they regulate have only recently been understood by neuroscientists (Harrison & Owen, 2003; Harrison & Weinberger, 2005; Mei & Xiong, 2008; Stefansson et al., 2009). The fact that one identical twin can develop schizophrenia while the other, genetically identical, twin may not develop it indicates that genes alone do not cause schizophrenia. Instead, genes are turned on or off by environmental experiences during brain development to produce the disorder (A. W. Grossman et al., 2003; Moffitt et al., 2005; Petronis, 2004).

The more abuse and neglect (adverse experiences) children experience in their early home life, the more likely they are to suffer from schizophrenia later in life (Edwards et al., 2003; Whitfield et al., 2005). Adverse experiences, in the form of abuse and neglect often happen during the critical periods of brain growth and development. There are few more concrete examples of how abuse

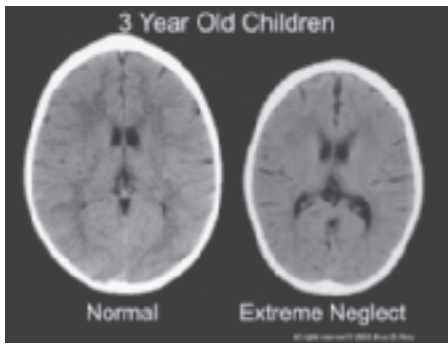


FIGURE 15.5

EFFECT OF EXTREME NEGLECT ON BRAIN DEVELOPMENT.

These MRI images show the brain of a typically developing 3-year-old child who has had a normal amount of cognitive, social, and linguistic stimulation (left), and that of a 3-year-old child who was deprived of regular social, linguistic, tactile, or cognitive stimulation (right). Growth is clearly stunted in the child who suffered from extreme neglect. Additionally, the dark, butterfly-shaped structures (ventricles) are much larger in the child who suffered from extreme neglect. Enlarged ventricles are common in people with schizophrenia. (Source: Perry, 2002)

and neglect shape the brain than the images shown in Figure 15.5 from ACE researcher Bruce Perry (2002). In the child who suffered extreme neglect, notice the much smaller overall brain size as well as the enlarged ventricles (butterfly shapes) in the middle of the brain. These features are two of the major brain abnormalities characteristic of schizophrenia. Indeed, one of the oldest findings on the brain and schizophrenia is the tendency of people with schizophrenia to have enlarged ventricles (the fluid-filled spaces in the brain) (Lieberman et al., 2001).

Although we may not yet know their causes or how exactly they interact with environmental forces, certain biological and brain abnormalities are hallmarks of schizophrenia. We consider some of the better-known ones: maternal infection, dysfunctional prefrontal and hippocampus activity, enlarged ventricles, an excess of dopamine activity in the basal ganglia, and a deficiency in the neurotransmitter glutamate.

Maternal Infections and Schizophrenia As first discussed in the chapter on the brain (Chapter 3), during fetal development, neural growth can occur at a rate of 250,000 new neurons per minute and peak at approximately 3 million per minute (Purves & Lichtman,

1985)! Consequently, what happens to both the mother and the fetus is crucially important; any kind of disease or toxic substance experienced by the mother may dramatically affect neural growth in the fetus. If a woman contracts an infection during pregnancy, the risk of the child's developing schizophrenia later in life increases dramatically (A. S. Brown, 2006; Koenig, 2006; J. Moreno et al., 2011).

Prenatal exposure to infections and diseases such as influenza, rubella, toxoplasmosis, and herpes has been linked to increased risk of schizophrenia (A. S. Brown, 2006; Buka et al., 2001) and deficits in brain development (J. Moreno et al., 2011; Short et al., 2010).

Connection

During the first 6 months of fetal development, the brain is extremely vulnerable to all kinds of toxins.

See "Environmental Influences on Fetal Development," Chapter 5, "Human Development," p. 175.

Schizophrenia and the Brain Abnormal brain development before birth may be responsible for many of the brain dysfunctions that are characteristic of schizophrenia (Lewis & Levitt, 2002). One mechanism by which maternal infections, for instance, may increase the risk of schizophrenia is by affecting the path neurons take when they migrate during fetal brain growth (Kandel, 2000a; Koenig, 2006). One of the most widely recognized

brain abnormalities is a dysfunctional prefrontal cortex and its working memory; in people with schizophrenia, there is evidence of both reduced and excessive activity in that area (Andreasen et al., 1997; Barch, 2005; Goldman-Rakic, 1999; D. R. Weinberger et al., 2001; Vyas et al., 2010). Moreover, the genes in the prefrontal cortex that regulate how synapses function are dysfunctional in people with schizophrenia compared to those without the disease (Mirnics et al., 2000). Often the hippocampus is smaller in people with schizophrenia, compared to those without the disorder (Barch, 2005; Harrison, 2004). See Figure 15.6 for an overview of these and other areas of the brain affected by schizophrenia.



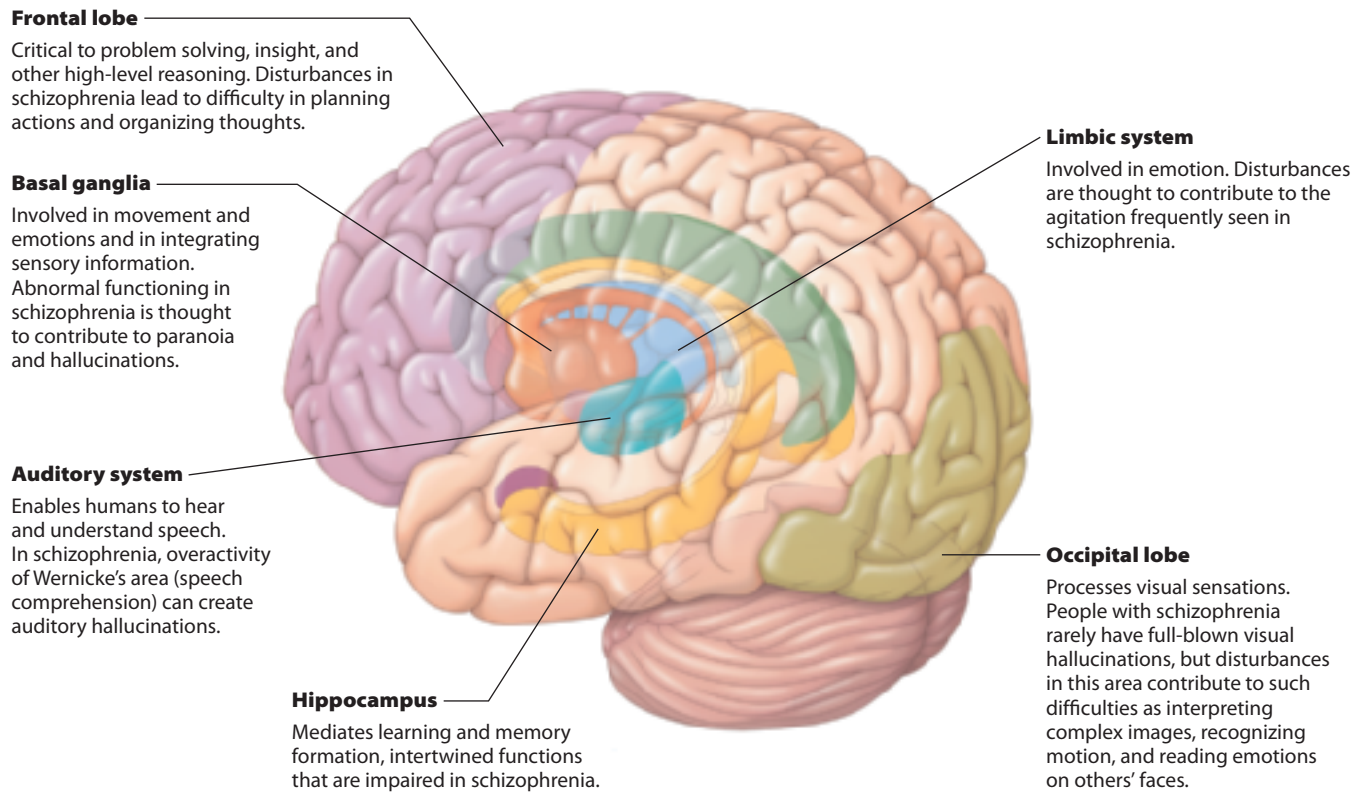


FIGURE 15.6

AREAS OF THE BRAIN IMPAIRED BY SCHIZOPHRENIA. The structures highlighted here do not function normally in people with schizophrenia. Limbic system structures not shown here are the hypothalamus, amygdala, and cingulate gyrus. (Source: Javitt & Coyle, 2004)

Brain problems in schizophrenia may not be simply a function of abnormalities in certain structures, but may also stem from problems in the communications among groups of neurons. In people without schizophrenia, neural networks are efficiently clustered in close groups and move in and out of orderly and chaotic patterns of firing (Bassett et al., 2008). This process is essential for learning and memory. In people with schizophrenia, however, these networks are less clustered, less efficient and more disorderly, especially in the frontal lobes (Bassett et al., 2008).

An obvious positive symptom of schizophrenia is hallucinations. What is going on in the brain during a hallucination? Brain imaging studies show that hallucinations activate the brain in ways similar, but not identical, to real external stimulation (Shergill et al., 2000; Shergill et al., 2003; Silbersweig et al., 1995). For example, activity in the auditory cortex of the temporal lobe and the visual cortex of the occipital lobe during visual and auditory hallucinations shows striking similarities to the kind of brain activity that occurs when visual and auditory stimuli are present. Also noteworthy, however, is the lack of activity in the frontal lobes during the hallucination, which suggests that the person is unable to monitor and determine the source of the images or sounds (Shergill et al., 2003).

Neurochemistry of Schizophrenia For decades, the prevailing view on the neurochemistry of schizophrenia was the *dopamine hypothesis*, which

states that people with schizophrenia have an excess of dopamine activity in certain areas of the brain (Javitt & Coyle, 2004; Kegeles et al., 2010). The dopamine hypothesis was based on two findings. First, Nobel laureate Arvid Carlsson discovered that amphetamines stimulate dopamine release and therefore may mimic the hallucinations and delusions of schizophrenia (Javitt & Coyle, 2004; see *Breaking New Ground*). Second, early antipsychotic drugs that block dopamine receptors were somewhat effective at treating positive symptoms.

Breaking New Ground

The Discovery of Dopamine

Before 1952, no one knew that dopamine was a neurotransmitter. The belief at the time was that dopamine was merely a precursor of epinephrine (Yeragani et al., 2010). Moreover, most scientists were convinced that dopamine had no role to play in brain function (Carlsson, 1987). We now know, partly due to Arvid Carlsson's discoveries, that dopamine not only is involved in controlling our muscle movement and with the basic feelings of reward and pleasure but also is one of the main neurotransmitters involved in the development of schizophrenia. Indeed, dopamine research surpasses all other areas of research in importance in biological psychiatry (Iversen & Iversen, 2007). The person who made the seminal discovery of dopamine and identified some of its key functions was Arvid Carlsson from Sweden.



Arvid Carlsson

Even though he made important progress as a young researcher, Carlsson was denied tenure as a professor and for a while wondered whether to continue his research. He did continue, however, and his persistence paid off. A few years later, in the early 1950s, he did the work on dopamine and its role in schizophrenia and Parkinson's disease that led to his Nobel Prize in 2000 (Benes, 2001).

Yet, nearly 10 years after his groundbreaking work on dopamine, many neuroscientists could not accept that it was a neurotransmitter, because they still believed neurotransmitters had to be electrical rather than chemical (Iversen & Iversen, 2007). Although the first drug treatments for schizophrenia were discovered by others,

Carlsson's work helped support the view that schizophrenia is at least partly caused by excessive amounts of dopamine in the brain—a view now known as the dopamine hypothesis (Iversen & Iversen, 2007). Due to the central role that dopamine plays in schizophrenia, Parkinson's disease, and even ADHD, it is fair to say that the field of psychopharmacology would not be the same today without the early pioneering work of Arvid Carlsson.

There are, however, some problems with the dopamine hypothesis. As we discuss in more detail in the next chapter, dopamine-specific medications (major tranquilizers) effectively treat only positive symptoms and even then are not entirely effective. In addition, only a minority of the people who receive the traditional drug treatment find it effective in managing their symptoms (Javitt & Coyle, 2004). When researchers became aware that another set of recreational drugs led to schizophrenia-like symptoms that did not directly involve dopamine, they turned their attention to these drugs. These drugs, PCP ("angel dust") and ketamine (an animal anesthetic, used recreationally



as “Vit K” or “Special K”), do not affect dopamine production; instead, they impair the functioning of a different neurotransmitter, glutamate, and one of its receptors, NMDA. Glutamate is a major excitatory neurotransmitter that regulates the release of dopamine. PCP and ketamine block the action of glutamate, thus producing the same kinds of disturbances that we see in schizophrenia (Harrison & Owen, 2003; Moghaddam, 2003). Glutamate deficiencies, then, may also explain many of the symptoms of schizophrenia (Javitt & Coyle, 2004). A gene related to glutamate plays a role in prefrontal cortex functioning in schizophrenics, which further supports a role for glutamate in the disorder (Fallgatter et al., 2010).

These findings stimulated researchers to explore the role of glutamate in schizophrenia more fully. Not only is it crucial in learning, memory, neural processing, and brain development, but it also amplifies certain neural signals, making some stimuli more important than others (Goff & Coyle, 2001; Javitt & Coyle, 2004; Mayer, 2004). This process is crucial to selective attention—that is, focusing attention on some items of information while ignoring others. Thus, dysfunction in glutamate action would explain why people with schizophrenia have trouble with selective attention, cognitive control, and working memory.



Quick Quiz 15.2: Schizophrenia

1. Which of the following is a negative symptom of schizophrenia?
 - a. hallucinations
 - b. delusions of grandeur
 - c. catatonia
 - d. fatigue
2. The heritability rate for schizophrenia is roughly
 - a. 100%
 - b. 60%
 - c. 80%
 - d. 25%
3. Low levels of the neurotransmitter _____ might explain why people with schizophrenia have trouble with selective attention, cognitive control, and working memory.
 - a. acetylcholine
 - b. glutamate
 - c. norepinephrine
 - d. GABA

Answers can be found at the end of the chapter.

DEPRESSIVE DISORDERS

If schizophrenia and other psychotic disorders are expressions of thought and perceptual disturbances, then bipolar disorder and depression are expressions of disturbance in mood and emotion. The depressive disorders, bipolar disorders, and anxiety disorder are marked especially by disturbances in emotional behavior that prevent people from functioning effectively in everyday life.

We all feel blue from time to time. Feeling sad after being rejected by a lover or failing an exam presents a normal response to life challenges, as does getting into to a funk after a series of hard breaks. Yet being unable to leave your bed for days or failing to eat from a profound sense of despair or disinterest in doing anything—often without direct provocation—is something different altogether and it may reflect an underlying disorder in psychological health.

According to the *DSM-5*, there are several forms of **depressive disorder**. What most people refer to as “depression” is formally called

major depressive disorder

mood disorder characterized by pervasive low mood, lack of motivation, low energy, and feelings of worthlessness and guilt that last for at least two consecutive weeks.

major depressive disorder, a chronic condition characterized by enduring changes in mood, motivation, and sense of self-worth. Specifically, to be diagnosed with major depressive disorder, one must have at least five of nine symptoms associated with major depression according to *DSM-5*, which must continue for at least two consecutive weeks (APA, 2013):

1. depressed (sad, listless) mood that stays low all day for several days
2. reduced interest or pleasure in doing anything
3. significant change in body weight (indicating dieting or overeating)
4. sleep disturbances
5. sluggishness or restlessness
6. daily fatigue or loss of energy
7. daily feelings of worthlessness, self-reproach, or excessive guilt
8. lack of ability to concentrate or think clearly
9. recurrent thoughts of death or suicidal ideation

Overall, approximately 7% of the U.S. population has major depressive disorder, but the occurrence varies depending on age and sex. The disorders is three times more likely in 18- to 29-year-olds than in 60+-year-olds. Females experience depression up to 3 times more often than males (teen and up) (APA, 2013).

Other forms of depressive disorder have milder symptoms but last longer. One of these milder forms is **persistent depressive disorder (PDD)**, previously called *dysthymia*. Most of the symptoms are the same as in a major depressive disorder, but they are less intense in PDD, though the depressive mood lasts most of the day and most of the time, for at least two years.

Depression manifests itself differently in different people, but only rarely is it only about feeling blue. Although sadness is the emotion most associated with depression, many find the lack of interest in or ability to *feel* anything (positive or negative) to be the most disabling aspect of living with depression. The Pulitzer Prize-winning novelist William Styron, who went through a major depressive episode in his 60s, offered a poignant account of the experience in his book *Darkness Visible*. For Styron, as for many seriously depressed people, the feelings of despair reached a point at which ending his life seemed to be the only guaranteed source of relief:

I had not as yet chosen the mode of my departure, but I knew that that step would come next, and soon, as inescapable as nightfall. . . .

persistent depressive disorder (PDD) form of depression that is milder in intensity, but longer in duration, than major depressive disorder.

Most importantly, symptoms must significantly impact daily functioning, in terms of both social and work related contexts, and also be a source of distress, in order to be the basis for a diagnosis of major depressive disorder.



Late one bitterly cold night, when I knew that I could not possibly get myself through the following day, I sat in the living room of the house bundled up against the chill. . . . I had forced myself to watch the tape of a movie. . . . At one point in the film . . . came a contralto voice, a sudden soaring passage from the Brahms *Alto Rhapsody*.

This sound, which like all music—indeed, like all pleasure—I had been numbly unresponsive to for months, pierced my heart like a dagger, and in a flood of swift recollection I thought of all the joys the house had known; the children who had rushed through its rooms, the festivals, the love and work, the honestly earned slumber, the voices and the nimble commotion. . . . All this I realized was more than I could ever abandon. . . . I drew upon some last gleam of sanity to perceive the terrifying dimensions of the mortal predicament I had fallen into. I woke up my wife and soon telephone calls were made. The next day I was admitted to the hospital. (1990, pp. 63–67)

The kind of unbearable hopelessness we see in Styron’s comments may be one reason people with depression are at a higher risk of committing suicide than others. Indeed, suicide is a major risk for people with depression, and suicidal thinking is included as a symptom of depression (APA, 2013; Hawton, Comabella, Haw, & Saunders, 2013).

Causes of Depression

Depression is not often caused solely by an external life event, such as physical or sexual abuse. For some people, depression just comes on, like using a switch to turn on a light. To the extent that this is true, the reason some people and not others develop depression stems from a combination of neurochemistry and life circumstance—the diathesis–stress model again.

Abusive and extremely stressful environments increase one’s risk for depression later in life. Researchers studying adverse experiences found that people who reported the most adverse childhood experiences were more likely to be depressed than people who reported no adverse childhood experiences (Anda et al., 2006; Pietrek et al., 2013; Wang et al., 2010). Indeed, the

role of stress in the development of depression is not trivial (Wang et al., 2010; Weinstein et al., 2010). In animals, experimental induced stress kills neurons in the hippocampus, which can lead to symptoms of depression (B. L. Jacobs, 2004; B. L. Jacobs, van Praag, & Gage, 2000; Kendler, Karkowski, & Prescott 1999). In humans, stressful events, especially social rejection, start a host of biological reactions,

including activating the hypothalamic–pituitary–adrenal (HPA) system, which increases the likelihood of developing depression (O’Donovan, Epel, & Kemeny, 2010; Slavich et al., in press). Medications that make more serotonin available in the brain stimulate neural growth, which lessens the symptoms of depression (Malberg et al., 2000; Papakostos et al. 2008). This may



Stressful life events, such as the death of a loved one, can trigger a major depressive episode in people who have a genetic predisposition for depression.

Nature & Nurture

Different forms of the serotonin gene and stressful events work together to increase the risk of depression.



be an important avenue for treatment, given that depression is associated with decreased brain density, which may reflect stress-related neuronal death (Lai, 2013).

The physiological effects of depression may even be observable at the sub-cellular level. The mitochondria are structures inside cells (in this case inside neurons) that play a key role in cell metabolism. Several studies point out that mitochondrial dysfunction in specific brain tissues is linked with occurrence of depression, but it is not clear if this is a cause or an effect of the disease (Tobe, 2013). Stressful environments, however, appear to interact with particular biological dispositions and personality traits to produce depression, especially in people who have experienced stress, trauma, and abuse (Clark, 2005; Hankin, 2010; Krueger, 1999; Uher & McGuffin, 2010). People who are deficient in the neurotransmitters serotonin and neuropeptide Y (NPY) are most susceptible to depression after experiencing extremely stressful situations (Lowry et al., 2008; Morales-Medina, Dumant, & Quirion, 2010; Risch et al., 2009). For example, a meta-analysis of 34 studies found support for an interaction between differences in serotonin genes, adverse experiences, and the development of depression (Uher & McGuffin, 2010). One of the 34 studies in this meta-analysis provides a nice example of the research into the nature–nurture origins of depression; see the Research Process for more details (Figure 15.7). Also, the personality traits of anxiety, neuroticism and negative emotionality, for instance, are most associated with vulnerability to depression.

Connection

A person can inherit one form of a gene, or allele—say, for red hair—from one parent and a different form—maybe for brown hair—from the other parent.

See “Genes and Behavior,” Chapter 3, “The Biology of Behavior,” p. 77.

BIPOLAR DISORDER

bipolar disorder
mood disorder characterized by substantial mood fluctuations, cycling between very low (depressive) and very high (manic) moods.

People who suffer from **bipolar disorder** experience severe mood fluctuations, cycling between very low (depressive) and very high (manic) episodes. (At one time, this disorder was called “manic depression.”) **Manic episodes** typically involve increased energy, sleeplessness, euphoria, irritability, delusions of grandeur, increased sex drive, and “racing” thoughts that last *at least one week*. **Hypomanic episodes** are nearly the same symptoms but shorter in duration—they last *at least four days* (APA, 2013). There is a useful mnemonic for remembering the symptoms of mania: D-I-G-F-A-S-T (Carlat, 1998):

D = Distractibility	F = Flight of ideas
I = Indiscretion	A = Activity increased
G = Grandiosity	S = Sleep (decreased need for)
	T = Talkativeness

The *DSM-5* distinguishes between two kinds of bipolar disorder, depending on the severity of the mania (APA, 2013). **Bipolar I** is more severe because it involves meeting the criteria for mania (at least seven days), whereas **bipolar II** is less severe because it involves meeting the criteria for hypomania (at least four days). Recall that *hypo* means “below,” so hypomania is not as severe as mania. So the degree of depression is the same in bipolar I and II, but the mania is less severe in bipolar II than in I. People with either form of bipolar disorder often find the initial onset of the manic phase pleasant, especially compared to the dullness and despair of the depressive phase. Unfortunately, the symptoms quickly become quite unpleasant and frightening. The manic upswing spirals

manic episode
one mood cycle in bipolar disorder, typically involving increased energy, sleeplessness, euphoria, irritability, delusions of grandeur, increased sex drive, and “racing” thoughts.



Research Process



1 Research Question

How do genetic and environmental differences interact to affect the development of depression?

2 Method

Avshalom Caspi and colleagues followed a group of nearly 1,000 people from age 3 until age 26 (Caspi, Sugden, et al., 2003). The investigators measured life events experienced by the participants at different ages. They obtained data on the presence of long and short forms of the serotonin gene in the participants' genotypes. One form (allele) comes from each parent.

3 Results

They found that people who had inherited two short forms (s/s) of the serotonin gene were more likely to exhibit depressive symptoms following stressful life events than were those who had inherited the long form (l/l). For example, in the graph shown here, we see that if people experience a few major stressful events (no more than two), their risk of having a major depressive episode does not increase, regardless of which form of the serotonin gene they carry. But if they experience three or four stressful events, the likelihood that they will have a major depressive episode nearly doubles or triples in those with the short form compared to those with the long form.

4 Conclusion

Depression is most likely in individuals who carry the short form of the gene *and* experience many severe life stressors. Neither condition by itself is likely to lead to depression.

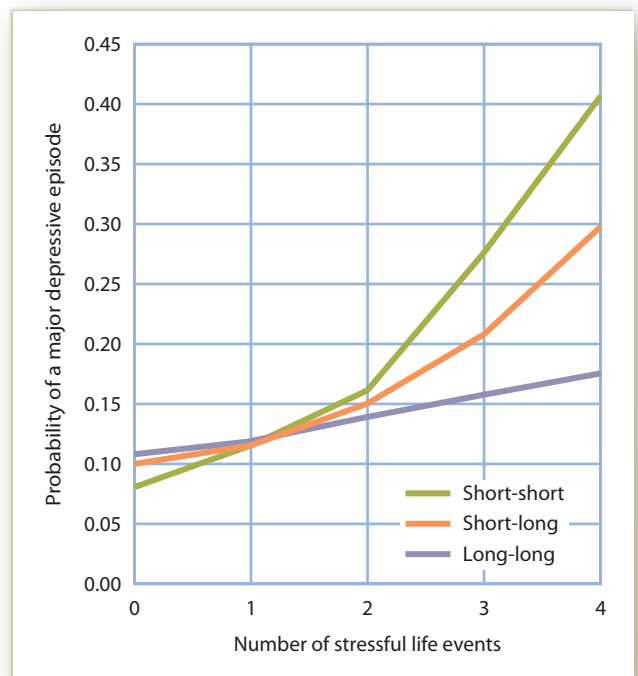


FIGURE 15.7

GENE-ENVIRONMENT INTERACTION IN THE DEVELOPMENT OF DEPRESSION. Individuals with at least one short allele of the serotonin gene are more likely to experience depression than those with two long alleles. Those with two short forms of the gene are most vulnerable to depression if they experience at least three stressful life events. Source: "Influence of Life Stress on Depression: Moderation by a Polymorphism in the 5-HTT Gene," by A. Caspi, K. Sugden, T. E. Moffitt, A. Taylor, I. W. Craig, H. Harrington, . . . Poulton, R., 2003, *Science*, 301, 386–389.



FIGURE 15.8
MAJOR SYMPTOMS AND
BEHAVIORS OF DEPRESSIVE
DISORDERS AND BIPOLAR
DISORDERS. (Source: APA,
 2013)

	Major symptoms	Behaviors
major depressive disorder	Low mood, lack of motivation, low energy, feelings of worthlessness and guilt that last for at least two weeks	Change in eating behavior, intense anxiety or sadness, feeling of being disconnected, and/or inability to take pleasure in enjoyable experiences
bipolar disorder	Extreme swings in mood between depressive and manic episodes	Manic episodes characterized by distractibility, increased activity, euphoria, grandiosity, decreased need for sleep, talkativeness, flight of ideas, and indiscretion

out of control, often leading to frenetic activity, excessive energy, and grandiose thinking, in which sufferers think they have relationships with important people or expertise in areas where they have none. Indiscretion occurs when a person says things that are somewhat inappropriate or gets involved in promiscuous sexual relationships. Figure 15.8 lists the characteristics and symptoms of depression and bipolar disorder.

Virginia Woolf, the groundbreaking early-20th-century novelist, suffered from bipolar disorder. She dealt with bouts of severe depression and frenetic mania, which ultimately led to her suicide in 1941. Virginia’s husband, the writer Leonard Woolf, offered revealing descriptions of her condition while manic:

“She talked almost without stopping for two or three days, paying no attention to anyone in the room or anything said to her. For about a day when she was coherent, the sentences meant something, though it was nearly all wildly insane. Then gradually it became completely incoherent, a mere jumble of dissociated words.” (quoted in Jamison, 1993, p. 29)

In an even milder but longer lasting form of bipolar disorder called **cyclothymia**, both the manic and depressive episodes are less severe than they are in bipolar II disorder—that is, the hypomanic and depressive symptoms never reach the criteria for hypomania and major depression.

cyclothymia
 a relatively mild but long lasting form of bipolar disorder.

Causes of Bipolar Disorder

What causes bipolar disorder? As is true for other psychological disorders, multiple biological and environmental factors appear to interact in ways scientists are only beginning to understand. The dynamic relationship between the environment and brain in bipolar disorder may be seen as early as prenatal development. Fetuses exposed to large amounts of alcohol may suffer permanent effects, including increased risks for bipolar disorder as well as depression, schizophrenia, alcoholism, mental retardation, and drug abuse (Famy, Streissguth, & Unis, 1998; O’Conner & Paley, 2006).

The genetics of bipolar disorder are complex. Many variations of genes appear to play a role in the development of the disorder, the specifics of which are only beginning to be understood (Comer, 2007; Luykx et al., 2010; Shastry, 2005). Twin studies also point to a role for genetics in bipolar disorder. If one identical twin develops bipolar disorder, there is a 40%–70% chance that the other twin will also develop the disorder (Müller-Oerlinghausen, Berghöfer, &



The chance that if one identical twin has bipolar disorder so will the other is 40%–70%, indicating that genetics play a strong, but not singular, role in this disorder. Life events, such as stress and trauma, also play a role in the development of bipolar disorder.

Bauer, 2002; Shastry, 2005). But even if the chance is 70% that both twins will have the disorder, that still suggests that life events, such as stress and trauma, also play a role in the development of bipolar disorder (Müller-Oerlinghausen et al., 2002; Shastry, 2005).

Abnormalities in the brains of people who suffer from bipolar disorder may be a cause or result of the biochemical, genetic, and environmental elements that contribute to the disorder. The prefrontal cortex, the amygdala, the hippocampus, and the basal ganglia all may play a role (Müller-Oerlinghausen et al., 2002; Shastry, 2005). Overactivity in many of these regions is evident in the PET scan images displayed in Figure 15.9, showing up as red areas compared to the blue regions that indicate depressed mood. There may also be problems in the connectivity among key regions involved in emotional processing, such as the prefrontal cortex and amygdala (Chepenik et al., 2010).

Neurochemistry is also important to bipolar disorder. In both the manic and depressed phases, serotonin levels are low, but low serotonin may be coupled with high levels of norepinephrine in the manic phase and with low levels in the depressed phase (Comer, 2007; Müller-Oerlinghausen et al., 2002). In addition, thyroid hormones, which control metabolism, are sometimes present in either abnormally high or low levels in people with bipolar disorder (Bauer & Whybrow, 2001; Müller-Oerlinghausen et al., 2002).

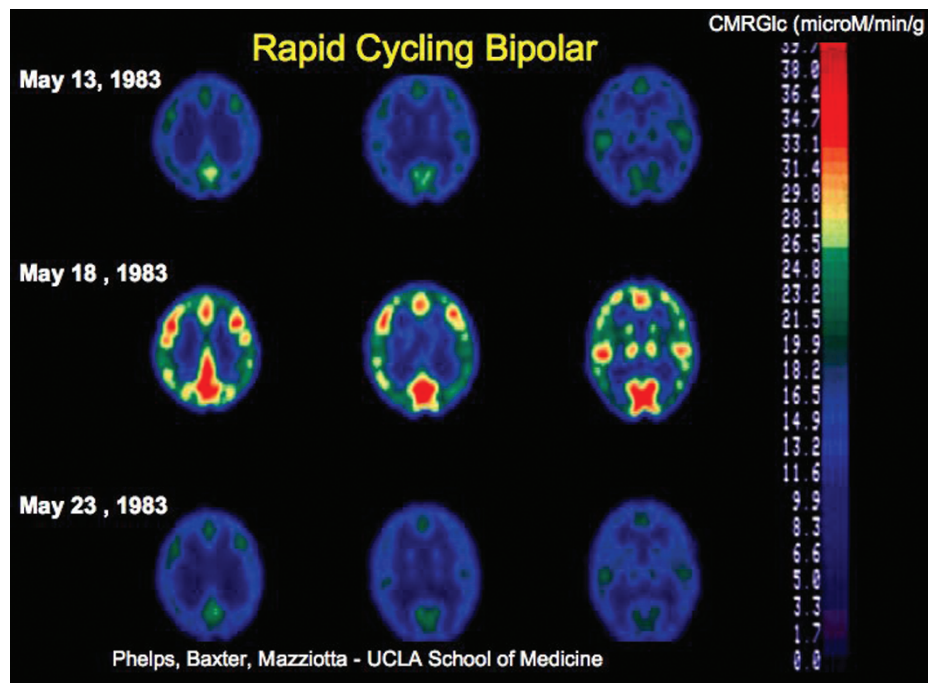


FIGURE 15.9

THE BIPOLAR BRAIN. PET scan images show the brain of someone with bipolar disorder over the course of 10 days. Blue and green indicate low levels of brain activity, and red and yellow indicate high levels of brain activity. The top and bottom images show the low activity of depression, whereas the middle images show an increased level of brain activity during mania. Note how quickly this person cycled in and then out of the manic phase (10 days).

Quick Quiz 15.3: Depressive and Bipolar Disorders

1. Latresha is not hungry, is extremely tired, and doesn't feel like doing much of anything. She often feels that life is just hopeless. These symptoms have been going on for two months now. She probably is suffering from which disorder?
 - a. generalized anxiety disorder
 - b. bipolar disorder
 - c. major depressive disorder
 - d. obsessive–compulsive disorder
2. David went home for Christmas break, and he found that his mother, who was usually depressed, had just purchased dozens of bird houses from a local gift store. She'd had each custom wrapped and was planning to give them to all extended members of the family and all her neighbors, whom she claimed to love like family. She had spent thousands of dollars. What might be going on with David's mom?
 - a. She won the lottery.
 - b. She has bipolar disorder.
 - c. She has an overactive hypothalamus.
 - d. She is just depressed.
3. Which neurotransmitter is reduced in both the manic and depressive phases of bipolar disorders?
 - a. acetylcholine
 - b. dopamine
 - c. norepinephrine
 - d. serotonin

Answers can be found at the end of the chapter.

ANXIETY DISORDERS

Fear and anxiety are normal reactions to danger or future threat. These emotions create bodily changes—such as increased heart rate—that support useful responses to danger. For some, fear and anxiety can get out of hand, occurring repeatedly in response to imagined threat and sometimes persisting for days. For about 26% of the U.S. population, however, anxious states can interfere with everyday functioning (Kessler et al., 2012). In this section we discuss seven of the more common forms of anxiety disorder (see Figure 15.10 on page 609).

Generalized Anxiety Disorder

Filmmaker Woody Allen uses writing, acting, and directing as a distraction from his own anxiety.

Generalized anxiety disorder (GAD) is a common anxiety disorder, characterized by a pervasive and excessive, hard-to-control state of anxiety or worry that lasts at least 6 months (APA, 2013). People with GAD may also have trouble with sleep, body restlessness or agitation, difficulty concentrating, sleep disturbances, or muscle tension. Indeed, adults must exhibit at least three of the preceding symptoms to receive a diagnosis of GAD (APA, 2013). GAD affects between 3% and 9% of the population in the United States, though females are twice as likely as males to have GAD (APA, 2013). It is also more common in the United States among people of European descent than among those of non-European descent.

Unlike those suffering from other anxiety disorders, people with GAD often have been anxious throughout their lives and cannot recall when they began to feel that way (Barlow, 2004). In everyday language, we might call such people “worrywarts”—or those who worry about anything and everything, often out of proportion to the actual threat. The writer, director, and actor Woody Allen has made a career out of his pervasive tendency to worry. Allen says he uses filmmaking and writing as a creative distraction from his pervasive anxiety (Briggs, 2005). The

generalized anxiety disorder (GAD)

state of pervasive and excessive anxiety lasting at least 6 months.



Disorder	Major symptoms	Behaviors
Generalized anxiety disorder (GAD)	Pervasive/excessive anxiety lasting at least 6 months	Inability to relax
Panic disorder	Persistent worry about having a panic attack	<i>Panic attack:</i> Heart palpitations, trembling, dizziness, intense dread, and fear of dying <i>Panic disorder:</i> Prone to panic attacks, concerned about having a panic attack and about embarrassment of having a panic attack
Agoraphobia	Fear of not being able to escape or of help not being available if panic attack should occur in public place	Unwilling to leave home so as to avoid panic attacks
Post-traumatic stress disorder (PTSD)	Anxiety disorder triggered by a traumatic experience	(1) Possible flashbacks; nightmares about the traumatic event (2) Emotional numbness and avoidance of thoughts, feelings, and activities associated with the trauma (3) Irritability or outbursts of anger; hypervigilance and trouble sleeping
Social phobia	Persistent fear of humiliation in the presence of others	Highly anxious, extremely self-conscious about appearance or behavior or both, possibly housebound
Specific phobias	Undue anxiety response to particular objects or situations	Intense fear or panic when confronted with particular situations or objects or even when thinking about them

FIGURE 15.10

MAJOR SYMPTOMS AND CRITERIA OF SPECIFIC ANXIETY DISORDERS. All of these disorders share the symptom of intense anxiety. (Source: APA, 2013)

constant anxiety of GAD can be debilitating, however, preventing many people who suffer from it from being able to work at all.

Panic Disorder

panic attacks brief episodes of anxiety associated with perceptions of threat and occurring because of fear of danger, inability to escape, embarrassment, or specific objects, for example.

The core of panic disorders is the panic attack. **Panic attacks** involve sudden changes in body and mind, characterized by an overwhelming sense of impending doom, heart palpitations, trembling, sweating, shortness of breath, dizziness, intense dread, nausea, and even a fear of dying. Such attacks are associated with perceptions of threat and can occur for a number of reasons: fear of danger, inability to escape, fear of embarrassment, or fear of a specific category of objects. Panic attacks usually last about 10 minutes but sometimes come and go over a period of an hour or more. Due to their physiological effects, people undergoing a panic attack may believe they are having a heart attack or are “going crazy.”

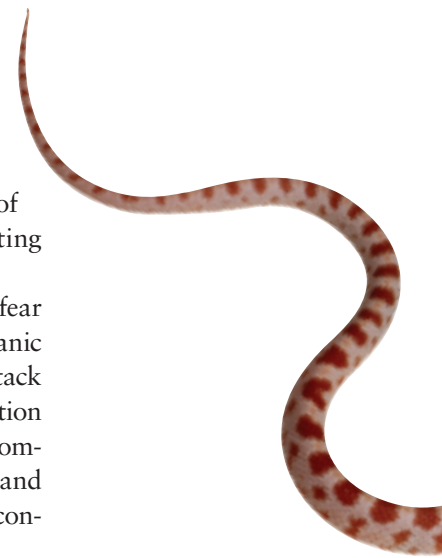
Panic disorder is defined by frequent panic attacks and pervasive and persistent fear, worry, embarrassment, and concern about having future panic attacks (APA, 2013). The preoccupation with and anxiety over having another attack create an anxious mood, which then increases the likelihood of more worrisome thoughts and, ironically, another attack. Thus, panic disorder creates

panic disorder an anxiety disorder characterized by panic attacks and persistent anxiety about having more attacks.



a positive feedback cycle, wherein anxiety about future attacks hijacks the body's emergency response system and catapults it out of control. To receive a diagnosis of panic disorder, a panic attack must be followed by at least a month of persistent worry over future attacks, along with the development of potentially maladaptive behaviors to avoid attacks (e.g., avoidance of putting oneself in unfamiliar situations).

People who have only occasional panic attacks without intense anxiety or fear about the possibility of future panic attacks do not qualify for the diagnosis of panic disorder. Although about 10% of the U.S. population has experienced a panic attack in the past 12 months (Grant et al., 2006), only about 2% to 3% of the population has panic disorder (APA, 2013). In the United States, panic disorder is more common in women than men and lower in older adults. Overall, in Asian, African, and Latin American countries the rates are very low—less than 1%, and the specific concerns or persistent worries appear to vary by culture as well (APA, 2013).



Agoraphobia

Agoraphobia is the most severe of all phobias (Bouton, Mineka, & Barlow, 2001). Contrary to popular belief, the primary “fear” in agoraphobia is not of being out in public. Formally, **agoraphobia** is intense anxiety, fear, and panic about being in places from which escape might be difficult or in which help might not be available, should a panic attack occur, such as open spaces, public market, standing in line, being outside of the home alone, or being in enclosed spaces (e.g., movies theaters, shops) (APA, 2013). This fear of being unable to escape keeps people at home, where they feel safe. Panic attacks are associated with agoraphobia in about one-third of the cases.

agoraphobia
an anxiety disorder involving fear of being in places from which escape might be difficult or in which help might not be available, should a panic attack occur.

Social Phobia (Social Anxiety Disorder)

People with social anxiety disorder are extremely self-conscious and fearful of embarrassing themselves in front of others.

A **phobia** is a persistent and unreasonable fear of a particular object, situation, or activity (APA, 2013). Some people suffer extreme anxiety when they have to interact with other people, viewing each interaction as a possible opportunity to be scrutinized by others. **Social anxiety disorder**, or **social phobia**, is marked by a pronounced fear of humiliation in the presence of others and severe self-consciousness about appearance or behavior or both. People with social phobia are most afraid of embarrassing or humiliating themselves, of being evaluated negatively by others, and of having their faults continually observed by everyone. Consider the case of “Sarah,” who hates going to the grocery store: She would not dare ask anyone working there how to find an item, out of fear that she might look stupid for not being able to find it herself. She doesn't want anyone to know she is anxious about being in the grocery store. She is concerned that her voice might quiver when forced to say the obligatory “hello” to the cashier. This would make her seem really foolish, and everybody would stare at her foolishness.

phobia
an anxiety disorder: an ongoing and irrational fear of a particular object, situation, or activity.

social phobia (social anxiety disorder)
an anxiety disorder: fear of humiliation in the presence of others, characterized by intense self-consciousness about appearance or behavior or both.



Fear like Sarah's can be paralyzing, making it very difficult to go out into public situations, even though in most cases the person recognizes that these fears are irrational. Unfortunately, the high degree of anxious arousal produced by



social phobia may lead the person to act very nervously and thus, in a self-fulfilling way, exhibit behaviors that do indeed attract other people's attention.

Specific Phobias

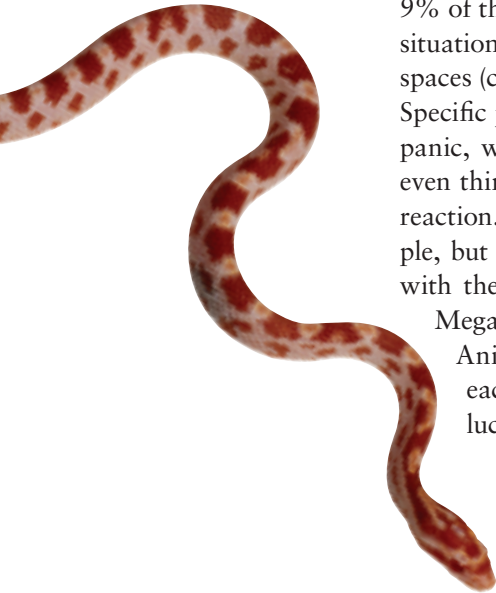
Only a few of us enjoy spiders, snakes, or heights, but most of us feel only mild levels of anxiety about such objects or experiences. Some of us, however, go beyond mild levels of fear. In the United States, up to 9% of the population has a *specific phobia* for a particular object or situation, such as spiders (arachnophobia), heights, flying, enclosed spaces (claustrophobia), doctors and dentists, or snakes (APA, 2013). Specific phobias are marked by an intense and immediate fear, even panic, when confronted with very particular situations or objects; even thinking about those situations or objects may set off the fear reaction. People with specific phobias are not generally anxious people, but they will do almost anything to avoid coming into contact with the feared object or experiencing the feared event or object.

Megan Fox, Britney Spears, and Jennifer Aniston all fear flying. Aniston, for instance, feels compelled to perform the same ritual each time she boards a plane ("Jennifer Aniston Talks," 2009), a "good luck" superstition in the face of her fear:

If I walk onto an airplane, I always have to go on with my right foot first and tap the outside of the plane. I have always done it. For luck. Someone told me to do it and I don't remember when that was. But it's kind of stuck.



Actress Jennifer Aniston has spoken publicly about her fear of flying and the ritual she performs before each flight.



Nature and Nurture Explanations of Anxiety Disorders

How do anxiety disorders develop? Like all animals, humans have evolved fear mechanisms to determine whether a situation is safe or not and whether we need to try to fight or flee (LeDoux, 2000). Additionally, as is true for most complex traits, some people are more genetically disposed to anxiety than others. Anxiety disorders—and most other psychological disorders—result from the interplay between biological and environmental factors. Instead of offering either biological or social theories of disorders, we present integrated nature–nurture (diathesis-stress) explanations.

Three biological factors that make people vulnerable to anxiety disorders are deficiencies in the neurotransmitter GABA, their genetic heritage, and their personality. Researchers have discovered that people who are prone to anxiety are deficient in receptors for GABA, a major inhibitory neurotransmitter (Charney, 2004; Nikolaus et al., 2010). Deficiencies in GABA lead to excessive activation in certain brain regions, especially the limbic structures associated with fear. Moreover, the fact that major medications for treating anxiety disorders work on GABA receptors is further evidence for GABA's role in anxiety. Genetic heritability estimates for generalized anxiety, panic disorder, and agoraphobia range from 30% to 40% (Hettema, Neale, & Kendler, 2001; Maron, Hettema, & Shlik, 2010).

Connection

How does our first environment—the womb—shape the expression of our genes?

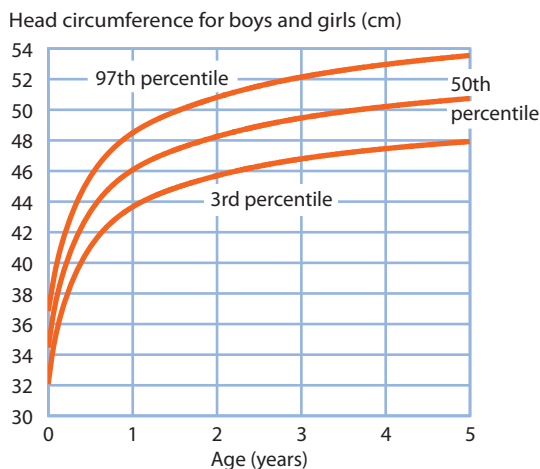
See "Epigenetics: How the Environment Changes Gene Expression," Chapter 3, "The Biology of Behavior," p. 80.



FIGURE 15.11

EFFECTS OF NEGLECT AND REMOVAL FROM NEGLECTFUL ENVIRONMENTS ON CHILDREN'S BRAIN SIZE.

Percentile of head circumference means the percentage of people in the population who have heads that are a particular size or smaller. So 30th percentile means that only 30% of people have that size or smaller. The younger the child is when he or she is removed from a neglectful home, the larger the brain/head size is after 1 year in a nurturing foster home. (Source: Perry, 2002)



Nature & Nurture

Those most likely to develop anxiety disorders are people with a genetic predisposition to anxiety, low levels of GABA, or the personality trait of neuroticism and who also experience chronic stress environments or abuse.

As for personality, people who are high in neuroticism—prone to worry, anxiety, and nervousness—are more likely to develop anxiety disorders than are people who are low in neuroticism (Eysenck, 1982; Hamer & Copeland, 1998). Degree of extraversion may play a role in some anxiety disorders as well. For instance, in panic disorder, people who are more introverted are more likely than those who are extraverted to avoid putting themselves in public situations (Rosellini et al., 2010).

An ambitious study that is changing the way psychologists view the interaction between biology and environment in the development of psychological disorders, including anxiety disorders, is the Adverse Childhood Experiences (ACE) Study. For the ACE study, more than 17,000 participants have been interviewed about eight “adverse childhood experiences,” including abuse, domestic violence, and serious household dysfunction (meaning that someone in the household abused drugs, had a psychological disorder, or committed criminal acts). Because participants had extensive medical histories on file at the hospital, researchers could correlate their adverse childhood experiences with health and mental health outcomes in adulthood.

Connection

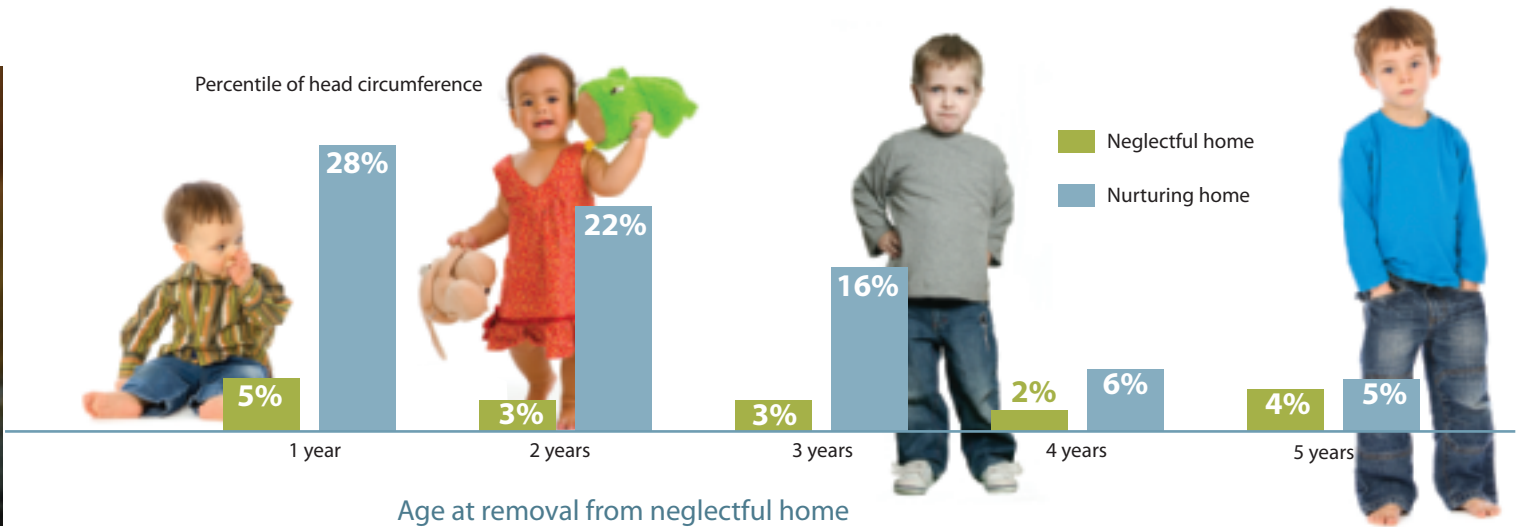
Development—language development, in particular—occurs rapidly during critical periods, when we are biologically most receptive to a specific kind of input from the environment.

See “Language Development in Individuals,” Chapter 9, “Language and Thought,” p. 350.

The results were dramatic. The more adverse childhood experience participants reported, the worse the psychological outcomes. For example, someone who reported four or more adverse childhood experiences was two and a half times as likely to suffer from anxiety disorder as someone who reported no adverse childhood experiences (Anda et al., 2006).

Perry (2002) found that when children were removed from neglectful home environments at age 1 or 2 and placed in caring foster homes, the size of their brains increased dramatically. If they were removed from the neglectful environment after age 4, however, there was little increase in brain size (circumference). And if they were removed after age 5, there was almost no increase (see Figure 15.11). Thus, there is a critical period for brain growth. Generally, for a child’s brain size to be anywhere near normal, the child needs regular environmental stimulation by about age 4.





In summary, people who have the bad luck of having a genetic predisposition to anxiety, low levels of GABA, or the personality trait of neuroticism *and* who also experience chronic stress or abuse are most likely to develop anxiety disorders. Those who have the biological predispositions *or* experience abuse are next most likely to develop these disorders, whereas those who have *neither* biological vulnerability nor chronically stressful experiences are least likely to develop these disorders.

Quick Quiz 15.4: Anxiety Disorders

- The occurrence of two or more disorders at the same time is known as
 - bipolar disorder
 - comorbidity
 - dipolarity
 - syndrome
- Maya is so preoccupied with fears of embarrassing or humiliating herself in public that she avoids going shopping or out for walks in town. What disorder best describes this set of symptoms?
 - general anxiety disorder
 - specific phobia
 - panic disorder
 - social phobia
- People who are prone to anxiety are deficient in receptors for _____, a major inhibitory neurotransmitter.
 - GABA
 - glutamate
 - serotonin
 - dopamine

Answers can be found at the end of the chapter.

obsessive-compulsive disorder (OCD) an anxiety disorder in which obsessive thoughts lead to compulsive behaviors.

OBSESSIVE-COMPULSIVE DISORDER

Obsessive-compulsive disorder (OCD) is a disorder that is manifested in both thought and behavior. An **obsession** is an unwanted thought, word, phrase, or image that persistently and repeatedly comes into a person's mind and causes distress. People with OCD have thoughts that they cannot dismiss, especially negative thoughts that most people can disregard (APA, 2013).

obsession an unwanted thought, word, phrase, or image that persistently and repeatedly comes into a person's mind and causes distress.

compulsion

a repetitive behavior performed in response to uncontrollable urges or according to a ritualistic set of rules.

A **compulsion** is a repetitive behavior performed in response to uncontrollable urges or according to a ritualistic set of rules. In short, obsessions are thought disturbances, whereas compulsions are repetitive behaviors.

Obsessive–compulsive disorder most often involves either cleaning, checking, or counting behaviors that interfere with everyday functioning. A man who is obsessed with security might check that the front door is locked 15 or 20 times before being able to drive away; a woman who is obsessed with germs might wash her hands dozens or even hundreds of times throughout the day.

People who suffer from OCD often know that their thoughts are irrational, or at least that their compulsive behaviors are excessive, but they cannot stop themselves. In some cases, compulsive behaviors stem from superstitions. For example, a man might feel the need to tap the wall 65 times before leaving a room for fear that not doing so will mean that his parents will die. He knows rationally that there is no connection between wall tapping and the death of one's parents but performs the ritual nevertheless. The 12-month prevalence rate of OCD in the United States is 1.2% and internationally it is between 1.1% and 1.8% (APA, 2013).

In OCD, too many thoughts are held in awareness, too much importance is ascribed to all thoughts (rational or irrational), and thinking about one's thoughts is excessive (Janeck et al., 2003). Research on cognitive performance in people with OCD reveals a preoccupation with conscious thinking; it is hard for people with this disorder to keep certain ideas or information out of awareness.

Causes of OCD

Some scientists argue that the brain circuit that connects the caudate, the anterior cingulate cortex (ACC), and limbic structures (such as the amygdala and hypothalamus) is working overtime in OCD (Aouizerate et al., 2004; J. M. Schwartz, 1999a, 1999b). The overactive ACC creates a perpetual feeling that something is wrong, which the limbic system structures translate into anxiety. In turn, anxiety stimulates more intrusive thoughts, which sometimes become compulsive actions. These actions occur as behavioral responses aimed at reducing the tensions or anxiety generated by the situation (from the caudate nucleus). Relief may be experienced, but only briefly, before the anxiety returns. The cycle goes on endlessly, due to the hyperactivity of the brain circuit—which is stuck in the “on” position. So this circuit involving the ACC, caudate nucleus, and limbic structures supports the obsessive thinking and compulsive responding (Fitzgerald et al., 2005; Guehl et al., 2008).

Quick Quiz 15.5: Obsessive–Compulsive Disorder

1. Rebecca has to count to seven chews every time she eats. If she is interrupted or loses count, she has to start all over again. This is an example of a(n)
 - a. compulsion
 - b. obsession
 - c. anxiety
 - d. panic attack
2. Joshua is constantly worried about getting sick from the germs all around, everywhere he goes. He can't help but think about the germs, the germs, the germs. This is an example of a(n)
 - a. compulsion
 - b. obsession
 - c. anxiety
 - d. panic attack

Answers can be found at the end of the chapter.



POST-TRAUMATIC STRESS DISORDER

Post-traumatic stress disorder (PTSD) is one of the trauma and stressor-related disorders. PTSD involves a set of intrusive and persistent cognitive, emotional, and physiological symptoms triggered by exposure to a catastrophic or horrifying event, such as experiences of war, attempted murder, rape, natural disasters, sudden death of a loved one, or physical or sexual abuse. In order to receive a diagnosis of PTSD, one must have directly experienced a traumatic event or witnessed such an event occurring to others, learned of a violent or accidental extreme trauma (death, sexual violence) occurring to a loved one, and/or repeatedly been exposed or reminded of the details of such an event (APA, 2013). People suffering from PTSD experience a number of intrusive symptoms that last for at least 1 month. These may include recurring intrusive thoughts, feelings, or memories of the traumatic event, either while awake or dreaming, and *flashbacks*, vivid reactions in which the person feels as if he or she is experiencing the traumatic event all over again. There may be avoidance of situations or stimuli that might trigger recollection of the event, as well as a number of persistent cognitive symptoms, such as a distorted view of oneself and self-blame associated with the trauma, as well as persistent emotional and physiological reactivity. For instance, people with PTSD are easily startled, may have hair-trigger tempers, and may be reckless or self-destructive.

War veterans are at increased risk not only for PTSD but also for depression, drug abuse, and suicide after returning home. For example, upwards of 24% of the veterans from Iraq have developed PTSD (Renshaw, 2011; Roehr, 2007; Tanielian & Jaycox, 2008). In fact, the hypothalamic-pituitary axis, a major neuroendocrine system of the stress response (see Chapter 12), may be dysfunctional in war veterans with PTSD (Golier, Caramanicaa, & Yehuda, 2012).

People of all ages can experience post-traumatic stress symptoms, including children who have experienced a serious trauma, such as extreme physical or sexual abuse (APA, 2013; Nixon et al., 2010). Compared to healthy controls, children with post-traumatic stress symptoms show reduced brain activity in the hippocampus while performing a verbal memory task (Carrion et al., 2010). The hippocampus plays a central role in learning and memory, so these results suggest that post-traumatic stress interferes with learning.

DISSOCIATIVE DISORDERS

Daydreaming and being caught up in a great novel or movie are common, everyday experiences in which we may lose our sense of time, space, and ourselves.

Dissociative disorders magnify this effect: They produce extreme disruptions or gaps in memory, identity, or consciousness. These disorders lack a clear physical cause, such as brain injury, and often stem from extreme stress, trauma, or abusive experiences, especially during childhood. Although they are often associated with trauma, the *DSM-5* places dissociative disorders in their own category. We focus on the most dramatic dissociative disorder, dissociative identity disorder.

Dissociative Identity Disorder

People with **dissociative identity disorder (DID)** develop at least two distinct personalities, each with a unique set of memories, behaviors, thoughts, and

dissociative disorders

psychological disorders characterized by extreme splits or gaps in memory, identity, or consciousness.

dissociative identity disorder (DID)

dissociative disorder in which a person develops at least two distinct personalities, each with its own memories, thoughts, behaviors, and emotions. Some psychiatrists question the legitimacy of the disorder.



emotions. Consider the case of Eric, 29, who was found wandering around a shopping mall in Daytona Beach, Florida:

Eric began talking to doctors in two voices: the infantile rhythms of “young Eric,” a dim and frightened child, and the measured tones of “older Eric,” who told a tale of terror and child abuse. According to “older Eric,” after his immigrant German parents died, a harsh stepfather and his mistress took Eric from his native South Carolina to a drug dealers’ hideout in a Florida swamp. Eric said he was raped by several gang members and watched his stepfather murder two men. (quoted in Comer, 2007, p. 208)

Eric had 27 distinct personalities, 3 of whom were female. Among these personalities were Dwight, who was middle-aged and quiet; Michael, an arrogant jock; Phillip, an argumentative lawyer; and Jeffrey, who was blind and mute and rather hysterical.

Eric is a classic example of what used to be called “multiple personality disorder” but is now referred to as *dissociative identity disorder*.

Symptoms of dissociative identity disorder include two or more distinct personality states, amnesia and self-destructive behaviors. People with dissociative identity disorder may not remember anything about an experience or a particular period of their life, they may cut themselves, and up to 70% have attempted suicide. Fugue states are also somewhat common, in which people do not recall anything about how they got to where they are. For instance, they might end up at a beach or nightclub or at home but have no memory of how they came to be there.

Although it may not be diagnosed until adolescence, DID often develops in childhood but may develop at any period of life (APA, 2013; Comer, 2007). Although the sample size was relatively small, one study found that only about 1.5% of people have the disorder during the last 12 months (APA, 2013). A history of sexual or physical abuse is very common. In one study, more than 90% of people with DID reported being either sexually or physically abused (Ellason, Ross, & Fuchs, 1996).

We should say, however, that the diagnosis of DID is somewhat controversial, with some psychiatrists claiming the diagnosis is not real but rather is produced unintentionally by therapists themselves (Putnam & McHugh, 2005). In one survey, a majority of psychiatrists said they believed DID should be included in the *DSM* only with reservations and have questioned the scientific evidence for the diagnosis (Lalonde et al., 2001).

Causes of Dissociative Disorders

People who suffer from dissociative disorders have one characteristic in common: They lived through a highly traumatic experience. They often have suffered sexual or physical abuse or survived a terrible accident or natural disaster in which a loved one was killed. Most explanations of dissociative disorder view it as a coping strategy that has gone awry (Putnam, 2006). The experience was so traumatic that the individual disconnects or dissociates the self from the event as a way of having it happen not to “him” or “her” but rather to “someone else.” Yet not everyone who experiences traumatic events develops a dissociative disorder. Some theorists, therefore, argue that particular personality traits, such as susceptibility to hypnotism, make some people more likely to develop dissociative disorders (Kihlstrom, 2005).



SOMATIC SYMPTOM DISORDERS

somatic symptom disorders

psychological disorders that take bodily or physical form and mimic physical diseases but have no known physical cause or medical basis.

illness anxiety disorder

fear of somatic symptom but without any somatic symptoms

personality disorders

patterns of cognition, emotion, and behavior that develop in late childhood or adolescence and are maladaptive and inflexible; they are more consistent than clinical disorders.

Some disorders take bodily or physical form and mimic physical diseases. The general term for these disorders is **somatic symptom disorders**. As you may recall from our discussion of the neuron, *soma* means “body”; hence the term *somatic* means “bodily.” An older term for bodily disorders—*hypochondriasis*—has now been divided into two related but distinct disorders: somatic symptom and illness anxiety disorders.

Somatic symptom disorder occurs when a person complains of multiple physical disorders that cause distress and disruption of a person’s life and that persist for at least 6 months. This disorder has two main criteria (APA, 2013):

- one or more distressing somatic symptoms that disrupt daily life
- excessive thoughts, feelings, or behaviors related to bodily symptoms

Somatic symptom disorder occurs between 5% and 7% in the U.S. adult population (APA, 2013).

Some people have just the fear of the somatic symptoms and therefore would be diagnosed with **illness anxiety disorder**, or preoccupation with and anxiety about acquiring a serious illness for at least 6 months. The person with this disorder will also frequently and excessively check for the symptoms.

With the Internet and easy access to medical information, more and more people are self-diagnosing without evidence of real symptoms and without professional evaluations. People who self-diagnose primarily from information found on the Internet are referred to informally as *cyberchondriacs* (White & Horvitz, 2009).

somatic symptom disorder

psychological disorder in which a person complains of multiple physical disorders that cause disruption and that persist for at least 6 months.

Quick Quiz 15.6: PTSD, Dissociative Disorders, and Somatic Symptom Disorders

1. What is one of the most serious and common mental disorders suffered by war veterans?
 - a. dissociative disorder
 - b. somatic symptom disorder
 - c. post-traumatic stress disorder
 - d. schizophrenia
2. _____ produce extreme splits or gaps in memory, identity, or consciousness.
 - a. Dissociative disorders
 - b. Bipolar disorders
 - c. Mood disorders
 - d. Cognitive disorders
3. The primary difference between somatic symptom disorder and illness anxiety disorder is
 - a. illness anxiety disorder does not have somatic symptoms
 - b. illness anxiety disorder has only somatic symptoms
 - c. only somatic symptom disorder involves persistent concern about bodily symptoms
 - d. only somatic symptom disorder involves anxiety

Answers can be found at the end of the chapter.

PERSONALITY DISORDERS

As we saw in Chapter 13, personality consists of an individual’s unique, long-term behavior patterns. **Personality disorders** are maladaptive and inflexible patterns of cognition, emotion, and behavior that generally develop in late childhood or adolescence and continue into adulthood. There are three distinct



FIGURE 15.12
THREE CLUSTERS OF PERSONALITY DISORDERS AND THEIR MAJOR SYMPTOMS.

(Source: APA, 2013)

Cluster	Major symptoms	Personality disorders
Odd–eccentric	Lack of interest in social relationships, inappropriate or flat emotion, thought, and coldness Isolated, odd, and bizarre thoughts and beliefs Extreme, unwarranted, and maladaptive suspicion	Schizoid Schizotypal Paranoid
Dramatic–emotional	Wild, exaggerated behaviors, extreme need for attention, suicidal, seductive, unstable relationships, shifting moods Shifting moods, dramatic, impulsive, self-injury (e.g., cutting) Grandiose thoughts and sense of one’s importance, exploitative, arrogant, lack of concern for others Impulsive, violent, deceptive, and criminal behavior; no respect for social norms, ruthless	Histrionic Borderline Narcissistic Antisocial
Anxious–fearful	Anxious and worrying, sense of inadequacy, fear of being criticized, nervousness, avoids social interaction Pervasive selflessness, need to be cared for, fear of rejection, total dependence on and submission to others Extreme perfectionism and anxiety over minor disruption of routine, very rigid activities and relationships, pervades most aspects of everyday life	Avoidant Dependent Obsessive–compulsive

clusters of personality disorders: odd–eccentric, dramatic–emotional, and anxious–fearful (see Figure 15.12). Almost 15% of the general adult population (older than 18) and 20% of the young adult population (ages 18–25) suffer from some form of personality disorder (APA, 2013; Blanco et al., 2008; Lenzenweger et al., 2007).

Odd–Eccentric Personality Disorders

The three major forms of odd–eccentric personality disorder are schizoid, schizotypal, and paranoid (APA, 2013). People with **schizoid personality disorder** do not want close relationships; are emotionally aloof, reclusive, and humorless; and want to live solitary lives. Similarly, a person with **schizotypal personality disorder** is also isolated and asocial but in addition has very odd thoughts, perceptual distortions, and beliefs. For instance, people with schizotypal personality disorder may believe that stories on TV or in the newspaper were written directly about them. Moreover, the person dresses, acts, and appears in peculiar or eccentric ways. People with **paranoid personality disorder** are extremely suspicious and mistrustful of other people, in ways that are both unwarranted and not adaptive. They may often test the loyalty of their friends and lovers because they believe others are trying to harm them. People with paranoid personality disorder may be regularly suspicious of their spouse’s faithfulness even if there is no evidence the spouse has been unfaithful. If someone does slight or insult them, they will often hold a grudge for an unusually long time. For example, if someone with paranoid personality disorder discovers that a colleague has just been promoted to a position she had wanted, she might conclude that the boss does not appreciate her and is actively trying to sabotage her career. When she sees coworkers talking later that day, she might assume that they are talking about her in a disparaging manner.

schizoid personality disorder
 odd–eccentric personality disorder characterized by a desire to avoid close relationships as well as by emotional aloofness, reclusivity, and a lack of humor.

paranoid personality disorder
 odd–eccentric personality disorder characterized by extreme suspicions and mistrust of others in unwarranted and maladaptive ways.

schizotypal personality disorder

odd–eccentric personality disorder characterized by a desire to live an isolated and asocial life, but also by the presence of odd thoughts, perceptual distortions, and beliefs.



Dramatic–Emotional Personality Disorders

Another class of personality disorders involves dramatic and emotional disorders, of which there are four (APA, 2013). People with **histrionic personality disorder** want very much to be the center of attention and often behave in very dramatic, seductive, flamboyant, and exaggerated ways. They can also be very emotional, intense, self-centered, and shallow in their emotions and relationships. Those with **borderline personality disorder** have out-of-control emotions, are very afraid of being abandoned by others, and vacillate between idealizing and despising those who are close to them. They are more likely than most to hurt themselves (cutting, burning, or attempting suicide) or suffer from eating disorders or substance abuse. Individuals with **narcissistic personality disorder** have an extremely positive and arrogant self-image, and most of their time and attention are self-focused. They have an exaggerated sense of self-importance and are grandiose. As a result, they often make unrealistic and unreasonable demands of others and ignore others' needs or wishes. They may be quite successful and climb the career ladder very quickly, but their narcissism often isolates them from others.

To many students, the most captivating and intriguing of all personality disorders is antisocial personality. Formerly known as “sociopathic” or “psychopathic” personality, **antisocial personality disorder** is marked by extremely impulsive, deceptive, violent, ruthless, and callous behaviors. People with antisocial personality disorder are most likely to engage in criminal, deceptive, and violent behaviors. Indeed, although only about 3% of the population has this disorder, between 45% and 75% of male prison inmates are diagnosed with the disorder (Fazel & Danesh, 2002; Hare, 1993). Only about 20% of female prisoners are diagnosed with antisocial personality disorder (Fazel & Danesh, 2002). Do not confuse *antisocial* with *asocial*. Antisocial personality is a serious and potentially dangerous disorder, whereas being asocial simply means being shy and not enjoying social situations. Indeed, the case of the serial killer Ted Bundy, is an extreme example of someone suffering from antisocial personality disorder.

Anxious–Fearful Personality Disorders

The third cluster of personality disorders consists of the avoidant, dependent, and obsessive–compulsive personality disorders. Each of these is characterized by persistent high levels of anxiety, nervousness, and fear.

People with **avoidant personality disorder** are so afraid of being criticized that they avoid interacting with others and become socially isolated. They often feel inadequate and have low self-esteem and therefore tend to choose professions that allow them to be alone. People with **dependent personality disorder** fear being rejected and have such a strong need to be cared for that they form clingy and dependent relationships with others. They feel safe only in relationships with others; ironically, however, they tend to drive others away because they are so demanding. People with **obsessive–compulsive personality disorder (OCPD)** are very rigid in their habits, extremely perfectionistic in how things have to be done, and frequently very rigid list makers and rule followers. This personality disorder is similar to the clinical disorder with nearly the same name but is more general and it does not have true obsessions and compulsions. Also, people with OCD know they have a problem, whereas people with OCPD are convinced their way is the right and only way things can be done. In short, OCD is usually focused only on cleanliness or checking, whereas

borderline personality disorder

dramatic–emotional personality disorder characterized by out-of-control emotions, fear of being abandoned by others, and a vacillation between idealizing and despising people who are close to the person with the disorder.

antisocial personality disorder

dramatic–emotional personality disorder characterized by extremely impulsive, deceptive, violent, ruthless, and callous behaviors; a serious and potentially dangerous disorder.

avoidant personality disorder

anxious–fearful personality disorder characterized by extreme fear of being criticized, low self-esteem, and avoidance of social interaction.

histrionic personality disorder

dramatic–emotional personality disorder characterized by the desire to be the center of attention and by dramatic, seductive, flamboyant and exaggerated behaviors.

narcissistic personality disorder

dramatic–emotional personality disorder characterized by having an extremely positive and arrogant self-image and being extraordinarily self-centered; other symptoms are an exaggerated sense of self-importance and grandiosity.

dependent personality disorder

anxious–fearful personality disorder characterized by fear of being rejected and having a strong need to be cared for.

obsessive–compulsive personality disorder

anxious–fearful personality disorder characterized by rigid habits and extreme perfectionism; more general than obsessive–compulsive disorder.



obsessive–compulsive personality disorder is focused on all aspects of a person’s life, as illustrated in the following case study of a 32-year-old accountant:

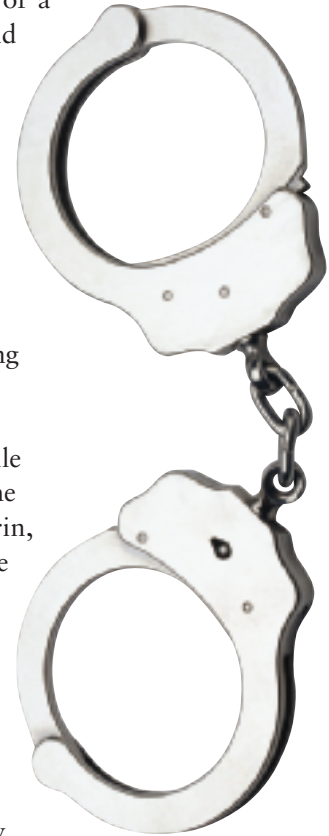
For many years he has maintained an almost inviolate schedule. On weekdays he arises at 6:47, has two eggs soft-boiled for 2 minutes, 45 seconds, and is at his desk at 8:15. Lunch is at 12:00, dinner at 6:00, bedtime at 11:00. He has separate Saturday and Sunday schedules, the latter characterized by a methodical and thorough trip through the *New York Times*. Any change in schedule causes him to feel varying degrees of anxiety, annoyance, and a sense that he is doing something wrong and wasting his time. . . . [His] major problems are with women and follow the same repetitive pattern. At first, things go well. Soon, however, he begins to resent the intrusion upon his schedule a woman inevitably causes. This is most strongly illustrated in the bedtime arrangements. He must spray his sinuses, take two aspirin, straighten the apartment, do 35 sit-ups and read two pages of the dictionary. (Spitzer and colleagues, quoted in Nolen-Hoeksema, 2007, pp. 451–452)

In the film *Monster*, Charlize Theron (below) portrayed Aileen Wuornos, a prostitute who confessed to killing several men. Abandoned by her parents in childhood, Wuornos later ran away from her grandparents’ home and turned to prostitution to support herself. At one of her trials, a psychiatrist testified that she was mentally ill with borderline personality disorder. Nevertheless, she was convicted of murder and later executed.

Nature and Nurture Explanations of Personality Disorders

Research on murderers has identified a cluster of traits possessed by most of these violent criminals: being male, coming from abusive and neglectful households, having at least one psychological disorder (often antisocial personality disorder), and having suffered some kind of injury to the head or brain (Pincus, 1999, 2001; Strueber, Lueck, & Roth, 2006–2007). Just being abused or having a psychological disorder or suffering a brain injury is not enough. To become antisocial and violent, a person usually has to experience all of these conditions.

Moreover, as a result of head injuries or living in a constant state of fear and abuse, or both, murderers almost always have moderate to severe problems of impulse control, social intelligence, working memory, and attention (Strueber et al., 2006–2007). Recall the principle of neuroplasticity from Chapter 3. Research on brain development suggests that living under a constant threat of abuse and stress changes the neural connectivity in the brain, making it less likely to develop many complex synaptic connections, especially in the frontal lobes. Being in a constant state of fear often leads to neural systems that are primed for unusually high levels of anxiety, impulsive behavior, and a state of constant alertness. These are all conditions that might lead to violent or criminal behaviors. Finally, genetics interact with abusive experience to create personality disorders. Different forms of one particular gene, for instance, when coupled with being abused as a child, make violent and antisocial behavior in adulthood more likely (Capsi et al., 2002).



Connection
Neuroplasticity occurs when neurons and hence brain structure and function change as a result of input from the environment.

See “Brain Plasticity and Neurogenesis,” Chapter 3, “The Biology of Behavior,” p. 106.



Psychology in the Real World

Can Internet Use Become an Addiction?

In March 2010, police discovered that a couple in South Korea had starved their 3-month-old daughter due to neglect caused by their constant preoccupation with the online multiplayer fantasy game *Prius Online*. The tragic irony is that in the parents' version of *Prius Online* they were raising a virtual baby (Greenemeier, 2013)!

As this case demonstrates, some people just can't stay off-line. For many people, this, in itself, may not be a serious problem. In some cases, however, people are online all day; they check their Facebook or Twitter feeds dozens or even hundreds of times a day; and they cannot continue their work or activities around the home without logging on. For them, Internet use has become so intrusive that it adversely affects their professional and personal lives in the real world.

As with all disorders, something becomes a problem once it causes clinically significant disruptions of everyday life. For the first time, the *DSM-5* includes the category "Internet Gaming Disorder," but due to insufficient and inconclusive evidence it is classified as a "Condition for Further Study." Any five of nine criteria must be present during a 12-month period for a diagnosis to be made:

1. preoccupation with Internet games (not Internet gambling)
2. withdrawal symptoms when games are taken away (e.g., irritability, sadness, anxiety)
3. tolerance, that is, more and more time is needed to be satisfied
4. unsuccessful attempts to stop or control one's habit
5. loss of interest in previous hobbies and entertainment
6. continued excessive use despite knowing of their psychological problems
7. deceives family, friends, and therapists about how much one plays games
8. use of Internet games to cope with or escape from a negative mood
9. has jeopardized or lost a significant relationship, job, or educational/career opportunity due to Internet gaming activity

Some of these criteria are, in fact, signs of addiction, namely tolerance, mood regulation, and disruption of relationships, job, or school. Moreover, researchers have suggested that some people do experience behavioral withdrawal symptoms, such as emotions of irritation and anger, when the computer or smart phone is not available (Block, 2008). Indeed, the Chinese government has labeled compulsive and disruptive Internet use "an addiction" (APA, 2013).

Although there are more than 250 publications on gaming or Internet use disorder, and some evidence does suggest it may be addictive, mental health professionals do not completely agree on whether excessive and dysfunctional Internet use is an addiction, a compulsion, or an impulse disorder (Petry & O'Brien, 2013).

In a review of the research from the United States, between 9.8% and 15.2% of high school and college students met criteria for Internet dependency (M. Moreno et al., 2011). Averages from studies across Europe and Asia report 12% excessively play computer games, 10% abuse them, and 3% are dependent upon them. In China, prevalence rates for Internet disorder range from 8% to 13.5%, with males outnumbering females about 2 to 1 (Wu et al., 2013). When looking exclusively at Massively Multiplayer Online Role-Playing Games (MMORPGs) the rates of dysfunctional use are even higher, with 18% experiencing academic, health, or relationship problems (and 8% saying they spend more than 40 hours a week playing video games).

Whether computer and online gaming meet the criteria for mental disorder in some people, it is clear that the popularity and widespread use of these games is only going to become even more pervasive in the future. If serious disruptions in people's lives (and occasional deaths) continue to result from excessive and compulsive Internet gaming use, then the next edition of the *DSM* may list it as an official mental disorder.



Quick Quiz 15.7: Personality Disorders

1. People with this personality disorder are so afraid of being criticized that they stay away from others and become socially isolated.
 - a. borderline
 - b. avoidant
 - c. dependent
 - d. psychopathic
2. Individuals with which kind of personality disorder are most likely to commit crimes and end up in jail?
 - a. asocial
 - b. narcissistic
 - c. antisocial
 - d. avoidant

Answers can be found at the end of the chapter.

to Real Life

Research

Psychological disorders are more common than many people think. Nearly half (46%) of all adults will suffer some kind of disorder at some point in their lives.

Connecting Psychology to Your Life: Now that you have some understanding of the major disorders,

- Do you know anyone who suffers from a psychological disorder, such as depression, anxiety, obsessive–compulsive disorder, schizophrenia, or a personality disorder?
- If so, how has it affected their lives?
- How does the disorder affect your relationship with this person?

Bringing It All Together

Making Connections in Psychological Disorders

Creativity and Mental Health

For thousands of years, people have associated “madness” and “genius.” Many of the world’s most creative people have been touched by more than their fair share of mental instability, if not outright “madness.” Perhaps, some have argued, that is just the price of greatness (Ludwig, 1995). Amadeus Mozart, Ludwig von Beethoven, Robert Schumann, Vincent Van Gogh, Virginia Woolf, Ernest Hemingway, William Styron, Jackson Pollock, Howard Hughes, Sylvia Plath, Salvador Dalí, and the Nobel Prize–winning mathematician John F. Nash, Jr., are just some of the creative geniuses who have suffered from a psychological disorder. So many creative individuals have experienced some psychological condition that many people think creativity and disorders of the mind are connected. The term *mad genius* reflects this belief. To be clear, however: Suffering from psychological disorders is not necessary to be creative. Many creative people have not suffered from disorders, and not all who suffer from disorders are

creative. There are, however, at least in art, literature, poetry, and music, higher rates of disorders than in the general population (Ludwig, 1995).

Exploring the connection between psychological disorders and creativity offers an opportunity to look again at the topics discussed in this chapter. We address two questions: (1) What is the evidence that creative people suffer from psychological disorders at a higher rate than the rest of the population? (2) Which disorders are more likely to be linked with creativity?

Evidence for a Relationship Between Creativity and Psychological Disorders

To help us answer the first question, we can look at an impressive study of creativity and psychological disorder conducted by Arnold Ludwig. In a biographical study of 1,005 eminent people in 16 professions, Ludwig (1995)



examined the lifetime rates of psychological disorder across the professions and over lifetimes. Lifetime rate is the likelihood that a person will suffer a disorder at some point in her or his lifetime. Lifetime rates for any psychiatric illness are remarkably high for people in the arts: 87% of poets, 77% of fiction writers, 74% of actors, 73% of visual artists, 72% of nonfiction writers, 68% of musical performers, and 60% of musical composers (see Figure 15.13). Compare these figures with the 46% lifetime rate in the general population for any disorder (Kessler et al., 2005). The data from this large-scale study clearly indicate a higher prevalence of disorder in creative artists than in the general population.

Which Disorders Affect Creative Individuals?

Not all disorders are associated with creative ability. There is evidence, however, for a connection between creativity and many of the disorders we discussed in this chapter.

Autistic Spectrum Disorder and Creativity

Some people who have autistic spectrum disorder are extremely gifted in one domain, such as music or math, a phenomenon known as savant syndrome (see Chapter 10). Most autistic savants do not produce great works of original genius because their amazing feats of calculation and recall

are not original. Yet some savants do produce truly creative works of art, usually math analyses, musical compositions, drawings, or paintings (Fitzgerald, 2004). One of the 20th century's greatest mathematicians, Srinivasa Ramanujan, showed clear signs of childhood autism (Fitzgerald, 2004). Composer Wolfgang Amadeus Mozart also may have been such a savant. A contemporary creative savant is Matt Savage (born in 1992), who was diagnosed with autism at the age of 3. He is a professional jazz musician and composer who had recorded three CDs by the time he was 14.

Asperger's syndrome, or what is now known as high functioning autistic spectrum disorder, has been associated with creative ability in science, math, and engineering (Austin, 2005; Baron-Cohen et al., 2001). Baron-Cohen and his colleagues report that engineers, mathematicians, and physical scientists score much higher than nonscientists on measures of high-functioning autism and Asperger's syndrome and score higher than social scientists on a nonclinical measure of autism. Lastly, children with Asperger's are more than twice as likely as normal children to have a father or grandfather who was an engineer (Baron-Cohen et al., 1997; Baron-Cohen et al., 1998; Baron-Cohen et al., 2001).

Psychotic Symptoms and Creativity

Having unusual thoughts is common to both creative people and those with schizophrenia. For instance, much of the art of Salvador Dalí, who claimed to be psychotic, consists of bizarre, dreamlike images—bordering on the kinds of delusions experienced by people with schizophrenia. John F. Nash, Jr., the mathematician made famous by the book and movie *A Beautiful Mind*, is a creative person who also has schizophrenia (Nasar, 1998). He was creative despite, rather than because of, the psychotic episodes he experienced; all of his creative work preceded his schizophrenic symptoms and stopped after they began.

It is the milder psychotic symptoms, however, that are most strongly associated with creativity (Kinney et al., 2000–2001; Nettle & Clegg, 2006; Schuldberg, 2000–2001). Each of the following groups manifest unusual thought processes that are milder than those of schizophrenia: first-degree relatives of individuals with schizophrenia, people with schizotypal personality disorder, and those who score high on the normal personality dimension of psychoticism (see Chapter 13). People in these groups are more likely to have unusual thought processes that develop into creative achievements that other people recognize to be significant (Burch et al.,

Connection
Creative thinking requires novelty and connections among ideas.
 See “What Is Creativity?” Chapter 10, “Intelligence, Problem Solving, and Creativity,” p 412.

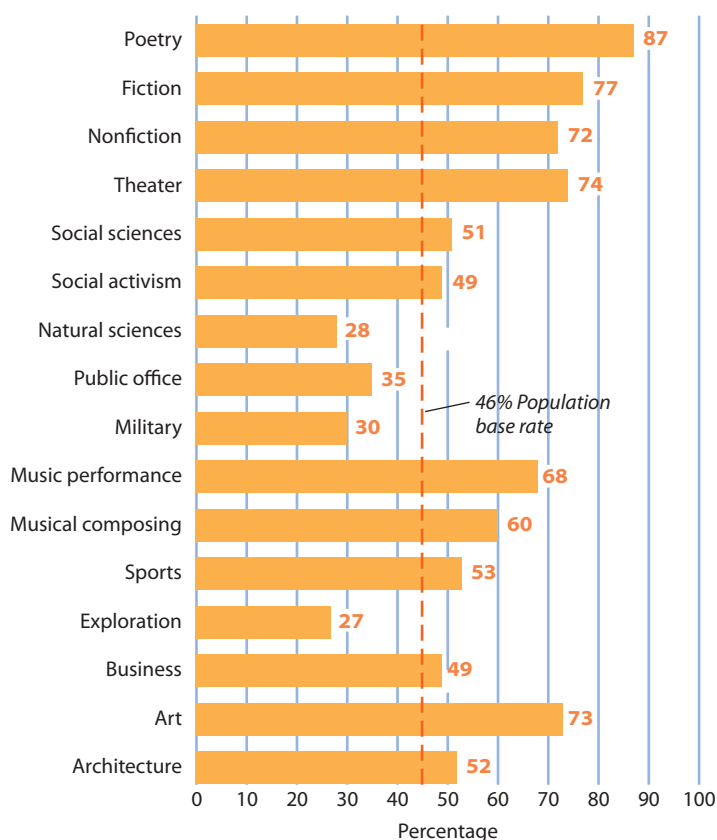
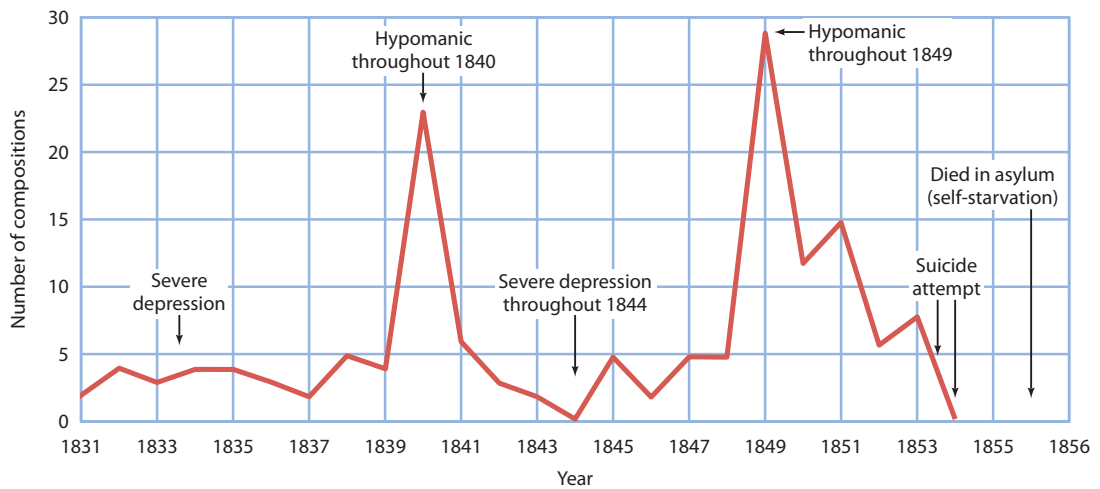


FIGURE 15.13
LIFETIME RATES OF PSYCHOLOGICAL DISORDERS IN FAMOUS PEOPLE IN 16 DIFFERENT PROFESSIONS. (Source: Ludwig, 1995)



FIGURE 15.14
BIPOLAR DISORDER
AND CREATIVITY IN
THE WORK OF ROBERT
SCHUMANN.

The composer's creative output coincided directly with the highs and lows of his disorder. His most productive years (1840 and 1849) were marked by his most hypomanic periods. (Source: Slater & Meyer, 1959)



2006; Fisher et al., 2004). Having a lot of ideas come to mind quickly can lead to many unusual associations that may be creative, but they may also be so unusual as to be similar to the bizarre associations seen in people with schizophrenia (Carson, Peterson, & Higgins, 2003; Eysenck, 1995).

Depression and Creativity

Emotional distress is a familiar companion to creative people. Many highly creative people have suffered from major depression (Ludwig, 1995). Across the 16 professions identified in Figure 15.13, the lifetime rate of depression was 30%, with poets (77%), fiction writers (59%), and visual artists (50%) having the highest rates. In addition, poets are 20 times more likely to commit suicide, a key indicator for depression, than most people (Ludwig, 1995). One recent study in fact found that social rejection (a common experience in depression) combined with a biological disposition toward depression enhanced participants' artistic creativity (Akinola & Mendes, 2008). In less creative populations, we should note, there is often only a weak relationship between depression and creativity (Silvia & Kimbrel, 2010).

Although highly creative artists and writers may have a higher rate of depression than the general population, depressive episodes themselves do not generate much creative output. Recall that a complete lack of motivation is a common symptom of depression, so lower productivity would follow. Still, the experiences one has while depressed might inspire and motivate the creation of works of art as a way of understanding it.

Bipolar Disorder and Creativity

For more than three decades, studies of the relationship between psychological disorder and creativity have devoted more attention to bipolar illness than to any other condition (Andreasen & Glick, 1988; Bowden, 1994; Fodor & Laird, 2004; Jamison, 1993; Ludwig, 1995). Actors (17%), poets (13%), architects (13%), and nonfiction writers (11%) all exceed a 10%

lifetime rate of bipolar disorder—10 times the rate in the general population (Ludwig, 1995). There is a positive relationship between bipolar disorder and creative thought. For instance, some studies show that highly creative people are more likely than noncreative people to have bipolar disorder (Andreasen, 1987, 2006; Jamison, 1993; Jamison et al., 1980; Richards, 1994). Others report the other side of the coin: People with bipolar disorder are likely to be more creative than those without this condition (Fodor & Laird, 2004; Richards, 1994; Richards & Kinney, 1990). Indeed, many creative individuals throughout history have been bipolar (Jamison, 1993).

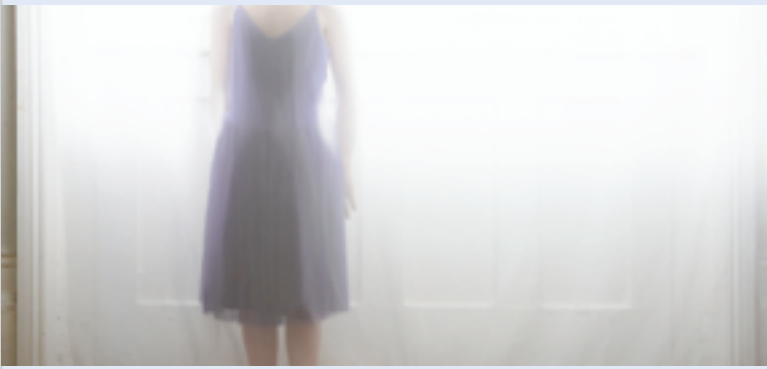
The manic phase is more likely than the depressive phase to generate creative behavior (Andreasen & Glick, 1988; Jamison et al., 1980). Few artists and writers are creative during their depressed phases; rather, they are creatively inspired during a milder form of mania, known as the hypomanic phase. A tragic example is the composer Robert Schumann, whose output and episodes of mania and depression are graphed in Figure 15.14.

Quick Quiz 15.8: Bringing It All Together: Making Connections in Psychological Disorders

1. Research shows which psychotic disorder to be most strongly associated with creativity?
 - a. schizophrenia
 - b. schizotypal
 - c. schizoid
 - d. split-personality
2. With respect to the relationship between bipolar disorder and creativity, the _____ phase is more likely to produce creative behavior than the _____ phase.
 - a. depressive; manic
 - b. cognitive; depressive
 - c. manic; depressive
 - d. manic; affective

Answers can be found at the end of the chapter.





Chapter Review

DEFINING PSYCHOLOGICAL DISORDERS

- Psychologists agree on four general criteria for a psychological disorder: disruptive, distressing, dysfunctional, and deviant (but only if also dysfunctional).
- A major tool for diagnosing disorders is the *Diagnostic and Statistical Manual (DSM-5)*.

NEURODEVELOPMENTAL DISORDERS

- The most common disorders to affect children are attention deficit hyperactivity disorder (ADHD) and autism. ADHD consists of severe inattention, hyperactivity, and impulsivity. Children with autistic spectrum disorder (ASD) show very inward-focused behaviors, with severe language and social impairment combined with repetitive habits and behaviors. They also have serious deficits in understanding other people's thoughts, feelings, and intentions.

SCHIZOPHRENIA

- Schizophrenia is a psychotic disorder of profound disturbances in thought, perception, and emotion. Positive symptoms of schizophrenia include hallucinations, delusional thinking, and disorganized thought and speech. Negative symptoms of schizophrenia include nonresponsiveness, flattened affect, immobility or strange poses, reduction of speaking, and inability to complete tasks. Cognitive symptoms of schizophrenia include disordered thinking, including impaired attention and profound difficulty in monitoring conflicting sources of information.

DEPRESSIVE DISORDERS

- People with major depressive disorder experience a pervasive low mood, lack of motivation, low energy, and feelings of worthlessness and guilt.

BIPOLAR DISORDER

- Bipolar disorder involves substantial mood fluctuation between depressive and manic episodes, with bipolar I being more severe and longer lasting than bipolar II.

ANXIETY DISORDERS

- Anxiety disorders occur when fears and worrying are out of proportion to the situation and interfere with everyday functioning. Generalized anxiety disorder, a pervasive state of anxiety lasting at least 6 months, consists of excessive worrying about relatively minor events of daily life. Panic disorder is extreme anxiety about having a panic attack. Social anxiety disorder, a pronounced fear of humiliation in the presence of others, is marked by severe self-consciousness about appearance, behavior, or both.
- Specific phobias involve an intense fear when confronted with particular situations or objects, such as spiders or heights.

OBSESSIVE–COMPULSIVE DISORDER

- Obsessive–compulsive disorder is a disorder of thought (obsession) and behavior (compulsion). Compulsions are repetitive behaviors, which are often rituals that people have developed to control the anxiety created by the obsessions. Obsessions are anxiety-producing thoughts that can preoccupy a person throughout the day and are beyond the person's control.

POST-TRAUMATIC STRESS DISORDER

- PTSD involves a set of intrusive and persistent cognitive, emotional, and physiological symptoms triggered by exposure to a catastrophic or horrifying event, such as experiences of war, attempted murder, rape, natural disasters, sudden death of a loved one, or physical or sexual abuse.

DISSOCIATIVE DISORDERS

- Dissociative disorders entail the loss of a sense of time and space but also involve extreme gaps in memories, identity, or consciousness. People with dissociative identity disorder (DID) develop at least two distinct personalities, each of whom has a unique set of memories, behaviors, thoughts, and emotions. Some experts have reservations about classifying DID as a disorder.

SOMATIC SYMPTOM DISORDERS

- Somatic symptom disorder occurs when a person complains of one or more distressing somatic symptoms



that disrupt daily life coupled with excessive thoughts, feelings, or behaviors related to the bodily symptoms.

- Illness anxiety disorder is diagnosed in the absence of somatic symptoms and when the person nevertheless has a preoccupation with and extreme anxiety about acquiring a serious illness.

PERSONALITY DISORDERS

- Personality disorders differ from clinical disorders in being generally a more consistent part of a person's personality than the clinical disorders (e.g., schizophrenia, depression, and bipolar disorder). The schizoid personality is very emotionally cold, reclusive, humorless, or uninteresting; someone with schizotypal personality disorder expresses very odd thoughts and behavior, is socially isolated, and has a restricted range of emotions. Paranoid personality disorder is marked by extreme suspiciousness and mistrust of other people, in ways that are both unwarranted and not adaptive.

- Those with borderline personality disorder suffer from out-of-control emotions, are very afraid of being abandoned by others, and vacillate between idealizing those close to them and despising them. People with dependent personality disorder fear rejection and have such a strong need to be cared for that they form very clingy relationships with others. Antisocial personality disorder is marked by extremely impulsive, deceptive, violent, and ruthless behaviors.

BRINGING IT ALL TOGETHER: MAKING CONNECTIONS IN PSYCHOLOGICAL DISORDERS

- Creativity and psychological disorder are related, especially in the arts. Disorders such as depression, bipolar disorder, anxiety disorders, substance abuse, and suicide occur at higher rates in creative artists than in members of other professions and in the general population.

Key Terms

agoraphobia, p. 610

antisocial personality disorder, p. 619

attention deficit hyperactivity disorder (ADHD), p. 593

autistic spectrum disorder, p. 593

avoidant personality disorder, p. 619

bipolar I disorder, p. 604

biopolar II disorder, p. 604

borderline personality disorder, p. 619

comorbidity, p. 591

compulsion, p. 614

cyclothymia, p. 606

delusion, p. 596

dependent personality disorder, p. 619

dissociative disorders, p. 615

dissociative identity disorder (DID), p. 615

generalized anxiety disorder (GAD), p. 608

hallucinations, p. 596

histrionic personality disorder, p. 619

illness anxiety disorder, p. 617

joint attention, p. 594

major depressive disorder, p. 602

manic episodes, p. 604

narcissistic personality disorder, p. 619

negative symptoms, p. 597

obsession, p. 613

obsessive–compulsive disorder (OCD), p. 613

obsessive–compulsive personality disorder, p. 619

panic attack, p. 609

panic disorder, p. 609

paranoid personality disorder, p. 618

persistent depressive disorder, p. 602

personality disorders, p. 617

phobia, p. 610

positive symptoms, p. 596

post-traumatic stress disorder (PTSD), p. 615

psychotic disorders, p. 595

schizoid personality disorder, p. 618

schizophrenia, p. 595

schizotypal personality disorder, p. 618

social phobia (social anxiety disorder), p. 610

somatic symptom disorder, p. 617

syndromes, p. 589

word salad, p. 597



Quick Quiz **Answers**

Quick Quiz 15.1: 1. a 2. d

Quick Quiz 15.2: 1. c 2. c 3. b

Quick Quiz 15.3: 1. c 2. b 3. d

Quick Quiz 15.4: 1. b 2. d 3. a

Quick Quiz 15.5: 1. a 2. b

Quick Quiz 15.6: 1. c 2. a 3. a

Quick Quiz 15.7: 1. a 2. c

Quick Quiz 15.8: 1. b 2. c

Challenge Your Assumptions **Answers**

- Most people who suffer from mental illness are dangerous. **False.** See p. 590.
- Mental disorders are relatively rare and most families are free of mental disorders. **False.** See p. 591.
- Extreme stress can make you depressed. **True.** See p. 603.
- Schizophrenia is a disorder of split personalities. **False.** See p. 596.
- All the great artists in history can be viewed as psychologically disturbed. **False.** See p. 622.

