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I n the 1970s, Ted Bundy broke into the apartment of a young female student at the University of Washington, knocked her unconscious, assaulted her sexually, then killed her. He did this again more than 30 times across the United States. His desire was to possess a lifeless female form – comatose or dead – and just before his 1989 execution, he admitted to police detectives that he kept some of his victims in such a state for hours or days before he disposed of their bodies. He even photographed his victims and kept a stash of their skulls in his Seattle apartment. Bundy explained, ‘When you work hard to do something right, you don’t want to forget it.’ Ted Bundy felt no remorse, guilt, or shame about violating the standards of human decency. On the contrary, he was proud of himself. Later, when facing his own murder trial and probable death sentence, his examining psychiatrist uncovered further unusual emotions. He described Bundy as cheerful and jovial. He stated that although Bundy ‘intellectually’ understood the charges against him, ‘he sure didn’t act like a man who was facing a death sentence. He was acting like a man who did not have a care in the world.’ Against the strong urgings of his legal advisors, Bundy even chose to serve as counsel in his own defense. As his psychiatrist later explained, ‘[Bundy] was not motivated by a need to help himself. He was motivated by the need to be the star of the show. . . . He was the producer of a play in which he was playing a big role. The defense and his future were of secondary importance to him.’ Ted Bundy had no fear for future consequences. Emotions, it turns out, are so central to human experience and successful social encounters that we consider those who seem to have no emotions – like the serial killer who shows no shame or no fear – to be inhuman. We call such people cold-blooded. This label fits, because although we share basic motives such as hunger and sex with cold-blooded reptiles, we seem to share emotions only with other warm-blooded mammals (Panksepp, 1998). People like Ted Bundy are, in fact, thought to have specific biological and social-cognitive deficits. They are said to have antisocial personality disorder (and are sometimes called psychopaths or sociopaths), a disorder characterized by deficits in normal emotional responding – especially for shame, guilt, and fear – as well as deficits in empathy for the emotions of others (Hare, 1999). And yet people like Ted Bundy are not completely devoid of emotions. Instead, ‘they seem to suffer a kind of emotional poverty that limits the range and depth of their feelings. While at times they appear cold and unemotional, they are prone to shallow and short-lived displays of feeling. . . . Many clinicians have For more Cengage Learning textbooks, visit www.cengagebrain.co.uk CHAPTER OUTLINE COMPONENTS OF EMOTION COGNITIVE APPRAISAL AND EMOTION Discovery of appraisals Themes and dimensions of appraisals Conscious and unconscious appraisals Appraisals in the brain SUBJECTIVE EXPERIENCES AND EMOTION Feelings modify attention and learning Feelings modify evaluations and judgments THOUGHT AND ACTION

TENDENCIES AND EMOTION CUTTING EDGE RESEARCH: BENEFITS OF POSITIVE EMOTIONS POSITIVE EMOTIONS BROADEN OUR THINKING AND ACTIONS POSITIVE EMOTIONS BUILD OUR PERSONAL RESOURCES BODILY CHANGES AND EMOTION Intensity of emotions Differentiation of emotions FACIAL EXPRESSION AND EMOTION Communication of emotion through facial expressions The facial feedback hypothesis RESPONSES TO EMOTION: EMOTION REGULATION EMOTIONS, GENDER, AND CULTURE Gender differences Cultural differences AGGRESSION Aggression as a drive Aggression as a learned response Aggressive expression and catharsis SEEING BOTH SIDES: WHAT IS THE UNDERLYING STRUCTURE OF EMOTIONS? 395

commented that the emotions of psychopaths are so shallow as to be of little more than 'proto-emotions' – primitive responses to immediate needs' (Hare, 1999, p. 52). In this chapter we will explore what Ted Bundy seemed to lack – the full array of meaningful human emotions. Emotions and motives (discussed in Chapter 10) are closely related. Emotions can activate and direct behavior in the same way that basic motives do. They may also accompany motivated behavior: Sex, for example, is not only a powerful motive but also a potential source of joy or guilt. Despite their similarities, we need to distinguish between motives and emotions. One distinction is that emotions are typically triggered from the outside, whereas motives are more often activated from within. That is, emotions are usually aroused by external circumstances, and emotional reactions are directed toward these circumstances. Motives, in contrast, are often aroused by internal circumstances (such as a homeostatic imbalance) and are naturally directed toward particular objects in the environment (such as food, water, or a mate). Another distinction between motives and emotions is that a motive is usually elicited by a specific need, but an emotion can be elicited by a wide variety of stimuli (think of all the different things that can make you angry or happy). These distinctions are not absolute. An external source can sometimes trigger a motive, as when the sight of food triggers hunger. And the discomfort caused by a homeostatic imbalance – severe hunger, for example – can arouse emotions. Nevertheless, emotions and motives are different enough in their sources, subjective experience, and effects on behavior that they merit separate treatment. COMPONENTS OF EMOTION An emotion is a complex, multicomponent episode that creates a readiness to act. An intense emotion has at least six components (Frijda, 1986; Lazarus, 1991b). Typically, an emotion begins with a cognitive appraisal, a person's assessment of the personal meaning of his or her current circumstances (see Figure 11.1). This appraisal process is considered the first component of an emotion. Cognitive appraisals, in turn, trigger a cascade of responses that represent other loosely connected components of an emotion. The component that we most frequently recognize is the subjective experience of the emotion – the affective state or feeling tone the emotion brings. A third and closely related component includes thought and action tendencies – urges to think and act in certain ways. When something sparks your interest, for instance, you want to explore it and learn more about it. When someone angers you, you may be tempted to act aggressively, either physically or verbally. A fourth component includes internal bodily reactions, especially those of the autonomic nervous system, the division of the peripheral nervous system that controls the heart and other smooth muscles (see Chapter 2). When you are afraid, for example, your heart may pound in your chest, and your palms may sweat. A fifth component of an emotion includes facial expressions, the muscle actions that move facial landmarks in particular ways. When you experience disgust, for example, you probably frown while also raising your upper lip and partially closing your eyes, as if to shut out the smell and sight of whatever offends you. The final component includes responses to emotion, meaning how people cope with or react to their own emotion or the situation that elicited it. The Concept Review Table

reviews these various components. 3 5 6 Personenvironment relationship Cognitive appraisal Responses to emotion Emotional responses: Subjective experience Thought-action tendencies Internal bodily changes Facial expression Figure 11.1 Schematic Diagram of the Emotion Process. Six components of emotion are triggered by circumstances described by certain person-environment relationships. (After Lazarus, 1991b; Rosenberg, 1998) CHAPTER 11 EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

None of these six components by itself is an emotion. Instead, they come together to create a particular emotion. Viewing emotion as a complex system helps distinguish emotions from closely related states, like moods. Emotions are distinct from moods in multiple ways. First, emotions typically have a clear cause. They are about something or someone (Beedie, Terry, & Lane, 2005; Oatley & Jenkins, 1996). You are angry at your sister. You are awestruck by the Grand Canyon. Moods, on the other hand, are often free-floating and diffuse affective states (Russell & Feldman Barrett, 1999). For unknown reasons, you feel irritable one day, and cheerful the next. This raises a second difference: Emotions are typically brief, lasting only seconds or minutes, but moods endure longer, lasting for hours, even days (Beedie et al., 2005). A third difference is that emotions typically implicate the multiple component systems described previously, but moods may be salient only at the level of subjective experience (Rosenberg, 1998; Russell & Feldman Barrett, 1999). Finally, emotions are often conceptualized as fitting into discrete categories, like fear, anger, joy, and interest. Moods, by contrast, are often conceptualized as varying along the dimensions of pleasantness and arousal level (Russell & Feldman Barrett, 1999). This last point is still hotly debated, however. An example of this debate is provided in the Seeing Both Sides box later in this chapter. Many emotion theorists hold a systems perspective on emotion, in which the components of an emotion are seen as having reciprocal effects on each other. In other words, each component can influence the others. Whereas Figure 11.1 outlines the typical way that an emotion unfolds – through cognitive appraisal (Reisenzein, 1983) – laboratory experiments have shown that introducing another component of an emotion first – like physiological arousal or a facial expression – can jumpstart the entire, multicomponent emotion process. Let’s say you race up four flights of stairs and arrive at your friend’s apartment with your heart pounding. In that aroused state, you may be more likely to appraise an ambiguous remark from your friend (such as ‘nice hair’) as an insult and lash out. The critical questions in contemporary emotion research concern the detailed nature of each of the components of an emotion and the specific mechanisms by which they influence each other. For example, one set of questions concerns the functions of each component. Why do emotions color subjective experience? Why do they evoke bodily changes? Why do they show up on our faces? Another set of questions concerns how responses of the various components contribute to the intensity of an experienced emotion. Do you feel angrier when you experience more arousal of your autonomic nervous system? Indeed, could you even feel angry if you had no autonomic arousal? Similarly, does the intensity of your anger depend on your having a certain kind of thought or a certain kind of facial expression? In contrast to these questions about the intensity of an emotion, there are also questions about which components of an emotion are responsible for making the different emotions feel different. To appreciate the difference between questions about intensity and questions about differentiation, consider the possibility that autonomic arousal greatly increases the intensity of our emotions but that the pattern of arousal is roughly the same for several emotions. In this case, autonomic arousal could not differentiate among emotions. These questions will guide us in this chapter as we consider cognitive appraisals, subjective experiences, thought–action tendencies, internal bodily changes,

and observable facial and bodily expressions. We will also consider people's responses to their own emotions and their attempts to regulate their emotional experiences. We CONCEPT REVIEW TABLE Six components of the emotion process Cognitive appraisal A person's assessment of the personal meaning of his or her current circumstances Subjective experience The affective state or feeling tone that colors private experience Thought and action tendencies Urges to think or act in particular ways Internal bodily changes Physiological responses, particularly those involving the autonomic nervous system such as changes in heart rate and sweat gland activity Facial expression Muscle contractions that move facial landmarks – like cheeks, lips, noses, and brows – into particular configurations Responses to emotion How people regulate, react to, or cope with their own emotion or the situation that triggered it COMPONENTS OF EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

398 CHAPTER 11 EMOTION then discuss gender and cultural variation in emotions. In the final section, we turn to aggression, which is at times a reflection of intense emotion and a topic of considerable societal importance. Throughout, we will be concerned primarily with the most intense and prototypical emotions, like anger, fear, sadness and disgust on the negative side and joy, interest, and contentment on the positive side. Even so, the ideas and principles that will emerge in our discussion are relevant to a variety of feelings. INTERIM SUMMARY l An emotion is a complex, multicomponent episode that creates a readiness to act. l There are six components of emotions: cognitive appraisals, the subjective experiences of emotion, thought–action tendencies, internal bodily changes, facial expressions, and responses to the emotion. l Emotions are distinct from moods in several ways. For instance, emotions have clear causes, are particularly brief, and implicate multiple components. CRITICAL THINKING QUESTIONS 1 Reconsider Figure 11.1, which describes the six components of the emotion process. Do you think that all six components need to be present in order to call a given experience an emotion? Why or why not? What might be the rationale for including responses to emotion as the sixth component? 2 Drawing from your own day-to-day experiences, can you identify the difference between an emotion and a mood? Do emotions and moods feel different, subjectively? COGNITIVE APPRAISAL AND EMOTION You will notice in Figure 11.1 that the first box in the model mentions the person–environment relationship. This refers to the objective situation in which a person finds herself – her current circumstances in the world, or in relation to others. One such circumstance, for instance, is receiving an insult; another is seeing a colorful sunset. These person–environment relationships are not themselves components of emotions, because they do not always or directly trigger emotions. For these circumstances to produce an emotion in us, we would need to For more Cengage Learning textbooks, visit www.cengagebrain.co.uk interpret them as relevant to our personal goals or wellbeing. This interpretation process is called cognitive appraisal. For instance, you might interpret receiving an insult as a threat to your honor. If so, you'd experience anger. In another instance, you might interpret that same insult as the meaningless ranting of an erratic person and experience no emotion whatsoever. Likewise, if you are a spiritual person, you might interpret the sunset as evidence of God's immense power and artistry and experience a mixture of awe and gratitude. On another evening, you might be frightened by the impending loss of daylight, because you're on a day hike and worry that you can't make it back to your campsite before dark. It is through this appraisal process, then, that we assess whether the current person–environment relationship impinges on our goals or well-being. If it does, the appraisal process translates the objective circumstance into a personally meaningful one. Personal meaning, in turn, determines the type of emotion we experience, as well as its intensity (Lazarus, 1991b). Cognitive appraisals

are largely responsible for differentiating the emotions. Indeed, we often emphasize cognitive appraisals when we describe the quality of an emotion. We say, 'I was angry because she was so unfair' or 'I was frightened because I felt abandoned.' Assessments of unfairness and abandonment are clearly abstract beliefs that result from a cognitive process. These observations suggest that cognitive appraisals are often sufficient to determine the quality of emotional experience.
Discovery of appraisals The importance of this cognitive component within emotions was first spotlighted in a famous study in the early 1960s. Schachter and Singer (1962) suggested that if people could be induced to be in a general state of autonomic arousal, the quality of their emotion would be determined solely by their appraisal of the situation (see Figure 11.2a). This was called the two-factor theory of emotions. According to this theory, emotions were thought to result from the combination of two factors – an initial state of unexplained arousal plus a cognitive explanation (or appraisal) for that arousal. (We will discuss the James–Lange Theory and the Facial Feedback Hypothesis, also included in Figure 11.2, later in this chapter.) Participants in Schachter and Singer's study were given an injection of epinephrine, which typically causes autonomic arousal – an increase in heart and respiration rates, muscle tremors, and a jittery feeling. The experimenter then manipulated the information that the participants were given regarding the effects of the injection. Some participants were correctly informed about the arousal consequences of the drug, but others were given no information about the drug's physiological effects. The informed participants therefore had an explanation for

their sensations, whereas the uninformed participants did not. Schachter and Singer predicted that how the uninformed participants interpreted their symptoms would depend on the situation in which they were placed. Participants were left in a waiting room with another person, ostensibly another participant but actually a confederate of the experimenter. The confederate created either a happy situation (by making paper airplanes, playing basketball with wads of paper, and so on) or an angry situation (by complaining about the experiment, tearing up a questionnaire, and so on). The uninformed participants placed in the happy situation rated their feelings as happier than did the informed participants in that same situation. Although the data were less clear for the angry situation, Schachter and Singer claimed that the uninformed participants were angrier than the informed participants. In other words, participants who had a physiological explanation for their arousal (i.e., 'that injection I got') appeared to be less influenced by the situation than those who did not have an explanation. The Schachter and Singer experiment was extremely influential over the next two decades, but that influence may not have been justified (Reisenzein, 1983). The pattern of results in the study did not strongly support the experimenters' hypotheses, in that the differences between critical groups did not reach statistical significance and a control group did not react in a manner consistent with the hypotheses. In addition, the autonomic arousal may not have been the same in the happy and angry situations, and it certainly was not neutral. Follow-up experiments have found that participants rate their experiences more negatively (less happy or more angry) than the situation warrants, suggesting that the physiological arousal produced by epinephrine is experienced as somewhat unpleasant. Also, later experimenters have had difficulty reproducing the results obtained by Schachter and Singer (Marshall & Zimbardo, 1979; Maslach, 1979; Mezzacappa, Katkin, & Palmer, 1999). We need further evidence that completely neutral arousal may be mistakenly attributed to a particular emotion. Another study supplied such evidence. Participants first engaged in strenuous physical exercise and then participated in a task, during which they were provoked by a confederate of the experimenter. The exercise created physiological arousal that was neutral and that persisted until the participant was provoked. This

arousal should have combined with any arousal elicited by the provocation, resulting in a more intense response of anger. In fact, participants who had just exercised responded more aggressively to the provocation than those who did not (Zillmann & Bryant, 1974). Although these results do not support Schachter and Singer's two-factor theory per se, they do support a more limited effect, called the misattribution of arousal. This effect means that lingering physiological arousal – say, from running up four flights of stairs – can be mistakenly attributed to subsequent circumstances – like an ambiguous remark, 'nice hair' – and intensify our emotional reactions to those circumstances. In the case of our earlier example, the lingering arousal could fuel anger. This effect has been replicated in many studies. Schachter and Singer's famous study, along with the later work on the misattribution of arousal, is important because it created a central role for cognitive appraisals within the emotion process. Even so, the two-factor theory did little to explain how emotions unfold outside the laboratory (Reisenzein, 1983). This is because Schachter and Singer's first factor of unexplained physiological arousal may occur only rarely in real life. Think for a moment of the last time you were really afraid. Where were you? What happened? As you visualize the details of that experience, try to locate the exact moment when you experienced unexplained arousal. Suppose, for instance, that you experienced fear while you were snorkeling and saw a shark. Although you did sense a huge adrenalin rush that helped you swim to safety, that arousal was never unexplained. The shark was the explanation! Or more precisely, your appraisal that the shark endangered you was the explanation. Departing from Schachter and Singer, most contemporary appraisal theorists would place the component of cognitive appraisal before the component of physiological arousal, not after it. But, as Schachter and Singer suggested, the perceived arousal and cognitive appraisal are a) Two-factor theory (Schachter & Singer, 1962) Stimulus General physiological arousal Cognitive appraisal of arousal Subjective experience of the emotion b) James-lange theory (James, 1890/1950) Stimulus Stimulus Physiological arousal specific to an emotion Subjective experience of the emotion c) Facial feedback hypothesis (Tompkins, 1962) Facial expression Subjective experience of the emotion Figure 11.2 Classic Theories of Emotion. Early theories of emotion proposed different relationships between the components of emotion. COGNITIVE APPRAISAL AND EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

400 CHAPTER 11 EMOTION not experienced as independent. Rather, the arousal is attributed to the appraisal – 'My heart is racing because I'm so angry about what Mary said.' So both arousal and appraisal contribute to the intensity of experience – and sometimes appraisal alone can determine the quality of experience. Themes and dimensions of appraisals The model of emotion presented in Figure 11.1 is consistent with various appraisal theories of emotion. All appraisal theories are alike in that they suggest that people's appraisals of situations (not their appraisals of physiological arousal) lead to the subjective experience of emotion, the arousal associated with it, and other components of the emotional response. Yet various appraisal theories differ in how they conceptualize the appraisal process. These theories can be divided into (1) minimalist appraisal theories, which reduce the number of appraisal dimensions to minimum, often based on fundamental themes, and (2) dimensional appraisal theories, which identify a range of appraisal dimensions thought to be sufficient to account for differences among emotions. According to the minimalist appraisal theories, there are certain fundamental human transactions that yield specific emotions. One appraisal theorist, Richard Lazarus (1991b), identifies these fundamental transactions as core relational themes. A core relational theme represents the personal meaning that results from a particular pattern of appraisals about a specific person– environment

relationship. It distills the appraisal process to its essence. Table 11.1 lists several emotions (such as sadness) and the core relational themes that trigger them (for sadness, irrevocable loss). These fundamental themes and their associated emotions can be found in every human culture. Some circumstances are appraised the same by almost everyone. For example, for most humans and even most animals, being near a large hissing snake tends to be appraised as threatening. Even so, the types of circumstances that elicit the appraisal patterns listed in Table 11.1 may differ across cultures, a point we will return to in a later section. The dimensional appraisal theories are concerned with specifying the various dimensions of appraisals and the emotional consequences of those dimensions. An example is given in Table 11.2. One dimension is the desirability of an anticipated event, and another is whether the event occurs. When we combine these two dimensions, we get four possible appraisals, each of which seems to produce a distinct emotion. (We are using only four emotions in our example to try to keep things simple.) When a desired event (such as falling in love) occurs, we experience joy; when a desired event does not occur (the person we are in love with does not love us), we experience sorrow; when an undesired event (such as doing poorly on an exam) occurs, we experience distress; and when an undesired For more Cengage Learning textbooks, visit www.cengagebrain.co.uk Table 11.1 Emotions and their cognitive causes Fifteen emotions and their associated core relational themes (appraisal patterns). (After Lazarus, 1991b) Emotion Core relational theme Anger A demeaning offense against me and mine Anxiety Facing uncertain, existential threat Fright Facing an immediate, concrete, and overwhelming physical danger Guilt Having transgressed a moral imperative Shame Having failed to live up to an ego ideal Sadness Having experienced an irrevocable loss Envy Wanting what someone else has Jealousy Resenting a third party for loss or threat to another’s affection Disgust Taking in or being too close to an indigestible object or idea (metaphorically speaking) Happiness Making reasonable progress toward the realization of a goal Pride Enhancing our ego identity by taking credit for a valued object or achievement, either our own or that of some person or group with whom we identify Relief A distressing goal-incongruent condition has changed for the better or gone away Hope Fearing the worst but yearning for better Love Desiring or participating in affection, usually but not necessarily reciprocated Compassion Being moved by another’s suffering and wanting to help Table 11.2 Primary appraisal dimensions and their consequences Combinations of two appraisal dimensions and their associated emotions. (After Roseman, 1984) Occur Not occur Desirable Joy Sorrow Undesirable Distress Relief event does not occur (not doing poorly on an exam), we experience relief. The preceding example makes use of only two dimensions, but most dimensional theories of appraisal assume that numerous dimensions are involved. For example,

Smith and Ellsworth (1985, 1987) found that at least six dimensions were needed to describe 15 different emotions (including, for example, anger, guilt, and sadness). These dimensions were (1) the desirability of the situation (pleasant or unpleasant), (2) the amount of effort the person anticipates spending on the situation, (3) the certainty of the situation, (4) the amount of attention the person wants to devote to the situation, (5) the degree of control the person feels he or she has over the situation, and (6) the degree of control the person attributes to nonhuman forces in the situation. To illustrate how the last two dimensions operate, anger is associated with an unpleasant situation caused by another person, guilt is associated with an unpleasant situation we brought on ourselves, and sadness is associated with an unpleasant situation controlled by circumstances. So, if you and your friend miss a concert that you had your heart set on hearing, you will feel anger if you missed it because your friend carelessly misplaced the tickets, guilt if you misplaced the

tickets, and sadness if the performance is canceled because of a performer's illness. The virtue of this kind of approach is that it specifies the appraisal process in detail and accounts for a wide range of emotional experiences. Despite the widespread acceptance of appraisal theories of emotion, most of the early evidence for these theories rested on correlations between self-reported appraisals and self-reported emotions. The causal role of appraisals was thus not established (Parkinson & Manstead, 1992). A recent experiment supplied this missing evidence. Participants first completed a task in which they attributed a series of neutral events (such as check for the mail, wait for the bus) either to themselves (internal attribution condition) or to someone else (external attribution condition). They did this by generating either 20 sentences like 'I check for the mail' and 'I wait for the bus' or 20 like 'He checks for the mail' and 'He waits for the bus.' Next, they faced an ambiguous negative situation: They had been told by one experimenter to proceed to the next room to complete the study. When they opened the door to the assigned room, a second experimenter cried out from within, 'Get out! Didn't you read the sign on the door? You disturbed our experiment. Wait outside the door.' How would people respond to this outburst? Would they feel guilty or get angry? Recall that guilt is associated with unpleasant circumstances you bring on yourself and anger is associated with unpleasant circumstances caused by another person. Results of the experiment showed that participants who were earlier primed to make internal attributions were more likely to express guilt and apologize, and those who were earlier primed to make external attributions were more likely to express anger and blame the other experimenter (Neumann, 2000). These findings demonstrate that cognitive appraisals precede and cause the other components of emotion. Additional evidence for the causal role of   appraisals comes from assessments of brain activity. When people evaluate a set of pictures by how pleasant or unpleasant they are, they show more activation in key brain areas associated with emotion than when they evaluate similar pictures along emotion-irrelevant dimensions, such as determining how many people appear in the picture (Hajcak, Moser & Simons, 2006). Conscious and unconscious appraisals Much debate among emotion theorists has centered on whether the appraisal process necessarily occurs consciously and deliberately. Some have argued that emotions can occur without any preceding conscious thought (Zajonc, 1984). Experiments on common phobias have tested this idea by presenting pictures of spiders and snakes to participants who (1) fear snakes, (2) fear spiders, or (3) have no phobias (Ohman, 2000). In one condition, the pictures were shown long enough for participants to consciously recognize them. In another condition, a procedure called backward masking was used, meaning that pictures were shown for only 30 milliseconds and then masked by a neutral picture so that participants were unaware of the picture's content. Phobics showed nearly identical physiological responses (increased sweat gland activity) to pictures of their phobic object, regardless of whether they consciously saw the spider or snake or not. Other experiments confirm that even for people without phobias, quick exposure to images that elicit fear or disgust using similar backward masking techniques can produce emotion-specific subjective, cognitive, and behavioral responses (Ruys & Stapel, 2008). These sorts of studies suggest that appraisals can occur at unconscious levels, making people experience emotions for reasons unknown to them. Most contemporary appraisal theories acknowledge that cognitive appraisals can occur automatically, outside conscious awareness. Debate continues, though, over how much of the appraisal process can occur unconsciously. One suggestion is that only the most rudimentary appraisals of valence ('Are these circumstances good for me or bad for me?') and urgency ('How quickly must I respond?) are made outside of awareness. By contrast, more complex appraisals, such as agency ('Who is to blame?'), result from conscious information

processing (Robinson, 1998). In short, the cognitive appraisals within emotion processes are similar to other forms of cognition. They result in part from automatic processing, outside conscious awareness, and in part from controlled processing, of which we are aware (see Chapters 6 and 18 for similar dual-process perspectives). To illustrate, if from the corner of your eye you see something shaped like a snake, an automatic and unconscious appraisal process may make you jump before a more controlled and deliberate appraisal process can determine that the object in question is, in fact, a harmless piece of rope.

402 CHAPTER 11 EMOTION Appraisals in the brain Research on the brain circuits involved in emotion processes also supports the view that appraisals occur both consciously and unconsciously. One brain structure that plays a key role within emotion circuits is the amygdala, a small, almond-shaped mass that is located in the lower brain and is known to register emotional reactions (Phelps, 2006). At one time, it was thought that the amygdala received all its inputs from the cortex and, hence, that those inputs always involved conscious appraisal. But research with rats uncovered connections between sensory channels and the amygdala that do not go through the cortex, and these direct connections may be the biological basis of unconscious appraisals (LeDoux & Phelps, 2000). The amygdala is capable of responding to an alarming situation before the cortex does, which suggests that sometimes we can experience an emotion before we know why. Although the initial research on the amygdala's role in automatic emotions was based on rats, the neural pathways involved appear similar in humans (Phelps, 2006). Brain imaging in humans (see Chapter 2) has also demonstrated a key role for the amygdala within emotions (Figure 11.3). Using the same backward masking technique described earlier, fearful facial expressions were shown to participants for about 30 milliseconds and then masked by neutral expressions on the same faces. Even though participants had no conscious awareness of the Figure 11.3 Amygdala Activation During Unconscious Appraisals. This image shows a coronal slice of brain. Fearful and happy faces were shown to participants using a backward masking technique that prevented conscious awareness. Portrayed is the activation difference for masked fearful versus masked happy faces. The highlighted area represents greater activation in the amygdala for masked fearful faces. These findings suggest that the amygdala may play a role in the unconscious appraisal of emotionally-relevant stimuli. (From Whalen, Rauch, Etcoff, McInerney, Lee, & Jenike, (1998), 'Masked Presentation of Emotional Facial Expressions Modulate Amygdala Activity Without Explicit Knowledge', Journal of Neuroscience 18, 411–418.) For more Cengage Learning textbooks, visit www.cengagebrain.co.uk fearful faces, imaging data showed activation within the amygdala (Whalen et al., 1998). These data suggest that the amygdala monitors emotion-eliciting stimuli at an automatic, nonconscious level. Interestingly, criminals with antisocial personality disorder, like Ted Bundy, described at the start of this chapter, show less activation in the amygdala during emotional processing than normal criminals or normal noncriminals (Kiehl et al., 2001), providing neurological evidence for an emotion-related deficit. INTERIM SUMMARY l A cognitive appraisal is an interpretation of the personal meaning of certain circumstances (or person– environment relationships) that results in an emotion. Such appraisals affect both the intensity and the quality of an emotion. l The classic two-factor theory of emotion predicted that when people are induced into a state of undifferentiated arousal, the quality of their emotional experience would be influenced by their appraisal of the situation. This theory, although popular, is not well supported by data. A related effect, known as the misattribution of arousal, has received better empirical support. It states that any lingering physiological arousal can be mistakenly attributed to subsequent circumstances and intensify our emotional reactions to those circumstances. l One prominent

minimalist appraisal theory emphasizes the importance of emotion-specific core relational themes, like a demeaning offense for anger (see Table 11.1). Dimensional appraisal theories focus on identifying the relevant dimensions of cognitive appraisal of emotion, like degrees of certainty or control. l Cognitive appraisals can occur outside conscious awareness, and brain research identifies the amygdala as involved in automatic appraisals. CRITICAL THINKING QUESTIONS 1 What is the relationship between a person–environment relationship and a cognitive appraisal (that is, the first two boxes in Figure 11.1)? Can you think of a specific person–environment relationship that has, at one time, led you to experience an emotion, whereas at another time it did not? 2 If the appraisal process can be outside awareness, sometimes we may experience emotions and not know why. How then, would that sort of an emotion differ from a mood, which also has no knfown cause?

SUBJECTIVE EXPERIENCES AND EMOTION Although the initial appraisal process may occur outside conscious awareness, the subjective experience of emotions – the feeling component – is, by definition, within awareness. Recall the study of phobic people who were shown pictures of their phobic objects (spiders or snakes) via the backward masking technique that prevented conscious awareness. The results showed not only that people experienced bodily responses (increased sweat gland activity) to unseen feared objects but also that they reported feeling aversion, arousal, and lack of control, all consistent with the subjective experience of fear. So, one output of the appraisal process is a change in subjective experience. On the aversive side, we may feel angry, afraid, sad, disgusted, or perhaps some combination of these feelings. On the pleasant side, we may feel elated and joyful, serene and content, interested and engaged, or some other pleasant feeling like awe or gratitude. To say that subjective experiences are a component of the emotion process does not mean that all emotion experiences come with this component. Researchers have argued persuasively that emotions can occur without any conscious feelings at all (Berridge & Winkielman, 2003). Nonetheless, when present, conscious subjective experiences matter. What function do these inner feelings serve? A prominent view is that these feelings serve as feedback about the personal relevance of our current circumstances. When we feel a negative emotion, like fear or anger, the unpleasant feeling serves as a cue that something in our environment poses us a threat and that we may need to act fast to protect ourselves. When we feel a positive emotion, like joy or interest, the pleasant feeling signals that we are safe and satiated, and that we can feel free to play or explore. More generally, the feeling component of emotion is thought to guide behavior, decision making, and information processing (Clore, Gasper, & Garvin, 2001). Feelings modify attention and learning We tend to pay more attention to events that fit our current feelings than to events that do not. As a consequence, we learn more about the events that fit, or are congruent with, our feelings. One experiment that demonstrates these phenomena involved three stages. In the first stage, participants were induced using hypnosis to be either happy or sad. In the second stage, the participants read a brief story about an encounter between two men – a happy character and a sad one. The story vividly described the events of the two men’s lives and their emotional SUBJECTIVE EXPERIENCES AND EMOTION reactions. After reading the story, participants were asked who they thought the central character was and with whom they identified. Participants who had been induced to feel happy identified more with the happy character and thought the story contained more statements about him; participants who had been induced to feel sad identified more with the sad character and thought the story contained more statements about him. These results indicate that participants paid more attention to the character and events that were congruent with their feelings than to those that were not (Bower, 1981). More recent experiments demonstrate that

current feelings guide attention automatically, by producing faster reaction times to feeling-congruent events (Derryberry & Tucker, 1994). The third stage of the hypnosis experiment provided evidence that participants also learned more about feeling-congruent events than about feeling-incongruent events. One day after reading the story, the participants, now in a neutral state, returned to the laboratory, where they were asked to recall the story. Participants recalled more about the character they had identified with: For the previously happy participants, 55 percent of the facts they recalled were about the happy character; for the previously sad participants, 80 percent of the facts they recalled were about the sad character (Bower, 1981). Exactly how does the congruence between our current feelings and some new material affect the learning of that material? We know that we can learn new material better if we can relate it to information already in memory. We also know that emotions affect our ability to retrieve personal memories (Buchanan, 2007). So our feelings during learning may increase the availability of memories that fit that feeling, and such memories will be easier to relate to new material that also fits that feeling. Suppose that you hear a story about a student failing in school. If you are feeling sad when you hear the story, some of your memories about failure experiences (particularly academic failures) may be easily accessible, and the similarity of these memories to the new fact of someone failing in school will make it easy to relate to them. In contrast, if you are feeling happy when you hear the story, your most accessible memories may be too dissimilar to a school failure to foster a relationship between the old memories and the new fact. So, our feelings influence what memories are more accessible, and those memories influence what is easy for us to learn at the moment (Bower, 1981; Isen, 1985). Feelings modify evaluations and judgments Our feelings can affect our evaluations of other people. Everyday experiences provide numerous examples of this. When we are feeling happy, a friend’s habit of constantly

404 CHAPTER 11 EMOTION checking his appearance in a mirror may seem just an idiosyncrasy; when we are feeling irritable, we may dwell on how vain he is. Our feelings affect our evaluation of inanimate objects as well. In one experiment, participants were asked to evaluate their major possessions. Participants who had just been made grateful by receiving a small gift rated their televisions and cars more positively than did control participants who were feeling neutral (Isen, Shalker, Clark, & Karp, 1978). Emotions also alter our economic decisions, like how much we’d be willing to pay for some object, or how much we’d be willing to sell that same object for if we already owned it (Lerner, Small & Loewenstein, 2004). Our feelings also affect our judgments about the frequency of various risks. Theorists have argued that such influence occurs because emotions activate tendencies to reproduce the same cognitive appraisals that initially produced the emotion (Lerner & Keltner, 2001; Siemer, 2001). Feeling fear, for instance, leads us to appraise subsequent circumstances as uncertain and uncontrollable and thus causes us to see future risks as more likely. In contrast, feeling angry or happy, although feelings of different valence, leads us to appraise subsequent circumstances as certain and controllable and thus causes us to see future risks as less likely (Johnson & Tversky, 1983; Lerner & Keltner, 2001). In an experiment testing this idea, participants were first induced to feel anger or fear by vividly recounting circumstances that made them angry or fearful. They were then asked to rate the degree to which the circumstances they described were under their control and how certain or uncertain they were about them. Finally, participants estimated their own chances of experiencing a range of positive and negative life events, like marrying someone wealthy or getting a sexually transmitted disease. The results are shown in Figure 11.4. Fear and anger had opposite effects on cognitive appraisal and on estimates of risk. Those feeling fear appraised their circumstances as uncertain and uncontrollable,

and these appraisals in turn predicted more pessimistic risk assessments. Those feeling anger, by contrast, appraised their circumstances as certain and controllable, and these appraisals in turn predicted more optimistic risk assessments (Lerner & Keltner, 2001). Our feelings affect other types of judgment as well. In another experiment, participants were made either sad or angry by imagining themselves experiencing either a sad event or an angry one. They then were asked to evaluate the possible causes of hypothetical events, such as missing an important flight or losing money. Participants who were angry tended to attribute the hypothetical events to the mistakes of other people, but participants who were sad tended to attribute them to situations (for example, traffic congestion was the reason for missing a flight). So the angry participants were more ready to blame someone For more Cengage Learning textbooks, visit www.cengagebrain.co.uk Angry Fearful 0.7 0.6 0.5 0.4 0.3 Standardized scores 0.2 0.1 –0.1 –0.2 –0.3 –0.4 –0.5 –0.6 –0.7 Control appraisals Certainty appraisals Optimistic risk estimates Figure 11.4 Fear, Anger, and Risk. Fear and anger had opposite effects on cognitive appraisals and risk estimates. Effect sizes are represented in standardized scores to put appraisals and risk estimates on the same scale. Compared with angry participants (green bars), fearful participants (purple bars) rated their circumstances as less under their control (left bars) and less certain (middle bars) and made more pessimistic estimates of future risks (right bars). Subsequent analyses confirmed that appraisals accounted for the effect of emotions on risk estimates. (From J. S. Lerner and D. Keltner (2001). ‘Fear, Anger, and Risk’, in Journal of Personality and Social Psychology, 81:146–159. Copyright © 2001 by the American Psychological Association. Reprinted with permission.) for negative events, whereas the sad participants were more willing to acknowledge that an unlucky situation might have caused the events (Keltner, Ellsworth, & Edwards, 1993). Feeling afraid, then, makes the world seem more dangerous. Such a perception can reinforce the fearful feelings. In addition, as noted earlier, our feelings lead us to selectively attend to and learn feeling-congruent facts and memories, which can also reinforce the initial emotion. A similar analysis applies to positive emotions. Positive emotions broaden our habitual modes of thinking, which may make it more likely that we find positive meaning in subsequent circumstances and then experience further positive emotions. So, the cognitive consequences of subjective experiences serve to perpetuate emotional states, which can produce downward spirals for negative emotions and upward spirals for positive ones (Fredrickson & Joiner, 2002).

THOUGHT AND ACTION TENDENCIES AND EMOTION One way that feelings guide behavior and information processing is through the urges that accompany them. These urges are called thought–action tendencies (Fredrickson, 1998) or sometimes just action tendencies (Frijda, 1986; Lazarus, 1991b). Table 11.3 lists several emotions and the thought–action tendencies they instill. With most negative emotions, people’s thought–action tendencies become narrow and specific. In fear, for example, we feel the specific urge to escape the danger. By contrast, with most positive emotions, people’s thought–action tendencies become broad and more open to possibilities. In joy, for instance, we feel the urge to be playful in general. (See the Cutting Edge Research box for a discussion of the related benefits of positive emotions.) Certainly, people do not invariably act on the urges that accompany their emotions. Keep in mind that these are thought–action tendencies, not thoughts or actions per se. They merely describe people’s ideas about possible courses of action, and whether these ideas narrow to a specific behavioral urge, as for negative emotions, or broaden to encompass a wide range of possibilities, as for positive emotions. Whether urges become actions depends on the complex interplay of impulse control, cultural norms, and other factors. Even so, many emotion theorists hold that having particular thought and action tendencies

come to mind is what made emotions evolutionarily Table 11.3 Emotions and their associated thought–action tendencies Twelve emotions and the urges they spark. (After Fredrickson, 1998, 2002; Fredrickson & Branigan, 2001; Frijda, 1986; Lazarus, 1991b) Emotion Thought–action tendency Anger Attack Fear Escape Disgust Expel Guilt Make amends Shame Disappear Sadness Withdraw Joy Play Interest Explore Contentment Savor and integrate Pride Dream big Gratitude Be prosocial Elevation Become a better person For more Cengage Learning textbooks, visit www.cengagebrain.co.uk THOUGHT AND ACTION TENDENCIES AND EMOTION adaptive: For negative emotions, specific thought–action tendencies are thought to represent those actions that worked best in getting our ancestors out of life-or-death situations (Levenson, 1994; Tooby & Cosmides, 1990). For positive emotions, broadened thought–action tendencies are thought to build enduring personal resources – like health, optimism, and social support – which might have also made the difference between life and death for our ancestors (Fredrickson, 1998, 2001). One way researchers have assessed whether specific emotions produce specific action tendencies is to show study participants a range of images selected to induce fear, disgust, sexual attraction or no emotion whatsoever (e.g., household objects). Participants viewed these images with their hands palms down on an experimental table, and during each picture they were cued to extend their wrists and fingers as quickly as possible, while the electrical signals in the muscles of their forearms were recorded along with the force of their hand movement. Researchers found that, compared to all the other images, the fear-inducing images produced faster withdrawal actions, as indexed by muscle activity in the forearms (Coombes, Cauraugh, & Janelle, 2007). INTERIM SUMMARY l Subjective experiences of emotions, or feelings, guide behavior, decision making, and judgment. l Subjective experiences also steer memory, learning, and risk assessments. l Different emotions carry urges to think and act in certain ways, called thought–action tendencies. These are summarized in Table 11.3. l Negative emotions narrow people’s momentary thought–action repertoires, promoting quick action in life-threatening circumstances. By contrast, positive emotions broaden people’s momentary thought–action repertoires, which, over time, can build lasting resources for survival. CRITICAL THINKING QUESTIONS 1 What are some of the cognitive processes by which a particular emotion might perpetuate itself? 2 Some theorists argue that the thought–action tendencies listed in Table 11.3 are the result of evolutionary processes. Why might this be the case?

406 CHAPTER 11 EMOTION CUTTING EDGE RESEARCH Benefits of positive emotions What good are positive emotions? This question seems almost silly because at one level the answer is obvious: Positive emotions feel good. This fact alone makes them rewarding and valuable experiences. End of story, right? Unfortunately, for many years, this had been the end of the story. Early reviews of the scientific literature on emotions revealed an overwhelming focus on negative emotions – like fear, anger, disgust, and shame – and only a tiny focus on positive emotions – like joy, contentment, interest, and love. So, although few would argue with Thomas Jefferson’s assumption in the U. S. Declaration of Independence that the pursuit of happiness is a worthy goal, until recently, few had pursued positive emotions scientifically. This situation has changed over the past decade, and a recent landmark study sounds a wake-up call about the profound benefits positive emotions may hold for us. This was a study of 180 Catholic nuns who donated their lives not only to God but also to science (see chart). As part of a larger study of aging and Alzheimer’s disease, these nuns agreed to give scientists access to their archived work and medical records (and to donate their brains at death). The work archives included autobiographies handwritten in the 1930s and 1940s, when the nuns were in their early 20s and about to take their final vows. Researchers

scored these essays for emotional content, recording instances of positive emotion – like happiness, interest, love, and hope – and negative emotions – like sadness, fear, and lack of interest. No association was found between negative emotional content and mortality, perhaps because it was rather rare in these essays. But a strong inverse association was found between positive emotional content and mortality: Those nuns who expressed the most positive emotions lived up to ten years longer than those who expressed the least positive emotions (Danner, Snowdon, & Friesen, 2001, see chart). This gain in life expectancy is considerably larger than the gain you would get from 1.0 0.9 0.8 Probability of survival 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0.0 POSITIVE EMOTIONS BROADEN OUR THINKING AND ACTIONS One virtue of negative emotions is that they spark strong urges to act in specific ways: to fight when angry, to flee when afraid, or to spit when disgusted (Lazarus, 1991b). Put differently, negative emotions narrow our thinking and For more Cengage Learning textbooks, visit www.cengagebrain.co.uk quitting smoking. Imagine how long you would live if you both quit smoking and accentuated the positive? This study of nuns is not an isolated finding. A recent review of nearly 300 published studies, which collectively tested more than 275,000 people, makes a similar conclusion: Positive emotions produce success in life as much as they reflect success in life (Lyubomirsky, King, & Diener, 2005). These conclusions are compelling, yet they do not address how positive emotions provide benefits. Insight into the possible pathways is provided by a cutting edge theory that describes the form and function of positive emotions, called the broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001). Group 1 Group 2 Group 3 Group 4 75 85 95 Age Positive Emotions and Longevity. Four groups of 45 nuns were formed by ranking the number of positive emotion sentences in the autobiographies they wrote in early life. Then, for each of the four groups, the probability of survival in late life was calculated. These survival curves are plotted. (Note that the survival curves for Groups 1 and 2–representing those nuns who expressed the least positive emotions–are virtually overlaid on each other.) (From D. D. Danner, D. A. Snowden, W. V. Friesen (2001). Positive emotions in early life and longevity: Finding from the nun study. Journal of Personality and Social Psychology, 80:804–813. Copyright © 2000 by the American Psychological Association. Reprinted with permission.) actions. Positive emotions have a complementary effect; they broaden our thinking and actions. Joy creates the urge to play, interest the urge to explore, contentment the urge to savor, and love a recurring cycle of each of these urges. The virtue here is that positive emotions expand our typical ways of thinking and being in the world, pushing us to be more creative, more curious, or more connected to others (Fredrickson, 1998; Isen, 2002). Laboratory experiments support this basic distinction between negative and positive

emotions (for a review, see Fredrickson & Cohn, in press). In one study, participants were shown one of five emotionally evocative film clips to induce one of two positive emotions (joy or contentment), one of two negative emotions (fear or anger), or no emotion (the control condition). While in these states, participants listed all the things they would like to do right then. Compared with those experiencing no emotion, those experiencing fear or anger listed fewer things they would like to do right then and named things consistent with the specific action tendencies listed in Table 11.3 (for example, those who felt angry felt like being aggressive). By contrast, and again compared with those experiencing no emotion, those experiencing joy or contentment named more things they would like to do right then, consistent with a broadened thought–action repertoire (Fredrickson & Branigan, 2005). Other experiments document that positive emotions even expand the scope of people's visual perception, allowing them to see more than they typically do (Wadlinger & Isaacowitz, 2006). And seeing the big picture in this way helps people to come up

with creative solutions to difficult problems (Rowe, Hirsh, & Anderson, 2007); POSITIVE EMOTIONS BUILD OUR PERSONAL RESOURCES Although emotions themselves are short-lived, they can have lasting effects on us. By momentarily broadening our thinking and actions, positive emotions promote discovery ª FRED GOLDSTEIN j DREAMSTIME.COM Positive emotionality may extend life expectancy. For more Cengage Learning textbooks, visit www.cengagebrain.co.uk POSITIVE EMOTIONS BUILD OUR PERSONAL RESOURCES of novel and creative ideas, actions, and social bonds. Playing, for instance, can build our physical and social resources, exploring can generate knowledge, and savoring can set our life priorities. Importantly, these outcomes often endure long after the initial positive emotion has vanished. In this way, positive emotions build up our store of resources to draw on in times of trouble, including physical resources (such as health and effective physical functioning), intellectual resources (such as a cognitive map for finding your way), psychological resources (such as an optimistic outlook), and social resources (such as someone to turn to for help). For instance, studies that track friendship formation among university students find that early experiences of positive emotions – especially gratitude – forecast better relationships months later (Algoe, Haidt & Gable, 2008; Waugh & Fredrickson, 2006). And field-based experiments that increase people's daily diets of positive emotions through mediation show promising evidence of growth across a wide range of personal resources (Fredrickson, Cohn, Coffey, Pek & Finkel, in press). So, feeling good may do more for us than we typically acknowledge. The broaden-and-build theory states that positive emotions broaden our typical ways of thinking and acting which, in turn, builds our lasting personal resources, making us more complex and resilient people than we would be otherwise. The next time you're laughing with friends, pursuing an interest, or enjoying a walk through the park, consider that you may be cultivating more than just fleeting good feelings. You may also ª SONYA ETCHISON j DREAMSTIME.COM

408 CHAPTER 11 EMOTION be optimizing your own long-term health and well-being (Fredrickson, 2000, 2002). BODILY CHANGES AND EMOTION When we experience certain emotions intensely, such as fear or anger, we may be aware of a number of bodily changes – including rapid heartbeat and breathing, dryness of the throat and mouth, perspiration, trembling, and a sinking feeling in the stomach (see Table 11.4). Many of the physiological changes that take place during emotional arousal result from activation of the sympathetic division of the autonomic nervous system (see Chapter 2). The sympathetic nervous system prepares the Table 11.4 Symptoms of fear in combat flying Based on reports of combat pilots during World War II. (From L. F. Shafer (1947) 'Symptoms of Fear in Combat Flying', in Journal of Consulting Psychology, 11:137–143.) During combat missions did you feel. . . ? Sometimes Often Total 56% 30% 86% A pounding heart and rapid pulse 30 That your muscles were very tense Easily irritated or angry 22 50 80 Dryness of the throat or mouth 26 Nervous perspiration or cold sweat Butterflies in the stomach 23 49 69 A sense of unreality–that this could not be happening to you A need to urinate frequently 25 Trembling 11 Confused or rattled 3 Weak or faint 4 34 39 That right after a mission you were unable to remember the details of what had happened Sick to the stomach 5 Unable to concentrate 3 4 5 That you had wet or soiled your pants For more Cengage Learning textbooks, visit www.cengagebrain.co.uk body for emergency action and is responsible for the following changes (which need not all occur at once):

1. Blood pressure and heart rate increase.
2. Respiration becomes more rapid.
3. The pupils dilate.

4. Perspiration increases while secretion of saliva and mucus decreases.
5. Blood-sugar level increases to provide more energy.
6. The blood clots more quickly in case of wounds.
7. Blood is diverted from the stomach and intestines to the brain and skeletal muscles.
8. The hairs on the skin become erect, causing goose pimples. The sympathetic nervous system thus gears up the organism for energy output. As the emotion subsides, the parasympathetic nervous system – the energy-conserving system – takes over and returns the organism to its normal state. These activities of the autonomic nervous system are themselves triggered by activity in certain regions of the brain, including the hypothalamus (which, as we saw in the last chapter, plays a major role in many biological motives) and the amygdala, which, as described earlier in this chapter, is implicated in the appraisal process. Impulses from these areas are transmitted to nuclei in the brain stem that control the functioning of the autonomic nervous system. The autonomic nervous system then acts directly on the muscles and internal organs to initiate some of the bodily changes described here. It also acts indirectly by stimulating the adrenal hormones to produce other bodily changes. Note that the kind of heightened physiological arousal we have described is characteristic of those negative emotions that come with urges for specific actions requiring substantial physical energy (such as attack or flee; the role of this fight-or-flight response in threatening or stressful situations is discussed further in Chapter 14). Indeed, a core idea within many emotion theories is that thought–action tendencies infuse both mind and body. So, for example, when you feel fear and experience the urge to escape, your body simultaneously reacts by mobilizing appropriate autonomic support for the possibility of running. According to this perspective, the function of the physiological changes evident during these potent negative emotions is to prepare the body for specific actions (Levenson, 1994). Positive emotions, some have argued, produce few bodily changes because their associated thought–action tendencies are broad and not specific. So instead of producing the heightened arousal that supports specific actions, positive emotions may be particularly suited for helping people recover from any lingering arousal that

Joy Contentment Neutral Sadness 10 30 50 Time (in seconds) Figure 11.5 The Undoing Effect of Positive Emotions. Joy and contentment produce faster cardiovascular recovery from lingering negative emotional arousal than neutrality and sadness. (Adapted with permission from B. L. Fredrickson, R. A. Mancuso, C. Branigan, & M. M. Tugade (2000), 'The Undoing Effect of Positive Emotions', in Motivation and Emotion, 24:237–258. © 2000 Kluwer Academic/Plenum Publishers.)
follows negative emotions, an idea called the undoing effect of positive emotions. A recent experiment tested this idea. Participants were first asked to prepare a speech on 'Why you are a good friend' under considerable time pressure. They were told that the speech would be videotaped and evaluated by their peers. This speech task produced feelings of anxiety, along with increases in blood pressure, heart rate, and other indices of cardiovascular activity. These physiological changes lingered on, even after participants were told that they would not have to deliver their speech after all. At this point, the participants were shown a randomly selected film clip that induced one of two positive emotions (joy or contentment), a negative emotion (sadness), or no emotion. Results are shown in Figure 11.5. Those who turned their attention to either of the two positive emotion films returned to their own baseline levels of cardiovascular activity faster than those who saw either the neutral or sad films (Fredrickson, Mancuso, Branigan, & Tugade,

2000). Cultivating positive emotions, then, appears to be a particularly good way to combat the lingering physiological aftereffects of negative emotions. Intensity of emotions What is the relationship between the heightened physiological arousal experienced with some emotions and the subjective experience of those emotions? In particular, is our perception of our own arousal – called visceral perception – part of the experience of the emotion? One way to answer this question is to study the emotional life of individuals with spinal cord injuries. When the spinal For more Cengage Learning textbooks, visit www.cengagebrain.co.uk BODILY CHANGES AND EMOTION cord is severed or lesioned, sensations below the point of injury cannot reach the brain. Because some of these sensations arise from the sympathetic nervous system, the injuries reduce the contributions of autonomic arousal to the experience of emotion. In one study, army veterans with spinal cord injuries were divided into five groups according to the location on the spinal cord where the lesion occurred. In one group, the lesions were near the neck (at the cervical level), with no feedback from the sympathetic system to the brain. In another group, the lesions were near the base of the spine (at the sacral level), with at least partial feedback from the sympathetic nerves possible. The other three groups fell between these two extremes. The five groups thus represented a continuum of visceral perception: The higher the lesion on the spinal cord, the less the feedback of the autonomic nervous system to the brain (Hohmann, 1962). The participants were interviewed to determine their feelings in situations of fear, anger, grief, and sexual excitement. Each person was asked to recall an emotionarousing incident prior to the injury and a comparable incident following the injury and then to compare the intensity of their emotional experience in each case. The data for states of fear and anger are shown in Figure 11.6. The higher the lesion on the individual's spinal cord (that is, the less feedback coming from the autonomic nervous system), the greater the decrease in emotionality following injury. The same relationship was true for states of sexual excitement and grief. A reduction in autonomic arousal resulted in a reduction in the intensity of experienced emotion. Comments by veterans with the highest spinal cord lesions suggested that they could react emotionally to arousing situations but that they did not really feel emotional. For example, 'It's sort of a cold anger. Sometimes I act angry when I see some injustice. I yell and cuss and raise hell, because if you don't do it sometimes, I've learned people will take advantage of you; but it doesn't have the heat to it that it used to. It's a mental kind of anger.' Or, 'I say I am afraid, like when I'm going into a real stiff exam at school, but I don't really feel afraid, not all tense and shaky with the hollow feeling in my stomach, like I used to.' The study just described is important, but it is not entirely objective – the emotional situations varied from one participant to another and were described from hindsight. More recent studies with noninjured participants provide more experimental control. Across healthy

410 CHAPTER 11 EMOTION Fear Anger 0.5 Change in emotionality –0.5 –1 –1.5 –2 Cervical Sacral Lumbar Upper thoracic Lower thoracic Level of lesion Figure 11.6 The Relationship Between Spinal Cord Lesions and Emotionality. People with spinal cord lesions compared the intensity of their emotional experiences before and after injury. Their reports were coded according to the degree of change: 0 indicates no change, a mild change ('I feel it less, I guess') is scored 1 for a decrease or þ1 for an increase, and a strong change ('I feel it a hulluva lot less') is scored 2 or þ2. Note that the higher the lesion, the greater the decrease in emotionality following injury (Adapted from G. W. Hohmann, 'The effect of dysfunctions of the autonomic nervous system on experienced feelings and emotions', Paper read at the New School for Social Research, New York, October 1962.) individuals, people can be classed into those who are good at visceral perception – for instance, those who are good at detecting their own heartbeat – and those who are not. If visceral perception

contributes to the intensity of emotions, then people who are good heartbeat detectors should report more intense subjective experiences of emotions. Several studies that compare good and poor heartbeat detectors indeed show that good detectors report experiencing more intense emotional arousal, both in response to viewing films and pictures in laboratory settings (Pollatos, Kirsch, & Schandry, 2005; Wiens, Mezzacappa, & Katkin, 2000) and in response to daily life events (Barrett, Quigley, Bliss-Moreau, & Aronson, 2004). Related studies find that good heartbeat detectors show more intense facial expressions (Ferguson & Katkin, 1996) and more pronounced emotion-related brain activity (Pollatos et al., 2005) in response to emotional pictures. Together with the studies on spinal cord injuries, these studies suggest that visceral perception plays a role in the experience of the intensity of emotions (Schachter, 1964). For more Cengage Learning textbooks, visit www.cengagebrain.co.uk ª RICHARD WAREHAM FOTOGRAFIE / ALAMY Physical arousal may intensify feelings of anger. Differentiation of emotions Clearly, autonomic arousal contributes to the intensity of emotional experience. But does it differentiate the emotions? In other words, is there one pattern of physiological activity for excitement, another for anger, still another for fear, and so on? This question dates back to William James, the author of the very first psychology textbook, published in 1890. He proposed that the perception of bodily changes is the subjective experience of emotion and that we could not have one without the other: ‘We feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful’ (James, 1890/1950, p. 450). The Danish physiologist Carl Lange arrived at a similar conclusion at about the same time, so this view has come to be known as the James– Lange theory. It runs as follows: Because the perception of autonomic arousal (and perhaps of other bodily changes) constitutes the experience of an emotion, and because different emotions feel different, there must be a distinct pattern of autonomic activity for each emotion. The James–Lange theory therefore holds that autonomic arousal differentiates the emotions (see Figure 11.2b). This theory (particularly the part dealing with autonomic arousal) came under severe attack in the 1920s. The attack was led by the physiologist Walter Cannon (1927), who offered three major criticisms:

1. Because the internal organs are relatively insensitive structures and are not well supplied with nerves, internal changes occur too slowly to be the primary source of emotional feeling.
2. Artificially inducing the bodily changes associated with an emotion – for example, injecting a drug such as epinephrine – does not produce the experience of a true emotion. At most, it produces ‘as if’ emotions: Injected participants remark, ‘I feel as if afraid.’
3. The pattern of autonomic arousal does not seem to differ much from one emotional state to another. For example, anger makes our heart beat faster, but so does the sight of a loved one. The third argument, then, explicitly denies that autonomic arousal can differentiate the emotions. Psychologists have tried to rebut Cannon’s third point as they develop increasingly accurate measures of the components of autonomic arousal. Although a few experiments in the 1950s reported distinct physiological patterns for different emotions (Ax, 1953; Funkenstein, 1955), until the 1990s most studies had found little evidence for different patterns of arousal being associated with different emotions. A study by Levenson, Ekman, and Friesen (1990), however, provided evidence of autonomic patterns that are distinct for different emotions. Participants produced emotional expressions for each of six emotions – surprise, disgust, sadness, anger, fear, and happiness – by following instructions about which particular facial muscles to contract.

While they held an emotional expression for 10 seconds, the researchers measured their heart rate, skin temperature, and other indicators of autonomic arousal. A number of these measures revealed differences among the emotions (see Figure 11.7). Heart rate was faster for the negative emotions of anger, fear, and sadness than for happiness, surprise, and disgust, and the first three emotions themselves Change in heart rate (beats/min) 4 0 –2 Fear Sadness Happiness Surprise Anger Figure 11.7 Differences in Arousal for Different Emotions. Changes in heart rate (orange) and right finger temperature (blue). For heart rate, the changes associated with anger, fear, and sadness were all significantly greater than those for happiness, surprise, and disgust. For finger temperature, the change associated with anger was significantly different from that for all other emotions. (Adapted from an article by P. Ekman, et al., 'Autonomic Nervous System Activity Distinguishes Among Emotions', from Science, Vol. 221, pp. 1208–1210, September 16, 1983. Copyright © 1983 American Association for the Advancement of Science.) For more Cengage Learning textbooks, visit www.cengagebrain.co.uk BODILY CHANGES AND EMOTION could be partially distinguished by the fact that skin temperature was higher in anger than in fear or sadness. So, even though both anger and the sight of a loved one make our heart beat faster, only anger makes it beat much faster; and although anger and fear have much in common, anger is hot and fear is cold (no wonder people describe their anger as their 'blood boiling' and their fear as 'bone-chilling' or as 'getting cold feet'). Other research suggests that these distinctive arousal patterns may be universal. Levenson, Ekman, and colleagues studied the Minangkabau of Western Sumatra, a culture very different from Western culture. Again, participants produced facial expressions for various emotions – fear, anger, sadness, and disgust – while measures were taken of their heart rate, skin temperature, and other indicators of arousal. Although the magnitude of the physiological changes was less than that of the changes reported earlier for American individuals, the patterns of arousal for the different emotions were the same: Heart rate was faster for anger, fear, and sadness than for disgust, and skin temperature was highest for anger (Levenson, Ekman, Heider, & Friesen, 1992). These results are important, but they do not provide unequivocal support for the James–Lange theory or for the claim that autonomic arousal is the only component that differentiates the emotions. The studies we have described demonstrated that there are some physiological differences between emotions (though some researchers question this; see Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000), not that those differences are perceived and experienced as qualitative differences between emotions. Even if autonomic arousal does help differentiate some emotions, it is unlikely that it differentiates all emotions. The difference between contentment and gratitude, for example, may not be found in autonomic reactions. Also, Cannon's first two arguments against the James–Lange theory still stand: Autonomic arousal is at times too slow to differentiate emotional experiences, and artificial induction of arousal does not yield a true emotion. For these reasons, many emotion theorists still believe that something other than autonomic arousal differentiates the emotions. As we discussed earlier, that something else (or part of it) is usually thought to be the individual's cognitive appraisal of the situation. Heart rate Temperature Change in temperature (degrees) 0.15 0.1 0.05 –0.05 Disgust

412 CHAPTER 11 EMOTION INTERIM SUMMARY l Intense negative emotions involve physiological arousal caused by activation of the sympathetic division of the autonomic nervous system. l Positive emotions appear to have an undoing effect on lingering negative emotional arousal. l People with spinal cord injuries, which limit feedback from the autonomic nervous system, report experiencing less intense emotions. Other studies also suggest that visceral perception contributes to the intensity of emotion experiences. l The James–Lange theory states that autonomic arousal also differentiates the emotions, and recent evidence suggests that, to a degree, the pattern of arousal (for example, heartbeat, skin temperature) differs for different emotions. CRITICAL THINKING QUESTIONS 1 Drawing from your own experiences of anger or fear, does your perception of bodily changes contribute to your judgment of the intensity of your emotion? 2 In what way is the James–Lange theory of emotions similar to Schachter and Singer's two-factor theory? In what way do these two theories differ? FACIAL EXPRESSION AND EMOTION The facial movements that sometimes accompany an emotion serve to communicate the sender's emotion, often eliciting emotion in those who receive that communication (Russell, Bachorowski & Fernandez-Dole, 2003). Since the publication of Charles Darwin's 1872 classic, The Expression of Emotion in Man and Animals, psychologists have regarded the communication of emotion as an important function, one that has survival value for the species. Looking frightened may warn others that danger is present, perceiving that someone is angry tells us that he or she may be about to act aggressively, and seeing someone smile will make us feel safe and drawn to them. Other research suggests that, in addition to their communicative function, emotional expressions – in the face, body, and voice – contribute to the subjective experience of emotion, just as appraisals and internal bodily changes do. Facial expressions might at times even jumpstart the whole emotion process. Although most of the research For more Cengage Learning textbooks, visit www.cengagebrain.co.uk described below centers on facial expression, increasingly researchers are extending this work to examine how bodily postures communicate emotions as well (Gross, Crane & Fredrickson, 2008; Schindler, van Gool, & de Gelder, in press). Communication of emotion through facial expressions Certain facial expressions seem to have a universal meaning, regardless of the culture in which an individual is raised. The universal expression of anger, for example, involves a flushed face, brows lowered and drawn together, flared nostrils, a clenched jaw, and bared teeth. When people from five countries (the United States, Brazil, Chile, Argentina, and Japan) viewed photographs showing facial expressions typical of happiness, anger, sadness, disgust, fear, and surprise, they had little difficulty identifying the emotion that each expression conveyed. Even members of remote groups that had had virtually no contact with Western cultures (the Fore and Dani peoples in New Guinea) were able to identify the emotions represented by facial expressions of people from Western cultures. Likewise, American college students who viewed videotapes of facial expressions of Fore natives identified the associated emotions accurately, although they sometimes confused fear and surprise (Ekman, 1982). Even though facial musculature varies from person to person, the muscles needed to produce these universally recognized emotions appear to be basic and constant across people (Waller, Cray, & Burrows, 2008), suggesting that the human face has evolved to transmit emotion signals and the human brain has evolved to decode these signals (Smith, Cottrell, Gosselin, & Schyns, 2005). The universality of certain emotional expressions supports Darwin's claim that they are innate responses with an evolutionary history. According to Darwin, many of the ways in which we express emotion are inherited patterns that originally had some survival value. For example, the expression of disgust or rejection is based on the organism's attempt to rid itself of something unpleasant – perhaps even poisonous – that it has ingested. To quote Darwin (1872), The term 'disgust', in its simplest sense, means something offensive to the taste. But as

disgust also causes annoyance, it is generally accompanied by a frown, and often by gestures as if to push away or to guard oneself against the offensive object. Extreme disgust is expressed by movements around the mouth identical with those preparatory to the act of vomiting. The mouth is opened widely, with the upper lip strongly retracted. The partial closure of the eyelids, or the turning away of the eyes or of the whole body, are likewise highly expressive of disdain. These actions seem to declare that the despised person is not worth looking at, or is disagreeable to behold. Spitting seems an almost universal sign of contempt or disgust; and spitting obviously represents the rejection of anything offensive from the mouth.

The fact that facial expressions of emotions communicate important information is demonstrated even more powerfully when the facial expression of one person by itself changes the behavior of another person. Such evidence is provided by studies of infants' interactions with their mothers. In one study, infants who had just started to crawl were placed on an apparatus called a visual cliff (described in Chapter 5, and shown in Figure 5.36). The depth of the apparent cliff was not as deep as that used in studies of depth perception; instead, it was the size of an ordinary step, which made it less clear whether the drop posed a danger or not. When infants approached the edge of the cliff, they would look to their mother. In one condition, mothers had been instructed to make an expression of intense fear. In another, they were instructed to smile broadly. The mothers' facial expression resolved the infants' uncertainty about the danger: Babies whose mothers showed fear never crossed to the deep side, whereas 74 percent of those whose mothers smiled did (Sorce, Emde, Campos, & Klinnert, 1985). Facial expressions are universal in the emotions they convey. Photographs of people from New Guinea and from the United States demonstrate that specific emotions are conveyed by the same facial expressions. Shown here are, from left to right, happiness, sadness, and disgust. (ALL) © PAUL EKMAN (ALL) NEW GUINEA FACES FROM FACE OF MAN, NEW YORK, GARLAND, 1980, PAUL EKMAN/PERGAMON FACIAL EXPRESSION AND EMOTION

 Although facial expressions seem to be innately associated with particular emotions, certain aspects of them are learned. Emotional display rules, for instance, vary across cultures and specify the types of emotions people should express in certain situations and the behaviors appropriate for particular emotions. As an example, in some cultures people who lose a loved one are expected to feel sad and to express their sadness by openly crying and wailing for the loved one to return. In other cultures, bereaved people are expected to sing, dance, and be merry. In Europe, two men greeting each other on the street may embrace and kiss, but in the United States such displays of affection are often taboo for men. A laboratory study with participants from Japan and the United States demonstrated cultural similarities in expressions alongside differences in display rules. Participants from both cultures viewed a disgusting film clip either alone or in the presence of an authority figure. Although they showed nearly identical facial expressions when alone, when the authority was present, Japanese participants more often masked their disgust expressions with a smile (Ekman, 1972). Superimposed on the basic expressions of emotion, which appear to be universal, are conventional forms of expressions – a kind of language of emotion that is recognized by other members of the culture but potentially misunderstood by people from other cultures (Elfenbein, Beaupre, Levesque & Hess, 2007). The facial feedback hypothesis The idea that facial expressions, in addition to their communicative function, also contribute to our experience of emotions is called the facial feedback hypothesis (Tomkins, 1962). This hypothesis runs parallel to the James–Lange theory: Just as we receive feedback about (or

perceive) our autonomic arousal, so do we receive feedback about our facial expressions, and this feedback can cause or intensify the experience of emotions. The hypothesis is illustrated in Figure 11.2c. Play around with this idea yourself. Make yourself smile, and hold that smile for several seconds. Did you begin to feel happy? Now, make yourself scowl and hold it. Does this make you feel tense or angry? Testing the facial feedback hypothesis experimentally is trickier than making faces and telling how you feel. Experimenters need to rule out the possibility that participants report their feelings based on common knowledge about which expressions and feelings go together, like the knowledge that smiling and feeling happy go hand-in-hand. The trick is to get participants to smile without knowing it. In one such experiment, participants rated cartoons for funniness while holding a pen either in their teeth or in their lips. Holding a pen in your teeth forces your face into a smile, while holding it in your lips prevents a smile. (Try it!) Consistent with the facial feedback hypothesis, participants who held the pen in their teeth rated the cartoons as funnier than those who held the pen in their lips (Strack, Martin, & Stepper, 1988). Similar studies show an effect for body postures as well (Flack, 2006). In addition to these studies, which show a direct connection between expression and experienced emotion, other experiments indicate that facial expressions may have an indirect effect on experienced emotion by increasing autonomic arousal. Such an effect was demonstrated in the experiment discussed earlier in which producing particular emotional expressions led to changes in heartbeat and skin temperature (Levenson, Ekman, & Friesen, 1990). We therefore need to add emotional expression to our list of factors that can initiate emotions. Even so, knowing that we can jumpstart an emotion by making a facial expression does not mean that this is the typical way that emotions unfold. In daily life, appraisals of our current circumstances are still the most likely trigger of emotions, as described in Figure 11.1. Yet, when facing adversity, knowledge of the facial feedback hypothesis might inspire us to ‘grin and bear it’, and studies have shown that doing so is linked with speedy physiological recovery (Fredrickson & Levenson, 1998). INTERIM SUMMARY l The facial expressions that accompany a subset of emotions have a universal meaning: People from different cultures agree on what emotion a person in a particular photograph is expressing. l The communicative power of facial expressions is evident in parent–infant interactions. Mothers’ facial expressions of fear or joy have been shown to dramatically alter their infants’ behavior. l Cultures may differ in the factors that elicit certain emotions and in display rules that specify how emotions should be experienced and expressed. l In addition to their communicative functions, emotional expressions may contribute to the subjective experience of an emotion (the facial feedback hypothesis). CRITICAL THINKING QUESTIONS 1 What effect does your smile have on others? What effect does your smile have on you? 2 How do the facial feedback hypothesis and Schachter and Singer’s classic study relate to the model of emotion illustrated in Figure 11.1?

RESPONSES TO EMOTION: EMOTION REGULATION Emotion regulation, or people’s responses to their own emotions, can be considered a component in the emotion process because people – at least by middle childhood – almost always have reactions to their emotions and goals about what they would like to feel or express, and when. Sometimes people have the goal of maintaining or intensifying an emotion, whether positive or negative. For instance, you might wish to savor and prolong the joy you feel when you’re with people you love. In another circumstance, you might want to work up your anger before registering a complaint to a merchant. Other times, people have the goal of minimizing or eliminating an emotion, whether positive or negative. Imagine feeling immensely proud of a personal achievement, perhaps landing a good job. While on that

pleasurable high, imagine running into a friend who has recently been turned down for multiple jobs and remains jobless. Might you want to minimize your expressions of pride at that moment? Yet perhaps most commonly, people's goals are to minimize their negative emotions, like sadness or anger. You might pursue this goal to lift your own spirits, to shield another person from your negative expressions, or both. Emotions and people's efforts to regulate them go hand-in-hand – so much so that we can hardly have one without the other. Indeed, a considerable part of the socialization process is directed toward teaching children how and when to regulate their emotions. Parents teach their children, both directly and by example, when certain emotions are appropriate and when they are not. Take the example of receiving a disappointing gift (say, an ugly sweater) from your grandmother. Can you show your disappointment to your grandmother? Your parents hope that you won't, and eventually you learn not to. Why is this important? Evidence suggests that children's success in learning these lessons about emotion regulation predicts their social success more generally (Eisenberg, Cumberland, & Spinrad, 1998). For instance, experimenters who have given preschool children disappointing gifts in the lab have learned that kids' abilities to control their expressions of negative emotion are negatively correlated with their risks for later disruptive behavior problems (Cole, Zahn-Waxler, & Smith, 1994). People control or regulate their emotions in many different ways. One study classified the different strategies that people use to improve their negative emotions as either cognitive or behavioral and as either diversion or engagement tactics (Parkinson & Totterdell, 1999). Table 11.5 lists these different kinds of strategies. Suppose you had a fight with a close friend, are angry, but want to feel better. You could disengage from your anger through sheer mental effort, by trying to think of nothing, or by distracting yourself by doing something fun or demanding, like playing your guitar or doing your calculus assignment. Alternatively, you could confront your feelings or the situation with an engagement strategy. Maybe you can reappraise the situation as better than you thought – if there's another reason your friend was so irritable, you need not take it personally. Or you can try to solve the underlying problem, by talking through the issues with your friend. These tactics are not mutually exclusive. You might first use distraction to quell the heat of your anger and then later, when you have a cooler head, you might discuss the underlying problem with your friend. In addition, these tactics are not always deliberately chosen. Like other cognitions and behavior, with repeated use, they can become automatic responses, outside of conscious awareness. People's responses to their emotions – whether deliberate regulation strategies or automatic responses – can influence the other components of emotion, either directly or indirectly. This is why Figure 11.1 has feedback arrows leading from responses to emotion, on the right, to all the preceding boxes. This influence also underscores that an Table 11.5 Classification of emotion regulation strategies People use different cognitive and behavioral strategies to make themselves feel better. (After Parkinson & Totterdell, 1999) Cognitive Behavioral Diversion Disengagement Avoid thinking about the problem Avoid the problematic situation Distraction Think about something pleasant or absorbing Do something pleasant or demanding Engagement Affect-directed Reappraise Vent feelings; seek comfort Situation-directed Think about how to solve the problem Take action to solve the problem RESPONSES TO EMOTION: EMOTION REGULATION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

416 CHAPTER 11 EMOTION emotion is a process – one that unfolds and changes over time – and not a simple state that can be captured in a single snapshot. Imagine, for instance, that you are the first to arrive at the scene after a bicyclist is hit by a car. You notice the bicyclist's leg is broken because it's bent in an unnatural position. Here, your initial emotion of disgust might quickly

transform into compassion as you reappraise the circumstance as one in which the injured bicyclist needs your help. So your emotions in this situation change over time, in part because of your responses to your own emotions ('I can't show my feelings of disgust to this suffering person'), and in part because the circumstances themselves change over time (e.g., the ambulance arrives, and you feel relieved). Does it matter which strategy you use to regulate an emotion? Consider that ugly sweater again. One way to convince your grandmother that you appreciate the gift is to focus on what your face shows. You could actively suppress any facial signs of anger or sadness and instead make yourself smile and give Grandma a hug. Another strategy would be to focus on how you interpret the situation, reappraising it to be better than you first thought. You might tell yourself (as your parents often did), 'It's the thought that counts' and focus on the care and effort your grandmother invested in selecting or knitting that sweater. Doing so might naturally yield a smile and hug for Grandma. Although these two strategies for dealing with the ugly sweater might be equally convincing to your grandmother, the strategy of suppressing facial expressions has been shown to increase both autonomic nervous system activation (Gross & Levenson, 1997) and amygdala activation (Goldin, McRae, Ramel, & Gross, 2008). Reappraisals, by contrast, don't appear to take a physiological toll and actually reduce amygdala activation (Goldin et al., 2008), because they change emotions, rather than stifle them. Research has shown that efforts to suppress facial expressions take a toll on cognitive functioning, too (Muraven, Tice, & Baumeister, 1998; Richards & Gross, 2000). In one study, participants were shown slides of men with recent or past injuries, many of them quite serious and therefore disgusting to view. During the slide presentation, participants heard each man's name, occupation, and type of accident. In one condition (suppression), participants were instructed to control their facial expressions by looking neutral and keeping still. In another condition (reappraisal), they were told to view the slides 'with the detached interest of a medical professional' and to try to think so objectively that 'you don't feel anything at all.' For comparison, in a third condition, participants were simply told to view the slides carefully. Results showed that people instructed to suppress had poorer memory for the injured men's background information than those who simply watched. Those who reappraised showed no such memory deficit (Richards & Gross, 2000). This finding suggests that efforts to For more Cengage Learning textbooks, visit www.cengagebrain.co.uk maintain composure by suppressing facial expressions may impair people's ability to navigate their social worlds. If, for instance, one person in a heated argument stonewalls and the other doesn't, they may end up with different memories of who said what, which in time could erode the relationship. So reappraisal seems a better strategy for regulating emotions than suppressing facial expressions. Other research has shown that, at least in the short run, distraction techniques – like playing basketball or reading an absorbing novel – are better strategies than rumination techniques – like thinking over and over again about the causes and consequences of your sadness or anger. Rumination tends to heighten negative emotions, whereas distraction lessens them. Because of the effects of emotions on evaluations and judgments (described earlier), eventual efforts to solve underlying problems tend to be more successful once negative emotions have abated (Nolen-Hoeksema & Larson, 1999). We return to a discussion of rumination and its effects on depression and anxiety in Chapter 14. INTERIM SUMMARY l People almost always respond to or regulate their emotions, by either exaggerating or minimizing them, and the ability to do so predicts social success. l Emotion regulation strategies have been classified as either cognitive or behavioral and as either diversion or engagement (see Table 11.5). l Responses to emotion can influence other components of the emotion process. This is why Figure 11.1 has feedback arrows leading from 'responses to emotion' to all preceding boxes. l The strategies people use to regulate emotions can have unexpected

repercussions. For instance, suppressing facial expression increases autonomic arousal and impairs memory. CRITICAL THINKING QUESTIONS 1 Identify and describe an example from your own life in which you deliberately tried to regulate an emotion. How did you do it? Did your regulation strategy alter the other components of the emotion process? Which ones? 2 Research suggests that if you merely interact with a person who suppresses his own emotions, your own physiological arousal may increase. How might this happen?

EMOTIONS, GENDER, AND CULTURE So far, in our discussion of the emotion process, we've emphasized how that process is similar for everybody. Yet emotional circumstances often bring out the differences between individuals and across groups. Sometimes those differences reflect personality and individuality (discussed in Chapters 12 and 13), and other times those differences reflect socialization histories, which vary by gender and culture. As we turn to issues of gender and culture in emotion processes, keep in mind that socialized differences and biological similarities both play key roles in the emotion process. As discussed in Chapter 1, it's not 'nature or nurture' but rather 'nature and nurture.' Looking back to Figure 11.1, you will notice that the emotion process begins with people's appraisals of their transactions with the environment and ends with their responses to their own emotions. One way to conceptualize the differences in emotion by gender and culture is to situate those differences as 'front-end' or 'back-end' differences. Front-end differences refer to those that begin with, or precede, the appraisal process. For instance, as we saw in our discussion of objectification theory (Chapter 10), to the extent that girls and women face circumstances that emphasize the importance of their weight and appearance, they may experience certain emotions – like shame – and certain emotional consequences – like depression and eating disorders – more frequently than do boys and men. By contrast, back-end differences refer to those linked to responses to emotion. People in some cultures, for instance, express fewer emotions socially, appearing stoic, whereas those in other cultures are very expressive and effusive. Using this perspective, we characterize the middle part of the process – the emotional responses of subjective experience, thought–action tendencies, bodily changes, and, to some extent, facial expressions – as relatively less influenced by gender and culture differences. This is clearly an oversimplification. For instance, we just discussed how responses to emotion serve to modify each and every other component of the emotion process. As such, any differences by gender or culture in responses to emotion also produce differences in these middle components. Even so, those differences in the middle components may be secondary to differences in front-end or back-end processes. Gender differences First, note that people – men and women alike – hold strong beliefs about how emotions differ by gender. Women are stereotyped as the more emotional sex, experiencing and expressing emotions more often. The exceptions are anger and pride, which are among the few emotions held to be experienced and expressed more EMOTIONS, GENDER, AND CULTURE often by men (Plant, Hyde, Keltner, & Devine, 2000). How do these stereotypes map onto reality? Consolidating across multiple studies, psychologists have learned that men and women differ more in the expression of emotions – both facially and verbally – than in the subjective experience of emotions (Fischer, 2000). When gender differences in reports of subjective experience do emerge, they can often be traced back to differences in gender stereotypes. For instance, one study found that endorsement of the gender stereotypes was, for women, associated with reporting high-intensity emotions and, for men, associated with reporting low-intensity emotions (Grossman & Wood, 1993). This suggests that gender stereotypes color people's reports of their own experiences. Men might think, 'I am a man, and men are not emotional, therefore I must not be

emotional', and women might think, 'I am a woman and women are emotional, therefore I must be emotional.' Studies have shown that stereotypes most color emotion reports when those reports are made at a global level ('How often do you feel sad or depressed') or from hindsight ('How anxious were you during last week's exam?'). It turns out that gender differences in reported experience vanish when men and women report how they feel in the moment ('How anxious do you feel right now?'), presumably because in the moment, people are more focused on the specifics of their circumstances and feelings and less on how those feelings conform to their gendered beliefs about themselves (Feldman Barrett, Robin, Pietromonaco, & Eyssell, 1998). These findings suggest that emotions may be a medium through which men and women (and boys and girls) 'do gender' – behave in gender-appropriate ways. So just as females show femininity by paying attention to their appearance and diet, they may also show femininity by expressing the 'feminine' emotions of sadness and fear and avoiding expression of the 'masculine' emotions of anger and pride. Likewise, males may show their masculinity by showing the opposite pattern ('boys don't cry', 'men show no fear'). Supporting this view, a study demonstrated that gender differences in emotional expression are linked to gender differences in the goals men and women have for regulating emotions. Women more readily expressed sadness and fear and were more likely to regulate their emotions to protect relationships. Men, in contrast, more readily expressed anger and were more likely to regulate their emotions to maintain or demonstrate their power (Timmers, Fischer, & Manstead, 1998). The link between gender and power has led some psychologists to suggest that a gender hierarchy, in which women have relatively less power and status than men, is responsible for the observed gender differences in emotion. Women, as lower status, express the 'powerless' emotions of sadness, anxiety, and fear (emotions that work to make one appear weak and helpless) and men, as

higher status, express the 'powerful' emotions of anger, pride, and contempt (emotions that work to maintain control and dominance) (Fischer, 2000). Again, the distinction here targets emotion expression, not emotion experience. In one recent review of gender and anger, women were found to experience anger just as much as men – and in contexts of interpersonal relationships, even more. Even so, men appear angrier than women because they express their anger in prototypical ways – that is, with physical and verbal assaults. Women, in contrast, express their anger with tears, which may make it easier to dismiss their anger or mislabel it as sadness (Kring, 2000). Women also report being less comfortable than men in expressing their anger. Such gender differences in expressions of anger, then, may be what reinforce men as 'powerful' and women as 'powerless.' Gender stereotypes also come into play: In a recent study, participants judged how angry or sad a person was who expressed an ambiguous blend of anger and sadness. When the blended expression appeared on a man's face, it was seen as showing more anger; when it appeared on a woman's face, it was seen as showing more sadness (Plant et al., 2000). Can women gain status and power by expressing anger? Not easily. Because showing anger runs counter to gender stereotypes, a woman who expresses anger in a professional context actually loses status, being judged as out of control, a witch, or a shrew, regardless of whether she is the CEO or a trainee. This backlash against women disappears only when an external reason for a woman's anger is obvious (Brescoll & Uhlmann, 2008). To sum up, gender differences in emotion may stem primarily from the back-end of the emotion process – from the ways in which men and women regulate and express their emotions. These differences, in turn, most likely stem from gender differences in the way males and females are socialized – both by parents and by the culture more generally – to conform to gender stereotypes. Indeed, studies have shown that parents talk to their

preschool children differently about emotions – for example, emphasizing sadness more with their daughters than with their sons (Fivush & Buckner, 2000). Such differences may set the stage for the emergence of gender differences in emotion regulation habits in later life. In other words, gender-specific lessons about appropriate emotion regulation are one way that boys and girls learn to be masculine or feminine, powerful or powerless. Cultural differences Psychologists studying cultural differences in emotion have mostly focused on how the values associated with collectivism and individualism shape emotional experiences. Recall from Chapter 1 that collectivism refers to (BOTH) COURTESY OF ASHBY PLANT Both of these photos show the same blend of two different emotion expressions. The brows are lowered and drawn together as they are for anger, while the lip corners are turned down as they are for sadness. Research has shown that when these and other anger-sadness blends appear on a man's face, people more often see the ambiguous blends as anger, but when the same blends appear on a woman's face, people more often see them as sadness (Plant et al., 2000). These findings suggest that gender stereotypes shape perceivers' interpretations of facial expressions. CHAPTER 11 EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

ª ZAIRBEK MANSUROV j DREAMSTIME.COM Happiness is more closely associated with individual achievements in individualist cultures and with good relationships in collectivist cultures. cultures that emphasize the fundamental connectedness and interdependence among people, and individualism refers to cultures that emphasize the fundamental separateness and independence of individuals. Many East Asian, Latin American, and African countries are identified as collectivist cultures, and the United States, Canada, Australia, and many Western European countries are identified as individualist cultures. Of course, not all citizens of these countries can be classified as collectivists or individualists. Variations by gender, social class, and ethnicity are common. Even so, differences along the dimension of collectivism–individualism appear critical to understanding cultural differences in emotions (van Hermert, Poortinga, & van de Vijver, 2007). To understand why this is so, we can examine how variations in collectivism–individualism affect people's views of self (Markus & Kitayama, 1991). In collectivist contexts, people's sense of self is embedded within relationships, with many personal goals reflecting this, For more Cengage Learning textbooks, visit www.cengagebrain.co.uk EMOTIONS, GENDER, AND CULTURE including desires to fit in and create interpersonal harmony. In individualist contexts, by contrast, people's sense of self is bounded, or viewed as separate from close others, with many personal goals reflecting desires to be independent and unique. Continuing with the framework described earlier, cultural differences in personal goals can produce cultural differences in emotions through 'front-end' differences in the emotion process. That is, if people in different cultures differ in their personal goals, especially regarding interpersonal relationships, so, too, will they differ in their appraisals of the personal meaning of their current circumstances, even when those circumstances are very similar. One study examined people's emotional reactions following errors in shared plans, like missing a scheduled meeting or get-together. In this study, Italians were selected to represent collectivism, and English-speaking Canadians were selected to represent individualism. As expected in collectivist cultures, Italians valued the relationship more than Canadians did. And when plans went wrong, Italians experienced more sorrow, whereas Canadians experienced more anger (Grazzani-Gavazzi & Oatley, 1999). Sorrow reflects collectivism in this circumstance because the error is viewed as a shared loss. Anger, by contrast, reflects individualism because the error is viewed as a something the self deals with individually. So here, because relationships matter differently to people in collectivist and individualist cultures, the same circumstance – a broken plan – yields

different emotions. As another example, researchers have found that the circumstances that yield ‘good feelings’ vary by culture. In Japan, a more collectivist culture, feeling good most frequently accompanies interpersonal engagement, like feeling friendly, whereas in the United States, a more individualist culture, feeling good most frequently accompanies interpersonal disengagement, like feeling superior or proud (Kitayama, Markus, & Kurokawa, 2000; Kitayama, Mesquita, & Karasawa, 2006). This evidence suggests that people’s sources of happiness depend on the ways in which their culture values relationships and social worth – again, presumably because people’s self-views and personal goals reflect collectivism or individualism. From early childhood, cultural messages influence the emotions that people strive to feel. Children’s storybooks in the United States, for instance, emphasize excited states, whereas comparably popular books in Taiwan emphasize calm states (Tsai, Louie, Chen, & Uchida, 2007). The persistence of such cultural messages influences the ideals children and adults come to hold for their emotions. Bicultural individuals are in the unique position of identifying with two cultures, often ones with opposing values about emotions. Diary studies have shown that for biculturals, the language spoken most recently influences the ways they experience their own emotions (Perunovic, Heller, & Rafaeli, 2007).

420 CHAPTER 11 EMOTION So far we’ve discussed cultural differences in the ‘frontend’ of the emotional process – that is, differences in the circumstances that yield emotions and differences in the appraisals of personal significance. Yet collectivism and individualism also affect the ‘back-end’ of the emotional process, by prescribing which emotions can be expressed and when. We encountered one example of this earlier in discussing display rules for facial expressions. Compared with people from the United States, people from Japan more often mask experiences of disgust with smiles when in the presence of another. Relatedly, other studies find that pride is more acceptable to express in individualist cultures than in collectivist cultures (Fischer, Manstead, & Mosquera, 1999). In addition to front-end differences in appraisals and back-end differences in responses to emotion, recent survey research on culture and emotion suggests that people’s fundamental beliefs about emotions may differ in collectivist and individualist contexts (Mesquita, 2001). For instance, in individualist cultures, emotions are taken to reflect the subjective inner worlds of individuals and are thought to ‘belong to’ a particular person (for instance, ‘Mark is angry’). By contrast, in collectivist cultures, emotions are taken to reflect objective reality and are thought to ‘belong to’ relationships (for instance, ‘We are angry’). Studies show, for instance, that judging a target person’s emotions from facial expressions, Japanese participants look also to the facial expressions of surrounding people, whereas Western participants do not (Masuda, Ellsworth, Mesquita, Leu, Tanida, & Van de Veerdonk, 2008). So, just as we said that emotions may be one medium through which people ‘do gender’ or behave in gender-appropriate ways, emotions may also reinforce and sustain important cultural themes: Emotions appear to bind people together in collectivist cultures and to define individual uniqueness in individualist cultures. INTERIM SUMMARY l Emotions vary by gender and culture, perhaps most typically at the front-end of the emotion process (such as person–environment relations and cognitive appraisals) and the back-end of the emotion process (such as responses to emotion). l Many gender differences can be linked to gender stereotypes about emotions, which assign ‘powerless’ emotions, like sadness and fear, to women, and ‘powerful’ emotions, like anger and pride, to men. l Cultural differences in individualism versus collectivism also yield differences in emotion, with collectivism’s greater focus on relationships affecting both appraisal processes and regulation strategies. For more Cengage Learning textbooks, visit www.cengagebrain.co.uk CRITICAL THINKING QUESTIONS 1 Revisit Figure 11.1 and explain the difference between ‘front-end’ and ‘back-end’ differences by gender and

culture. 2 Are there likely to be aspects of the emotion process that do not vary by gender or culture? Why or why not? AGGRESSION As listed in Table 11.3, the action tendency associated with anger is to attack. People who act on this urge become either physically or verbally aggressive. Among the various thought–action tendencies associated with emotions, psychologists have singled out aggression for extensive study. This special attention is partly due to the social significance of aggression. At the societal level, in an age when nuclear weapons are widely available, a single aggressive act can spell worldwide disaster. At the individual level, many people experience aggressive thoughts and impulses frequently, and how they handle these thoughts has major effects on their health and interpersonal relations. Another reason psychologists have focused on aggression is that two major theories of social behavior make quite different assumptions about the nature of aggression. Freud's psychoanalytic theory views aggression as a drive, but social-learning theory views it as a learned response. Research on aggression helps us evaluate these competing theories. In the following discussion we first describe these different views, along with related research, and then consider how they differ with respect to the effects of portrayals of aggression in the mass media. Keep in mind that what we mean by aggression is behavior that is intended to injure another person (physically or verbally) or to destroy property. The key concept in this definition is intent. If a person accidentally steps on your foot in a crowded elevator and immediately apologizes, you would not interpret the behavior as aggressive; but if someone walks up to you as you sit at your desk and steps on your foot, you would not hesitate to label the act as aggressive. Aggression as a drive According to Freud's psychoanalytic theory, many of our actions are determined by instincts, particularly the sexual instinct. When expression of these instincts is frustrated, an aggressive drive is induced. Later, psychoanalytic theorists broadened this frustration–aggression hypothesis, proposing that whenever a person's effort to reach a goal

is blocked, an aggressive drive is induced that motivates behavior intended to injure the obstacle (person or object) causing the frustration (Dollard, Doob, Miller, Mowrer, & Sears, 1939). This proposal has two critical aspects. One is that the cause of aggression is frustration; the other is that aggression has the properties of a basic drive – being a form of energy that persists until its goal is satisfied, as well as being an inborn reaction like hunger or sex, as discussed in Chapter 10. As we will see, it is the drive aspect of the frustration–aggression hypothesis that has been particularly controversial. If aggression is really a basic drive like hunger, we would expect other mammalian species to exhibit patterns of aggression that are similar to ours (just as they exhibit patterns of hunger that are similar to ours). The evidence for this has changed over the years. In the 1960s, early ethological research suggested that there was a major difference between humans and other species – namely, that animals had evolved mechanisms to control their aggressive instincts but humans had not (Ardrey, 1966; Lorenz, 1966). Subsequent research suggested, however, that animals may be no less aggressive than we are. The incidence of murder, rape, and infanticide among animals was shown to be much greater than previously thought. One kind of murder occurs in border wars between chimpanzees (Goodall, 1978). In one well-documented case in the Gombe Stream National Park in Tanzania, a gang of five male chimpanzees defended their territory against any strange male that wandered into it. If the gang encountered a group of two or more strangers, their response would be raucous but not deadly, but if there was only one intruder, one member of the gang might hold his arm, another a leg, while a third pounded the intruder to death. Or a couple of members of the gang would drag the intruder over the rocks until he died. In another chimpanzee border war observed during the 1970s, a tribe

of about 15 chimpanzees destroyed a smaller neighboring group by killing the males one at a time. Female primates engage in as many aggressive acts as males, although their encounters are less deadly because their teeth are shorter and less sharp (Smuts, 1986). Although observations like these bring animal aggression more into line with human aggression, there are still many differences. Humans wage wide-scale wars, for example. Findings on the biological basis of aggression in animals provide evidence for an aggressive drive in at least some species. Some studies show that mild electrical stimulation of a specific region of the hypothalamus produces aggressive, even deadly, behavior in animals. When a cat's hypothalamus is stimulated via implanted electrodes, the animal hisses, its hair bristles, its pupils dilate, and it will strike at a rat or other objects placed in its cage. Stimulation of a different area of the hypothalamus For more Cengage Learning textbooks, visit www.cengagebrain.co.uk AGGRESSION ª PATRICIA MARKS j DREAMSTIME.COM Is aggression a drive or a learned response? produces quite different behavior: Instead of exhibiting any of these rage responses, the cat coldly stalks and kills a rat. Similar techniques have produced aggressive behavior in rats. A laboratory-bred rat that has never killed a mouse, nor seen a wild rat kill one, may live quite peacefully in the same cage with a mouse. But if the rat's hypothalamus is stimulated, the animal will pounce on its cagemate and kill it with exactly the same response that is exhibited by a wild rat (a hard bite to the neck that severs the spinal cord). The stimulation seems to trigger an innate killing response that was previously dormant. Conversely, if a neurochemical blocker is injected into the same brain site that induces rats to spontaneously kill mice on sight, the rats become temporarily peaceful (Smith, King, & Hoebel, 1970). In these cases, then, aggression has some properties of a drive, because it involves inborn reactions. In some mammals, such instinctive patterns of aggression are controlled by the cortex and therefore are influenced more by experience. Monkeys living in groups establish a dominance hierarchy: One or two males become leaders, and the others position themselves at various lower levels in the hierarchy. When the hypothalamus of a dominant monkey is electrically stimulated, the monkey attacks subordinate males but not females. When a low-ranking monkey is stimulated in the same way, it cowers and behaves submissively (see Figure 11.8). Thus, aggressive behavior in a monkey is not automatically elicited by stimulation of the hypothalamus; the monkey's environment and past experiences also play a role. Humans are similar. Although we are equipped with neurological mechanisms that are tied to aggression, activation of these mechanisms is usually controlled by the prefrontal cortex, an area of the brain implicated in emotion regulation. Supporting this view, recent evidence suggests that the aspects of the prefrontal cortex are dysfunctional in individuals who show impulsive violence (Davidson, Putnam, & Larson, 2000).

For others without this particular brain abnormality, the frequency with which aggressive behavior is expressed, the forms it takes, and the situations in which it is displayed are determined largely by experience and social influences. Aggression as a learned response Social-learning theory is concerned with human social interaction, but it has its origins in behaviorist studies of animal learning such as those discussed in Chapter 7. It focuses on the behavior patterns that people develop in response to events in their environment. Some social behaviors may be rewarded, and others may produce unfavorable results. Through the process of differential reinforcement, people eventually select the more successful behavior patterns. Although social-learning theory shares basic principles of reinforcement with behaviorism, it differs from strict behaviorism in that it also emphasizes cognitive processes. Because people can represent situations mentally, they are able to foresee the likely consequences of their actions and alter their behavior accordingly. Social-learning theory further differs from strict behaviorism in that it stresses the role of vicarious

learning, or learning by observation. Many behavior patterns are learned by watching the actions of others and observing the consequences. A child who observes the pained expression of an older sibling in the dentist's chair will probably be fearful when the time comes for his or her first dental appointment. Social-learning theory emphasizes the role of models in transmitting both specific behaviors and emotional responses. It focuses on such questions as what types of models are most effective and what factors determine whether the observed behavior will actually be performed (Bandura, 1973, 1986). With this emphasis on learning, it is no surprise that social-learning theory rejects the concept of aggression as a frustration-produced drive. The theory proposes instead that aggression is similar to any other learned response. Aggression can be learned through observation or imitation, and the more often it is reinforced, the more likely it is to occur. A person who is frustrated by a blocked goal or disturbed by a stressful event experiences an unpleasant emotion. The response that this emotion elicits will differ, depending on the kinds of responses the individual has learned to use in coping with stressful situations. The frustrated individual may seek help from others, behave aggressively, withdraw, try even harder to surmount the obstacle, or resort to drug or alcohol use. The chosen response will be the one that has relieved frustration most successfully in the past. According to this view, frustration provokes aggression mainly in people who have learned to respond to adverse situations with aggressive behavior (Bandura, 1977). Figure 11.9 shows how social-learning theory differs from psychoanalytic theory (that is, the frustration–aggression hypothesis) in conceptualizing aggression. Social-learning theory assumes that (1) aggression is just one of several reactions to the aversive experience of frustration and (2) aggression is a response with no drivelike properties, and consequently it is influenced by the anticipated consequences of behavior. One source of evidence for social-learning theory comes from classic research by Albert Bandura showing Figure 11.8 Brain Stimulation and Aggression. A mild electrical current is delivered to electrodes implanted in the monkey's hypothalamus via remote radio control. The animal's response (attack or flight) depends on its position in the dominance hierarchy of the colony. COURTESY OF DR. JOSE M.R. DELGADO CHAPTER 11 EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

Psychoanalytic theory Aggressive drive Frustration Aggressive behavior Social-learning theory Emotional arousal Aversive experiences Dependency Achievement Withdrawal and resignation Aggression Psychosomatic symptoms Self-anesthetization with drugs and alcohol Constructive problem solving Anticipated consequences of behavior Incentive inducements Figure 11.9 Two Views of Aggression. This diagram schematically represents the determinants of aggression according to psychoanalytic theory (the frustration-aggression hypothesis) and social-learning theory. From the viewpoint of social-learning theory, the emotional arousal caused by unpleasant experiences can lead to any number of different behaviors, depending on the behavior that has been reinforced in the past. that aggression, like any other response, can be learned through imitation. Preschool children who observed an adult expressing various forms of aggression toward a large inflated doll subsequently imitated many of the adult's actions, including unusual ones (see Figure 11.10). The experiment was expanded to include two filmed versions of aggressive modeling: one showing an adult behaving aggressively toward the doll, the other showing a cartoon character displaying the same aggressive behavior. The results were equally striking. Children who watched either of the two films behaved as aggressively toward the doll as children who had observed a live model displaying aggression. Figure 11.11 shows the measures of aggressive behavior for each of the groups and for two control groups who observed either no model or a nonaggressive model. The conclusion of such studies is that observation of either live or

filmed models of aggression increases the viewer's likelihood of aggression. This may be part of the reason that children whose parents use physical punishment severely are likely to be more aggressive than average. The parents provide the model (Eron, 1987). Another piece of evidence for social-learning theory is that aggression is sensitive to reinforcement contingencies in the same manner that other learned responses are. A number of studies show that children are more likely to express the aggressive responses they learned by watching aggressive models when they are reinforced for such actions or when they observe aggressive models being reinforced. In one study, investigators observed children for ten weeks, recording instances of aggression and the events that immediately followed them, such as positive For more Cengage Learning textbooks, visit www.cengagebrain.co.uk AGGRESSION reinforcers (the victim winced or cried), punishment of the aggression (the victim counterattacked), or neutral reactions (the victim ignored the aggressor). For the children who showed the highest overall level of aggression, the most common reaction to their aggressive act was positive reinforcement. For the children who showed the least aggression, punishment was a common reaction. Children who initially were not aggressive but who occasionally succeeded in stopping attacks through counteraggression gradually began to initiate attacks of their own (their aggression was being positively reinforced). Clearly, the consequences of aggression play an important role in shaping behavior (Patterson, Littman, & Bricker, 1967). Aggressive expression and catharsis Studies that try to distinguish between aggression as a drive and aggression as a learned response often focus on catharsis, or purging an emotion by experiencing it intensely. If aggression is a drive, expression of aggression should be cathartic, resulting in a reduction in the intensity of aggressive feelings and actions (analogous to the way eating leads to a reduction of hunger-based feelings and actions). On the other hand, if aggression is a learned response, expression of aggression could result in an increase in such actions (if the aggression is reinforced). The available evidence favors the learnedresponse view. Psychologists have conducted numerous laboratory studies to determine whether aggression decreases once it has been partially expressed. Studies of children indicate that participation in aggressive activities either increases aggressive behavior or maintains it at the same level. Experiments with adults produce similar results. When given repeated opportunities to shock another person (who cannot retaliate), university students become more and more punitive. Participants who are angry become even more punitive in successive attacks than participants who are not angry. If aggression were cathartic, the angry participants should reduce their aggressive drive by acting aggressively and become less punitive the more they engage in aggression (Berkowitz, 1965). Some evidence about catharsis comes from real-life situations. In one case, California aerospace workers who had been laid off were interviewed about how they felt about their companies and supervisors and subsequently asked to describe their feelings in writing. If aggression were cathartic, men who expressed a lot of anger in the interviews should have expressed relatively little in the written reports. The results, however, showed otherwise: The men who let out anger in conversation expressed even more anger in their written reports. Another study

looked at the relationship between the hostility of a country (vis-à-vis its neighboring countries) and the kinds of sports its citizens play. More belligerent countries were found to play more combative games. Again, aggression seems to breed more aggression rather than dissipate it (Ebbesen, Duncan, & Konecni, 1975). These results argue against aggression being cathartic. However, there are circumstances in which the expression of aggression may decrease its incidence. For example, behaving aggressively may arouse feelings of anxiety that inhibit further aggression, particularly if the aggressors observe that their actions have led to injuries. But in

these instances the effect on aggressive behavior can be explained by its consequences without concluding that an aggressive drive is being reduced. Also, although expressing hostile feelings in action does not usually reduce the aggression, it may make the person feel good. But this may happen because the person feels more powerful and more in control, rather than because the person has reduced an aggressive drive. Most of the studies we have discussed deal with the consequences of directly expressing aggression. What about the effects of indirectly or vicariously expressing aggression by watching violence on television or in the movies, listening to music with violent lyrics, or by playing violent video games? Is entertaining oneself with violence cathartic, providing fantasy outlets for an aggressive drive? Or does it elicit aggression by modeling and reinforcing violent behavior? We have already seen that children imitate live or filmed aggressive behavior in an experimental setting, but how do they react in more natural settings? The increasing amount of media violence to which children are exposed makes this an important question. Several experimental studies have controlled children's viewing of television. In one study, one group of Figure 11.10 Children's Imitation of Adult Aggression. Nursery school children observed an adult expressing various forms of aggressive behavior toward an inflated doll. After watching the adult, both boys and girls behaved aggressively toward the doll, performing many of the detailed acts of aggression that the adult had displayed, including lifting and throwing the doll, striking it with a hammer, and kicking it. (ALL) © ALBERT BANDURA CHAPTER 11 EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

Imitative aggressive responses All aggressive responses 80 Number of responses 40 0 Live model Film model Cartoon model Nonaggressive model No model Figure 11.11 Imitation of Aggression. Observing aggressive models (either live or on film) greatly increases the amount of aggressive behavior displayed by children, compared with observing a nonaggressive model or no model at all. Note that observation of the live model results in imitation of more specific aggressive acts, whereas observation of filmed (either real-life or cartoon) models instigates more aggressive responses of all kinds. (Adapted from A. Bandura, et al., 'Imitation of Film-Mediated Aggressive Models', in Journal of Abnormal and Social Psychology; 1963, 66: 3–11. Copyright © 1963 by the American Psychological Association. Adapted by permission.) children watched violent cartoons for a specified amount of time each day, and another group watched nonviolent cartoons for the same amount of time. The amount of aggression the children showed in their daily activities was carefully recorded. The children who watched violent cartoons became more aggressive in their interactions with peers, but the children who viewed nonviolent cartoons showed no change in interpersonal aggression (Steuer, Applefield, & Smith, 1971). Another study, testing university students, showed increases in hostile feelings and aggressive thoughts following exposure to violent songs (Anderson, Carnagey, & Eubanks, 2003). The studies just described compared experimental groups to control groups. However, most studies that deal with children's viewing habits are correlational. They determine the relationship between amount of exposure to televised violence and the degree to which children use aggressive behavior to solve interpersonal conflicts. This correlation is clearly positive (Singer & Singer, 1981), even for children in Finland, which has a limited number of violent programs (Lagerspetz, Viemero, & Akademi, 1986). Yet correlations, you will recall, do not imply causal relationships. It may be that children who are aggressive prefer to watch violent television programs. For more Cengage Learning textbooks, visit www.cengagebrain.co.uk AGGRESSION That is, having an aggressive nature causes one to view violence, rather than vice versa. To evaluate this alternative hypothesis, a study traced television viewing habits over a ten-year period. More than 800 children between the ages of 8 and 9 were

studied. Investigators collected information about each child's viewing preferences and aggressiveness (as rated by schoolmates). Boys who preferred programs that contain a considerable amount of violence were found to be much more aggressive in their interpersonal relationships than boys who preferred programs that contain little violence. So far, the evidence is similar to that found in previous studies. But ten years later, more than half of the original participants were interviewed regarding their television preferences, given a test that measured delinquent tendencies, and rated by their peers for aggressiveness. Figure 11.12 shows that high exposure to violence on television at age 9 is positively related to aggressiveness in boys at age 19. Most important, the correlation remains significant even when statistical methods are used to control for degree of childhood aggressiveness, thereby reducing the possibility that the initial level of aggression determines both childhood viewing preferences and adult aggressiveness. Interestingly, the results showed no consistent relationship between the television viewing habits of girls and their aggressive behavior at either age. This agrees with the results of other studies indicating that girls tend to be less aggressive than boys (Archer, 2004). Girls are also less likely to imitate aggressive behavior, unless specifically reinforced for doing so. And because most of the aggressive roles on television are male, females are less Peer-rated aggression (10 years later) Viewing of violence in childhood Figure 11.12 The Relationship Between Childhood Viewing of Violent Television and Adult Aggression. A preference for viewing violent television programs by boys at age 9 is positively correlated with aggressive behavior at age 19. (After Eron, Huesmann, Lefkowitz, & Walder, 1972)

SEEING BOTH SIDES WHAT IS THE UNDERLYING STRUCTURE OF EMOTIONS? Dimensional approaches to emotion Lisa Feldmann Barret, Boston College In English, the word 'affect' means 'to produce a change.' To be affected by something is to be influenced by it. In science, and particularly in psychology, 'affect' refers to a special kind of influence – something's ability to influence your mind in a way that is linked to your body. Philosophers have believed for centuries that affect is a basic property of consciousness, that every moment of your waking life is infused with affective feeling. This idea can also be found in early psychological writing of Spencer (1855), James (1890), Sully (1892), and Wundt (1897/1998). During the behaviorist revolution in psychology, the study of affect, as a general mental feeling that is part of every conscious moment, was abandoned. Half a century later, as psychology emerged from the grips of behaviorism into the cognitive revolution, affect was firmly dislodged from a central role in perception and thought. Affective responses were ignored in cognitive science altogether and questions about affect were relegated to the study of emotion. The study of affect is now central to the study of emotion. Indeed, hundreds of psychological studies of emotion now show that, regardless of the form it takes or how it is measured (with facial EMG, autonomic responses, behavior, or self-reports of experience), affect can always be described in terms of two psychological properties: hedonic valence (pleasure or displeasure) and arousal (activated and wound up versus tranquil or slowed down) (Barrett, 2006a, b; Barrett & Bliss-Moreau, in press). Valence and arousal can be thought of as properties that characterize the landscape of affective responses that are possible in a human (or any other mammal). This landscape is actually a formal mathematical model for affect called the affective circumplex (Figure 1). A model like this is often referred to as a 'dimensional approach' to emotion, on the assumption that all emotional states can be described by a combination of dimensional properties. However this label is a bit of a misnomer; most theorists who are labeled as having a 'dimensional' perspective on emotion do not believe that dimensions of affect are sufficient to explain emotions. We know that valence and arousal alone do not

distinguish emotions like anger and fear, both of which are unpleasant and high in arousal. Instead, we propose that affect is necessary for emotion. We argue that affect is but one ingredient in emotion, and in all mental states; and, along with William James (1890), we take a psychological constructionist approach to emotion (Gendron & Barrett, in press). Psychological constructionist approaches are united in the assumption that the mental phenomena people experience and name (e.g., 'thoughts', 'emotions', 'memories', and 'beliefs') result from recipes of more basic psychological ingredients that are themselves not specific to any single psychological phenomenon. Psychological constructionist approaches to emotion have been put forth by Schachter & Singer (1962), Mandler (1974), Russell (2003), and Barrett (2006a, b). My lab's approach, called the Conceptual Act Model (Barrett, 2006), nicely illustrates the psychological constructionist approach to emotion. First, the mental events that people refer to as 'emotion' are constructed, in the blink of an eye, from at least two ever-present psychological ingredients: a psychologically and biologically basic mammalian system that produces some variation on positive or negative states (called 'core affect') and a conceptual system for emotion (i.e., what people 'know' about emotion). Together, these ingredients produce the considerable variability in emotional life that has been observed within individuals over time, across individuals from the same culture, and also across cultures. Second, the basic psychological ingredients that make up emotion are not specific to emotion, and participate to some degree in constructing every psychological moment. For example, we hypothesize that affect plays a role in normal vision, helping people to literally see the world around them (Barrett & Bar, in press). The far-reaching consequence of this idea is that the mental events people call 'emotions' and 'cognitions' and 'perceptions' differ phenomenologically, but may themselves not be biologically distinct (see Duncan & Barrett, 2007). Third, factors that have traditionally been treated as nonemotional, such as concepts and language, play a central role in this model (Barrett, Lindquist, & Gendron, 2007). In our view, understanding the meaning of emotion words and emotion concepts further our understanding of what emotions are and how they work. ACTIVATION Negative affect high activation (e.g., upset, distressed) Positive affect high activation (e.g., elated, thrilled) Positive affect low activation (e.g., serene, calm) Positive affect medium activation (e.g., gratified, pleased) Negative affect low activation (e.g., lethargic, depressed) Negative affect medium activation (e.g., miserable, displeased) VALENCE Figure 1 CHAPTER 11 EMOTION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

SEEING BOTH SIDES WHAT IS THE UNDERLYING STRUCTURE OF EMOTIONS? An argument for discrete emotions Robert W. Levenson, University of California–Berkeley A small set of prototypical challenges and problems that have enormous implications for human survival and thriving undoubtedly played a major role in the evolution of our emotions. Bonding with others, handling threats, dealing with loss, defending what is ours, avoiding noxious substances, and soothing self and others are all integral parts of the human condition. The ubiquity and importance of these problems and challenges would have created enormous selection pressures favoring generalized solutions for each – solutions that have the highest likelihood of producing beneficial outcomes for the individual and for the social group most of the time. Emotions are these solutions, orchestrating configurations of motor behaviors; expressive signals in face and voice; changes in attention, perception, and information processing; and physiological adjustments that can be activated quickly and efficiently, often with little conscious intervention. Viewed in this way, emotions can be seen as time-tested solutions for timeless problems. This group of problems and challenges and the associated emotional solutions are not distributed evenly across the landscape of human

experience. Emotional solutions for dealing with problems of rotting food (disgust), loss of a loved one (sadness), or having a possession taken away (anger) differ more in kind and in configuration than in degree. Because of this, it is virtually impossible to find a single unipolar or bipolar dimensional structure that allows ordinal ranking of the most common emotions (e.g., anger, contempt, disgust, fear, happiness, sadness, surprise). Consider the pervasive 'positive–negative' dimension. Although happiness is clearly more positive than the others in this set, subsequent ranking quickly becomes problematic. Is disgust more negative than fear? Is fear more negative than anger? Or consider another oft-proposed dimension: 'approach–avoidance'. Although disgust can readily be placed at the extreme avoidance end of the scale, the other emotions are not so clear. Sadness, for example, sometimes drives us toward and sometimes away from others (and has a similar bimodal effect on the behavior of others toward us). The same kinds of problems for the dimensional approach found at these more macro levels of behavior are also found at the more micro levels of individual emotional response systems. Emotional appearance changes in the face poorly fit popular dimensional schemes (Ekman, 1972). Consider trying to map brow changes onto the 'positive–negative' dimension. Lowered and furrowed brows are associated with a negative emotion (anger), but raised brows are not part of the positive emotion (happiness) display. Rather, raised brows are either associated with surprise (if both inner and outer portions are raised), an emotion that is arguably neither positive nor negative, or with sadness (if only the inner portion is raised), an emotion that is clearly negative. Attempting to map lip movements onto this dimension creates similar problems. Lip corners move up bilaterally in a positive emotion (happiness) and move down in a negative emotion (sadness), but they also move up unilaterally in another negative emotion (contempt) and are stretched laterally in yet another negative emotion (fear). Autonomic nervous system responses present comparable difficulties. Heart rate increases are found in two negative emotions (anger, fear) but not in a third (disgust) (Levenson, 1992). These two negative emotions that are alike in heart rate change, diverge in terms of temperature (warming in anger versus cooling in fear), a difference found both in physiological studies of emotion and in common metaphoric parlance (Lakoff, 1987). These kinds of problems with the dimensional view lead me to conclude that discrete view is the most parsimonious way to organize emotions. In this view, emotions are seen as having different configurations of behavior, expression, and physiology that represent generalized solutions to a small set of common problems and challenges (Levenson, 2003a). Nonetheless, it is important to note that humans are clearly capable of talking about and thinking about emotions in dimensional ways. We respond to the ubiquitous question of 'How are you feeling today?' by invoking a dimensional structure when we reply with 'good' or 'bad'. However, even in this highly conventional case, a response of 'bad' is likely to engender an additional question probing for more information as to whether we are sad or mad or afraid (or something comparably 'discrete'). What would enable us to resolve the discrete versus dimensional question with greater certainty? It goes without saying that more research evaluating both views, well-designed studies that allow for disconfirmation as well as confirmation, is needed. The traditional approach to evaluating the discrete model has been to elicit a set of discrete emotions under comparable conditions and determine if their expressive and physiological concomitants differ (Levenson, 2003a; Levenson, 2003b). Other approaches make use of patient populations with particular areas of brain damage (Levenson, 2007) to determine if they impact particular emotions, for example problems with disgust recognition in Huntington's disease and with fear recognition in amygdala patients (Sprengelmeyer, 1997; Hayes, Stevenson, & Coltheart, 2007), stimulation of selected brain areas to determine if they elicit particular emotions (George et al., 1996; Mosimann et al., 2000), and functional imaging studies to determine if the expression

and processing of different emotions are associated with different regions of activation (Whalen, 2001). Application of these and other empirical approaches, while unlikely to quell the controversy completely, would surely enrich the debate. AGGRESSION For more Cengage Learning textbooks, visit www.cengagebrain.co.uk

428 CHAPTER 11 EMOTION likely to find aggressive models to imitate. For boys, however, the majority of studies point to the conclusion that viewing violence does increase aggressive behavior, particularly in young children. Indeed, this conclusion is supported by a meta-analysis of 28 studies of this issue (Wood, Wong, & Chachere, 1991). These findings argue against the idea of aggression as catharsis, as well as the view that aggression is a drive. So the scientific evidence that media violence increases aggression is very strong. Despite this evidence, the media are become increasingly violent and diverse and now include interactive media, like video games, which can be intensely engaging. Public concern about violent video games rose dramatically in the aftermath of school shootings in Paducah, Kentucky; Jonesboro, Arkansas; and Littleton, Colorado. The adolescent boys who committed these mass murders habitually played some of the bloodiest and most violent video games available. Given that children, adolescents, and university students (mostly male) spend considerable time playing violent video games, psychologists have become interested in whether playing these violent games also increases aggressive behavior in the real world. A meta-analysis of 54 studies provides clear evidence that it does – and also that playing these violent games increases aggressive thoughts, feelings, and arousal, and reduces prosocial helping behavior (Anderson & Bushman, 2001). Perhaps most alarmingly, habitual use of violent video games comes with reduced sensitivity to the suffering of others (Funk, Baldacci, Pasold, & Baumgardner, 2004). The results of research on media violence provide strong support for efforts to reduce the amount of aggression in media marketed to children. They also carry a message for parents. Not only should responsible parents closely monitor the type of television programs their children view and video games they play but also they should avoid praising aggressive actions, either by their children or by television characters. They also need to be aware of their powerful role in modeling ª BYRON/MONKMEYER PRESS Children often imitate what they see on television For more Cengage Learning textbooks, visit www.cengagebrain.co.uk behavior. If they behave aggressively, their children are likely to do so as well. Our survey of aggression has by no means considered all of its possible causes. Common causes of anger and aggression include loss of self-esteem or a perception that another person has acted unfairly (Averill, 1983). We have not focused on either of these factors in our discussion of aggression as a drive versus aggression as a learned response. Also, many social conditions are involved in the instigation of aggression. Poverty, overcrowding, the actions of authorities such as the police, and cultural values are only a few. Some of these social influences will be considered in Chapter 17. In sum, aggression may often occur when a person is frustrated, but it does not always follow frustration. Many social conditions and cues either increase or decrease a person’s tendency to act aggressively (Berkowitz, 1981). The study of aggression makes it clear that an emotional reaction is a complex event. Similarly, each component of an emotion that we considered – cognitive appraisals, subjective experiences, thought and action tendencies, bodily changes, facial expressions, and responses to emotion – is itself a complex event involving multiple factors, both biological and psychological. In fact, each of the perspectives on emotion described in this chapter has addressed how the biological components of emotion (such as physiological arousal and universal facial expressions) and the psychological components of emotion (such as cognitive appraisals) interact to produce the experience of emotion. Taken together, the research reviewed in this chapter suggests that in most

cases the biological and psychological components of emotion probably have reciprocal influences on each other in a dynamic process that evolves over time. A situation may initially elicit a mild emotion, but as a person evaluates the situation more deeply, the emotion may intensify, and his physiological arousal may increase. The effects of the emotion on his memory for similar events from the past and on his appraisals of this event may further intensify his ª MICHAEL NEWMAN/PHOTOEDIT

subjective experience of emotion. Over time, then, feedback loops between the biological and psychological components of an emotion can influence the course of the emotion. We will return to discussions of the feedback between the biological and psychological components of emotion when we discuss stress in Chapter 14 and emotional disorders in Chapters 15 and 16. INTERIM SUMMARY l The psychoanalytic hypothesis that aggression is a basic drive receives some support from studies showing a biological basis for aggression. In some animals, aggression is controlled by neurological mechanisms in the hypothalamus. Stimulation of the hypothalamus of a rat or cat can lead to rage or a killing response. In humans and certain other mammals, aggressive behavior is largely under cortical control and hence is affected by past experiences and social context. l According to social-learning theory, aggressive responses can be learned through imitation and increase in frequency when positively reinforced. Children are more likely to express aggressive responses when they are reinforced for such actions than when they are punished for the actions. CHAPTER SUMMARY The components of emotion include cognitive appraisals, the subjective experience of emotion, thought–action tendencies, autonomic arousal, facial expressions, and responses to the emotion. A cognitive appraisal is an interpretation of the personal meaning of a situation that results in an emotion. Such appraisals affect both the intensity and the quality of an emotion. When people are induced into a state of undifferentiated arousal, the quality of their emotional experience may be influenced by their appraisal of the situation. Cognitive appraisals can occur outside of conscious awareness, and brain research identifies the amygdala as being involved in automatic appraisals. Subjective experiences of emotions, or feelings, guide behavior, decision making, and judgment. Feelings also steer memory, learning, and risk assessments. For more Cengage Learning textbooks, visit www.cengagebrain.co.uk CHAPTER SUMMARY l Evidence indicates that aggression either increases subsequent aggressive behavior or maintains it at the same level, arguing against catharsis. When given repeated opportunities to shock another person who cannot retaliate, university students become more and more punitive. l Indirect or vicarious expression of aggression also shows no evidence for catharsis: There is a positive relationship between the amount of media violence children and adolescents consume and the extent to which they act aggressively. CRITICAL THINKING QUESTIONS 1 How are responses to emotion – or attempts to regulate emotion – implicated in the biology and psychology of aggressive behavior? 2 Which types of studies suggest that media violence plays a causal role in increasing aggression? Different emotions carry urges to think and act in certain ways, called thought–action tendencies. Positive emotions expand people’s thought–action repertoires and make their behavior more creative and flexible. Over time, such broadened thinking serves to build people’s enduring personal resources. This broaden-and-build theory of positive emotion helps explain why people who experience and express more positive emotions tend to live longer. Intense negative emotions involve physiological arousal caused by activation of the sympathetic division of the autonomic nervous system. Positive emotions have an undoing effect on lingering negative emotional arousal. People with spinal cord injuries, which limit feedback from the autonomic nervous system, report experiencing less intense emotions. Autonomic arousal may also help differentiate the emotions,

because the

430 CHAPTER 11 EMOTION pattern of arousal (for example, heartbeat, skin temperature) differs for different emotions. The facial expressions that accompany a subset of emotions have a universal meaning: People from different cultures agree on what emotion a person in a particular photograph is expressing. Cultures may differ in the factors that elicit certain emotions and in rules for the proper display of emotion. In addition to their communicative functions, emotional expressions may contribute to the subjective experience of an emotion (the facial feedback hypothesis). People almost always respond to or regulate their emotions by either exaggerating or minimizing them, and the ability to do so predicts social success. The strategies people use to regulate emotions can have unexpected repercussions. For instance, suppressing facial expression increases autonomic and amygdala activation and impairs memory. Emotions vary by gender and culture. Many gender differences can be linked to gender stereotypes about emotions, which assign 'powerless' emotions, like sadness and fear, to women, and 'powerful' emotions, like anger and pride, to men. Cultural differences in individualism versus collectivism also yield differences in emotion, with collectivism's greater focus on relationships affecting both appraisal processes and regulation strategies. CORE CONCEPTS misattribution of arousal minimalist appraisal theories dimensional appraisal theories core relational theme backward masking amygdala broaden-and-build theory sympathetic nervous system parasympathetic nervous system undoing effect of positive emotions visceral perception antisocial personality disorder emotion cognitive appraisal subjective experience thought and action tendencies autonomic nervous system facial expressions responses to emotion moods person–environment relationship two-factor theory For more Cengage Learning textbooks, visit www.cengagebrain.co.uk The psychoanalytic hypothesis that aggression is a basic drive receives some support from studies showing a biological basis for aggression. In some animals, aggression is controlled by neurological mechanisms in the hypothalamus. Stimulation of the hypothalamus of a rat or cat can lead to a rage or killing response. In humans and certain other mammals, aggressive behavior is largely under cortical control and hence is affected by past experiences and social context. According to social-learning theory, aggressive responses can be learned through imitation and increase in frequency when positively reinforced. Children are more likely to express aggressive responses when they are reinforced for such actions than when they are punished for the actions. Evidence indicates that aggression either increases subsequent aggressive behavior or maintains it at the same level. When given repeated opportunities to shock another person who cannot retaliate, college students become more and more punitive. The indirect or vicarious expression of aggression has similar effects: There is a positive relationship between the amount of media violence children consume and the extent to which they act aggressively. James–Lange theory display rules facial feedback hypothesis emotion regulation collectivism individualism aggression frustration–aggression hypothesis social-learning theory vicarious learning catharsis

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