Chapter 23

Aggression

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WHAT IS AGGRESSION?

> Man must evolve for all human conflict a method which rejects revenge, aggression and retaliation. The foundation of such a method is love.
>
> —Martin Luther King Jr. (1929–1968)

There is little doubt that aggression was an adaptive behavior for many of our ancient ancestors who lived in small groups. Males used aggression to gain access to females, food, shelter, and other resources. Females used aggression to defend their offspring and gain resources for them. Thus, the most aggressive individuals in our evolutionary past were at one time the ones who were most likely to pass on their genes to subsequent generations. As humans became more social, however, aggression toward others in the social group on which one's survival depended became less adaptive and prosocial genes became common. Aggression today, in fact, seems maladaptive and destructive. Aggression breeds aggression, and seems to cause more problems than it solves. Even if it works in the short run, it fails in the long run. Most social psychologists today are interested in understanding why people become aggressive, what factors influence aggression, and how to reduce it.

In this chapter we begin by defining the terms aggression and violence. We also discuss different forms and functions of aggression. The forms and functions of aggression change from childhood to adulthood and differ for males and females (perhaps as a result of their evolutionary past). We discuss whether the amount of aggression and violence is changing over time, and whether the amount differs across cultures. Next, we describe different theoretical explanations for aggression, some based on nature, some based on nurture, and some based on both nature and nurture. We describe situational, personal, and environmental factors that influence aggression. Finally, we discuss different approaches for reducing aggression.

Aggression and Violence Defined

The scientific study of aggressive behavior was hampered for years because of different understandings of the word "aggression." Aggressive toddlers are generally considered bad. However, in sports and in business, the term "aggressive" is frequently given a positive connotation as a trait to be admired. Consequently, one of the first steps scientists had to undertake was to define aggressive behavior clearly as a negative social behavior.

In social psychology, the term *aggression* is generally defined as any behavior that is intended to harm another person who does not want to be harmed (e.g., Baron & Richardson, 1994). Aggression is an external behavior that you can see. For example, you can see a person shoot, stab, hit, slap, or curse someone. Aggression is not an emotion that occurs inside a person, such as an angry feeling. Aggression is not a thought inside someone's brain, such as mentally rehearsing a murder. Note also that aggression is a social behavior—it involves at least two people. In addition, aggression is intended to hurt. Aggression is not accidental, such as when a drunk driver accidentally runs over a child on a tricycle. In addition, not all intentional behaviors that hurt others are aggressive behaviors. For example, a dentist might intentionally give a patient a shot of Novocain (and the shot hurts!), but the goal is to help rather than hurt the patient.

Social psychologists and laypeople also differ in their use of the term *violence*. A meteorologist might call a storm "violent" if it has intense winds, rain, thunder, and lightning. In social psychology, *violence* is aggression that has extreme physical harm as its goal, such as injury or death. One child intentionally pushing another child down is an act of aggression but is not an act of violence. One person intentionally hitting, kicking, shooting, or stabbing another person is an act of violence. Thus, violence is a subset of aggression. All violent acts are aggressive,

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but not all aggressive acts are violent (only the ones that are intended to cause extreme physical damage are called violent). The U.S. Federal Bureau of Investigation (FBI) classifies four crimes as violent: murder, assault, rape, and robbery. Social psychologists would also classify other physically aggressive acts as violent even if they do not meet the FBI definition of a violent crime, such as slapping someone really hard across the face. But a husband who calls his wife every name in the book would not be committing an act of violence by this definition.

Forms and Functions of Aggression

Different Forms of Aggression

It is useful to distinguish between forms and functions of aggression. By *forms* we mean how the aggressive act is expressed, such as physical versus verbal, direct versus indirect, and active versus passive (Buss, 1961). *Physical aggression* involves harming others physically (e.g., hitting, kicking, stabbing, or shooting them). *Verbal aggression* involves harming others with words (e.g., yelling, screaming, swearing, name calling). *Relational aggression* (also called *social aggression*) is defined as intentionally harming another person's social relationships, feelings of acceptance, or inclusion within a group (e.g., Crick & Grotpeter, 1995). Some examples of relational aggression include saying bad things about people behind their backs, withdrawing affection to get what you want, excluding others from your circle of friends, and giving someone the "silent treatment." "Recent research shows that social pain may even linger longer than physical pain (Chen, Williams, Fitness, & Newton, 2008). Participants in these studies recalled an event that caused social pain (e.g., betrayal by a person very close to them) and an event that caused physical pain. They rated how intense the initial pain had been and how intense it was as they relived it. The initial levels of social and physical pain did not differ, but relived pain was more intense for social pain than for physical pain. Social pain also impaired cognitive performance more than physical pain did.

The different forms of aggression can be expressed directly or indirectly (Lagerspetz, Bjorkqvist, & Peltonen, 1988). With *direct aggression*, the victim is physically present. With *indirect aggression*, the victim is absent. For example, physical aggression can be direct (e.g., hitting a person in the face) or indirect (e.g., destroying another person's property when he or she isn't looking). Likewise, verbal aggression can be direct (e.g., screaming in a person's face) or indirect (e.g., spreading rumors behind a person's back).

In *displaced aggression*, a substitute aggression target is used (e.g., Marcus-Newhall, Pedersen, Carlson, & Miller, 2000). The substitute target is innocent of any wrongdoing and just happens to be in wrong place at the wrong time. For example, a man is berated by his boss at work but does not retaliate. When he gets home, he yells at his daughter instead. Sometimes the substitute target is not entirely innocent, but has committed a minor or trivial offense, called *triggered displaced aggression* (Pedersen, Gonzales, & Miller, 2000). For example, the man berated by his boss might yell at his daughter because she forgot to clean her room. Triggered displaced aggression is especially likely to occur when the aggressor ruminates about the initial offense (Bushman, Bonacci, Pedersen, Vasquez, & Miller, 2005) and when the aggressor does not like the substitute target, such as when the target is an outgroup member or has a personality flaw (e.g., Pederson, Bushman, Vasquez, & Miller, 2008). People displace aggression for two main reasons. First, directly aggressing against the source of provocation may be unfeasible because the source is unavailable (e.g., the provoker has left the area), or because the source is an intangible entity (e.g., hot temperature). Second, fear of retaliation or punishment from the provoker may inhibit direct aggression. For example, the employee who was reprimanded by his boss may be reluctant to retaliate because he does not want to lose his job.

The form of aggression may be active or passive. With *active aggression*, the aggressor responds in a hurtful manner (e.g., hitting, swearing). With *passive aggression*, the aggressor fails to respond in a helpful manner. For example, the aggressor might "forget" to deliver an important message to the person.

Direct and active forms of aggression can be quite risky, leading to injury or even death. Thus, most people prefer to use indirect and passive forms of aggression instead.

Different Functions of Aggression

Aggressive acts may also differ in their function. Consider two examples. In the first, a husband finds his wife and her lover together in bed. He takes his rifle from the closet, and shoots and kills both individuals. In the second, a "hitman" uses a rifle to kill another person for money. The form of aggression is the same in both examples (i.e., physical aggression caused by shooting and killing victims with a rifle). However, the motives appear quite different. In the first example, the husband appears to be motivated by anger. He is enraged when he finds his wife making love to another man, so he shoots them both. In the second example, the "hitman" appears to be motivated by money. The "hitman" probably does not hate his victim. He might not even know his victim, but he kills the person anyway for the money. To capture different functions or motives for aggression, psychologists make a distinction between *reactive aggression* (also called hostile, affective, angry, impulsive,

or retaliatory aggression) and *proactive aggression* (also called instrumental aggression; e.g., Buss, 1961; Dodge & Coie, 1987; Feshbach, 1964). Reactive aggression is "hot," impulsive, angry behavior that is motivated by a desire to harm someone. Proactive aggression is "cold," premeditated, calculated behavior that is motivated by some other goal (obtaining money, restoring one's image, restoring justice). Some social psychologists have argued that it is difficult (if not impossible) to distinguish between reactive and proactive aggression because they are highly correlated and because motives are often mixed (Bushman & Anderson, 2001). For example, what if the husband who finds his wife making love to another man hires a "hitman" to kill his wife and her illicit lover? Would this be reactive or proactive aggression?

FREQUENCY OF VIOLENT AND AGGRESSIVE BEHAVIOR

Is the World Less Violent Now Than in the Past?

World War I was called "the war to end all wars," but that title went out of fashion after World War II. The colossal slaughter and destruction of World War II might have taught humanity some lessons about the importance of peace, yet wars continued. In the 40 years after the end of World War II there were approximately 150 wars and only 26 days of world peace (out of 14,610 days), defined as the absence of international wars (Sluka, 1992). (Civil wars didn't count; if you count civil wars, there was probably no peace at all.) In the early twenty-first century, international wars continue to be waged. The world seems more violent today than ever before. Yet quantitative studies of body counts, such as the proportion of prehistoric skeletons with axe and arrowhead wounds, suggest that prehistoric societies were far more violent than our own (Pinker, 2007). Although one can kill a lot more people with a bomb than with an axe, the death rates per battle were much higher in the past. Estimates show that if the wars of the twentieth century killed the same proportion of the population as ancient tribal wars, then the death toll would have been 20 times higher—2 billion rather than 100 million (Pinker, 2007).

More recent data also show that violence is decreasing over time. European murder rates have decreased dramatically since the Middle Ages (e.g., Eisner, 2001; Gurr, 1981). For example, estimated murders in England dropped from 24 per 100,000 in the fourteenth century to 0.6 per 100,000 by the early 1960s. The major decline in violence seems to have occurred in the seventeenth century during the "Age of Reason," beginning in the Netherlands and England and then spreading to other European countries (Pinker, 2007). Global violence has also been steadily falling since the middle of the twentieth century (*Human Security Brief,* 2007). For example, the number of battle deaths in interstate wars has declined from more than 65,000 per year in the 1950s to less than 2,000 per year in the 2000s. There also are global declines in the number of armed conflicts and combat deaths, the number of military coups, and the number of deadly violence campaigns waged against civilians.

A number of other observations are consistent with the idea that human society is becoming less violent over time. Pinker (2007, p. 18) notes:

> Cruelty as entertainment, human sacrifice to indulge superstition, slavery as a labor-saving device, conquest as the mission statement of government, genocide as a means of acquiring real estate, torture and mutilation as routine punishment . . . all were unexceptionable features of life for most of human history. But, today, they are rare to nonexistent in the West, far less common elsewhere than they used to be, concealed when they do occur, and widely condemned when they are brought to light.

In today's digital age we certainly are more informed about wars and other acts of violence than in past ages. In the media, if it bleeds it leads. Because violent images are more available to us now than ever before, we might assume that violence levels are also higher. However, while terrible violence still kills thousands or even millions in places like Cambodia, Croatia, Chechnya, and Rwanda, it seems that over time this planet is actually becoming a less violent place to live.

Cross-National Comparisons of Murder Rates

Murder rates vary widely across the world. The 10 countries with the highest murder rates per 100,000 population are Colombia (61.7), South Africa (49.6), Jamaica (32.4), Venezuela (31.6), Russia (20.2), Mexico (13.0), Estonia (10.7), Latvia (10.4), Lithuania (10.3), and Belarus (9.8) (United Nations Survey of Crime, 1998- 2000). The USA at 4.3 per 100,000 in this survey had the highest rate of Western democracies. The heterogeneity in murder rates reflects, in part, the role of culture and social learning on violence. However, a word of caution is in order. Murder rates can be distorted by political reasons and reflect the availability of weapons. Thus, they do not necessarily reflect overall violence rates. For example, national victimization surveys (which are the most accurate assessments of violence) show that the United States is less violent than Britain today even though the United States has a higher murder rate (U.S. Department of Justice, 2008).

Recent Murder Trends in the United States

Even though violence has gone down over the centuries, an examination of murder rates of the past 100 years in the

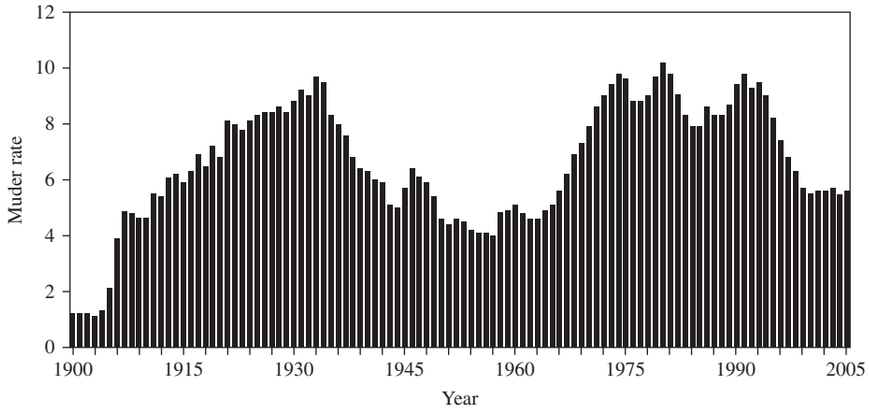

Figure 23.1 USA murder rates (per 100,000 population) from 1900–2006 (US Department of Justice, 2008).

United States looks somewhat like the stock market—murder rates go up and down (see Figure 23.1, U.S. Department of Justice, 2008). In recent years murder rates have been going down. The simplest explanation for the recent downturn in murders is that the U.S. population is getting older, and very few elderly people are murderers. About 30% of the current U.S. population was born in the post–World War II baby boom between 1946 and the early 1960s (U.S. Census Bureau, 2008). The large aging baby boomer population may be driving down the murder statistics. However, other explanations ranging from increased imprisonment rates and increased abortion rates to increased surveillance of the population have been offered. There is no way to know for certain what the cause is.

DEVELOPMENTAL TRENDS AND GENDER DIFFERENCES IN AGGRESSION

Emergence of Aggression in Early Childhood

In all cultures, aggressive behavior appears very early in children's lives. Angry facial expressions are apparent in most infants 4 to 7 months old (Stenberg, Campos, & Emde, 1983). Interpersonal behaviors that can be called aggressive (although it is difficult to be certain about "intent" to harm) appear shortly afterwards. For example, protest and aggressive retaliation in response to provocations (e.g., grabbing toys) is frequent in infants (Caplan, Vespo, Pedersen, & Hay, 1991), and physical aggression to obtain instrumental goals is frequent in 1- to 3-year-olds (Tremblay et al., 1996).

As empirical data from multiple longitudinal studies have accumulated, it has become clear that most people are more physically aggressive when they are 1 to 3 years old than at any other time in their lives (e.g., Broidy et al., 2003; Cote, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Miner & Clarke-Steward, 2008; Tremblay et al., 2004). In daycare settings, about 25% of interactions among toddlers involve some kind of physical aggression (e.g., one child pushes another child out of the way and takes her toy [Tremblay, 2000]). No other group, not even violent youth gangs or hardened criminals, resorts to physical aggression 25% of the time. Fortunately, most toddler aggression isn't severe enough to qualify as violence. Children can't do much damage at that age, being smaller and weaker and subject to external control.

Toddlers may resort to physical aggression 25% of the time, but as they grow up, they learn to inhibit aggression. In the later preschool and early elementary years physical aggression generally decreases, whereas verbal aggression and indirect aggression increases (Loeber & Hay, 1997; Tremblay, 2000; Tremblay & Nagin, 2005).

There are important implications of this early emergence of anger and aggression for the understanding of aggressive behavior. Certainly, these findings cast doubt on any "pure learning theory" explanation of aggressive behavior in young children. Anger in response to frustration and pushing, hitting, and shoving obstacles to obtain goals appears too early in almost all toddlers' lives to be explained solely in terms of learning. It is more plausible to explain these behaviors as part of inborn proclivities. The key role for early learning processes is to socialize children "out of aggression" and into socially acceptable behaviors for obtaining goals.

Age Trends in Aggression and Violence

Although most people become less aggressive over time, a subset of people become *more* aggressive over time. The most dangerous years for this subset of individuals (and for society) are late adolescence and early adulthood. This is because aggressive acts become more extreme, and the

consequences are more severe (e.g., weapons are used more frequently [Cairns & Cairns, 1994]). Official records show that violent criminal offending is highest for both males and females between ages 15 and 30, and declines significantly after that. For example, the average age of murderers is about 27 years old (U.S. Department of Justice, 2008).

Although these generalizations summarize the empirical data accurately, exact developmental trends in general aggression are difficult to measure because aggressiveness manifests itself in different ways at different ages—for example, in taking things at age 4, fighting at age 8, telling lies about others at age 12, vandalism at age 16, and murder at age 27. In addition, boys and girls show different trajectories for different types of aggression. Girls not only show greater use of indirect aggression than boys, but their use of indirect aggression increases with age (Vaillancourt, Miller, Fagbemi, Cote, & Tremblay, 2007). Different environments may also influence the growth of aggression quite differently. For example, in high-risk inner city schools, average aggression by children increases dramatically during the first year of school (Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995). Similarly, the prevalence of a gang culture radically increases the growth curve of aggression in adolescence (Goldstein, 1994).

Continuity of Aggression From Childhood to Adulthood

Shortly after aggressive behavior emerges in children, individual differences in aggressiveness become detectable—by the late preschool and early elementary school years (Eron, Walder, & Lefkowitz, 1971; Huesmann, Eron, Lefkowitz, & Walder, 1984). Such early differences are highly predictive of aggression later in life (Farrington, 1982, 1989, 1995; Huesmann et al., 1984; Huesmann, Dubow, & Boxer, 2009; Huesmann, Eron, & Dubow, 2002; Huesmann & Moise, 1998; Juon, Doherty, & Ensminger, 2006; Kokko, Pulkkinen, Huesmann, Dubow, & Boxer, 2009; Loeber & Dishion, 1983; Magnusson, Duner, & Zetterblom, 1975; Moffitt, Caspi, Rutter, & Silva, 2001; Olweus, 1979; Tremblay, 2000; Zumkley, 1992). The "stability" for aggression indicated by these data refers to "continuity of position" within the population: The more aggressive child grows up to be the more aggressive adult (Huesmann et al., 1984; Olweus, 1979). Continuity correlations range from .76 for one year to .60 for 10 years for both males and females (Olweus, 1979). Indeed, aggressiveness is almost as stable over time as intelligence. One study reported 22-year continuity correlations of .50 for males and .35 for females (Huesmann et al., 1984).

Some researchers have suggested that the continuity in aggression is due only to a few highly aggressive people remaining aggressive over time (e.g., Loeber, 1982). However, the continuity occurs all along the entire range of aggression. The statistical continuity of aggression over time is as much due to non-aggressive individuals remaining non-aggressive as it is due to aggressive individuals remaining aggressive (Hartup, 2005). For example, 18% of children who are classified as very low in aggressiveness at age 8 remain very low for the next 40 years, whereas 22% of those who are classified as very high in aggressiveness at age 8 remain very high for the next 40 years (Huesmann et al., 2009; Huesmann & Moise, 1998). It is rare for adolescents to suddenly become very aggressive and continue to remain aggressive through adulthood (Brame, Nagin, & Tremblay, 2001; Huesmann et al., 2009).

According to Moffitt's (1993) developmental taxonomy, there are two types of aggressive people: (1) those for whom aggression is stable and persistent (*life-course-persistent*) and (2) those for whom aggression is temporary and situational (*adolescent-limited*). A significant number of individuals who fit the pattern of adolescent-limited aggression have now been identified in several longitudinal studies (Broidy et al., 2003; Moffitt, 2007; Huesmann et al., 2009), and their aggressive behaviors are much less severe than the aggressive behaviors for life-course-persistent individuals.

Emergence of Gender Differences

Gender differences in aggression are very noticeable by the preschool years, with boys showing higher levels of physical aggression than girls (Loeber & Hay, 1997). However, many preschool girls are physically aggressive, and they show levels of verbal and indirect aggression similar to or greater than boys (Crick & Grotpeter, 1995; Rys & Bear, 1997). In later elementary grades and in adolescence, gender differences in indirect and physical aggression increase. Indirect aggression becomes much greater for girls than boys; physical aggression becomes much greater for boys than girls; and verbal aggression is about the same for girls and boys (Crick & Grotpeter, 1995; Lagerspetz et al., 1988; Vaillancourt, 2005). These gender differences culminate in dramatic differences in violent behavior in young adulthood, reflected by large gender differences in murder rates. Nevertheless, this should not lead one to believe that females are never physically aggressive. Females do display physical aggression in social interactions, particularly when they are provoked by other females (Collins, Quigley, & Leonard, 2007). When it comes to heterosexual domestic partners, women are slightly *more* likely than men to use physical aggression against their partners (e.g., Archer, 2000; Straus, 1997)! However men are more likely than women to inflict serious injuries and death on their partners.

Laboratory studies with college students often yield higher aggression by men, but provocation apparently has a greater effect on aggression than does biological sex. Sex differences in aggression practically disappear under high provocation (Bettencourt & Miller, 1996).

Developmental research suggests that many gender differences in aggression result both from nature and nurture. Innate factors (discussed in more detail later) have led to substantial evolutionary theorizing about the reasons for gender differences in aggression (Archer & Conte, 2005; Buss & Shackelford, 1997b; Campbell, 1999; Geary, 1998). These are described below in the section on evolutionary theorizing.

THEORETICAL ORIENTATIONS FOR THE STUDY OF AGGRESSION

As long as there has been violence in the world, people have tried to determine why it occurs. For example, is it due to biological abnormalities or poor upbringing? More generally, why is it that most people can be aggressive at least some of the time?

Instinctive and Psychoanalytic Theories of Aggression

One early theory that gained popularity in intellectual circles in the nineteenth century was that violence was instinctive in humans just as it was in many other animals. First given scientific prominence by Darwin (1871), the instinct theory of aggression viewed aggressive behavior as motivated neither by the seeking of pleasure nor the avoidance of pain, but rather as an evolutionary adaptation that had enabled humans to survive better. Empirical evidence supporting the existence of innate, relatively automatic, aggressive responses has been demonstrated for many species (e.g., Lorenz, 1966). For example, for the male Stickleback fish, a red object triggers attack 100% of the time (Timbergen, 1952). However, for humans no exactly parallel innate aggressive response has been demonstrated (Hinde, 1970).

However, it does appear that most humans innately derive "pleasure" from hurting people who have provoked, angered, or attacked them. This has been demonstrated in a variety of clever experiments. In one experiment (Baron, 1979), half the participants were first strongly angered by a confederate who insulted them, whereas the other half had a neutral interaction with the confederate. All participants then "shocked" the confederate every time he made an error on a task. They could select the intensity of the shock, from mild to severe. Half of the people giving the shocks could see a "pain meter" that supposedly told them how much pain the confederate was experiencing from the shocks, whereas the other half got no pain information. The pain meter always showed that the confederate was experiencing "high pain." Of course, the angered people gave stronger shocks than nonangered people, but the interesting result was the effect of the pain meter. The somewhat depressing results showed that angry people gave more intense shocks when the pain meter indicated that the confederate was suffering. In contrast, non-angry people gave less intense shocks when the pain meter indicated that the confederate was suffering. Apparently, humans enjoy hurting those who have provoked them. However, that does not mean that aggression is an automatic instinctive response to provocation.

A more complex and plausible view of human aggression as a product of instincts was offered by Freud (1933/1950). Depressed by the horrors of World War I, Freud became interested in explaining aggressive behavior. He advanced the theory that humans have both an instinct to live and an instinct to die. The life instinct supposedly counteracts the death instinct and preserves life by diverting destructive urges outward toward others in aggressive acts (Freud, 1917/1961). Freud's views undoubtedly influenced Lorenz (1966) whose instinct theory of aggression posited a more specific buildup of aggressive urges (like hydraulic pressure inside a closed environment) that, if not released through some other activity, would inevitably lead to aggression. Although little empirical evidence has ever been found to support the "hydraulic" model of aggression, the theory that aggression is due to the buildup of an internal drive or tension that must be released still has a profound influence on clinical psychology. It motivates popular venting and cathartic therapies even though numerous studies have shown that the hydraulic model is false (for reviews see Berkowitz, 1993; Geen & Quanty, 1977; Scott, 1958).

Frustration-Aggression Theory

In 1939, psychologists from Yale University published an important book titled *Frustration and Aggression* (Dollard, Doob, Miller, Mowrer, & Sears, 1939). In this book, partially as a reaction to the spreading influence of the Freud's theory, the authors proposed that aggression was due to frustration. They defined frustration an unpleasant emotion that arises when a person is blocked from achieving a goal. Their theory was summarized in two bold statements on the first page of their book: (1) "The occurrence of aggressive behavior always presupposes the existence of frustration," and (2) "the existence of frustration always leads to some form of aggression." In their view, frustration depended on an "expected" or "hoped for" goal

being denied and was not simply absence of achieving a goal.

This theory seemed to explain a large amount of everyday occurrences of aggression, but it readily became apparent to the authors that not every frustration led to observable aggression. Miller (1941), one of the original authors, was the first to revise the theory. He explained that frustrations actually stimulate a number of different inclinations besides an inclination to aggress, such as an inclination to escape or to find a way around the obstacle to the goal. The inclination that eventually dominates, he theorized, is the one that is most successful in reducing frustration. In other words, people learn through experience to respond to frustrations with aggressive or non-aggressive responses. This idea opened the door for learning theory explanations of aggression.

Learning Theory Formulations

The earliest learning theory explanations for individual differences in human aggressiveness focused on operant and, to a lesser extent, classical conditioning processes. *Operant conditioning theory*, developed by behaviorists such as Edward Thorndike and B. F. Skinner, proposes that people are more likely to repeat behaviors that have been rewarded and are less likely to repeat behaviors that have been punished. *Classical conditioning theory*, developed by Ivan Pavlov, proposes that through repeated pairing of an unconditioned stimulus with a conditioned stimulus, the unconditioned stimulus eventually elicits a response similar to that elicited by the conditioned stimulus. For example, dogs that hear a bell every time they receive meat powder will eventually salivate when they hear the bell alone. The bell becomes a conditioned stimulus by being paired with the meat powder, which is the unconditioned stimulus. Research showed that children could be taught to behave aggressively through *positive reinforcement*—adding pleasure (Cowan & Walters, 1963; Lovaas, 1961) or *negative reinforcement*—subtracting pain (Patterson, Littman, & Bricker, 1967). Children not only learn to behave aggressively, they also learn to discriminate between situations when aggression pays and when it does not. Through stimulus generalization they apply what they have learned to new situations (Sears, Whiting, Nowlis, & Sears, 1953). Taken together these processes explained how aggressive behavior could be learned (Eron, 1987; Eron et al., 1971).

By the early 1960s, however, it became clear that conditioning by itself could not explain individual differences in aggression. Bandura theorized that the more powerful learning processes in understanding social behavior (including aggression) were *observational learning* or *imitation* (also called *social learning*) (e.g., Bandura, 1977; Bandura, Ross, & Ross 1961; 1963) in which people learn how to behave aggressively by observing and imitating others. In several classic experiments, he showed that young children imitated specific aggressive acts they observed in aggressive models (e.g., hitting a "bobo" doll that they had seen an actor hit). Furthermore, he developed the concept of *vicarious learning* of aggression by showing that children were especially likely to imitate models that had been rewarded for behaving aggressively (Bandura, 1965; Bandura et al., 1963). Bandura argued that the imitation was the key to social learning. The idea is that one does not just imitate the specific social behaviors one sees, but one makes cognitive inferences based on the observations, and these inferences lead to generalizations in behavior. What is important is how the child interprets social events and how competent the child feels in performing the behaviors he or she observes (Bandura, 1986). These cognitions provide a basis for stability of behavior tendencies across a variety of situations. Watching one parent hit the other parent may not only increase a child's likelihood of hitting, but may also increase the child's belief that hitting is OK when someone provokes you.

Aversive Stimulation Theory

Building on ideas from frustration-aggression theory, learning theory, and cognitive psychology, Berkowitz (1974, 1989, 1990) proposed a theory of "aversively stimulated aggression" that subsumes frustration-aggression theory. The idea is that aversive stimuli (including frustrations) automatically produce primitive reaction tendencies (e.g., flight or fight). When people experience an unpleasant event, they want to stop it (fight) or get away from it (flight). This fight-or-flight response is an adaptive stress-reducing response that occurs in humans and other animals (Cannon, 1915). The theory suggests that "anything that makes us feel bad" is an aversive instigation to aggression. Whether aggression occurs depends on the cognitive interpretation of the aversive event and the presence of aggressive cues (Berkowitz, 1993). For example, a person who experiences an aversive event (e.g., frustration) and sees an aggressive cue (e.g., a weapon) is likely to behave aggressively.

Social-Cognitive, Information-Processing Models of Aggression

The introduction of ideas from cognitive psychology into theorizing about aggression was given another boost in the early 1980s with the formulation of two cognitive information-processing models. One model, developed by Huesmann and his colleagues (Huesmann, 1982, 1988,

1998; Huesmann & Eron, 1984), focused particularly on scripts, beliefs, and observational learning. In a play or movie, scripts tell actors what to say and do. In memory, *scripts* define situations and guide behavior: The person first selects a script to represent the situation and then assumes a role in the script. One example is a restaurant script (i.e., enter restaurant, go to table, look at menu, order food, eat food, pay for food, leave tip, exit restaurant [see Abelson, 1981]). Scripts can be learned by direct experience or by observing others (e.g., parents, siblings, peers, mass media characters). The second model, developed by Dodge and his colleagues (Dodge, 1980, 1986, 1993; Dodge & Frame, 1982; Fite, Goodnight, Bates, Dodge, & Pettit, 2008), focused particularly on perceptions and attributions. *Attributions* are the explanations people make about why others behave the way they do. For example, if a person bumps into you, a hostile attribution would be that the person did it on purpose to hurt you. These two models were supplemented in the late 1990s and early 2000s by a third similar model, called the General Aggression Model, developed by Anderson and his colleagues (e.g., Anderson & Bushman, 2002a). Although these three models differ in their details, all view aggression as the outcome of a social problem-solving process in which situational factors are evaluated, social scripts are retrieved, and these scripts are evaluated until one is selected to guide behavior.

Huesmann and Kirwil (2007) have attempted to integrate these three models into one unified model. According to the unified model, information processing begins with evaluation of the social situation and ends with the decision to follow a particular script for behaving. People also evaluate the consequences of behaving that way. If the consequences are positive, the script is likely to be used again in the future. Four individual differences in social problem solving play a central role in the unified model: scripts (described above), world schemas, normative beliefs, and emotional predispositions. *World schemas* are beliefs about what the world is like. They are used to evaluate environmental cues and make attributions about others' intentions. These attributions, in turn, influence the search for a script for behaving. People who believe the world is a mean place are more likely to make hostile attributions about others' intentions and thus to retrieve an aggressive script. *Normative beliefs* are beliefs about what types of behavior are normal. They are used to judge the appropriateness of aggressive behavior and to filter out inappropriate scripts and behaviors. For example, a man who believes it is wrong to hit a woman is likely to reject retrieved scripts that involving hitting women. *Emotional predispositions* are individual differences in a variety of emotion-related tendencies (e.g., emotional reactivity, arousal level). These predispositions affect how people evaluate scripts. For example, non-aggressive individuals may reject aggressive scripts because they think they might feel bad after behaving in an aggressive manner.

In any given social setting, the characteristics of the situation interact with these four individual-difference factors to determine behavior. Many of the cognitive processes happen in an automatic fashion (Berkowitz, 2008; Schneider & Shiffrin, 1977). Aversive events automatically arouses negative emotions, which makes aggressive scripts more accessible. If these aggressive scripts pass through a filter of normative and moral beliefs and seem to lead to a desirable goal, people use the script to guide their behavior. Individual differences in aggressiveness are therefore linked to individual differences in the four kinds of social cognitions involved in social problem solving—one's repertoire of scripts, world schemas, normative beliefs, and emotional reactivity. Once these cognitions are crystallized, they produce stable aggressive tendencies over the life span.

Recent Advances in Observational Learning Theory

Recent research helps us better understand imitation and observational learning processes. Human and primate young have an innate tendency to imitate what they observe (Meltzoff, 2005; Meltzoff & Moore, 1977). They imitate expressions in early infancy, and they imitate behaviors by the time they can walk. Aggressive behaviors are no different from other motor behaviors in this regard. Thus, the hitting, grabbing, pushing behaviors that young children see around them or in the mass media are generally immediately mimicked unless the child has been taught not to mimic them (Bandura, 1977; Bandura, Ross, & Ross, 1961, 1963). Furthermore, automatic imitation of expressions on others' faces can lead to the automatic activation of the emotion that the other was experiencing. For example, angry expressions stimulate angry emotions in observers (Prinz, 2005; Zajonc, Murphy, & Inglehart, 1989).

This empirical evidence for automatic imitation in humans has been given added import by an explosion of neurophysiological findings. The demonstration in the mid-1990s of the existence of "mirror neurons" that fire either when an action is observed or when it is executed provided a strong basis for understanding why children imitate others (Gallese, Fadiga, Fogassi, & Rizzolatti, 1996; Iacoboni, Woods, Brass, Bekkering, Mazziotta, & Rizzolatti, 1999; Rizzolatti, 2005). The immediate "mimicry" of aggressive behaviors does not require a complex cognitive representation of the observed act, but only a simple "mirror" representation of it. However, that does not mean that more delayed imitation is not a complex cognitive process. As Hurley and Chater (2005) wrote,

> Imitation is often thought of as a low level, cognitively undemanding, even childish form of behavior. But recent work across a variety of sciences argues that imitation is a rare ability, fundamentally linked to characteristically human forms of intelligence, and in particular to language, culture, and the ability to understand other minds. (p. 1)

Within the cognitive information-processing theories of aggression described above, imitation is seen as a key learning process for the acquisition of scripts, schemas, and beliefs. Priming and simple imitation (mimicry) can explain why exposure to violence increases aggressive behavior in the short run, whereas complex delayed imitation, observational learning of cognitions, and emotional desensitization can explain why exposure to violence increases aggressive behavior in the long run (Bushman & Huesmann, 2006; Huesmann & Kirwil, 2007).

Ego Depletion Theory

Another theoretical approach with implications for aggression is "ego depletion theory" (Baumeister, Bratslavsky, Muraver, & Tice, 1998; DeWall, Baumeister, Stillman, & Gailliot, 2005). Self-regulating internal standards and normative beliefs are important elements for inhibiting aggression. Inhibiting behavior to satisfy such standards requires cognitive effort, which is limited. *Self-control* is a general capacity for bringing one's behavior into line with rules and standards. Self-control can be depleted by demanding tasks, which makes aggression more likely. For example, people who have to exercise self-control (e.g., by restraining themselves from eating chocolate or by performing demanding cognitive tasks) behave more aggressively than those who do not have to exercise self-control.

CAUSES OF AGGRESSION

Aggression is complex and multiply determined. We conceptualize aggression as the product of precipitating situational factors and predisposing personological factors. In this section we describe both types of factors.

Situational Factors That Precipitate Aggression

Unpleasant Events

According to Berkowitz's (1989) aversive stimulation theory (described earlier), all unpleasant events—instead of only frustration—deserve to be recognized as important causes of aggression. Some unpleasant events are nonsocial, such as hot temperatures. The evidence from laboratory experiments, field studies, correlational studies, and archival studies of violent crimes indicates that hotter temperatures are associated with higher levels of aggression and violence (for a review see Anderson, Anderson, Dorr, DeNeve, & Flanagan, 2000). Hotter regions generally have higher violent crime rates than cooler regions. Time period studies generally show higher violent crime rates in hot years, hot seasons, hot months, and hot days. Field and archival studies have found similar results. For example, in baseball games, the hotter the temperature, the more common it is for the pitcher to hit the batter with a pitched ball, which really hurts because the (hard!) ball is often thrown about 90 miles (145 kilometers) per hour (Reifman, Larrick, & Fein, 1991).

Scientists now agree that the average global air temperature near the Earth's surface is increasing, and it is projected to continue to increase (IPCC, 2007). When people think about the harmful effects of global warming, they mainly consider the effects on crops and flooding. People rarely consider the effects of global warming on violent crime rates. Projections indicate that by the middle of the twenty-first century, global warming could cause an increase of about 100,000 serious and deadly assaults each year in the United States alone (Anderson, Bushman, & Groom, 1997).

Other unpleasant environmental events can also increase aggression. Numerous studies have shown that loud noises can increase aggression, including traffic noise (Gaur, 1988). Noise is especially likely to increase aggression in when it is uncontrollable (Geen, 1978; Geen & McCown, 1984) and when it is paired with other aggression-eliciting factors, such as provocation (Donnerstein & Wilson, 1976) or violent media (Geen & O'Neal, 1969). Irritants in the air that we breathe can make us more aggressive, such as foul odors (Rotton, 1979), secondhand smoke (Jones & Bogat, 1978), and air pollution (Rotton & Frey, 1985).

Social stress may be even more unpleasant than nonsocial stress. There is an important difference between *density* (the number of people in a given area) and *crowding* (the subjective and unpleasant feeling that there are too many people in a given area). Crowding is a better predictor of aggression than density per se. In fact, high population density can produce positive emotions and behaviors in desirable environments, such as in football stadiums or concert halls. Crowding, on the other hand, can increase aggression in undesirable environments, such as in psychiatric wards (e.g., Nijman & Rector, 1999) and prisons (e.g., Lawrence & Andrews, 2004).

Social rejection is another aversive social stimulus. Common observation suggests that people who have been rejected by others often become angry and aggressive. Consider, for example, the reactions of some contestants who try out for the TV show *American Idol*, but do not pass the initial screening. The words they say about the judges

often must be bleeped out. The term "going postal" is used to describe the behavior of some disgruntled postal workers who shot and killed managers, fellow workers, police officers, and even ordinary citizens after being rejected at work (Barling, Dupré, & Kelloway, 2009). An analysis of 15 school shooters found that social rejection (e.g., from a romantic partner) was present in all but two of the cases (Leary, Kowalski, Smith, & Phillips, 2003).

In experimental studies, social psychologists have used a number of different procedures to make research participants feel rejected. For example, participants are tested in groups and are told that they have been voted out of the group (as in the reality TV show *Survivor*), they are left out of a ball-tossing game, or they are given false test feedback stating they will be alone and isolated most of their lives. Aggression is measured by allowing participants to give confederates loud blasts of noise through headphones or very spicy hot sauce to eat (they are told the confederate hates spicy food). In these experiments, rejected individuals are more aggressive than non-rejected individuals (for a review see Leary, Twenge, & Quinlivan, 2006). If a rejecter's group membership is salient, the rejected person is also more likely to retaliate against the entire group, even though the other group members had nothing to do with the rejection (Gaertner, Iuzzini, & O'Mara, 2008). The effects of social rejection on aggression are especially pronounced for individuals who are sensitive to rejection (Ayduk, Gyurak, & Luerssen, 2008).

One extreme form of social rejection is ostracism. *Ostracism* refers to being excluded, rejected, and ignored by others (e.g., giving someone the "silent treatment"). For example, the close-knit Amish community will sometimes ostracize someone who violates the community's rules, such as by cheating someone, breaking religious rules, or misbehaving sexually. The silent treatment is sometimes also used in military groups, such as if someone is believed to have cheated or broken the military code of honor. In such cases, no one speaks to the person or even acknowledges the soldier's existence. William James (1890) wrote, "If no one turned around when we entered, answered when we spoke, or minded what we did, but if every person we met 'cut us dead,' and acted as if we were nonexistent things, a kind of rage and impotent despair would ere long well up in us, from which the cruelest bodily torture would be a relief" (p. 281). Ostracism is very painful and does increase aggression (e.g., Warburton, Williams, & Cairns, 2006).

All unpleasant events have one thing in common—they put people in a bad mood. But why do unpleasant moods increase aggression? One possible explanation is that angry people aggress in the hope that doing so will enable them to feel better. Research has consistently shown that people who feel bad often try to remedy or repair their moods (Morris & Reilly, 1987). Because many people believe that venting is a healthy way to reduce anger and aggression, they might vent by lashing out at others to improve their mood. A series of studies (Bushman, Baumeister, & Phillips, 2001) replicated the standard finding that provocation increases aggression—but also found a revealing exception. When participants believed that their angry moods would not change for the next hour no matter what they did (ostensibly because of "mood freezing" side effects of a pill they had taken), anger did not lead to aggression. The implication is that anger does not directly or inevitably cause aggression. Rather, angry people attack others because they believe that lashing out will help get rid of their anger and enable them to feel better.

The fact that aversive emotional states lead to aggression has been supported by many research findings (for a review see Berkowitz, 1983). However, being in a bad mood is neither a necessary nor a sufficient condition for aggression. All people in a bad mood do not behave aggressively, and all aggressive people are not in a bad mood.

Presence of Weapons

> Guns not only permit violence, they can stimulate it as well. The finger pulls the trigger, but the trigger may also be pulling the finger.
>
> — Len Berkowitz (1968, p. 22)

Research has shown that the mere presence of weapons, even if they are not used, can increase aggression. In the first study on this topic (Berkowitz & LePage, 1967), participants were seated at a table that had a shotgun and revolver on it—or, in the control condition, badminton racquets and some shuttlecocks. The items on the table were described as part of another experiment, and the other researcher had supposedly forgotten to put them away. Participants decided how many shocks to deliver to a confederate who had previously angered or not angered them. Angered participants who saw the guns were more aggressive than were angered participants who saw the sports items. Several other studies have replicated this effect (dubbed the *weapons effect*). In a field study (Turner, Layton, & Simons, 1975), for example, a confederate driving a pickup truck purposely remained stalled at a traffic light to see whether the motorists trapped behind him would honk their horns (the measure of aggression). The truck contained either a military rifle in a gun rack and a bumper sticker that said VENGEANCE (two aggressive cues), a military rifle and a bumper sticker that said FRIEND (one aggressive cue), or no gun and no bumper sticker (no aggressive cues). The more aggressive cues the trapped motorists saw, the more likely they were to honk their horns. Why would people honk their horn at a driver

with a military rifle and a VENGEANCE bumper sticker? This seems very stupid and dangerous. It is certainly much safer to honk at someone who is not driving around with weapons and violent bumper stickers. But people probably were not thinking about what they were doing. Aggressive cues can automatically activate aggressive thoughts and impulses (Anderson, Benjamin, & Bartholow, 1998), influencing people to react more aggressively than they normally would. A meta-analysis of 56 published studies confirmed that the mere sight of weapons increases aggression in both angry and non-angry individuals (Carlson, Marcus-Newhall, & Miller, 1990).

Situational Stimuli That Arouse

Many stimuli, such as provocation, media violence, and heat, that increase aggression also increase arousal levels, suggesting that arousal may have a role in stimulating aggression. But why would arousal increase aggression? There are at least four possible reasons. First, high levels of arousal may be experienced as aversive (e.g., Mendelson, Thurston, & Kubzansky, 2008), and may therefore stimulate aggression in the same way as other aversive stimuli. Second, arousal narrows our span of attention (Easterbrook, 1959). If aggressive cues are salient in the situation, then people will focus most of their attention on the aggressive cues. Third, arousal increases the dominant response, which is defined as the most common response in that situation (Zajonc, 1965). Thus, whatever people are normally inclined to do (including behaving aggressively), they will be even more strongly inclined to do when they are physiologically aroused. Fourth, arousal may be mislabeled as anger in situations involving provocation, thus producing anger-motivated aggressive behavior. This mislabeling process has been demonstrated in several studies by Dolf Zillmann, who has named it *excitation transfer*. Excitation-transfer theory assumes that physiological arousal, however produced, dissipates slowly. If two arousing events are separated by a short amount of time, some of the arousal caused by the first event may transfer to the second event and add to the arousal caused by the second event. In other words, arousal from the first event may be misattributed to the second event. If the second event increases anger, then the additional arousal should make the person even angrier. In one study (Zillmann, Katcher, & Milavsky 1972), half the participants exercised by riding a stationary bike. In the second part of the study, participants were provoked or not provoked by a confederate. Participants were then given an opportunity to punish the confederate by shocking him. The results showed that unprovoked participants were not very aggressive, regardless of whether they rode the bike. Provoked participants, however, were more aggressive if they rode the bike than if they did not. Excitation transfer theory also suggests that anger may be extended over long periods of time, if the person has attributed his or her heightened arousal to anger and ruminates about it. Thus, even after the arousal has dissipated, the person may remain ready to aggress for as long as the self-generated label of anger persists.

Some Situational Factors That Interfere with Aggression Inhibition

This discussion of aversive stimulation raises the question of why there isn't even more aggression and violence in the world. After all, who hasn't experienced frustration, anger, insult, or hot weather in the past year? Yet most people do not hurt or kill anyone. These factors may give rise to violent impulses, but mostly people restrain themselves. People don't have to learn how to behave aggressively; it comes naturally. What people have to learn is how to inhibit their aggressive impulses. However, even after the inhibition of aggression is learned, situational factors can interfere with inhibiting aggression. We discuss two of those factors in this section: alcohol and anonymity. Other factors, such as aggressive role models, are discussed in a later section.

Alcohol

Alcohol has long been associated with violent and aggressive behavior. Numerous studies have found that over 50% of people who commit violent crimes were intoxicated when the crimes occurred (e.g., Innes, 1988; Pernanen, 1991). There is ample evidence of a positive correlation between alcohol and aggression. For example, a meta-analytic review of 130 studies found that alcohol was correlated with both criminal and domestic violence (Lipsey, Wilson, Cohen, & Derzon, 1997). However, there are numerous difficulties with using correlational evidence to establish a causal link between alcohol and aggression (Brain, 1986). For example, the aggressor may misreport alcohol ingestion as an excuse or to avoid punishment. But meta-analytic reviews of experimental studies also show that alcohol increases aggression (e.g., Bushman & Cooper, 1990; Ito, Miller & Pollock, 1996; Lipsey et al., 1997). In fact, alcohol is sometimes deliberately used to promote aggression. It has been standard practice for many centuries to issue soldiers some alcohol before they went into battle, both to increase aggression and to reduce fear (Keegan, 1993).

Does all of this mean that alcohol is a direct cause of aggression? No. Alcohol mainly seems to increase aggression in combination with other factors. Factors that normally increase aggression (e.g., frustration, provocation) have a stronger effect on intoxicated people than on sober people (Bushman, 1997). If someone is insulted, his or

her response will be more violent if he or she is drunk than sober. When there is no provocation, however, the effect of alcohol on aggression may be negligible.

There are several possible explanations for why alcohol increases aggression. One explanation is that alcohol reduces inhibitions. Normally people have strong inhibitions against behaving aggressively, and alcohol reduces these inhibitions. To use a car analogy, alcohol increases aggression by cutting the brake line rather than by stepping on the gas. One interesting theory, based on ego-depletion theory described previously, provides a plausible explanation of how alcohol might cut the brake line (Gailliot & Baumeister, 2007). The brain's activities rely almost exclusively on glucose for energy. Self-control takes a lot of energy, and acts of self-control deplete relatively large amounts of glucose. Alcohol reduces glucose throughout the brain and body and also impairs many forms of self-control, including the self-control needed to restrain aggressive impulses.

A second explanation is that alcohol creates a "myopic" or narrowing effect on attention (Steele & Josephs, 1990). This causes people to focus attention on the more salient provocative features of a situation and to pay less attention to more subtle inhibitory features. Several experiments have found support for this theory (e.g., Denson et al., 2008; Giancola & Corman, 2007).

A third explanation is that alcohol increases aggression by decreasing self-awareness (Hull, 1981). People become more aware of their internal standards when attention is focused on the self. Most people have internal standards against behaving aggressively, but alcohol reduces people's ability to focus on these internal standards.

A fourth explanation is that alcohol disrupts *executive functions*, which are cognitive abilities that help us plan, organize, reason, achieve goals, control emotions, and inhibit behavior tendencies (e.g., Giancola, 1995). It appears that executive functioning is both a mediator and moderator of alcohol-related aggression. It is a mediator because alcohol intoxication disrupts executive functioning, which, in turn, heightens the probability of aggression. It is a moderator because acute alcohol consumption is more likely to facilitate aggression in persons with low, rather than high, executive functioning abilities.

Alcohol is so closely linked to aggression that people don't even need to drink alcohol for it to have an effect. The mere sight of a bottle of alcohol or an alcohol advertisement increases aggressive thoughts and hostile attributions about others (Bartholow & Heinz, 2006). Moreover, the mere belief that one has consumed alcohol increases aggression (Bègue, Subra, Arvers, Muller, Bricout, & Zorman, 2009).

Anonymity

Another factor that might reduce aggressive inhibitions is being anonymous, probably because the perpetrators think they will be less likely to be caught and held responsible for their aggressive actions. When people become anonymous, they lose their sense of individuality, a state called *deindividuation*. Some ways people can achieve anonymity are by wearing a mask or disguise, by being part of a large group, or by performing behaviors in the dark. This might explain why bank robbers and members of the Ku Klux Klan wear masks when they commit violent crimes, why larger crowds are more likely to taunt a suicidal person to jump off a building, bridge, or tower (Mann, 1981), and why violent crimes are much more likely to occur during nighttime hours than during daytime hours (e.g., Bushman, Wang, & Anderson, 2005; Tamura, 1983).

Anonymity increases aggression both inside and outside the lab (Anderson & Bushman, 1997). In an analysis of 500 violent assaults in Northern Ireland, attackers who wore disguises inflicted more serious physical injuries, attacked more people at the scene, and were more likely to threaten victims after the attacks than were attackers who did not wear disguises (Silke, 2003). In a field study (Ellison, Govern, Petri, & Figler, 1995), a confederate driver remained stationary at an intersection when the light turned green. Participants were stalled motorists behind the confederate who were driving vehicles in which the tops could be put up or down (e.g., convertibles, Jeeps). (Drivers of other types of vehicles were not included in the study.) Drivers with tops up (and hence more anonymous) honked more and longer than drivers with tops down. Similar effects have been found in simulation tests of aggressive driving behavior (e.g., Ellison-Potter, Bell, & Deffenbacher, 2001). In an early laboratory experiment (Zimbardo, 1969), female college students were randomly assigned to one of two conditions. Half wore large lab coats, wore hoods over their heads, and were not referred to by name. The other half did not wear lab coats, wore large nametags, and were referred to by name. First, they listened to an interview between the researcher and a female confederate who was either obnoxious or nice. Participants were tested in groups of three. As a group, participants decided how long the female confederate should be shocked, presumably as part of a separate study on conditioning. The anonymous groups gave the confederate longer shocks than did the identified group, especially if she was obnoxious during the interview.

PREDISPOSING PERSONAL FACTORS

Aggression is the consequence of situational factors interacting with predisposing factors. We described the major situational factors above. In this section we describe the major predisposing personal factors that influence aggression. In the next section we focus on the major predisposing environmental factors.

Personality

Many predisposing factors, once established, are viewed as part of an individual's personality. However, their origins may stem from early interactions of the child with the environment, or they may be more innate. From a social-cognitive perspective, personality is the sum of a person's knowledge structures and emotional proclivities (Mischel & Shoda, 1995; Sedikides & Skowronski, 1990). *Knowledge structures* are organized packets of information that are stored in memory. These knowledge structures form when a set of related concepts is frequently brought to mind, or activated. How people construe and respond to their world depends in part on the knowledge structures they use. Situational realities impose constraints on how people construe their world, but individual differences in emotional reactivity and in the structure, accessibility, and use of underlying knowledge structures create a range of possible construals.

Psychopathy

One personality characteristic associated with aggression and violence is *psychopathy* (Hare, Harpur, Hakstian, Forth, Hart, & Newman, 1990), defined as a syndrome of callous and unemotional affective reactions and low empathy. Psychopaths are more likely to engage in proactive cold-blooded aggression than in reactive hot-blooded aggression (Nouvion, Cherek, Lane, Tcheremissine, & Lieving 2007). Because most murders are committed in a fit of rage, psychopaths are not frequently murderers (Hare & McPherson, 1984; Williamson, Hare, & Wong, 1987). Psychopaths mainly focus on obtaining their own goals, regardless of whether they hurt others in the process. Although psychopaths normally don't "feel" empathy toward others, if they are forced to adopt the victim's perspective, their aggression levels can be reduced (Van Baardewijk, Stegge, Bushman, & Vermeiren, 2009). Unfortunately, the origins of psychopathy remain unclear. It is also difficult (some say impossible) to treat psychopaths.

Narcissism

How are self-views related to aggression? For many years, the prevailing view held that aggressive people have low self-esteem. Despite this apparent consensus, no compelling theoretical rationale existed to explain why low self-esteem would cause aggression. Even more problematic, a persuasive body of empirical evidence was lacking. Research has contradicted the prevailing view (Baumeister, Smart, & Boden, 1996). Violent individuals typically have the trait of *narcissism*, which includes thinking oneself superior or special, feeling entitled to preferential treatment, being willing to exploit others, having low empathy for "lesser" human beings, and entertaining grandiose fantasies or other ideas about oneself as a great person (Morf & Rhodewalt, 2001). Several studies have shown that narcissistic individuals respond with high levels of aggression when they receive a blow to their ego (e.g., Bushman & Baumeister, 1998). Aggression often starts when someone questions or challenges those favorable self-views. Wounded pride seems to be the most apt descriptor of how self-views are linked to aggression.

Poor Self-Control

In their book titled *A General Theory of Crime*, Gottfredson and Hirschi (1990) propose that poor self-control is the major cause of crime. Research supports this proposition; poor self-control is one of the "strongest known correlates of crime" (Pratt & Cullen, 2000, p. 952), especially violent crime (Henry, Caspi, Moffitt, & Silva, 1996). Criminals seem to be impulsive individuals who don't show much respect for rules in general. In the movies, criminals often specialize in one specific kind of crime, almost like any other job. But in reality, most criminals are arrested multiple times for several different kinds of crimes. Another sign is that the lives of criminals show low self-control even in behaviors that are not illegal. For example, criminals are more likely than law-abiding citizens to smoke cigarettes, to be involved in traffic accidents, to be involved in unplanned pregnancies, to fail to show up for work regularly, and the like.

Predisposing Biological Factors

A number of different biological characteristics predispose individuals from birth to be more or less aggressive. Although the exact mechanisms are not entirely clear, most of them are triggered by environmental factors, and few (or none) of them determine aggression by themselves.

Low Arousal

Individuals with lower than average baseline levels of physiological arousal (e.g., heart rate, blood pressure) are inclined to behave aggressively. This finding has been replicated in several groups of individuals with aggressive tendencies, including conduct disordered children (Rogeness, Cepeda, Macedo, Fischer, & Harris, 1990), antisocial youth (Raine, 1993), and psychopaths (Hare, 1978). Men who show little negative emotion in response to scenes of violence in movies are also more aggressive inside and outside the laboratory (Moise-Titus, 1999). Longitudinal studies have shown that youth with low levels of arousal are more likely to engage in criminal activities 10 years later (Raine, Venables, & Williams, 1995; Wadsworth, 1976).

One social-cognitive interpretation of this effect is that low arousal individuals are less likely to experience negative

affect during evaluation of aggressive scripts for behavior (Huesmann, 1997). An alternative interpretation presumes an optimal arousal level for everyone. Low arousal individuals may engage in more risky and sensation-producing behaviors (including antisocial and aggressive acts) to increase their arousal to a more optimal level.

Some individual differences in baseline arousal are innate, but learning also plays a role. Researchers have shown that people habituate to repeated exposures to scenes of violence, displaying less emotional reaction to real-life violence over time (Smith & Donnerstein, 1998; Lazarus, Speisman, Mordkoff, & Davison, 1962).

Low Serotonin

In our brains, information is communicated between neurons (nerve cells) by the movement of chemicals across a small gap called the synapse. The chemical messengers are called neurotransmitters. Serotonin is one of these neurotransmitters. Its chemical name is 5-hydroxytryptamine, or 5-HT. It has been called the "feel good" neurotransmitter. If people don't have enough of it, they feel bad and may therefore behave more aggressively. Studies of humans and animals (even invertebrates) have found low serotonin levels in individuals who engage in aggressive and violent behavior repeatedly (e.g., Linnolia et al., 1983; Miczek, Mirsky, Carey, DeBold, & Raine, 1994; Virkkunen, De Jong, Bartko, Goodwin, & Linnolia, 1989; Virkkunen, De Jong, Bartko, & Linnolia, 1989; Virkkunen & Narvanen, 1987). In experiments involving animals, decreasing serotonin levels increases aggression levels, which shows a causal link between serotonin and aggression (Kantak, Hegstrand, & Eichelman, 1981). This causal link has also been shown in experiments involving humans. In one experiment (Berman, McCloskey, Fanning, Schumacher, & Coccaro, 2009), participants with and without a past history of aggression were randomly assigned to receive either 40 mg of paroxetine (raises serotonin) or a placebo. Next, participants completed a competitive reaction time task with an ostensible opponent in which the winner got to punish the loser with electric shocks. Over the series of 28 trials, the "opponent" kept setting more and more intense shocks for participants. Participants who had a history of aggression were much more likely to retaliate by administering severe shocks to their opponent, especially if they had ingested the placebo. The paroxetine, however, significantly reduced aggression levels. Low serotonin appears to produce an inability to inhibit impulsive responses to unpleasant events such as provocation (Soubrie, 1986). For example criminals convicted of impulsive violent crimes have lower serotonin levels than criminals convicted of premeditated crimes (Linnolia et al., 1983).

High Testosterone

Testosterone is the male sex hormone. It is a simple chemical arrangement of carbon rings, a derivative of the molecule cholesterol. Both males and females have testosterone, but males have much more of it. During puberty, testosterone levels are at their lifetime peak, and they begin to decline around the age of 23. Testosterone has repeatedly been linked to aggression. Robert Sapolsky (1998), author of *The Trouble with Testosterone*, writes: "Remove the source of testosterone in species after species and levels of aggression typically plummet. Reinstate normal testosterone levels afterward with injections of synthetic testosterone, and aggression returns."

Testosterone seems to affect aggression through long-term and short-term effects (Archer, 1991). In the long run, testosterone seems to affect the development and organization of various collections of cells in the brain (functional modules) that are associated with sex typed behaviors (ranging from sex to hunting—see Cosmides & Tooby, 2006) as well as affecting bodily structures (e.g., muscles, height) that influence the likelihood and the success rate of aggression. In the short run, testosterone may also have an instigating effect on aggression by increasing feelings of dominance. Although both effects are well established in animals, only the long-term effects are well established in humans (Book, Starzyk, & Quinsey, 2002; Brain, 1994; Reinisch, 1981). In humans, the presence of an instigating effect is difficult to demonstrate. One problem is that various behavioral outcomes closely related to aggression also affect circulating testosterone levels (Archer, 1988). Meta-analytic reviews have found a weak but significant positive correlation (about $r = .14$) between current level of circulating testosterone and various measures of human aggression (Archer, 1991; Book et al., 2002). Studies investigating whether testosterone levels in humans are affected by certain outcomes (e.g., winning, losing) also tend to show weak positive effects, but with many exceptions. Laboratory studies of competitions have shown that male winners usually experience an increase in testosterone, and sometimes female winners do, too (Gladue, Boechler, & McCaul, 1989; Mazur, Susman, & Edelbrock, 1997; McCaul, Gladue, & Joppa, 1992). Similar results have occurred in naturalistic studies of judo martial artists (Salvador, Simon, Suay, Llorens, 1987), wrestlers and tennis players (Elias, 1981), and chess players (Mazur, Booth, & Dabbs, 1992). Even the fans of a winning team show greater increases in testosterone compared to fans of a losing team (Mazur & Booth, 1998). Taken together, this research strongly suggests a reciprocal influence process for the short-term relation between testosterone and aggression in humans. Higher levels of plasma testosterone

probably increase aggression slightly, but the outcome of winning and dominating affects testosterone levels just as much.

Executive Functioning Deficits and IQ

As was mentioned previously, one explanation why alcohol increases aggression is that it disrupts executive functioning. A significant body of research has linked deficits in executive functioning to aggression (Giancola, 1995; Giancola, Mezzich, & Tarter, 1998; Seguin & Zelazo, 2005). Neurologically, executive functioning is thought to take place in the prefrontal cortex (the front of the brain, located just behind the forehead), and damage to the prefrontal cortex has also been linked to increased aggression. Deficits in executive functioning may also be linked to early Attention-Deficit/Hyperactivity Disorder (ADHD) and to low IQ. Low IQ in turn has been linked to aggression (Huesmann, Eron, Yarmel, 1987; Moffitt & Lynam, 1994; Wilson & Herrnstein, 1985). Some researchers have argued that a verbal IQ deficit makes it difficult for a child to develop appropriate social problem-solving skills that are useful in solving conflict (Moffitt & Lyman, 1994). It takes real skill and insight to negotiate and resolve a problem peacefully. It is much easier to resort to violence to get what you want.

Attention-Deficit/Hyperactivity Disorder (ADHD)

Early ADHD is strongly correlated with early aggression (Hinshaw, 1987). ADHD also predicts aggression in adolescence and young adulthood (Farrington, Loeber, & Van Kammen, 1990; Magnusson, 1987; Moffitt, 1990; Satterfield, Hoppe, & Schell, 1982). Pharmacological treatment of ADHD symptoms also lowers short-term aggression, though it has little effect on long-term aggression (Hinshaw, Heller, & McHale, 1992).

Genetic Predispositions to Aggress

Research has shown that a number of individual neurophysiological factors are related to aggression. The extent to which these factors are inherited is an important question. In animals, the hereditability of aggression is well established (see Lagerspetz & Lagerspetz, 1971). In humans, although aggression does not appear to be "inherited," genetic factors can predispose individuals to be more or less aggressive. The evidence for this conclusion comes both from behavior genetic studies and from recent examinations of specific genes and DNA sequences.

A substantial number of twin and adoption studies show some hereditability of aggressive or antisocial tendencies (Coie & Dodge, 1998, p. 35; Miles & Carey, 1997). For example, in a large sample of Danish twins born between 1880 and 1910, criminal behavior was correlated .74 for identical twins that have 100% of their genes in common and .46 for fraternal twins that have 50% of their genes in common (Christiansen, 1977; Cloninger & Gottesman, 1987). Similarly, a large sample of American same-sexed twins reared apart, aggression scores in adulthood were correlated .64 for identical twins and .34 for fraternal twins (Tellegen et al., 1988). However, the size of the estimated size of genetic effects decreases when measuring specific rather than general behaviors (DiLalla & Gottesman, 1991; Miles & Carey, 1997), so the behavior genetic effects of heritability may be overestimated.

The second line of evidence comes from the analysis of specific candidate genes and DNA sequences. For example, one important study demonstrated that individuals who possessed a certain variation of the gene that determined monoamine oxidase activity (MAOA) were more at risk to grow up to be antisocial and aggressive adults, but only when they were mistreated as children (Caspi et al., 2002). The MAOA gene is located on the X chromosome, and the enzyme it produces breaks down serotonin and other neurotransmitters. In this study it was demonstrated that if children with the gene for low MAOA activity were severely maltreated as children, they grew up to be more aggressive than either severely maltreated children who did not have the gene or than other children with the gene who were not maltreated. Another study found that a gene variation that lowers serotonin and dopamine activity seems to predispose individuals to be at risk for adolescent antisocial behavior (Burt & Mikolajewski, 2008). Although much more research is needed, it appears that aggressive behavior, like most other behaviors, is affected but not determined by genetic variations.

Evolutionary Underpinnings for Aggression

If genes affect individual differences in aggression, then, obviously, evolution should have influenced characteristic levels of aggression in male and female humans. In particular, to the extent that aggressive or non-aggressive behaviors are adaptive for survival, for the production of offspring, and for the survival of offspring, central nervous system (CNS) mechanisms should evolve that promote those behaviors. The mechanisms may not be "expressed" until certain stimuli occur, but they should evolve.

Evolutionary psychologists who have addressed aggressive behavior have suggested a number of different social problems where evolved neurophysiological mechanisms might play particularly strong roles (Buss & Shackelford, 1997b). These include driving away sexual competitors, mating by force, defending one's offspring, co-opting the resources of others to support one's offspring, and reducing the risk of investing in non-genetic offspring by enforcing sexual fidelity. For males and females, somewhat different social problems are most relevant, and these different

adaptive problems could be one explanation for gender differences in forms and amounts of aggression (Archer & Conte, 2005; Vaillancourt, 2005). According to evolutionary theorists, males are more likely than females to use aggression to ensure sexual fidelity in their partners because such aggression makes it more likely that their partners' offspring have the male's genes. Females know that their offspring have their own genes and do not need to use aggression for this purpose. A female, on the other hand, is more prone to use aggression to ensure that her partner does not devote any of his resources to the offspring of other sexual partners but stays committed to her (e.g., Buss & Shackelford, 1997a; Geary, Rumsey, Bow-Thomas, & Hoard, 1995). Consequently, females are more likely to be aggressive toward their partners or toward rivals over issues of commitment than over issues of sexual fidelity. In support of these ideas, women are angered somewhat more by thinking their partners love someone else than by thinking they have had sex with someone else, whereas the opposite is true for men (Buss & Shackelford, 1997a).

Evolutionary theories have also been advanced for why females use more indirect aggression. On average, males are stronger and more easily able to dominate their partners with physical aggression, whereas females, of necessity, must resort to other aggressive tactics such as indirect aggression. Also, from an evolutionary standpoint, the most important type of aggression for females is that directed against other females who compete for access to the best mates (Vaillancourt, 2005). Evolutionary theorists argue that indirect aggression is particularly valuable for damaging female rivals because females' reproductive success depends on their reputation among males. Males want sexual partners with a reputation of monogamy because they want to be sure that all of their partner's offspring are genetically their own.

Evolutionary theories have also been used to explain other differences in aggression, such as aggression in honor cultures (Nisbett & Cohen, 1996) and aggression against outgroup members (Pyszczynski, Greenberg, & Solomon, 1999). However, a cautionary note is in order: Evolutionary theories are not readily "falsifiable" and alternative theories can often make similar predictions.

PREDISPOSING ENVIRONMENTAL FACTORS

Within the framework of the social-cognitive information-processing model, there can be a large number of environmental factors that can exert long-lasting effects on aggression by influencing what people learn, what they believe, and what emotions they feel. For example, parenting practices, community environments, culture, peers, exposure to violence, and socioeconomic level are all environmental modifiers by this definition. For all of these factors, observational learning plays a major role in the development of various knowledge structures that support aggression.

Family Environment

Children closely observe those around them, so, not surprisingly, their aggressiveness is strongly influenced by how aggressive their parents are (Capaldi, Pears, Patterson, & Owen, 2003; Connell & Goodman, 2002; Huesmann et al., 1984). The influence is long lasting, too. When children grow up, their aggressive behaviors and beliefs as adults are correlated with the amount of inter-parental violence they witnessed in the home when they were children (Hill & Nathan, 2008).

Longitudinal studies have identified a number of family child-rearing variables have been linked to the development of life-long aggression, including inconsistent discipline, failure to monitor the child, rejection and coldness toward the child, and use of harsh physical punishment on the child (Eron, Huesmann, & Zelli, 1991; McCord, 1983; Olweus, 1980, 1995; Patterson, DeBaryshe, & Ramsey, 1989). For example, a study of parental acceptance and rejection in 60 different societies found that rejected children around the world are significantly more hostile and aggressive than are non-rejected children (Rohner, 1975).

Harsh physical punishment deserves special attention because of its close connection to abuse. Abused or neglected children are particularly likely to become abusing and neglecting parents themselves (e.g., Azar & Rohrbeck, 1986; Peterson, Gable, Doyle, & Ewugman, 1997). Furthermore, a number of prospective longitudinal studies have found that corporal punishment of children leads to later increases in aggression against parents, peers, and dating partners (Straus, 2000). There appears to be a reciprocal relation between aggressiveness in children and physical punishment, with each stimulating more of the other (Eron et al., 1991; Sheehan & Watson, 2008). However, the effects also seem to be moderated by cultural norms and identification with parents. Moderate (but not harsh) levels of punishment may actually reduce aggression in ethnic cultures (e.g., African American) that consider punishment normal and acceptable (Lansford et al., 2005) and in children who identify strongly with their parents (Eron et al., 1971).

Coercive Family Interactions

Serious aggressive and antisocial behavior in adolescence most often is the product of a confluence of a number of

interacting child-rearing and child-behavior problems (Dishion & McMahon, 1998; Patterson, Dishion, & Bank, 1984). The parents fail to monitor the child well; the child misbehaves; the parents exert inconsistent and overly harsh discipline. At that point the child and parents begin to have "coercive family interactions" that "teach" the child to behave aggressively. The child refuses to behave as the parents want. The parents respond to the child's misbehavior with aggression in an attempt to coerce the child to do what they want. The angered child aggresses back. The parents retreat, which reinforces the child's aggression. The downward cycle continues with the child learning that aggressive behavior produces desirable outcomes.

Peer Environment

As children begin attending school, peer interactions become important (Boivin, Vitaro, & Poulin, 2005; Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988). In general, aggressive children are not well liked by their peers, particularly in elementary school (Cairns et al., 1988; Coie & Dodge, 1983; Eron & Huesmann, 1984; Leary et al., 2006). One possible reason is that children do not like violence and will avoid bullies and others whom they regard as dangerous. Rejected aggressive children often seek out other rejected aggressive peers, or they withdraw from peers altogether and spend their time on isolated activities such as watching TV or playing video games. In either case, these children are likely to become even more aggressive, because they are surrounded by aggressive role models to imitate (Huesmann, 1986).

However, there are some cases where moderately aggressive children are viewed as popular, such as when they are viewed as attractive role models (Rodkin, Farmer, Pearl, & Van Acker, 2000; Vaillancourt & Hymel, 2006). In these studies, however, popularity seems to be defined more in terms of who has social power than in terms of who is liked.

Bullying

Bullying refers to persistent aggression by one individual against another for the purpose of establishing a power relationship over the person (Olweus, 1978). Bullying can occur almost anywhere: at school, at work, or even online (called *cyber bullying*). Being bullied can be a living hell for the victim. In extreme cases, the victim may even commit suicide. For example, one 14-year-old girl from Vancouver, Canada, hung herself with a dog leash after being repeatedly bullied by three girls at her school. She left a note that said: "If I try to get help it will get worse. They are always looking for a new person to beat up and they are the toughest girls. If I ratted they would get suspended and there would be no stopping them. I love you all so much."

Unfortunately, some use the term bullying to refer to any aggression by one peer against another. In fact, most so called "one-time bullying behavior" can be explained using the same theoretical models used for other aggressive behavior. But research suggests that real bullies (as defined above) have some characteristics that distinguish them from other aggressive individuals. Most notably, they have a reduced capacity to experience empathy for others (Gianluca Albiero, Benelli, Altoe, et al., 2007; Jolliffe & Farrington, 2006) a characteristic that bullies share with narcissists and psychopaths.

Cultural and Community Environment

"*Amok*" is one of the few Indonesian words used in the English language. The term dates back to 1665, and means "a murderous frenzy that has traditionally been regarded as occurring especially in Malaysian culture" (*Merriam-Webster Dictionary*, 2008). A young Malay man who had suffered some loss of face or other setback would "run amok," recklessly performing violent acts. The Malays believed it was impossible for young men to control their aggressive impulses under those circumstances. However, when the British colonial administration disapproved of the practice and began to hold the young men responsible for their actions, including punishing them for their violent acts, most Malays suddenly stopped running amok. The history of "running amok" thus reveals three important points about violence. First, it shows the influence of culture: The violence was accepted by one culture and prohibited another culture, and when the local culture changed, the practice of running amok died out. Second, it shows that cultures can promote violence without placing a positive value on it. There is no sign that the Malaysians ever approved of running amok (e.g., those who ran amok didn't receive trophies), but positive value wasn't necessary. All that was necessary was for the culture to believe that it was normal for people to lose control under some circumstances and act violently as a result. Third, it shows that when people believe their violence is beyond control, they are often mistaken—the supposedly "uncontrollable" pattern of running amok died out when the British government cracked down on it. The influence of culture was therefore mediated through self-control.

Cultures of violence can contribute to aggressive and violent behavior. For example, certain parts of the southern United States have long been associated with greater levels of violent attitudes and behaviors than the northern United States. These regional differences might be caused by a southern *culture of honor*, which calls for violent response to threats to one's honor (Nisbett & Cohen, 1996). Youth who grow up in the South even behave more aggressively when

provoked in laboratory settings at northern universities. Nisbett and Cohen suggest that the culture of honor dates back to the Europeans who first came to the United States. Many of the settlers in the areas where the culture of honor can be found came from herder families where protecting the herd (with violence, if necessary) was particularly important. Research has shown that herding cultures around the world tend to be more violent than agricultural cultures (e.g., Campbell, 1965; Figueredo, Tal, McNeil, & Guillén, 2003; Peristiany, 1965).

Honor cultures exist throughout the world. One example is ethnic Albania. The Kanun describes the laws that govern customs and practices in Albania. The following quotation is from the Kanun:

> An offence to honor is never forgiven. The person dishonored has every right to avenge his honor; no pledge is given, no appeal is made to the Elders, no judgment is needed, no fine is taken. The strong man collects the fine himself. A man who has been dishonored is considered dead according to the Kanun.

In some societies women are killed if they bring "dishonor" to their family, such as by refusing to accept an arranged marriage, seeking a divorce (even from an abusive husband), committing adultery, or having sex before marriage (even if the man forced her). This practice, called honor killing, supposedly restores the family's honor from the disgrace caused by the woman. It is estimated that about 5,000 women are killed each year this way (United Nations Population Fund, 2007/2008). For example, one Egyptian father paraded his daughter's severed head through the streets shouting, "I avenged my honor."

Other kinds of cultural influences on aggression have also been demonstrated. In one study, the longer Lebanese immigrants were in the United States, the more they "accepted" violence in general, but they became less accepting of violence by men against women (Souweidane & Huesmann, 1999). Children who grow up in violent cultures or communities, observing or experiencing violence around them, have been shown to develop numerous problems (Osofsky, 1995). They behave more violently (Guerra et al., 1995) and are more likely to later physically aggress against their own children (Widom, 1989). Observations of violence seem to lead to the development of beliefs and scripts supporting aggression that stimulate aggressive behavior (Guerra, Huesmann, & Spindler, 2002; Schwartz & Proctor, 2000).

Community poverty has long been investigated as an instigator to aggression for its inhabitants. To the extent poverty is an aversive stimulus, one would expect it to increase aggression (Berkowitz, 1989). However, there are different views of how psychologically aversive poverty is. Certainly, poverty makes life more difficult, increases the risk of a child being exposed to violence, and reduces resources to help families. Consequently, there are generally significant negative correlations between socioeconomic status and violent and aggressive behavior (Farrington, 1995; Huesmann, Eron, & Dubow, 2002; Huesmann, Moise-Titus, Podolski, & Eron, 2003; Winslow & Shaw, 2007). However, impoverished neighborhoods do not need to be breeding grounds for aggression. Research has shown that neighborhood and community activism and social support can mitigate the effects of impoverished neighborhoods on the development of aggression (Gatti, Tremblay, & Schadee, 2007; Sampson, Raudenbush, & Earls, 1997; Scarpa & Haden, 2006).

Other community characteristics besides violence and poverty also increase the risk of children growing up to be aggressive. Growing up in a community of ethnic prejudice and hate may well be the most extreme version of an aggression-fostering environment. Observational learning in such environments may well account for generations of ethnic and religious hatreds and genocidal tendencies that occasionally erupt into genocidal wars (Keltner & Robinson, 1996; Staub, 1989, 1998). When normative beliefs become completely accepting of violence against another ethnic group, genocide can result. Normal aggression inhibitions are sometimes overridden when one grows up in such prejudiced environments (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Keltner & Robinson, 1996; Staub, 1989, 1998).

Most people do not commit extreme acts of violence, even if they could do so with little chance of punishment, because of their own self-regulating normative beliefs and moral standards inhibit aggression. However, there appear to be at least two particularly important mechanisms that allow people to disengage their moral standards—dehumanizing the victim and finding overriding other "moral" beliefs. When the potential victims are placed in the ultimate outgroup—one that has no human qualities—typical moral beliefs need not apply (see also Diener, 1976; Prentice-Dunn & Rogers, 1983). Enemies are called "cockroaches," "rats," "vermin," "beasts," and so on. Alternatively, prejudiced societies often develop overriding beliefs about why it is good for the society to "cleanse" itself of the other "inferior" ethnic group.

Mass Media Environment

Children today are immersed in the media, like fish in water. By age 2, most children are frequently viewing television and movies and are playing some video games. By age 12, children spend more time consuming media than attending school. It should not be surprising, then, that decades of research have shown that observing violence in the mass media stimulates aggressive behavior. Regardless of how one studies the media violence/aggression link, the outcomes are the same. This is true for longitudinal studies, cross-sectional correlational studies, field studies, and

laboratory experiments (Anderson, Berkowitz, et al., 2003; Anderson & Bushman, 2002b; Bushman & Huesmann, 2000; Paik & Comstock, 1994). The average correlations from meta-analytic reviews are as large as those for other risks that are considered public health threats (e.g., second-hand smoke, exposure to lead)—ranging between .2 and .4. Violent media stimulate aggression in the short run by priming aggressive scripts and by influencing children to mimic what they see. Violent media stimulate aggression in the long run by changing schemas, scripts, and beliefs about aggression, and by desensitizing viewers to violence (Bushman & Huesmann, 2006; Huesmann & Kirwil, 2007).

Experiments on Short-Term Effects of Media-Violence

Ever since Bandura's classical early studies on imitation of film violence (Bandura et al., 1961), laboratory experiments have played an important role in showing that exposure to violent media causes a short-term increase in aggressive behavior. There can no longer be any dispute about this conclusion, and more recent studies using more valid measures of aggression have shown similar results. In one field experiment (Josephson, 1987), for example, a group of 396 7- to 9-year-old boys were randomly assigned to watch either a violent or a nonviolent film before they played a game of floor hockey in school. Observers who did not know what movie any boy had seen recorded the number of times each boy physically attacked another boy during the game (e.g., hitting, elbowing, tripping, kneeing, hair pulling). For some of the games, the referees carried walkie-talkies that were similar to those carried by characters in the violent film. The most aggressive boys were those who saw the violent film and the walkie-talkies carried by the referees.

A number of recent experiments have shown similar effects for violent video games. In one study (Konijn, Nije Bijvank, & Bushman, 2007), Dutch boys about 14 years old were randomly assigned to play a violent or nonviolent video game for 20 minutes and rated how much they identified with the main character in the game. Next, they completed a competitive task in which the winner blasted the loser with a noise through a pair of headphones. The noise levels ranged from 60 decibels (*level 1*) to 105 decibels (*level 10*)—about the same level as a fire alarm. (A nonaggressive no noise option was also included, although none of the boys used it.) The boys were told that inflicting higher noise levels could cause "permanent hearing damage" to their partners. Of course, nobody actually got hearing damage. But the results showed that violent game players acted more aggressively than nonviolent game players, especially if they identified strongly with the game character. These boys were even willing to give another boy noise levels loud enough to cause permanent hearing damage. One boy said, "I blasted him with level 10 noise because he deserved it. I know he can get hearing damage, but I don't care!" Another boy said he liked the violent game "because in this game you can kill people and shoot people, and I want to do that too."

An obvious question is whether playing violent video games has a larger effect in stimulating aggression than watching violent TV programs or movies. There are at least three reasons to believe that violent video games might stimulate more aggression. First, video game play is active, whereas watching TV is passive. People learn better when they are actively involved. Suppose you wanted to teach a person how to fly an airplane. What would be the best method to use: read a book, watch a TV program, or practice on a video game flight simulator? Second, players of violent video games are more likely to identify with violent characters. If the game is a first-person shooter, players have the same visual perspective as the killer. If the game is third person, the player controls the actions of the violent character from a more distant visual perspective. In either case, the player is linked to a violent character. In a violent TV program, viewers might or might not identify with a violent character. Third, violent games directly reward violent behavior by awarding points or allowing players to advance to the next game level. In some games, players are also rewarded through verbal praise, such as hearing the words "Nice shot!" or "Impressive!" after killing an enemy. It is well known that rewarding behavior increases its frequency. In TV programs, reward is not directly tied to the viewer's behavior. A recent study provided the first evidence that playing violent games produce stronger effects than simply observing violence (Polman, Orobio de Castro, & Van Aken, 2008). In this study, some participants played violent games while others watched the games being played, and the effects on aggression were stronger for the players than the watchers.

Some experiments have also provided support for more long-term processes. In particular several studies have shown how people who consume violent media become more tolerant of violence (*cognitive desensitization*) and experience less physiological arousal to violence (*emotional desensitization*) (Drabman & Thomas, 1974). Here again violent video games are of particular concern. Feeling empathy requires taking the perspective of the victim, whereas violent video games encourage players to take the perspective of the perpetrator. In one experiment, people who played a violent video game were less physiologically aroused (i.e., had lower heart rate and skin conductance levels) by real depictions of violence than were those who played a nonviolent game (e.g., Carnagey, Anderson, & Bushman, 2007).

In another experiment (Bushman & Anderson, 2009), people who had played a violent video game took 450% longer to help a violence victim in a staged emergency in comparison to those who played a nonviolent game. Violent game players also were less likely to notice the emergency and rated it as less serious if they did notice it.

Longitudinal Studies of Long-Term Effects of Media Violence

It is not so much the immediate effects of media violence on aggression that are of concern, but rather the aggregated long-term effects. A study initiated in 1960 on 856 8-year-old children in New York State found that boys' early childhood viewing of violence on TV was positively related to their aggressive and antisocial behavior 10 years later (after graduating from high school), even controlling for initial aggressiveness, social class, education, and other variables (Eron, Huesmann, Lefkowitz, & Walder, 1972; Lefkowitz, Eron, Walder, & Huesmann, 1977). A 22-year follow-up of these same boys revealed that early violence viewing was independently related to adult criminal behavior at age 30 (Huesmann, 1986; Huesmann & Miller, 1994).

The long-term effects of violent media exposure are not limited to American children. A three-year longitudinal study of children in five countries (Australia, Finland, Poland, Israel, USA) found that the television habits of children as young as 6 years old predicted subsequent childhood aggression, even controlling for initial level of aggression (Huesmann & Eron, 1986; Huesmann, Lagerspetz, & Eron, 1984). In contrast to earlier longitudinal studies, this effect was obtained for both boys and girls, even in countries without large amounts of violent programming. A 15-year follow-up of the U.S. children in this study revealed that both boys and girls who had been high violence viewers in childhood behaved significantly more aggressively in their mid-20s (Huesmann, Moise-Titus, Podolski, & Eron, 2003). For males, this included being convicted of more crimes. For females this included being both more physically aggressive and more indirectly aggressive. Importantly, this study also found that children's aggression did not significantly predict their later tendency to view or not view violent media as adults. Thus, it is unlikely that the results are simply due to more aggressive kids wanting to watch more violent programs.

Another large longitudinal study followed over 2,500 middle-school students over 2 years (Slater, Henry, Swaim, & Anderson, 2003). The results found a significant lagged effect of prior violence viewing on subsequent aggression, and a smaller and less significant effect of prior aggression on subsequent violence viewing. The authors concluded that the relation seemed to be a "downward spiral" of violence, viewing stimulating aggression and aggressive youth turning to more violence viewing.

Other longitudinal studies involving elementary school children in the United States and Japan found that playing violent video games predicted aggressive behaviors and thoughts several months later, even after controlling for initial level of aggression (Anderson, Gentile, & Buckley, 2007; Anderson, Sakamoto, Gentile, Ihori, & Shibuya, 2008; Ihori, Sakamoto, Kobayashi, & Kimura, 2003). In summary, the results from these longitudinal studies and others show that exposure to violent media has a cumulative effect and can increase aggression in the long run.

Sexually Explicit Violent Media

One type of media deserves special mention because it can lead to aggression against women—violent sexual media (e.g., rape depictions). The evidence is clearest for short-term effects. In one experiment (Donnerstein & Berkowitz, 1981), for example, college men watched one of four film clips: (1) a clip containing no violence or sex, (2) a nonviolent-sexually explicit clip of a couple enjoying making love, (3) a violent-sexual clip of a man raping a woman who resists the rape, or (4) a violent-sexual clip of a man raping a woman who initially resists the rape, but then seems to enjoy it. Afterwards, participants were provoked by either a male or female confederate and were then given the chance to punish the confederate using electric shocks. The results showed that men who viewed a rape scene were more aggressive than men who did not view a rape scene, especially when the aggression target was the female provoker. Men who saw the clip showing the woman enjoying being raped showed the highest levels of aggression. There was no evidence of an aggression-enhancing effect from viewing nonviolent sex. In fact, the men who viewed nonviolent sex were *less* aggressive toward the female provoker than toward the male provoker.

There are also long-term effects of viewing violent sexual media, such as desensitization. Research has shown that even several days after watching violent sex scenes (e.g., in "slasher" films), men still displayed an increased tolerance to aggression directed toward women (Malamuth & Check, 1981; Mullin & Linz, 1995). Additionally, field studies have shown a positive relation between pornography use and sexual aggression (e.g., Kingston, Fedoroff, Firestone, Curry & Bradford, 2008).

REDUCING AGGRESSION

Most people are greatly concerned about the amount of aggression and violence in society. Because aggression directly interferes with our basic needs of safety and security, it is urgent to find ways to reduce it. The fact that there is no single cause for aggression makes it difficult to design effective interventions. A treatment that works for one

person may not work for another. Some people, such as psychopaths, are even considered untreatable. Indeed, many people have started to accept the fact that aggression and violence have become an inevitable, intrinsic part of our society.

This being said, there certainly are things that can be done to reduce aggression and violence. There are two important general points we would like to make. First, successful interventions target as many causes of aggression as possible and attempt to tackle them collectively. Most often, these interventions are aimed at reducing factors that promote aggression in the direct social environment (family, friends), general living conditions (housing and neighborhood, health, poverty), and occupation (school, work, spare time). Interventions that are narrowly focused at removing a single cause of aggression, however well conducted, are bound to fail.

Aggression is quite stable over time. Therefore, if young children display excessive levels of aggression (often in the form of hitting, biting, or kicking), it places them at high risk for becoming violent adolescents and even violent adults. It is much more difficult to alter aggressive behaviors when they are part of an adult personality than when they are still in development. Thus, as a second general rule, aggressive behavior problems are best treated in early development, when they are still malleable.

In this section we discuss some methods for reducing aggression. Before discussing the effective methods, we first debunk two ineffective methods: catharsis and punishment.

Catharsis

The word catharsis comes from the Greek word *katharsis*, which means to cleanse or purge. The term dates back to Aristotle, who taught that viewing tragic plays gave people emotional release from negative emotions. In Greek drama, the heroes didn't just grow old and retire—they often suffered a violent demise.

Sigmund Freud, who believed that repressed negative emotions could build up inside an individual and cause psychological symptoms, revived the ancient notion of catharsis. Freud's ideas form the basis of the hydraulic model of anger (described earlier), which suggests that frustrations lead to anger and that anger, in turn, builds up inside an individual like hydraulic pressure inside a closed environment until it is vented or released. If the anger is not vented, the build-up will presumably cause the individual to explode in an aggressive rage.

According to *catharsis theory*, acting aggressively or even viewing aggression purges angry feelings and aggressive impulses into harmless channels. Almost as soon as researchers started testing catharsis theory, it ran into trouble. In one early experiment (Hornberger, 1959), participants who had been insulted by a confederate either pounded nails with a hammer for 10 minutes or did nothing. After this, all participants had a chance to criticize the confederate who had insulted them. If catharsis theory is true, the act of pounding nails should reduce anger and subsequent aggression. Unfortunately for catharsis theory, the results showed the opposite effect. Participants who pounded nails were *more* hostile toward the confederate afterward than were the ones who didn't get to hammer any nails.

In 1973, Albert Bandura issued a moratorium on catharsis theory and the use of venting in therapy, and research evidence supported Bandura's views (e.g., Geen & Quanty, 1977). Venting doesn't work even among people who believe in the value of venting, and even among people who report feeling better after venting (Bushman, Baumeister, & Stack, 1999). In fact, venting has the opposite effect—it increases aggression. The better people feel after venting, the more aggressive they are. Venting can even increase aggression against innocent bystanders.

One variation of venting is intense physical exercise, such as running. When angry, some people go running or try some other form of physical exercise. Although exercise is good for your heart, it is not good for reducing anger (Bushman, 2002). The reason exercise doesn't work very well is that it increases rather than decreases arousal levels. Angry people are highly aroused, and should try to calm down. Also, if someone provokes you after exercising, excitation transfer might occur (Zillmann, 1979). That is, the arousal from the exercise might transfer to the provocation, producing an exaggerated and possibly more violent response.

Punishment

Most cultures assume that punishment is an effective way to deter violence and aggression. *Punishment* is defined as inflicting pain (*positive punishment*) or removing pleasure (*negative punishment*) for a misdeed. Punishment can range in intensity from spanking a child to executing a convicted murderer. Parents use it, organizations use it, and governments use it. But does it work? Today, aggression researchers have their doubts about the effectiveness of punishment. Punishment is most effective when it is: (1) intense, (2) prompt (before the person can derive pleasure from the misdeed), (3) applied consistently and with certainty, (4) perceived as justified, and (5) replaced by a more desirable alternative behavior (Berkowitz, 1993). Even if punishment occurs under these ideal conditions, it may only suppress aggressive behavior temporarily, and it has several undesirable long-term consequences (Baron & Richardson, 1994; Berkowitz, 1993; Eron et al., 1971). Punishment models the behavior it seeks to prevent. For

example, suppose a father sees an older brother beating up his younger sister. The father starts spanking boy while proclaiming, "I'll teach you not to hit your little sister." Yes, the father is teaching the son something; he is teaching the boy that it is okay to behave aggressively as long as you are an authority figure. Punishment is also unpleasant. Its application can classically condition children to avoid their parents, and in the short run can instigate retaliatory aggression. Longitudinal studies have shown that children who are physically punished by their parents at home are more aggressive outside the home, such as in school (e.g., Lefkowitz. Huesmann, & Eron, 1978).

The most extreme form of punishment is capital punishment. Obviously, one way to stop violent people from hurting others is to kill them so they can't do it again. Unfortunately, capital punishment doesn't seem to deter murders, perhaps because many murderers kill their victims in a fit of rage without considering the consequences of their actions. In the United States, FBI Unified Crime reports show that states with the death penalty have murder rates 48 to 101% higher than states without the death penalty. Similar findings have been reported in other countries. An international study of criminal violence analyzed data from 110 nations over a period of 74 years and found that the death penalty does not deter criminals (Archer & Gartner, 1987). Of course, another problem with capital punishment is that it is irreversible. An innocent person (rather than the actual murderer) might be executed. There have been more than 75 documented cases of wrongful conviction of murder, and the death sentence was carried out in 8 of these cases (Draper, 1985). As use of DNA evidence becomes more common, these numbers are likely to increase.

Developing Nonaggressive Ways of Behaving

Aggressive people need to develop nonaggressive ways of behaving. Most aggression treatment programs can be divided into one of two broader categories, depending upon whether aggression is viewed as proactive or reactive (see Berkowitz, 1993, pp. 358–370). Recall from an earlier section that proactive aggression is the cold-blooded, premeditated type of aggression that is a means to some other end, whereas reactive aggression is the hot-blooded, impulsive type of aggression that is an end in itself.

Approaches to Reducing Proactive Aggression

People may resort to aggression because it seems to be the easiest way for them to get what they want in the short run. Negotiating, inducing guilt, compromising, ingratiating, and other ways of influencing others all require considerable skills and self-control, whereas aggression may not. (Indeed, aggression may flourish best in the absence of self-control and other social skills!) People may therefore turn to aggression as a seemingly rational and appealing way of pursuing their goals.

Psychologists who view aggression as proactive (instrumental) behavior concentrate on teaching aggressive people that they will be more effective in achieving their goals if they behave in a nonaggressive manner. This approach to reducing aggression uses *behavior modification* learning principles that focus on reinforcing nonaggressive behaviors.

One of the main problems with punishment is that does not teach the aggressor new, prosocial forms of behavior. One way to get rid of an undesirable behavior is to replace it with a desirable behavior (called *differential reinforcement of alternative behavior* in behavior modification terminology). The idea is that if one behavior increases as a result of reinforcement, then behaviors that are incompatible with the increased behavior must decrease. Thus, by reinforcing nonaggressive behavior, aggressive behavior should decrease.

The Oregon Social Learning Center uses behavior modification principles to reduce aggression in children and adolescents (e.g., Patterson, Reid, Jones, & Conger, 1975). According to this approach, parents play a key role in forming aggressive tendencies in their children by nagging them, failing to reward desirable behavior, and inconsistently punishing undesirable behavior. Thus, parents are involved in the treatment plan. The treatment is based on a contract the counselor makes with the aggressive child. The contract specifies the rewards the child will receive if he or she complies with the contract. For example, the child might gain 3 points for listening to parents, and lose 3 points for swearing at someone. The points can be exchanged for privileges (e.g., watching TV, favorite treats). If the first contract is successful, a second one is negotiated in which new behaviors are added. The counselor monitors and advises the family through the process. The program is effective in reducing aggression in about one of three children. Additional programs are sometimes required for the other children, such as school programs.

Other effective programs include social skills training, where people are taught about the verbal and nonverbal behaviors involved in social interactions (e.g., Pepler, King, Craig, Byrd, & Bream, 1995). For example, they are taught how to make "small talk" in social settings, how to maintain good eye contact during a conversation, and how to "read" the subtle cues contained in social interactions. By learning how to interact better with others, people don't have to resort to aggression to get what they want.

Having prosocial role models also helps. In one study (Spivey & Prentice-Dunn, 1990), participants played a computer game with a partner. During the game they could punish their partner by pressing shock buttons (1 = *low*

intensity, 10 = *high intensity*), or reward their partner by pressing money-dispensing buttons (1 = $*0.25* to 10 = $*2.50*). Before the actual task, the experimenter asked a confederate to press several of the buttons to make sure they were "working." In the antisocial modeling condition, the confederate repeatedly pressed the two highest shock level buttons and said: "I'm going to give this guy 10s every time" (during the task). In the prosocial modeling condition, the confederate repeatedly pressed the two highest money dispensing buttons and said: "I'm going to give this guy $2.50 every time" (during the task). The results showed that participants exposed to the prosocial model gave their partner the most money and the least shock, whereas participants exposed to the antisocial model gave their partner the least money and the most shock. Just as exposure to violent models in the media can increase aggression in viewers, exposure to prosocial models in the media can decrease aggression and increase cooperation (for a meta-analytic review see Mares & Woodward, 2005). Prosocial video games, like prosocial TV programs, can increase helping and decrease aggression (e.g., Gentile et al., 2009).

Approaches to Reducing Reactive Aggression

Other approaches to reducing aggression focus on reducing anger and arousal levels using relaxation and cognitive-behavioral techniques (for a meta-analytic review see DiGuiseppe & Tafrate, 2003). Most relaxation-based techniques involve deep breathing, visualizing relaxing images (e.g., a peaceful meadow), or tightening and loosening muscle groups in succession. People practice relaxing after imaging or experiencing a provocative event. In this way, they learn to calm down after they have been provoked.

Cognitive-based treatments focus on how an event is appraised or interpreted. When provocative events occur, people talk to themselves (in their minds), a process called *self-instructional training* (e.g., Novaco, 1975). When preparing for a provocation, people rehearse statements such as: "If I find myself getting upset, I'll know what to do" and "I can manage this situation. I know how to regulate my anger." When confronting the provocation, people rehearse statements such as: "Stay calm. Just continue to relax" and "You don't need to prove yourself." To cope with arousal and agitation that arises following provocation, people rehearse statements such as: "My muscles are starting to feel tight. Time to relax and slow things down" and "I'm not going to get pushed around, but I'm not going to lose control either." If the conflict is resolved, people rehearse statements such as: "That wasn't as hard as I thought" and "It could have been a lot worse." If the conflict is not resolved, people rehearse statements such as: "These are difficult situations, and they take time to work out." Research shows that it is especially helpful to combine relaxation and cognitive techniques to reduce angry arousal (e.g., Novaco, 1975).

SUMMARY

In some ways, humans are far more aggressive than other animals on this planet. Most fighting between other animals stops far short of serious injury or death, whereas humans kill each other. Humans have even gone to great lengths to invent tools to make killing easier and more "efficient" (from spears to guns to nuclear weapons). The good news is that human society is becoming less violent over time. Hopefully, that trend will continue.

We know a lot more today than we did even a few decades ago about what makes people aggressive. Social psychological theory and research can play an important role in reducing the amount of aggression and violence in society. Social psychological research has shed light on many of the situational and personal factors that are related to aggression. Social psychological research has also helped dispel some myths that have contributed to the level of violence and aggression in society. One myth is that venting anger is an effective way to reduce anger and aggression. Another myth is that aggressive people suffer from low self-esteem.

We don't have a crystal ball, and predictions of the future are hazardous to say the least. We are, however, optimistic about some areas of future research on human aggression. The link between brain activity and human aggression is a promising area of current and future research. Another promising research direction is self-control. Aggression often starts when self-control stops. Another promising research direction is forgiveness (e.g., McCullough, 2008). Dr. Martin Luther King Jr. was correct. The best way to reduce aggression is to reject revenge and retaliation and to embrace love and forgiveness. Hopefully, social psychologists will be at the forefront conducting research on these and other important topics that will help make the world a more peaceful place.

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