Reeve, J. (2015) Understanding motivation and emotion (6th edition). Hoboken, NJ: Wiley

Chapter 13

Aspects of Emotion

Try to look sad—try to produce a sad facial expression. As you try this, attend to the changing sensations you feel from the movements of your facial musculature. If you just pouted out the lower lip and pulled down the corners of your mouth, then you probably did not feel too sad. So, try this again.

Produce a second sad facial expression. But this time move not only your lower lip and corners of your mouth but also move your eyebrows inward and upward at the same time. Moving your eyebrows inward and upward will take some skill, so pretend that you have a couple of golf tees attached to the inner corners of the eyebrows. Pretend these golf tees are about two inches apart and pointing out from your face in a parallel way (imagine that the base of each tee rests on the inner eyebrow with its tip extending outward). Now move your eyebrows inward and upward until the tips of the golf tees touch. Now try to move all three of these muscles together—touch the golf tees together, pout your lower lip, and turn the corners of your mouth down (Larsen, Kasimatis, & Frey, 1992).

Did you feel anything change? Did you sense a hint of a sad feeling coming on? Did your heart rate accelerate a little? Any vague urge to cry? If so, the feeling will be mild because a posed facial expression is not as authentic and emotion-producing as is a spontaneous facial expression.

As important life events come our way, these events activate biological and cognitive reactions in us. The resulting biological and cognitive processes generate emotion. And the emotion readies us to cope adaptively with the important life event before us. An outline of the most important biological and cognitive processes involved in emotion appears in Table 13.1. The first half of this chapter overviews these biological processes (left-hand side), while the second half of the chapter overviews these cognitive processes (right-hand side).

BIOLOGICAL ASPECTS OF EMOTION

Emotions are, in part, biological reactions to important life events. The list of biological events in Table 13.1 is important because these entries identify what the body is doing to react to and to prepare for emotion-eliciting events. Facing a situation of personal significance (e.g., a threat), the body prepares itself to cope effectively (e.g., gets ready to run) by (1) activating the heart, lungs, and muscles (autonomic nervous system) and releasing hormones into the bloodstream (endocrine system); (2) stimulating subcortical brain structures such as the amygdala; and (3) expressing a unique pattern of the facial musculature (facial feedback). With these biological systems engaged, the person experiences emotion and is ready to cope with the impending threat. Table 13.1 also identifies the central cognitive aspects of emotion—appraisal, knowledge, and attribution, and these will be detailed and discussed in the second half of the chapter.

Table 13.1 Biological and Cognitive Aspects of Emotion

Biological Aspects	Cognitive Aspects
1. Autonomic nervous system	**1.** Appraisals
2. Subcortical brain circuits	**2.** Knowledge
3. Facial feedback	**3.** Attributions

Emotion study began about 100 years ago by asking what role the autonomic nervous system played in the subjective experience of emotion. The first theory of emotion, the James–Lange theory, asked whether the different emotions each had unique bodily reactions associated with them. We all know that fear and joy feel different, but do fear and joy also have their own unique bodily reactions? Do our heart, lungs, and hormones behave one way when we are afraid yet another way when we experience joy? And if so, do these biological differences explain why the emotions we experience are different? Does the pattern of activity in our heart, lungs, and hormones cause the felt fear and felt joy?

James–Lange Theory

Personal experience suggests that we experience an emotion and that the felt emotion is quickly followed by bodily changes. As soon as we see the flashing red lights and hear the siren of a police car, fear arises and the feeling of fear subsequently makes our heart race and our palms sweat. The sequence of events seems to be stimulus → emotion → bodily reaction. William James (1884, 1890, 1894) argued against this common view. He suggested that our bodily changes do not follow the emotional experience; rather, emotional experience follows from and depends on our bodily responses to the flashing lights and siren sounds. Hence, bodily changes cause emotional experience: stimulus → bodily reaction → emotion.

James's theory rested on two assumptions: (1) The body reacts uniquely (discriminatorily) to different emotion-eliciting events, and (2) the body does not react to nonemotion-eliciting events. To appreciate James's hypotheses, think of your body's physiological responses to a shower that suddenly and unexpectedly turns cold. The physiological reaction—the increased heart rate, quickened breath, and widened eyes—begins before you have time to think about why your heart is racing and why your eyes are widening. The body reacts and the ensuing emotional reactions are on us before we are aware of what is happening. James argued that such instantaneous bodily reactions occur in patterns. Each different pattern caused a different emotion. Further, if the bodily changes did not occur, then the ensuing emotion would not occur.

The James–Lange theory of emotions quickly became popular, but it also met with criticism (Cannon, 1927).[1] Critics argued that the sort of bodily reactions James referred to were actually part of the body's general mobilizing fight-or-flight response that did not vary from one emotion to the next (Cannon, 1929; Mandler, 1975; Schachter, 1964).[2] These critics also argued that emotional experience was quicker than physiological reactions. That is, while a person feels anger in a tenth of a second, it takes this person's nervous system a full second or so to activate important glands and send excitatory hormones through the bloodstream. These critics contended that the role of physiological arousal was to augment, rather than to cause, emotion (Newman, Perkins, & Wheeler, 1930). Critics concluded that

[1] At the same time James presented his ideas, a Danish psychologist, Carl Lange (1885), proposed essentially the same (but more limited) theory. For this reason, the idea that emotions emanate from our interpretation of patterns of physiological arousal is traditionally called the James-Lange theory (Lange & James, 1922).

[2] For instance, does a person experience specific emotions after taking a stimulant drug known to induce bodily changes—increase heart rate, minimize gastrointestinal activity, and dilate the bronchioles? Drug-induced visceral stimulation leads people to feel "as if afraid" or "as if going to weep without knowing why" rather than afraid or sad per se (i.e., people feel generally aroused but not specifically afraid).

the contribution of physiological changes to emotional experience was small, supplemental, and relatively unimportant.

Contemporary Perspective

In the face of criticism, James's ideas faded out of favor, and rival theories of emotion emerged and became popular (e.g., see Schachter & Singer, 1962). Nonetheless, James' insights continue to guide contemporary study (Ellsworth, 1994; Lang, 1994), and contemporary research now supports the physiological specificity of a few emotions (Buck, 1986; Levenson, 1992; Schwartz, 1986). Paul Ekman, Robert Levenson, and Wallace Friesen (1983), for example, studied whether each of several emotions does or does not have a unique pattern of bodily changes. These researchers recruited people who could experience emotions on command (professional actors) and asked each to relive five different emotions—anger, fear, sadness, joy, and disgust—while the researchers measured for emotion-specific patterns of physiological activity. Distinct differences in heart rate (HR), skin temperature (ST), and skin conductance (SC) emerged. With anger, HR and ST both increased. With fear, HR increased while ST decreased. With sadness, HR increased while SC decreased. With joy, HR, ST, and SC were all low and stable. And with disgust, both HR and ST decreased. Just as James suspected, different emotions did indeed produce distinguishable patterns of bodily activity.

Persuasive evidence exists for distinctive autonomic nervous system (ANS) activity associated with anger, fear, sadness, and disgust (Ekman & Davidson, 1993; Ekman et al., 1983; Levenson, 1992; Levenson, Carstensen, Friensen, & Ekman, 1991; Levenson, Ekman, & Friesen, 1990; Sinha & Parsons, 1996; Stemmler, 1989). Of course, autonomic nervous system activity extends beyond just HR, ST, and SC. Autonomic nervous system activity also involves vasodilation (blushing), stimulation of the lacrimal glands (crying), pupil dilation and constriction, stimulation of the salivary glands, stimulation of hair follicles, and so on. When these aspects of autonomic nervous system activation are included, ANS activity can distinguish between at least six emotions—namely, anger, fear, sadness, disgust, happiness, and embarrassment (Matsumoto et al., 2008). These patterns of ANS activity supposedly emerged because they were able to recruit ways of behaving that proved to be adaptive. For instance, blushing facilitated embarrassment-motivated appeasement behaviors to help maintain a positive self-image in the eyes of others, despite the social blunder that caused the embarrassment in the first place. In the same way, in a fight that arouses anger, increased heart rate and skin temperature facilitate strong, assertive behavior. Some implications of emotion-distinctive ANS activity are discussed in Box 13.

Only a few emotions have distinct ANS patterns, however. If no specific pattern of behavior has survival value for an emotion, there is little reason for the development of a specific pattern of ANS activity (Ekman, 1992, 1994a). For instance, what is the most adaptive behavioral pattern to jealousy? to hope? For these emotions, no single adaptive activity seems universally most appropriate, because adaptive coping depends more on the specifics of the situation than on the emotion itself. That said, new research is beginning to show that positive emotions (e.g., enthusiasm, awe, love, amusement) also show qualitatively distinct ANS patterns of activity (Shiota et al., 2011).

In discussing the James–Lange theory of emotion, the fundamental question is whether the physiological arousal causes, or just follows, emotion activation. This question is important because if arousal causes emotion, then the study of physiological arousal becomes the

BOX 13 *Affective Computing*

Question: Why is this information important?

Answer: To prepare yourself for the coming technology that will read your emotions.

The finding that emotions show autonomic nervous system (ANS) specificity has intriguing implications for coming technology. If changes in blood pressure and skin temperature can reliably distinguish between the emotions of anger, fear, sadness, joy, and disgust, then machines that read our emotions are not far away.

Imagine electronic sensors built into steering wheels, smartphones, tablets, wristwatches, and the handles of bicycles, pilot simulators, computer joysticks, and golf clubs that constantly monitor the user's ANS activity while driving, talking, and so on. Imagine too electronic sensors in a device held by audience members during plays, lectures, musical performances, and political debates.

Soon, you will not need to imagine such technology, because scientists in the new field of "affective computing" are hard at work building such devices. One particularly interesting invention is the "emotion mouse" (Azar, 2000). It functions like an ordinary computer mouse, except it has special sensors for monitoring heart rate, skin temperature, hand movements, and skin conductance. The computer monitors the data collected by the emotion mouse and analyzes these data as a means to infer the user's emotional state.

If a computer can read a user's emotions, then it gains the capacity to adjust its programming to the user's emotionality. A computer game can be made more or less challenging. A tutorial can be adjusted to decrease fear, say by re-presenting familiar information rather than new information. An online counseling session can provide emotional feedback regarding the feelings of a client at different points in the conversation.

But even the best emotion mouse will still be limited to monitoring only five or six emotions (i.e., only the emotions that show ANS specificity). To expand the computer's ability to monitor and analyze additional emotions, a digital camera or a camera built into a smartphone or tablet could monitor and analyze facial expressions. Such a camera could monitor movements of the user's face—the user's frontalis, corrugators, orbicularis oculi, zygomaticus, nasalis, depressors, orbicularis oris, and quadratus labii (see Figure 13.2). With these facial movements, the computer gains the data necessary to infer both the presence and the intensity of anger, fear, distress, disgust, joy, interest, and contempt.

Researchers have already developed the software needed to analyze and interpret a user's facial muscles called "FACS" for facial action coding system (Ekman & Friesen, 1978). Computers using this software are about as accurate as (and much faster than) people who score the same facial movements (Cohn, Zlochower, Lien, & Kanade, 1999). The ability of computers to instantly recognize people's emotional expressions appears to be only a matter of time (Ekman & Friesen, 1975; Ekman & Rosenberg, 1997). It will not be long before your automobile, television set, or wristwatch will ask how it can help you, because it will know that you are significantly more distressed now than you were 10 minutes ago.

cornerstone for any understanding of emotion. But if arousal merely follows and augments emotion, physiological activity is therefore much less important—noteworthy, but not vital. Contemporary researchers generally agree that physiological arousal accompanies, regulates, and sets the stage for emotion, but it does not directly cause it. The modern perspective is that emotions recruit biological and physiological support to enable adaptive behaviors such as fighting, fleeing, and nurturing (Levenson, 1994b).

Endocrine activity also plays a role in emotion (Panksepp, 1998). Opiates promote social bonding by producing a strong positive emotionality (love). Brain exogenous opiates (morphine) and brain endogenous opiates (endorphins) both alleviate sadness and separation distress. In addition, oxytocin and prolactin play a key role in alleviating sadness

and separation distress, and they further contribute positively to joy, love, contentment, attraction, and social bonding (Marazziti, Dall'osso, & Baroni, 2007). The two hormones of adrenaline (epinephrine) and cortisol support the fight-or-flight stress reaction (Kemeny & Shestyuk, 2008). Just as emotion involves a good deal of autonomic nervous system activity, it also involves a good deal of endocrine (hormonal) activity.

Brain Activity Activates Individual Emotions

Just as early researchers looked for emotion-specific patterns of physiological activity, contemporary researchers search for emotion-specific patterns in brain activity (Gray, 1994; LeDoux, 1996; Panksepp, 1998; Panksepp & Biven, 2011; Vytal & Hamann, 2010). For instance, Jeffrey Gray's (1994) neuroanatomical findings (with nonhuman mammals) document the existence of three distinct neural circuits in the brain, each of which regulates a distinctive pattern of emotional behavior: (1) a *behavioral approach system* that readies the animal to seek out and interact with attractive environmental opportunities, (2) a *fight-or-flight system* that readies the animal to flee from some aversive events but to defend aggressively against other events, and (3) a *behavioral inhibition system* that readies the animal to freeze in the face of aversive events. These three neural circuits underlie the four emotions of joy, fear, rage, and anxiety.

When emotion researchers use the methods of neuroscience to scan brain activity during the emotional experience, they use various techniques to activate emotions and then scan the brain to monitor its reaction (PET and *f*MRI; recall Chapter 3). For instance, researchers ask participants to view an emotion-eliciting film, and they then observe closely what each participant's brain does to generate an emotional reaction (Vytal & Hamann, 2010). Their finding for five basic emotions can be summarized as follows (Vytal & Hamann, 2010):

- **Happiness** — Nine identifiable brain areas are activated, primarily the right superior temporal gyrus and rostral anterior cingulate cortex.
- **Sadness** — Thirty-five identifiable brain areas are activated, primarily the left medial frontal gyrus and the caudate anterior cingulate cortex.
- **Anger** — Thirteen identifiable brain areas are activated, primarily the left inferior frontal gyrus and parahippocampal gyrus.
- **Fear** — Eleven identifiable brain areas are activated, primarily the left amygdala and insula.
- **Disgust** — Sixteen identifiable brain areas are activated, primarily the right anterior insula and right inferior frontal gyrus.

These neuroscience-based data support the conclusion that basic emotions are associated with specific, characteristic, and discriminable patterns of brain activity.

The activation of any particular subcortical brain area is important because biologically minded emotion researchers assume that within each brain structure must be a certain set of specific instructions (metaphorically speaking) to guide the coordinated activity that is an emotional reaction (Ekman & Cordaro, 2011; Ohman & Mineka, 2011). The onset of the person's subjective feelings, motivational impulses, autonomic nervous system activity, and expressive signals occurs so quickly and in such a coherent and coordinated way that researchers confidently assume that stimulated brain areas must be implementing an

emotion program that is specific to each individual basic emotion. The assumption is that there are somewhere between three and eight brain areas with specific instructions to guide each family of emotions.

These emotion programs can be traced to our evolutionary past, but they are also open systems to include learning from experience and culture. It is important to note that such "instructions" embedded with a subcortical brain structure are not lengthy scripts but, rather, consist of something more like the following. The brain area features a very fast pattern detector that monitors what is happening in the immediate second of time (e.g., seeing unexpected movement activates threat) and also a very fast output generator (e.g., accelerate heart rate, dilate the pupils; Levenson, 2011). Thus, what the amygdala brain structure does is detect that class of stimuli that signal threat and quickly generate the bodily systems necessary to produce a freezing reaction. What detects the threat and what mobilizes the bodily reaction is the ancient and evolutionary-developed emotion program (set of instructions) stored in the amygdala (LeDoux, 1996, 2000).

A second perspective on the nature of these subcortically stored emotion programs is that they are situation-detecting algorithms that lie dormant until activated by specific constellations of situational cues that were identified in one's ancestral past (Tooby & Cosmides, 2008). An analogy that speaks to the nature of these emotion programs is hunger. The hypothalamus has the capacity to detect low blood sugar and then generate output motivation to find and consume food. When a situation is detected by an emotion program that is consistent with cues related to a fundamental life task (e.g., a threat, a new area to explore), these anciently stored algorithms detect those signals to activate the corresponding basic emotion. Some of what is detected is rather straightforward (e.g., "snake detected!"), while some of what is detected is more complicated because it involves neural connections that add information from personal experience and learning.

Facial Feedback Hypothesis

According to the facial feedback hypothesis, the subjective aspect of emotion stems from feelings engendered by (1) movements of the facial musculature, (2) changes in facial temperature, and (3) changes in glandular activity in the facial skin. Therefore, emotions are "sets of muscle and glandular responses located in the face" (Tomkins, 1962). In other words, emotion is the awareness of proprioceptive feedback from facial behavior.

Upon being introduced to the facial feedback hypothesis, the reader might be a bit skeptical—"C'mon, smiling makes you happy?" But consider the following sequence of events depicted in Figure 13.1 to understand how sensations from the face feed back to the cortical brain to produce subjective emotional experience (Izard, 1991). Exposure to an external (loud noise) or internal (memory of being harmed) event increases the rate of neural firing quickly enough to activate a subcortical emotion program such as fear (1 in Figure 13.1). The subcortical brain structure possesses an emotion-specific program (2). When activated, these programs send impulses to the basal ganglia and facial nerve to generate discrete facial expressions (3). Within microseconds of the displayed fear facial expression (4), the brain interprets the proprioceptive stimulation (which muscles are contracted, which muscles are relaxed, changes in blood flow, changes in skin temperature, change in glandular secretions; 5). This particular pattern of facial feedback is cortically integrated—made sense of—as the subjective feeling of fear (6). Only then does the frontal lobe of the cortex become aware of the emotional state at a conscious level.

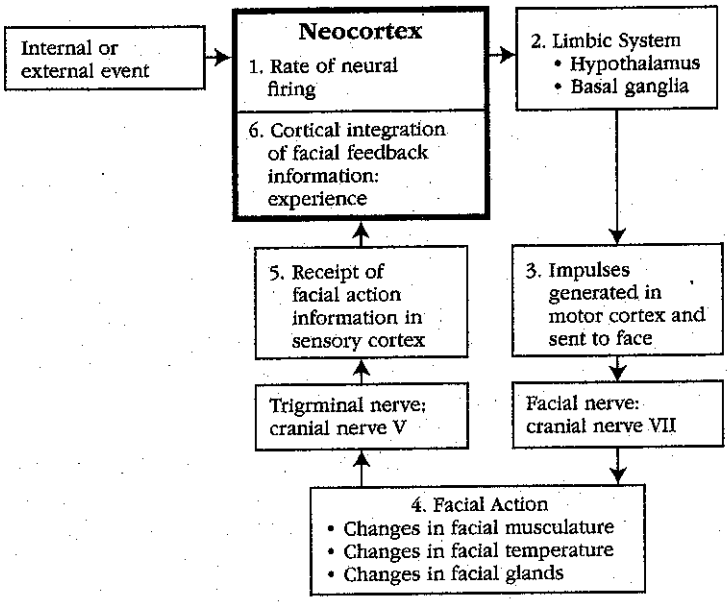


Figure 13.1 Sequence of the Emotion-Activating Events According to the Facial Feedback Hypothesis

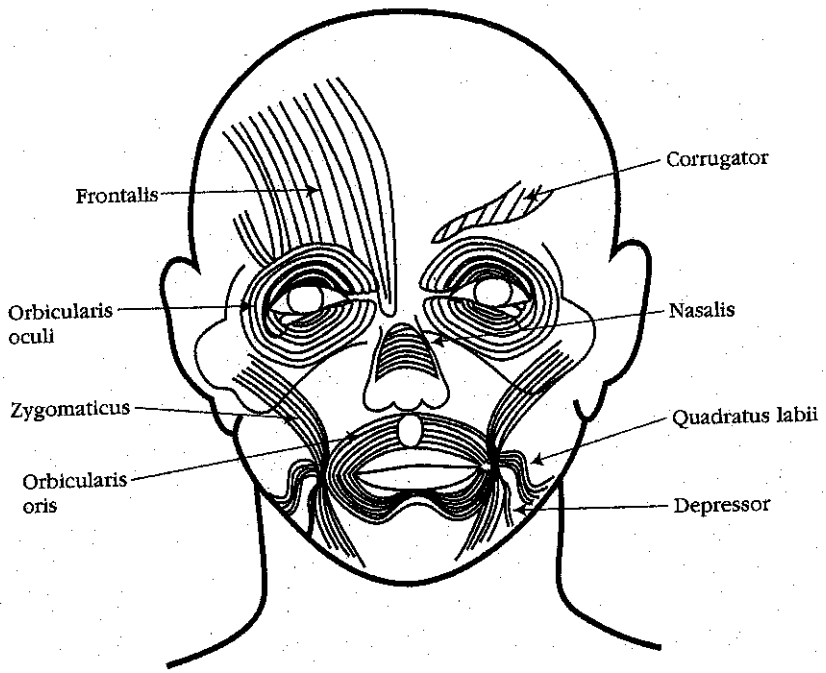
Quickly thereafter, the whole body joins the facial feedback to become involved in amplifying and sustaining the activated fear experience.

Facial feedback does one job: emotion activation (Izard, 1989, 1994). Once an emotion is activated, it is the emotion program, not the facial feedback, that recruits further cognitive and bodily participation to maintain the emotional experience past the first split-second of time. The person then becomes aware of and monitors not her facial feedback but her changes in heart rate, respiration, muscle tonus, posture, and so on.

Facial action also changes brain temperature, such that facial movements associated with negative emotion (sadness) constrict breathing, raise brain temperature, and produce negative feelings, whereas facial movements associated with positive emotion (happiness) enhance breathing, cool brain temperature, and produce positive feelings (McIntosh, Zajonc, Vig, & Emerick, 1997; Zajonc, Murphy, & Inglehart, 1989). To make sense of this, make a sad facial expression and see if the facial action around the nose does not constrict your air flow a bit. Also, make a joy facial expression and see if that facial action (e.g., raising the cheeks) does not encourage and open up nasal air flow. The changing brain temperatures do have (mild) emotional consequences.

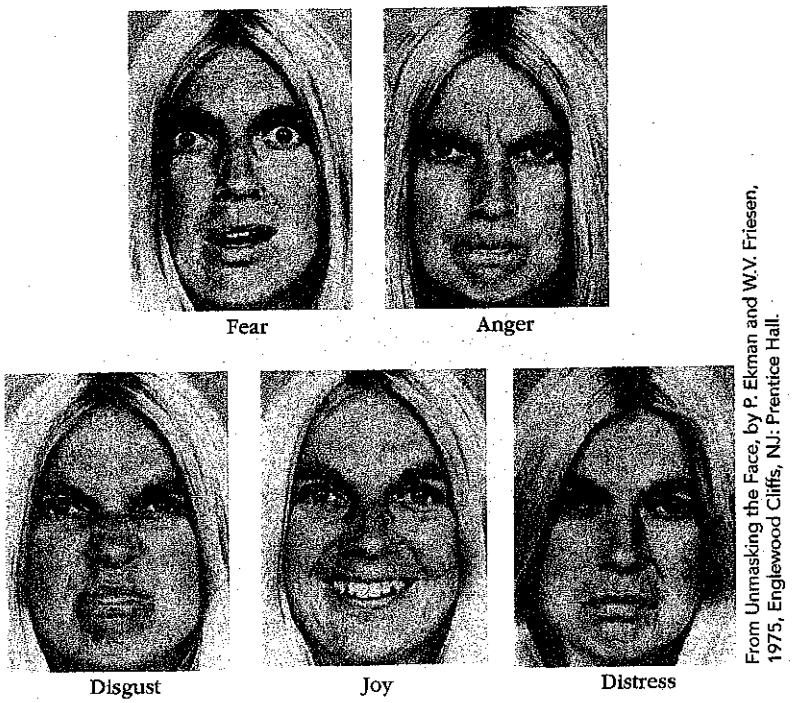
Facial Musculature

There are 80 facial muscles, 36 of which are involved in facial expression. For purposes of exposition, however, the eight facial muscles shown in Figure 13.2 are sufficient for differentiating among the basic emotions (for more information, see Ekman &



Facial Muscle	Anger	Fear	Disgust	Sadness	Joy
Frontalis (Forehead)	n/a	contracts, producing forehead wrinkles	n/a	n/a	n/a
Corrugator (Eyebrows)	draws eyebrows in and down	raises inner corners of eyebrows	n/a	raises and draws together inner corners of eyelids	n/a
Orbicularis Oculi (Eyes)	tenses lower eyelids upward	raises upper eyelids, tenses lower eyelids	n/a	raises upper inner corner of eyelids	relaxes, showing wrinkles below eyes
Nasalis (Nose)	n/a	n/a	wrinkles nose	n/a	n/a
Zygomaticus (Cheeks)	n/a	n/a	raises cheeks	n/a	1. pulls corners of lip back and up; 2. raises cheeks, showing Crow's feet below eyes
Orbicularis Oris (Lips)	presses lips firmly together	n/a	raises upper lip	n/a	n/a
Quadratus Labii (Jaw)	n/a	pulls lips backward	n/a	n/a	n/a
Depressor (Mouth)	n/a	n/a	n/a	pull corners of lips down	n/a

Figure 13.2 Eight Major Facial Muscles Involved in the Expression of Emotion



From Unmasking the Face, by P. Ekman and W.V. Friesen, 1975, Englewood Cliffs, NJ: Prentice Hall.

Figure 13.3 Facial Expressions for Five Emotions

Friesen, 1975; Izard, 1971). The upper face (the eyes and forehead) has three major muscles: the frontalis (covers the forehead), corrugator (lies beneath each eyebrow), and orbicularis oculi (surrounds each eye). The middle face has two major muscles: the zygomaticus (extends from the corners of the mouth to the cheekbone) and the nasalis (wrinkles the nose). The lower face has three major muscles: the depressor (draws the corners of the mouth downward), the orbicularis oris (circular muscle surrounding the lips), and the quadratus labii (draws the corners of the mouth backward).

Patterns of facial behavior produce discrete emotional expressions. Anger, fear, disgust, distress, and joy, for instance, all have a recognizable facial expression. These facial expressions are described muscle-by-muscle in words in Figure 13.2 and in pictures in Figure 13.3 (Ekman & Friesen, 1975). Two additional emotions are associated with a particular pattern of facial behavior: interest (Reeve, 1993) and contempt (Ekman & Friesen, 1986). The interest expression is illustrated in the faces of the gallery who are tracking the flight of the golf ball in Figure 13.4 (e.g., the man seventh from the left wearing a dark striped shirt). For interest, the orbicularis oculi open the eyelids and the orbicularis oris slightly parts the lips open. For contempt, the zygomaticus unilaterally raises the corner of one lip upward. In contempt, the person "snarls" upward one side of the upper lip (a la Elvis Presley). Pride too can be universally recognized, although pride expresses itself beyond the face (i.e., small smile, head tilted slightly back, expanded posture, arms lifted and extended high; Tracy & Robins, 2004, 2007).

Figure 13.4 Some Facial Expressions of Interest

Test of the Facial Feedback Hypothesis

Feedback from facial behavior, when transformed into conscious awareness, constitutes the experience of emotion (Laird, 1974; Tomkins, 1962, 1963). This is the facial feedback hypothesis (FFH). Investigations to test the validity of the FFH have used two different methodologies, because there are two testable versions of the FFH—the strong version and the weak version (McIntosh, 1996; Rutledge & Hupka, 1985).

In its strong version, the FFH proposes that manipulating one's facial musculature into a pattern that corresponds to an emotion display (e.g., see Figure 13.3) will activate that emotional experience. In other words, frowning the lips and raising the inner eyebrows inward and upward activates sadness (recall the example at the beginning of this chapter). In empirical tests, an experimenter instructs a participant to contract and relax specific muscles of the face and, with a particular facial expression displayed, complete a questionnaire to assess emotional experience. For example, in one study, participants were instructed to (1) "raise your brows and pull them together," (2) "now raise your upper eyelids," and (3) "now also stretch your lips horizontally, back toward your ears" (Ekman et al., 1983). So posed, the participants were asked about their emotional state (fear, in this case) on a questionnaire. Research has both supported (Laird, 1974, 1984; Larsen et al., 1992; Rutledge & Hupka, 1985; Strack, Martin, & Stepper, 1988) and refuted (McCaul, Holmes, & Solomon, 1982; Tourangeau & Ellsworth, 1979) the strong version of the FFH.

One area of consensus is that a posed facial musculature produces reliable changes in physiological reactions, such as changes in cardiovascular and respiratory rates (Ekman et al., 1983; Tourangeau & Ellsworth, 1979). It is still debated whether the posed facial musculature produces emotional experience, but most studies suggest that it does produce at least a small effect (Adelmann & Zajonc, 1989; Izard, 1990; Laird, 1984; Matsumoto, 1987; Rutledge & Hupka, 1985).

In its weaker (more conservative) version, the FFH proposes that facial feedback modifies the intensity of (rather than causes) the emotion. Thus, managing one's facial musculature into a particular emotional display will augment (exaggerate) but will not necessarily activate (cause) the emotional experience. In other words, if you intentionally smile when you are already joyful, then you will feel a more intense joy. In one experiment, participants either exaggerated or suppressed their spontaneous facial expressions while watching a video, which depicted either a pleasant, a neutral, or an unpleasant scenario (Zuckerman, Klorman, Larrance, & Spiegel, 1981). Exaggerating naturally occurring facial expressions did augment both emotional and physiological experience, just as suppressing naturally occurring facial expressions softened both emotional and physiological experience (Lanzetta, Cartwright-Smith, & Kleck, 1976).

Unlike its stronger version, the weaker version of the FFH has received a consensus of support (McIntosh, 1996; Soussignan, 2002). These results highlight the two-way street between the emotions we feel and the emotions we express: Emotions activate facial expressions, and facial expressions, in turn, feed back to exaggerate and suppress the emotions we feel. Critics contend, however, that the contribution of such facial feedback is small and that other factors are more important (Matsumoto, 1987).

Are Facial Expressions of Emotion Universal across Cultures?

The facial feedback hypothesis assumes that facial expressions are innate. But much facial behavior is surely learned. It is a rare individual who has not learned to express the polite smile and to inhibit the angry face while talking with the boss. But the fact that some facial behavior is learned (and therefore under voluntary control) does not rule out the possibility that facial behavior also has a genetic, innate component, as proposed by the proponents of the FFH.

A series of cross-cultural investigations tested the proposition that human beings display similar facial expressions regardless of cultural differences (Ekman, 1972, 1994b; Izard, 1994). In each of these studies, representatives from diverse nationalities looked at three photographs, each showing a different facial expression (Ekman, 1972, 1993; Ekman & Friesen, 1971; Ekman, Sorenson, & Friesen, 1969; Izard, 1971, 1980, 1994). From these photographs, participants chose, via a multiple-choice format, the photograph they thought best expressed a particular emotion. For example, participants were shown photographs of three faces, one expressing anger, one expressing joy, and one expressing fear. The participants selected the picture they thought showed what a face would look like when the person encountered an injustice or obstacle to a goal (i.e., anger). The research question is whether persons from different cultures would agree on which facial expressions correspond with which emotional experiences. The finding that people from different cultures (different cultures, different languages, different nationalities) match the same facial expressions with the same emotions is evidence that facial behavior is cross-culturally universal (Ekman, 1994b;

Figure 13.5 Which Facial Expression Shows Disgust? The photograph of the New Guinea native expressing disgust appears in the lower-right corner. Clockwise from the bottom-left are expressions of anger, joy, and distress. From "Universal and Cultural Differences in Facial Expression of Emotion" by P. Ekman, 1972, in J. R. Cole (Ed.), Nebraska Symposium on Motivation (Vol. 19, pp. 207–283), Lincoln: University of Nebraska Press.

Ekman & Friesen, 1971; Izard, 1971).[3] This is evidence that emotion-related facial behavior has an innate, unlearned component.

To test yourself as the participants in the cross-cultural experiments were tested, take a look at the photographs shown in Figure 13.5. The photographs show four different expressions of a New Guinea native (someone from a different culture than you). Your task is to identify the face that just encountered a contaminated object (i.e., disgust).

Skill in Recognizing Emotional Facial Expressions

With explicit training, people can learn how to recognize emotional facial expressions in others (Hurley, 2012; Matsumoto & Hwang, 2011). Some facial expressions are easier to recognize than are others. Joy (happiness) is generally the easiest facial expression of

[3]Research with infants supports the idea that facial behavior has a strong innate component (Izard et al., 1980) because presocialized infants show distinct, identifiable facial expressions. Blind children, who lack opportunity to learn facial expressions from others through modeling and imitation, show the same recognizable facial expressions as do children of the same age who can see (Goodenough, 1932). Severely mentally handicapped children, who have difficulty learning new motor behaviors, also show full expressions of the emotions (Eibl-Eibesfeldt, 1971).

emotion to recognize, while fear tends to be the most difficult to recognize accurately (Calvo & Lundqvist, 2008; Montagne et al., 2007; Russell, 1994). People in Western cultures (e.g., United States, Europe) tend to recognize facial expressions of emotion more accurately than do people in Eastern cultures (e.g., Asia; Russell, 1994). These East–West differences seem to arise because of culture-specific patterns of observation. Eastern observers mostly look at a person's eye region when trying to judge a facial expression of emotion, whereas Western observers mostly look at a person's mouth region (Jack et al., 2009). This is an important difference because the eye region provides more ambiguous information about emotion than does the mouth region (Calvo & Nummenmaa, 2008). From these data, it seems possible to conclude that if you were interested in improving your skill in accurately identifying emotional facial expressions in others, you could do so by observing the mouth region of the face more and the eye region less. This conclusion seems to be especially true for emotions such as fear and sadness. Looking into the eyes seems necessary, however, for anger accuracy and looking in the nose region seems necessary for disgust accuracy.

COGNITIVE ASPECTS OF EMOTION

For those who study emotion from a cognitive perspective, biological events are not necessarily the most important aspects of emotion. Cognitive theorists acknowledge the biological contribution to emotion (Parkinson, 2012), but they further argue that emotion and emotion activation are both deeply immersed within cognitive activity. These theorists see emotions as adaptive responses that reflect cognitive appraisals and cognitive mental representations (e.g., the self-concept) that interpret environmental events as being significant to one's well-being, and they tend to focus on complex emotions. They point out that an emotion such as "disappointment" cannot be explained by ANS activity or changes in facial expressions but, instead, by a cognitive understanding of what it means to not have what you expected you would have (van Dijk, Zeelenberg, & van der Pligt, 1999). Similarly, "shame" is not activated by subcortical brain structures but, rather, by a cognitive evaluation that the self is inferior or damaged in some important way (Tangney & Dearing, 2002).

Appraisal

The central construct in a cognitive understanding of emotion is appraisal (Moors, Ellsworth, Scherer, & Frijda, 2013).

Definition

Appraisal is a cognitive process that evaluates the significance of environmental events in terms of one's well-being (e.g., "Is this situation significant to me?"). Well-being is driven by the individual's goals, needs, values, beliefs, and attachments or personal relationships. That is, appraisal involves basically everything the person cares about.

Appraisal also affects each aspect of an emotional episode, including the feeling state, sense of purpose, bodily preparation, and expressive signals (Frijda, 2007; Reisenzein, 1994). Because appraisal causes a change in each aspect of an emotion, appraisal theorists conclude that appraisal causes emotion (Moors, 2013).

Appraisals change over time. Appraisals change as the person's perception of the environment changes, and appraisals change as the person's perception of the person–environment interaction changes. As appraisals change, so do the person's feelings, bodily readiness, action tendencies (sense of purpose), expressive signals, and coping behaviors. These changed emotional reactions typically produce changes in the environment and changes in the person–environment interaction, which again change the person's appraisals. The overall picture is that the emotion process is continuous and recursive, not a quick burst of activity that lasts for only a second or two.

Consider a child who sees a man approaching. Immediately and automatically, the child appraises the meaning of the man's approach as probably "good" or probably "bad." The appraisal is an evaluation of the environment that is based on the salient characteristics of the man approaching (gender, facial expression, pace of approach), expectations of who might be approaching, beliefs of what approaching people typically do, and memories of approaching people in the past. It is not the approaching man per se that explains the quality of the child's emotional reaction, but rather, it is how the child expects that the approaching man will affect her well-being that gives life to her emotion. If she sees the approaching man smiling and waving and if she remembers the man is her friend, then she will likely appraise the event as a good one. If she sees the approaching man ranting and raving and if she remembers the man is the neighborhood bully, then she will likely appraise the event as a bad one. These appraisals lead to specific action tendencies (motivations), expressive signals, bodily changes that mobilize coping responses, and the instrumental behavior that is coping. If the child did not appraise the personal relevance of the approaching man, she would not have had an emotional reaction to the man in the first place because events that are irrelevant to well-being do not generate emotions (Lazarus, 1991a; Ortony & Clore, 1989; Ortony et al., 1988). This example illustrates the four central beliefs that are shared by all appraisal emotion theorists (Ellsworth, 2013; Frijda, 2007; Lazarus, 1991a; Oatley & Johnson-Laird, 1987; Ortony et al., 1988; Roseman, 1984; Scherer, 2009; Smith & Ellsworth, 1985; Weiner, 1986):

1. Without an antecedent cognitive appraisal of the event, emotions do not occur.
2. The appraisal, not the event itself, causes the emotion.
3. Emotion is a process.
4. If the appraisal changes, even if the situation does not, then the emotion will change.

One of the earliest cognitive theorists was Magda Arnold (1960, 1970). She specified how appraisals, brain activity, and arousal work together to produce emotion by focusing on three questions: (1) How does the perception of an object or event produce a good or bad appraisal? (2) How does the appraisal generate emotion? and (3) How does felt emotion express itself in action? Arnold's pioneering appraisal theory of emotion is summarized in Figure 13.6 (see also Cornelius, 2006).

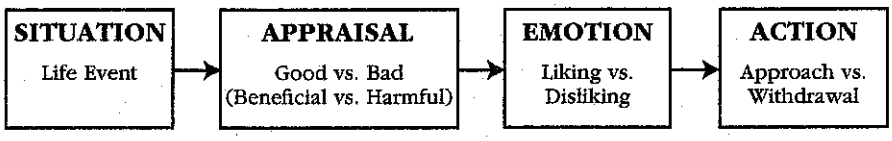


Figure 13.6 Arnold's Appraisal Theory of Emotion

From Perception to Appraisal

According to Arnold, people categorically appraise stimulus events and objects as positive or negative. This good/bad appraisal was simply a gut-felt evaluation of the stimulus event.

She recognized that the duration of time between the presentation of a stimulus and the onset of an emotional reaction to that stimulus was so remarkably brief that the appraisal process that took place between stimulus and emotional reaction must therefore be fairly simple (and hence fast). To substantiate her ideas, Arnold paid particularly close attention to the neurological pathways in the brain. In all encounters with the environment, subcortical brain structures (e.g., the amygdala) automatically appraise the hedonic tone of sensory information. For instance, a harsh sound instantaneously is appraised as intrinsically unpleasant (bad), while the smell of a rose is appraised as intrinsically pleasant (good). Recent neuroanatomical research confirms Arnold's claim that the subcortical brain (and amygdala in particular) is the focal brain center that appraises the emotional significance of sensory stimuli (Berridge & Kringelbach, 2008; LeDoux, 2012). In addition, most stimuli are further appraised cortically by adding information processing and hence expectations, memories, beliefs, goals, judgments, and attributions (Davidson & Irwin, 1999; Ochsner & Gross, 2005). Full appraisal therefore draws on both subcortical and cortical evaluations of the stimulus event in terms of sensory information and in terms of the person's goals and preferences.

From Appraisal to Emotion

Once an object has been appraised as good or bad (as beneficial or harmful), an experience of liking or disliking follows immediately and automatically. For Arnold, the liking or disliking is the felt emotion. Contemporary research has backed up Arnold's belief that the like–dislike appraisal is both fast and automatic (Moors, De Houwer, & Eelen, 2004).

From Felt Emotion to Action

Liking generates a motivational tendency to approach the emotion-generating object; disliking generates a motivational tendency to avoid it. This motivational tendency represents an action readiness to approach versus avoid.

During appraisal, the individual relies on memory and imagination to generate a number of possible courses of action in dealing with the liked or disliked object. When a particular course of action is decided upon, the subcortical brain generates autonomic and endocrine system reactions (Kapp, Pascoe, & Bixler, 1984; LeDoux, Iwata, Cicchetti, & Reis, 1988), general arousal (Krettek & Price, 1978), and the muscles that control facial expressions (Holstedge, Kuypers, & Dekker, 1977). Through its effects on these biological systems, emotions produce action.[4]

[4]One important feature of Arnold's theory is that emotion is defined in terms of motivation. The tendency to approach or avoid gives the emotion a directional force, while the physiological changes in the muscles and viscera give emotion its energy. A second important feature of Arnold's theory treats emotion as a unitary construct, because she preferred to talk about emotion forces of approach and avoidance, of attraction and repulsion, and of liking and disliking more than she did of specific emotions such as anger, sadness, or pride.

Complex Appraisal

Like Arnold, Richard Lazarus emphasized the cognitive processes that intervene between important life events (environmental conditions) and physiological and behavioral reactivity. While following Arnold's ideas as a road map, Lazarus expanded her general good/bad appraisal into a more complex conceptualization of appraisal (Lazarus, 1968, 1991a; Lazarus & Folkman, 1984). "Good" appraisals were conceptualized into several types of benefit, while "bad" appraisals were differentiated into several types of harm and into several types of threat. Lazarus's (1991a) complex appraisals framework appears in Figure 13.7.

In articulating a more complex portrayal of appraisal, Lazarus pointed out that people evaluate whether the situation they face has personal relevance for their well-being. When well-being is at stake, people then evaluate the potential harm, threat, or benefit they face. For Lazarus (1991a), these appraisals take the form of questions such as: Is this event relevant to my well-being? Is this event consistent with my goals? How deeply does this event touch my self-esteem? Given these appraisals of personal relevance, goal congruence, and ego involvement, people appraise situations as particular kinds of harm, as particular kinds of threat, or as particular kinds of benefit (Lazarus, 1991a, 1994).

The appraisal process does not end with an assessment of personal relevance, goal congruence, and ego involvement. Perceived coping abilities continue to alter how people

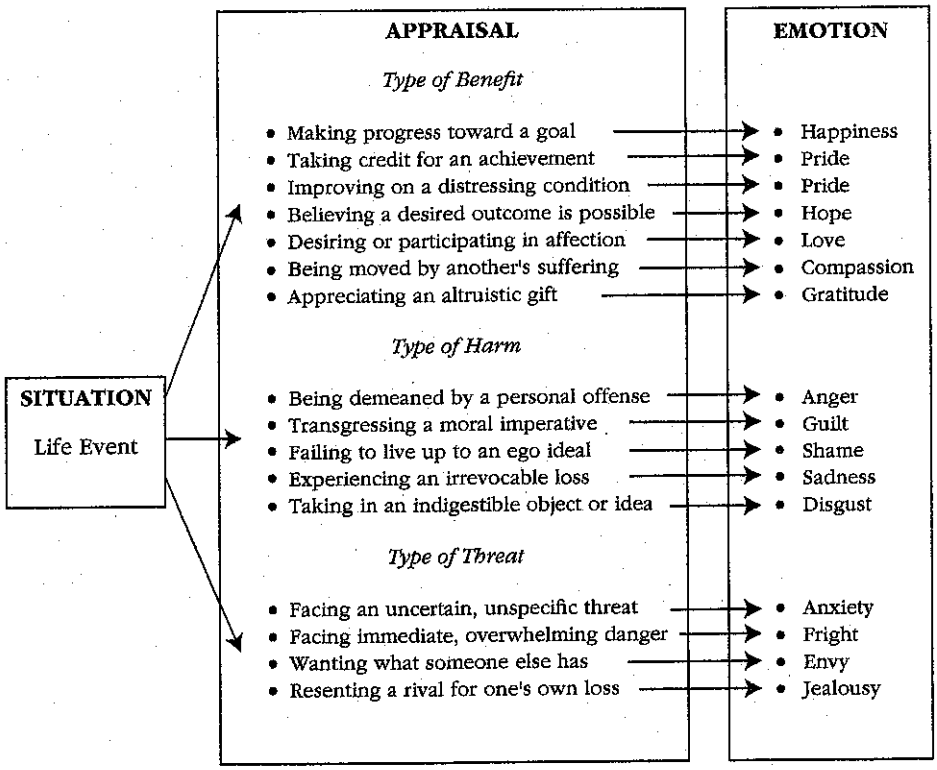


Figure 13.7 Lazarus's Complex Appraisals: Types of Benefit, Harm, and Threat

interpret (appraise) the situations they face (Folkman & Lazarus, 1990; Lazarus, 1991a, b). The person asks him- or herself, can I cope with the potential benefit, threat, or harm I face? Can I bring the benefit to fruition, and can I prevent the harm or threat? Anticipated coping changes the way a situation is appraised (if I can cope with the threat, then it is not really much of a threat). A changed appraisal leads to a changed emotion. Overall, then, people first appraise their relationship to the life event ("primary appraisal") and then appraise their coping potential within that event ("secondary appraisal").

Primary Appraisal

Primary appraisal involves an estimate of whether one has anything at stake in the encounter (Folkman et al., 1986). The following are potentially at stake in primary appraisal: (1) health, (2) self-esteem, (3) a goal, (4) financial state, (5) respect, and (6) the well-being of a loved one. In other words, primary appraisals ask whether one's physical or psychological well-being, goals and financial status, or interpersonal relationships are at stake during a particular encounter. As soon as one of these is at stake, an "ordinary life event" becomes an emotion-generating "significant life event." For instance, when driving a car and it swerves on ice, the cognitive system immediately generates the primary appraisal that much is now at stake—personal health, reputation as a skillful driver, a valuable possession (the car), and the physical and psychological well-being of one's passenger.

Secondary Appraisal

Secondary appraisal, which occurs after some reflection, involves the person's assessment for coping with the possible benefit, harm, or threat (Folkman & Lazarus, 1990). Coping involves the person's cognitive, emotional, and behavioral efforts to manage the benefit, harm, or threat. For instance, imagine the coping options for a musician scheduled to perform for an audience. The musician might solicit advice from a mentor, practice throughout the night, find a means of escape, make a plan of action and follow through, copy another musician's style, joke and make light of the event's significance, and so forth. The musician's emotional experience will depend not only on his initial appraisal of the potential benefit, harm, or threat within the evening's performance, but also on his reflection on the potential efficacy of his coping strategies to realize the benefit or prevent the harm or threat.

Motivation

Lazarus's portrayal of emotion is a motivational one. A person brings personal motives (goals, well-being) into a situation. When personal motives are at stake, emotions follow. Furthermore, emotions constantly change as primary and secondary appraisals change. The whole emotion process is characterized not so much by the linear sequence of life event → appraisal → emotion as it is by the ongoing change in the status of one's personal motives. Life events offer potential benefits, harms, and threats to well-being, and ongoing coping efforts have important implications for the extent to which those benefits, harms, and threats are realized. So, the individual's personal motives (goals, well-being) lie at the core of the emotion process and the individual continually makes primary and secondary appraisals about the status of those personal motives as events unfold and coping efforts are implemented.

Lazarus labels his emotion theory as a cognitive–motivational–relational one (Lazarus, 1991b). *Cognitive* communicates the importance of appraisal, *motivational* communicates the importance of personal goals and well-being, and *relational* communicates that emotions arise from one's relation to environmental threats, harms, and benefits.

Appraisal as a Process

The appraisal framework to understand emotion was proposed by Arnold, developed by Lazarus, and brought to its maturity by present-day emotion theorists. Inspired by Lazarus' concept of a complex appraisal, cognitively based emotion theorists worked to develop an increasingly sophisticated understanding of the appraisal process (Ellsworth, 2013; Frijda, 2007; Lazarus, 1991a; Johnson-Laird & Oatley, 1989; Oatley & Johnson-Laird, 1987; Ortony et al., 1988; Roseman, 1984, 1991; Roseman & Evdokas, 2004; Scherer, 2009; Smith & Ellsworth, 1985; Weiner, 1986). Like Lazarus, these researchers showed rather clearly that different appraisals caused different emotions. Each appraisal theorist embraced the life event → appraisal → emotion sequence, but they differed on how many dimensions of appraisal are necessary to explain emotional experience. Arnold used appraisal to explain two emotions (like and dislike), Lazarus used primary and secondary appraisals to explain approximately 15 emotions (see Figure 13.7), yet cognitive emotion theorists ultimately seek to use appraisals to explain *all* emotions.

These cognitive theorists believe that each emotion can be described by a unique pattern of appraisals. The thinking is that if one were able to know the full pattern of a person's appraisals, then it would be a rather straightforward task to predict which ensuing emotion the person would experience. The following list of additional appraisals represents the thinking of most cognition-minded emotion theorists (Moors et al., 2013):

Arnold's Appraisal:	
Valence	Is the event good or bad?
Lazarus's Appraisals:	
Goal Relevance	Is the event relevant to my goals and well-being?
Coping Potential	Can I cope successfully with the event?
Additional Appraisals:	
Goal Congruence	Is the event facilitating my goal attainment?
Novelty	Did I expect the event to happen?
Agency	Who caused the event: self? others? circumstances?
Self/Norm Compatibility	Is the event okay on a moral level?

The four new additional appraisals are goal congruence, novelty, agency, and self/norm compatibility. *Goal congruence* is an evaluation of whether the external event is working to facilitate (versus block, thwart) one's progress toward goal attainment or motive satisfaction. *Novelty* is detection of a change in the environment, and the detection of such a change recruits greater attention and information processing. The environment can change in different ways, including stimulus novelty (i.e., a new object appears in a familiar context) and contextual novelty (i.e., a familiar object appears in a new context). *Agency* is an attribution of the cause of the event, because events can be caused by the self, by someone else, or by impersonal circumstances. *Self/Norm compatibility* is an evaluation of how compatible versus incompatible (how acceptable versus unacceptable) the event is with one's

self-concept or personal standards. Together, these appraisals provide a rather comprehensive picture of the sort of appraisals people across many different cultures use (Scherer, 1997a).

Consider how a combination of several different appraisals can produce one specific emotion. Sadness, for instance, is a combination of the following four appraisals: (1) A valued goal is at stake (goal relevance); (2) no progress was made toward the goal (low goal congruence); (3) the goal was lost (unpleasant intrinsic value); and (4) it is not possible to regain what was lost (low coping potential). That is, high personal relevance + low goal congruence + unpleasant intrinsic value + low coping potential = sadness. If the appraisal pattern were to change so that low coping potential was re-evaluated to be high coping potential, then anger would replace sadness, as anger = high personal relevance + low goal congruence + unpleasant intrinsic value + high coping potential.

The ultimate goal of the appraisal emotion theorists is perhaps now apparent. They are hard at work to construct a decision tree in which all possible patterns of appraisal lead to a single emotion (Scherer, 1993, 1997b). That is, if the person makes appraisals X, Y, and Z, then emotion A will surely and inevitably follow.

Emotion Differentiation

The strong suit of an appraisal theory of emotion is its ability to explain emotion differentiation. Emotional differentiation is the phenomenon in which people experience different emotions for the same event. It also concerns how the same person can experience different emotions for the same event at different times. Emotional differentiation is actually the number one contribution that appraisal theory makes to the study of emotion. Unlike the biological perspective that explains how everyone experiences the same emotion to the same fundamental life event (i.e., everyone feels sad after the loss of a valued object), the appraisal theory of emotion can explain how different emotions emerge from the same event. Emotional differentiation occurs because different people appraise the same event differently and also because the same person appraises the same event differently at two different times.

Emotional differentiation occurs even within a single emotional episode. Those who use a neuroscientific perspective to study the appraisal process (Brosch & Sander, 2013) examine the appraisal process during an emotional episode on a millisecond-to-millisecond basis. They find that when the person encounters an external event, that stimulus event is very quickly appraised for its novelty and goal relevance, based largely on its sensory information. These two appraisals begin about one-tenth of a second after stimulus exposure and they feed-forward this novelty and goal relevance evaluative information to other brain areas for further processing. Brain structures such as the amygdala then orchestrate further appraisals and information processing as the stimulus event is appraised for goal congruence and agency. These appraisals occur about one-half of a second after stimulus exposure. As the appraisal process continues, information processing expands from just sensory stimulus information to learned associations and eventually to the accessing of stored information such as self/norm compatibility and predictive forecasts of the future, as with coping potential. Because these later appraisals feed back to combine with the earlier appraisals, the emotion may change—may undergo emotion differentiation. After several evaluative iterations and several seconds of time, the appraisal pattern begins to stabilize to

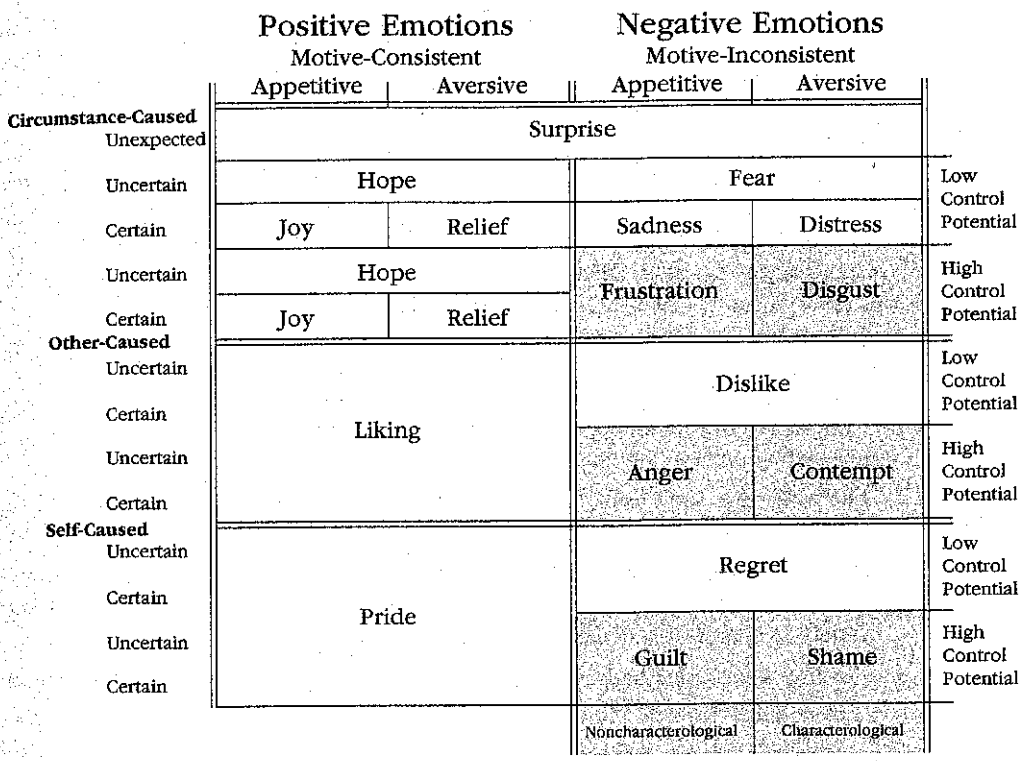


Figure 13.8 Appraisal Decision Tree to Differentiate among 17 Emotions

Source: From "Appraisal determinants of emotions: Constructing a more accurate and comprehensive theory," by I. J. Roseman, A. A. Antoniou, and P. E. Jose, 1996, *Cognition and Emotion, 10*, pp. 241–277. Reprinted by permission of Psychology Press, Ltd.

the point that the person settles on what the stimulus event means for his or her goals and well-being.

Figure 13.8 depicts one possible decision tree to show how the six earlier-mentioned appraisal dimensions can differentiate among 17 different emotions (Roseman, 2011, 2013; Roseman, Antoniou, & Jose, 1996). The appraisal dimensions are shown on the border of the figure, while the differentiated emotions appear in the boxes inside the figure. The appraisal dimensions on the left side of the figure represent *agency* (circumstance-caused, other-caused, self-caused) and *novelty* (unexpected, uncertain, certain). The appraisal dimensions on the top of the figure represent *goal congruence* (motive-consistent, motive-inconsistent) and *intrinsic value* (appetitive, aversive). The appraisal dimension on the right side of the figure represents *coping potential* (low versus high). And Roseman adds one additional appraisal dimension on the bottom of the figure to evaluate the source of the event (noncharacterological, characterological). Admittedly, the figure can be difficult to follow, but it does get one point across rather well—namely, that in an emotional episode, people engage in a good deal of cognitive appraisal to interpret what is happening to them and as any of these interpretations (appraisals) change so does the person's emotional experience.

An appraisal decision tree such as the one depicted in Figure 13.8 will never predict ensuing emotions correctly 100 percent of the time (Oatley & Duncan, 1994). Appraisal theorists generally agree that knowing a person's particular configuration of appraisal allows them about a 65–70 percent accuracy rate in predicting people's emotions (Reisenzein & Hofman, 1993). Critics are a bit tougher in stating these odds—one researcher put the odds at only about 25 percent, a little higher for anger, a little lower for sadness, fear, and guilt (Tong, 2010). Five reasons explain why appraisals are not sufficient for emotion and, hence, why appraisal theory cannot explain emotional reactions with 100 percent accuracy (Berkowitz & Harmon-Jones, 2004; Fischer, Shaver, & Carnochan, 1990; Reisenzein & Hofman, 1993; Scherer, 1997b):

1. Processes other than appraisal contribute to emotion (as discussed in the first half of this chapter).
2. Appraisals often function only to intensify (rather than cause) the emotion (e.g., low coping potential intensifies, but does not cause, anger).
3. The patterns of appraisals for many emotions overlap (e.g., guilt and shame have similar patterns of appraisal).
4. Developmental differences exist among people such that children experience only general emotions (e.g., joy), whereas socialized adults generally experience a richer variety of appraisal-specific emotions (e.g., pride, relief, gratitude).
5. Emotion knowledge and causal attributions (the next two topics in this chapter) represent additional cognitive factors beyond appraisal that affect emotion.

Emotion Knowledge

Infants and young children understand and distinguish between only a few basic emotions. They learn to name the few basic emotions of anger, fear, sadness, joy, and love (Kemper, 1987; Shaver et al., 1987). As people gain experience with different situations, they learn to discriminate shades within a single emotion. The shades of joy, for instance, include happiness, relief, optimism, pride, contentment, and gratitude (Ellsworth & Smith, 1988). The shades of anger include fury, hostility, vengefulness, rage, aggravation, and wrath (Russell & Fehr, 1994). These distinctions are stored cognitively in hierarchies of basic emotions and their derivatives. Thus, the number of different emotions any one person can distinguish constitutes her *emotion knowledge* (Shaver et al., 1987).

Emotion knowledge is the ability to differentiate emotional experience into discrete categories (anger versus fear) and to differentiate one particular basic emotion into its various shades (anger versus irritation, frustration, hostility, and rage) (Barrett, Gross, Christensen & Benvenuto, 2001). It refers to the level of complexity individuals rely on to identity, label, and mentally represent their emotional experience (Lischetzke et al., 2005). People with low emotion knowledge tend to think about emotions in global terms (e.g., "I feel good"), whereas people with high emotion knowledge tend to use specific and situationally specific terminology (Barrett, 2004; Feldman, 1995). Hence, emotion knowledge is rather literally people's knowledge and understanding of their own emotional experiences.

The depth, complexity, and sophistication of a person's emotion knowledge is important because greater emotion knowledge leads to greater psychological well-being

(Palmer, Donaldson, & Stough, 2002; Tugade, Fredrickson & Barrett, 2004) and to better emotion regulation strategies. With sophisticated emotion knowledge, the person targets some particular emotions for regulation (Barrett & Gross, 2001) and facilitates the choosing and implementation of a strategy that has the best chance of regulating that emotion successfully. Sophisticated emotion knowledge also decreases emotional variability (Thompson, Dizen, & Berenbaum, 2009), and it decreases negative emotional variability in particular (Pond et al., 2012), because people with sophisticated emotion knowledge know clearly what they are feeling, what did and what did not cause them to feel that way, and which behavior and which coping strategies will most effectively deal with the emotion-eliciting event at hand.

One person's hypothetical (computer-generated) emotion knowledge appears in Figure 13.9. At the most general level, the figure shows that the person differentiates positive (left side) from negative (right side) emotions. At the next level, the middle of the figure shows that the person represents emotion with the basic emotion categories of love, joy, surprise, anger, sadness, and fear. For this person, these are his or her six basic emotions (or emotion families). With experience, the individual learns shades of these basic emotions (listed on the lower part of the figure). For instance, the individual depicted in the figure understands three shades of love—affection, lust, and longing—and six shades of sadness—suffering, depression, disappointment, shame, neglect, and sympathy. The asterisk in each column of emotion words denotes the prototype within the shades of that emotion.

Much of the diversity of emotion experience comes from learning fine distinctions among emotions and the specific situations that cause them. For example, an individual who has just lost out to a rival might potentially experience distress, anger, fear, disgust, or jealousy (Hupka, 1984). One learns that these emotions can coincide. One also learns that other emotions (e.g., love, joy) are far removed from this cluster of emotional experience. Finally, one learns the differences between shades of anger—the differences that allow for distinctions among jealousy, hate, irritation, and so on. Eventually, a lifetime of such learning produces finer and more sophisticated emotion knowledge. It is this reservoir of emotion knowledge that enables the individual to appraise situations with high discrimination and therefore to respond to each life event with a specialized and highly appropriate emotional reaction (rather than with general ones).

Attributions

Attribution theory rests on the assumption that people very much want to explain why they experienced a particular life outcome (Heider, 1958; Jones & Davis, 1965; Kelley, 1967, 1973; Weiner, 1980, 1985, 1986). Following an outcome, we ask: "Why did I fail that chemistry examination? Why did the Yankees win the World Series? Why did Suzy drop out of school? Why is this person rich while that person is poor? Why didn't I get that job? Why didn't Frank return my telephone call?"

An attribution is the reason the person uses to explain an important life outcome (Weiner, 1985, 1986). It is the causal explanation to answer why an outcome occurred. For instance, if we answer the question, "Why did I fail that chemistry test?" by saying, "because I didn't study for it," then "low effort" is the attribution to explain the failure. Attributions are important because the explanation we use generates emotional reactions. Following positive outcomes, people generally feel happy, and following negative outcomes,

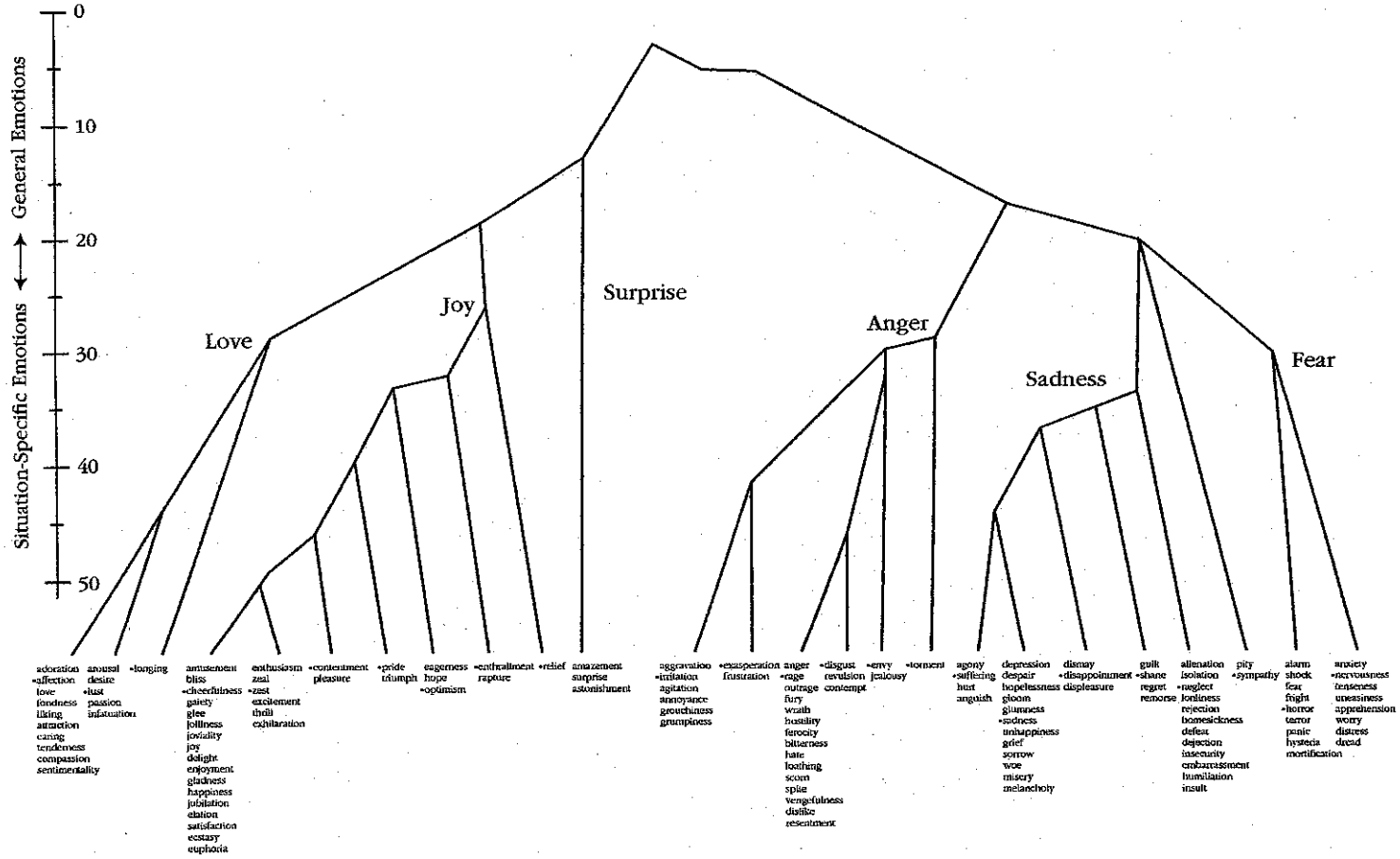


Figure 13.9 Hypothetical Representation of One Person's Emotion Knowledge

Source: From "Emotion knowledge: Further exploration of a prototype approach," by P. Shaver, J. Schwartz, D. Kirson, and C. O'Conner, 1987, *Journal of Personality and Social Psychology*, *52*, pp. 1061–1086. Copyright © 1987 by American Psychological Association. Adapted with permission.

people generally feel sad or frustrated. In his attributional theory of emotion, Bernard Weiner (1985, 1986) refers to the outcome-dependent emotional reaction as a "primary appraisal of the outcome." Basic emotions of happy and sad simply follow good and bad outcomes (Weiner, Russell, & Learman, 1978, 1979). Attribution theory proposes that in addition to these primary outcome-generated emotional reactions, people further explain why they succeeded or failed. Once the outcome has been explained, new emotions surface to differentiate the general happy–sad initial emotional reaction into specific secondary emotions. The attribution of why the outcome occurred constitutes the "secondary appraisal of the outcome." The sequence of events in Weiner's attribution theory of emotion appears in Figure 13.10.

As depicted in Figure 13.10, seven emotions occur in reliable ways as a function of the attributional information-processing flow (Weiner, 1985, 1986; Weiner & Graham, 1989). The attributional roots to the seven emotions are as follows:

Pride	Attributing a positive outcome to an internal cause. "I succeeded because of my outstanding effort."
Gratitude	Attributing a positive outcome to an external cause. "I succeeded because of help from my teammates."
Hope	Attributing a positive outcome to a stable cause. "I do well in sports because I am athletic by nature."
Anger	Attributing a negative outcome to an external-controllable cause. "I lost because my opponent cheated."
Pity (Sympathy)	Attributing a negative outcome to an external-uncontrollable cause. "I lost my job because of the poor economy."
Guilt	Attributing a negative outcome to an internal-controllable cause. "I lost because I didn't put forth much effort."
Shame	Attributing a negative outcome to an internal-uncontrollable cause. "I was rejected because I am ugly."

Notice that in each of these seven emotions (three positive, four negative), the attributional analysis of why the outcome came to pass is causally prior to the specific emotion. For instance, the fundamental assertion of an attributional analysis of emotion is that if the attribution was to change, then the emotion would change as well (i.e., change the attribution, change the emotion). If a student feels pride because she feels her effort won her a scholarship, and if the student then learns that the real reason she won the scholarship was because of someone's strong support of her application during a meeting, then the experienced emotion flows from pride into gratitude. The outcome is the same (she won the scholarship), but when the attribution changed so did the emotional reaction.

Appraisal theorists begin their analysis with relatively simple appraisals, such as whether an event signifies harm, threat, or danger (Lazarus, 1991a). They continue with progressively more complex appraisals, such as self/norm compatibility. Cognitive theorists then add emotion knowledge to explain further how people make fine-tuned appraisals. In his attributional analysis, Bernard Weiner (1982, 1986) adds yet one more type of appraisal to help explain emotion—the post-outcome appraisal of why the outcome occurred. Thus, the role of cognition is not only to appraise the meaning of the life event

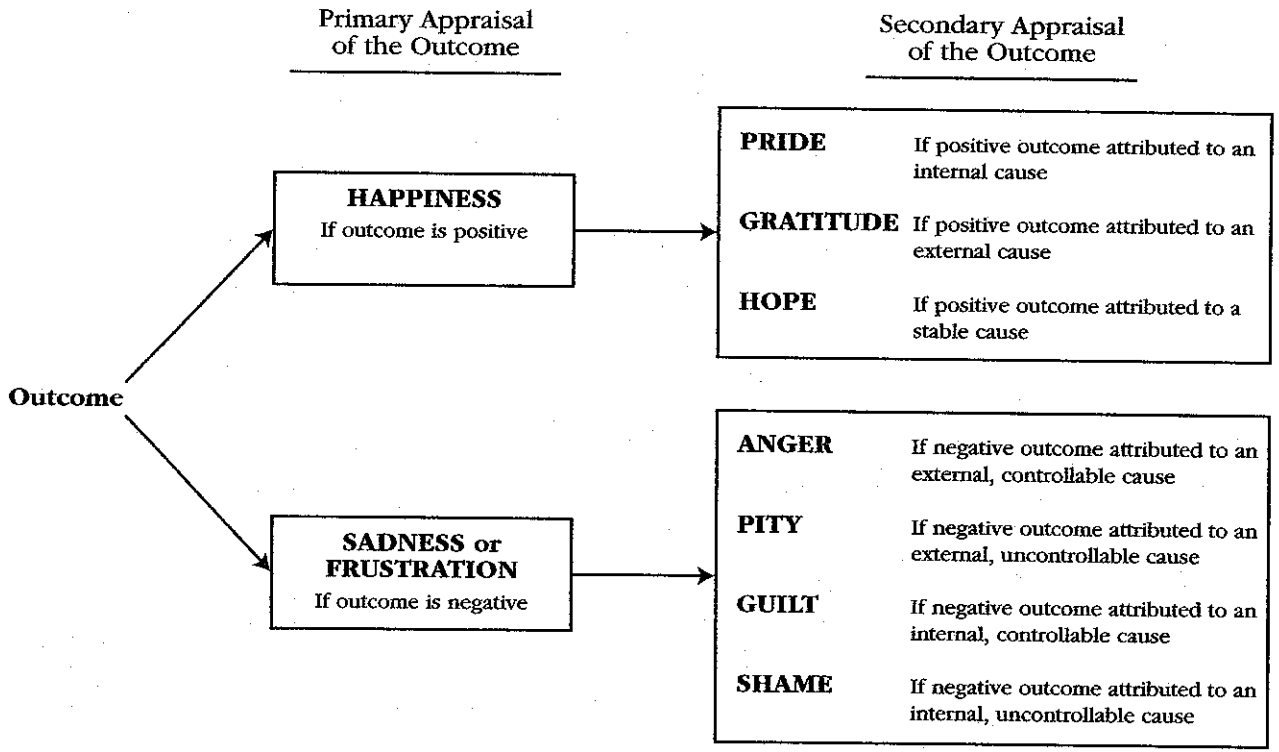


Figure 13.10 Attribution Theory of Emotion

(appraisal) but also to appraise why the life outcome turned out the way it did (attribution). When taken as a whole, preoutcome appraisals such as potential benefit, harm, versus threat explain some emotional processes, yet postoutcome appraisals (attributions) explain additional emotional processes (Leon & Hernandez, 1998).

Emotions Affect Cognition

The theme of the second part of this chapter has been that cognition affects emotion. But it works the other way too, because emotion affects cognition. That is, emotional states and emotional episodes affect and cause cognitive events such as attentional engagement, judgment, decision making, interpretation, risk taking, reasoning, short-term working memory, and long-term memory storage and retrieval (Angie, Connelly, Waples, & Kligyte, 2011; Blanchette & Richards, 2010; Derakshan & Eysenck, 2010; Lench, Flores & Bench, 2011; Lerner & Keltner, 2001; Yegiyan & Yonelinas, 2011). While this is a very important point, it is not all that surprising, because emotions have such robust effects. Emotions affect and coordinate people's feeling states, bodily preparation for action, motivational sense of purpose, expressive signals, *and* cognition. Further, the effect that individual emotions have on cognitive events is about the same in magnitude as the effect of emotion on feeling states, bodily preparation for action, motivational sense of purpose, and expressive signals (Lench et al., 2011).

This finding—that emotion changes cognition—might lead some to think that the four components of emotion should be expanded from four to five. That is, the emotional components of feeling, purpose, bodily preparation, and expressive signals should add the fifth component of cognition. But that would be a conceptual mistake. Cognition, like coping behavior, is a result of emotion, rather than one of its component aspects. So, the overall emotion process is as follows: A significant life event occurs and is appraised, then a feeling state, motivational sense of purpose, autonomic nervous and endocrine system activity, and expressive signals quickly follow. This complex reaction then causes the behavioral and cognitive activity that becomes the person's adaptive functioning toward the significant life event.

SOCIAL ASPECTS OF EMOTION

Other people are typically our most frequent source of day-to-day emotion (Oatley & Duncan, 1994). We experience a greater number of emotions when interacting with others than when we are alone.

Social Interaction

If you kept track of which events and experiences caused your emotional reactions—another person's action, an action of your own, something you read or saw—you would likely discover that interactions with others triggered most of your emotions (Oatley & Duncan, 1994). Emotions are intrinsic to interpersonal relationships. They also play a central role in creating (joy), maintaining (sadness), and dissolving (anger) interpersonal relationships, as emotions draw us together and emotions push us apart (Fischer & Manstead, 2008; Levenson, Carstensen, & Gottman, 1994; Levenson & Gottman, 1983).

Other people not only directly cause emotions to stir in us, but they also affect us indirectly, as through *emotional contagion*. Emotional contagion is "the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally" (Hatfield, Cacioppo, & Rapson, 1993a). The three propositions of mimicry, feedback, and contagion explain how, during social interaction, the emotions of others indirectly create emotions in us (Hatfield, Cacioppo, & Rapson, 1993b):

Mimicry:	"In conversation, people automatically mimic and synchronize their movements with the facial expressions, voices, postures, movements, and instrumental behaviors of other people."
Feedback:	"Emotional experience is affected, moment to moment, by the activation of and feedback from facial, vocal, postural, and movement mimicry."
Contagion:	"Consequently, people tend to 'catch' other people's emotions."

As we are exposed to the emotional expressions of others, we tend to mimic their facial expressions (Dimberg, 1982; Strayer, 1993), speech style (Hatfield et al., 1995), and posture (Bernieri & Rosenthal, 1991). Once mimicry occurs, the facial feedback hypothesis illustrates how mimicry (of not only the face, but also voice and posture) can affect the observer's emotional experience, and hence lead to a contagion effect.

Social Sharing of Emotion

During social interaction, we not only expose ourselves to a rich source of emotionally eliciting events and to emotional contagion effects, but we also put ourselves into a conversational context that provides an opportunity to re-experience and relive past emotional experiences, a process referred to as the social sharing of emotion (Rimé, 2009; Rimé, Mesquita, Philippot, & Boca, 1991). Social sharing of emotion is a conversational event in which one person that has experienced an emotional episode talks openly with person about the circumstances of the event and his or her feelings and emotional reactions. In social sharing, the person gains attention and elicits empathy, but he or she also undertakes a reflective effort to unpack the emotional material (e.g., contextual circumstances, antecedent causes, emotional processes, interpretation of events, consequences), put labels on that emotional material, organizes it into an emotional story that communicates what happened and what obstacles were encountered, and shares what was felt and thought. Social sharing occurs following the vast majority of emotional episodes (about 90 percent of the time; Rimé, 2009), more often involves positive emotional episodes rather than negative ones, and is most likely to occur on the same day as the emotional episode (about 60 percent of the time; Rimé, 2009), although social sharing also takes place days, weeks, months, or even years after the eliciting emotional event.

When people share their emotions, they typically do so by recounting the full account of what happened during the emotional episode, what it meant, and how the person felt throughout. Just sharing a negative emotional episode (i.e., talking about it, or just venting) is not sufficient to dissipate that emotion (Rimé, 2009). Rather, people share emotions in different ways and with different effects. One major way people share their emotional experiences is social-affectively, when the speaker solicits and the listener provides support, comfort, validation, and empathy. Another major way people share their emotional experience is in terms of cognitive sharing when the speaker asks for and the

listener stimulates the cognitive work necessary to recover from the felt sadness, fear, or anger episode.

Social-Affective Sharing:	Listening; understanding; unconditional positive regard; comforting; offering consolation; caring; reassuring; perspective taking and empathy; revalidating self-esteem; providing social and concrete help and assistance.
Cognitive Sharing:	Reframing the event; reappraising the emotional episode; creating meaning; encouraging the abandonment of failed goals; reprioritizing one's goals and motives.

People share their emotions with others primarily to better regulate those emotions. Social-affective sharing helps regulate emotion, especially negative emotion, by temporarily alleviating emotional distress. It is particularly beneficial in the early stages of the emotional event, because it does generally provide a state of temporary relief from one's distress, fear, anger, anxiety, insecurity, or sense of helplessness. But social-affective sharing is not sufficient to attain emotional recovery. Emotional recovery—getting over and getting beyond the distress, fear, or anger—requires cognitive sharing in which the other person helps the person reframe or reappraise the emotional event. Cognitive sharing is something more akin to therapy, because it provides an opportunity for reappraisal, deeper understanding, and more effective coping. Cognitive sharing helps bring distressing emotional episodes to an end (Brans et al., 2013). Importantly, if the social sharing of emotion involves only social-affective sharing (and not cognitive sharing), then it tends to produce a temporary distress relief but not much more. Part of the reason for this is because most listeners are not all that skilled in helping the person work cognitively and competently through the emotional episode (Nils & Rimé, 2012).

Social sharing of emotion contributes to some level of relief from the emotional distress, and it contributes to eventual emotional recovery, but it does more. The social sharing of an emotional experience by one person with another instigates an interpersonal dynamic that brings the two people closer together. This interpersonal dynamic is illustrated graphically in Figure 13.11. According to Rimé (2009), person 1 experiences an emotion and conversationally shares it with person 2. Person 2 then reacts with interest, because emotional stories are viewed as inherently interesting events. Person 1 takes person 2's expressed interest as a social signal to socially share more. Listening to social sharing that is elaborative enough to produce a full emotional story functions as an emotion-eliciting situation for person 2 (Strack & Coyne, 1983). The social sharing then begins to generate a social connection between the two interactants, because it is in experiences such as perceived similarity and greater empathy that a social connection is facilitated and begins to open the pair up to nonverbal communications such as eye contact, vocal mimicry, and touching intimacy. This enhanced relationship leads person 2 to a greater desire to help person 1 work through social-affective support and cognitive restructuring. Helping leads person 2 to like person 1 more, and the received interpersonal support leads person 1 to like person 2 more. Hence, what began as the social sharing of an emotional experience evolves into a closer and more positive interpersonal relationship between speaker and listener. It is in these times of sharing our emotions that we build and maintain the relationships that are central to our lives (Edwards, Manstead, & MacDonald, 1984), such as in friendship and marriage (Noller, 1984).

Overall, the conclusions from the social sharing of emotion are as follows: (1) Social sharing of emotion is the norm in emotional experience, not the occasional exception that

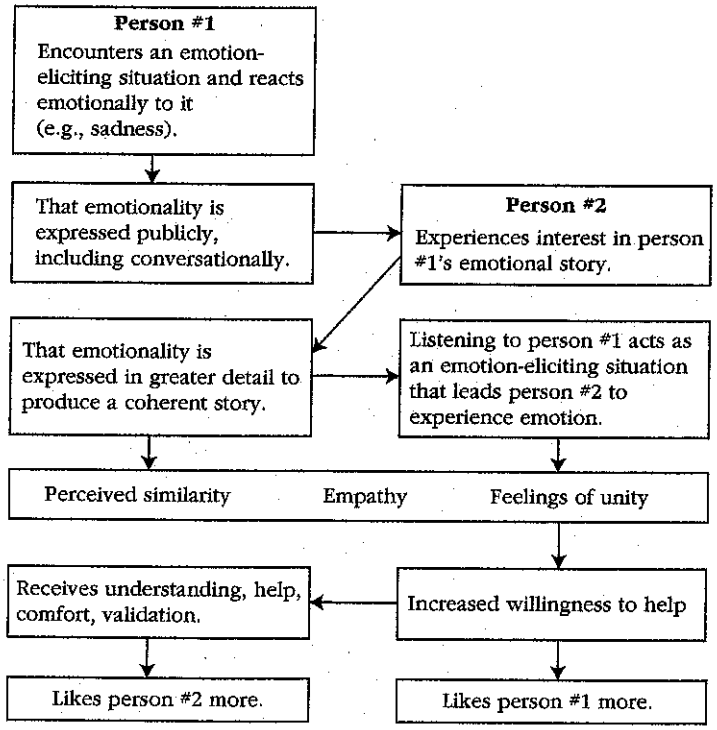


Figure 13.11 Rimé's Model of the Interpersonal Dynamics in the Social Sharing of an Emotional Experience

people only sometimes do; (2) social sharing sets the stage for interpersonal dynamics that bring the sharer and the listener closer together; (3) social-affective sharing is commonplace but generally yields little benefit beyond temporary relief; and (4) cognitive sharing stimulates the cognitive work necessary for emotional healing and recovery (Rimé, 2009). More generally, research on the social sharing of emotion makes the larger point that emotional episodes are social experiences. This research also challenges the common view that emotion is a short-lived, intrapersonal experience, because it argues alternatively that emotional experiences routinely endure for days, weeks, and even years, partly because they are retold and relived through this process of social sharing.

Cultural Construction of Emotion

Because appraisal contributes to a cognitive understanding of emotion and because social interaction contributes to a social understanding of emotion, the cultural context in which we live contributes to a cultural understanding of emotion. Social psychologists, sociologists, and others argue that emotion is not necessarily a private, biological, intrapsychic phenomenon. Instead, they contend that many emotions originate within both social interaction and a cultural context (Manstead, 1991; Rimé, 2009; Stets & Turner, 2008).

Those who study the cultural construction of emotion point out that if you changed the culture you lived in, then your emotional repertoire would also change (Mascolo, Fischer, & Li, 2003). Consider, for instance, the emotional repertoire of people in the

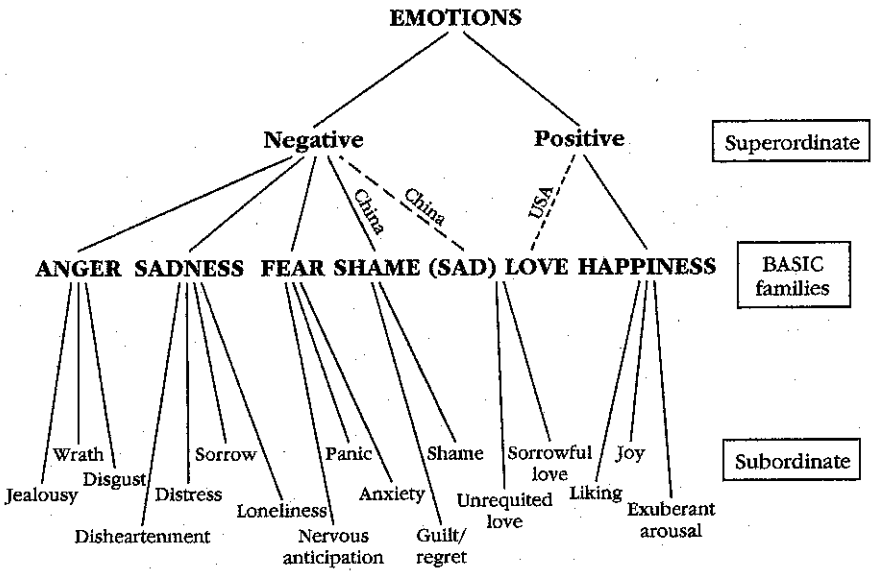


Figure 13.12 Cluster Analysis of Basic Emotion Families in Chinese and English

Source: From "Cross-cultural similarities and differences in emotion and its representation: A prototype approach," by P. R. Shaver, S. Wu, & J. C. Schwartz, 1992, in M. S. Clark (Ed.), *Review of Personality and Social Psychology, 13*, pp. 231–251. Thousand Oaks, CA: Sage.

United States and China. Chinese infants are less emotionally reactive and expressive than are American infants, probably because Chinese parents emphasize and expect emotional restraint whereas American parents emphasize and expect emotional expression. Similarly, the expression of some negative relational emotions—primarily anger—is strictly prohibited in cultures that are highly collectivistic, including China (Fok et al., 2008).

In the same spirit, Figure 13.12 graphically illustrates the similar and dissimilar basic emotions for people from both cultures. The solid lines to anger, sadness, fear, and happiness illustrate that members of both cultures see essentially the same meaning within these emotional experiences. The dashed lines to shame and love illustrate that members from the two cultures see different meanings within these emotions. For Chinese, love is not necessarily a positive emotion. The meaning of love is much closer to "sad love," and it is often considered to be a negative emotion. For people in China, shame is considered to be a basic emotion. Thus, people in the United States find meaning in two positive emotions and three negative emotions, whereas people in China find meaning in one positive emotion and five negative emotions. (The 17 subordinate emotions—jealousy, wrath, disgust, etc.—are from the Chinese participants, not from the American participants.)

If you are an English-speaking reader and are surprised that Chinese-speaking participants understand love ("sad love") as a negative emotion, then the point helps illustrate the cultural basis of emotion. In traditional Chinese culture, parents sometimes arrange their children's marriages. In these cases, marriages function as the joining of two extended families, in addition to the joining of two people. When one anticipates an arranged marriage, romantic love takes on meaning as a potentially disruptive force that can separate a son or daughter from his or her parents (Potter, 1988). If embraced, romantic love therefore

has the potential to break down the proper respect and deference that sons and daughters are expected to show their parents (Russell & Yik, 1996). The experience of romantic love therefore takes on a negative valence and is better represented by the experience of "sad love."

The case of East versus West in romantic love has an additional complexity in that Westerners generally lack the emotional complexity shown by Easterners (Kitayama, Markus, & Kurokawa, 2000). Emotional complexity is the experience of positive and negative emotion to the same event. While men and women from the East report comparable levels of positively valenced romantic love, Easterners tend to report that the negative emotions of shame, contempt, and anger accompany their experience of romantic love while Westerners do not report this same emotional complexity (Shiota et al., 2010). For Westerners, the experience of positive and negative emotions are strongly negatively correlated (i.e., if you feel one, you rarely feel the other), while positive and negative emotions are often bundled together in the emotional experience of Easterners.

Cultures also offer children storybooks to read and immerse their lives into. Preschoolers in the United States generally prefer exciting stories, whereas preschoolers in China prefer calm stories. Furthermore this exposure to exciting storybooks is part of what leads U.S. children to prefer exciting affect as ideal while exposure to calm storybooks is part of what leads Chinese children to prefer calm affect as ideal (Tsai, Louie, Chen, & Uchida, 2007). Societies also clearly socialize their members' emotional experiences and expressions (Chen, 1993, Stipek, 1999). Still, limits exist as to how much a culture can socialize particular emotions into its constituents. Consider the claim that in some cultures people exchange romantic partners without jealousy. Biology-minded theorists argue that sharing a sexual partner would surely produce jealousy, and appraisal theorists might make a similar argument (see Figure 13.7). But can people be socialized to not experience jealousy during the exchange of romantic partners? Is culture that dominant? The short answer is, basically, no (Reiss, 1986). Cultures *do* vary as to which behaviors signal jealousy, which signs of affection justify jealousy, and how people express jealousy, but the emotional angst of sexual jealousy occurs in all cultures (Reiss, 1986). Like many other basic emotions, jealousy is universal, although many of its nuances (causes, expressions) vary from one culture to the next.

Culture does not necessarily mean "nationality," because culture can consist of any group of people with shared beliefs, practices, and values. How people learn to manage their emotions in microcultures can be seen in professionals who interact frequently, closely, and intimately with the public, such as physicians (Smith & Kleinman, 1989), hairstylists (Parkinson, 1991), and airline flight attendants (Hochschild, 1983). In these microcultures, socialization pressures to manage one's emotions mostly revolve around a theme of coping with aversive feelings in ways that are both socially desirable and personally adaptive (Saarni, 1997). Physicians, for instance, are not supposed to feel either attraction or disgust for their patients, irrespective of how beautiful or revolting their appearance might be. Therefore, during their medical school training (i.e., during their enculturation into the professional society), physicians must learn affective neutrality, a detached concern for their patients. As a case in point, medical students learn emotion-regulating strategies such as the following during procedures such as a pelvic, rectal, and breast examinations and while blood is spewing out of an artery during surgery, dissections, and autopsies (Smith & Kleinman, 1989):

Transform the emotional contact into something else.

Mentally transform intimate bodily contact into a cold step-by-step procedure.

Accentuate the positive.

Identify the satisfaction in learning or the opportunity to practice medicine.

Laugh about it.

Joke about it, because joking exempts the doctor from admitting weakness.

Consider also hairstylists (Parkinson, 1991). To be professionally successful, hairstylists need to develop an open communication style characterized by expressiveness, affect intensity, empathy, poise, frequent positive facial expressions, and a concealment of negative emotions. Furthermore, the more natural and spontaneous the hairstylist appears to clients, the better the job goes. How do hairstylists learn to manage their emotions in this way? The problem hairstylists face is, essentially, how they can acquire an open interaction style with clients who are often uptight and socially remote. Part of the job of being a hairstylist is to figure this out, and the ones who do develop these emotion management skills report higher job satisfaction.

Flight attendants need to adopt an open interaction style similar to that of the hairstylist. To do so, the flight attendant frequently uses "deep-acting" methods that are not too unlike the methods stage actors use during a 2-hour performance. Using deep-acting methods, the flight attendant replaces her natural and spontaneous emotional reactions with an emotional repertoire characterized by constant courtesy to clients (Hochschild, 1983). In all these cases—medical students, hairstylists, and flight attendants—people learn to manage their private, spontaneous feelings and express them in publicly scripted and socially desirable ways of acting. Doing so facilitates smooth professional interactions with their clients (Manstead, 1991).

SUMMARY

Three central aspects of emotion exist: biological, cognitive, and social–cultural. The chapter begins with a biological analysis of emotion because emotions are, in part, biological reactions to important life events. They serve coping functions that allow the individual to prepare to adapt effectively to important life circumstances. Emotions energize and direct bodily actions (e.g., running, fighting) by affecting (1) the autonomic nervous system and its regulation of the heart, lungs, and muscles; (2) neural brain circuits such as those in the subcortical brain; and (3) facial feedback and discrete patterns of the facial musculature.

Research on the biological underpinnings of emotion identify that the activation of between two and eight basic emotions can be understood from a biological perspective. For instance, the basic emotions of anger, fear, sadness, and disgust show autonomic nervous system specificity in that the pattern of heart rate, skin temperature, and skin conductance is different for each emotion. Similarly, the basic emotions of anger, fear, sadness, disgust, and sadness are associated with a specific subcortical brain area. The facial feedback hypothesis asserts that the subjective aspect of emotion is actually the awareness of proprioceptive feedback from facial action. According to the strong version of this hypothesis, posed facial expressions activate specific emotions, such that smiling activates joy. According to the

weak version of this hypothesis, exaggerated and suppressed facial expressions augment and attenuate naturally occurring emotion. Although research is mixed on the strong version, evidence confirms the validity of the weaker version.

The central construct in a cognitive understanding of emotion is appraisal. Appraisal is a cognitive process that evaluates the significance of environmental events in terms of the person's goals and well-being. Cognitively minded appraisal emotion researchers embrace all of the following beliefs: (1) Without an antecedent cognitive appraisal of the event, emotions do not occur; (2) the appraisal, not the event itself, causes the emotion; (3) emotion is a process; and (4) if the appraisal changes, even if the situation does not, then the emotion will change. To explain virtually all complex emotions—not just the two to eight basic emotions emphasized by the biologically minded theorists—cognitive emotion researchers emphasize seven appraisals. Environmental events are evaluated in terms of their valence (is the event good or bad?), goal relevance (is the event relevant to my goals and well-being?), coping potential (can I cope successfully with the event?), goal congruence (is the event facilitating my goal attainment?), novelty (did I expect the event to happen?), agency (who caused the event?), and self-norm compatibility (is the event okay on a moral level?). Different patterns of these appraisals produce different emotions and explain why two different people can experience different emotions even to the same event.

In a social and cultural analysis of emotion, other people are our richest sources of emotional experiences. During social interaction, we often "catch" other people's emotions through a process of emotion contagion that involves mimicry, feedback, and, eventually, contagion. We also share and relive our emotional experiences during conversations with others, a process referred to as the social sharing of emotion. Social sharing of emotion is commonplace, brings the sharer and the listener closer together, usually provides only temporary distress relief, but can potentially stimulate the cognitive work necessary for emotional healing and recovery. In the cultural construction of emotion, cultural forces socialize how members of that culture experience, express, and manage (i.e., suppress) their emotional expressions toward ways that are socially acceptable and away from ways that are genuinely felt.

READINGS FOR FURTHER STUDY

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