

10.1 The Experience of Emotion

Learning Objectives

1. Explain the biological experience of emotion.
2. Summarize the psychological theories of emotion.
3. Give examples of the ways that emotion is communicated.

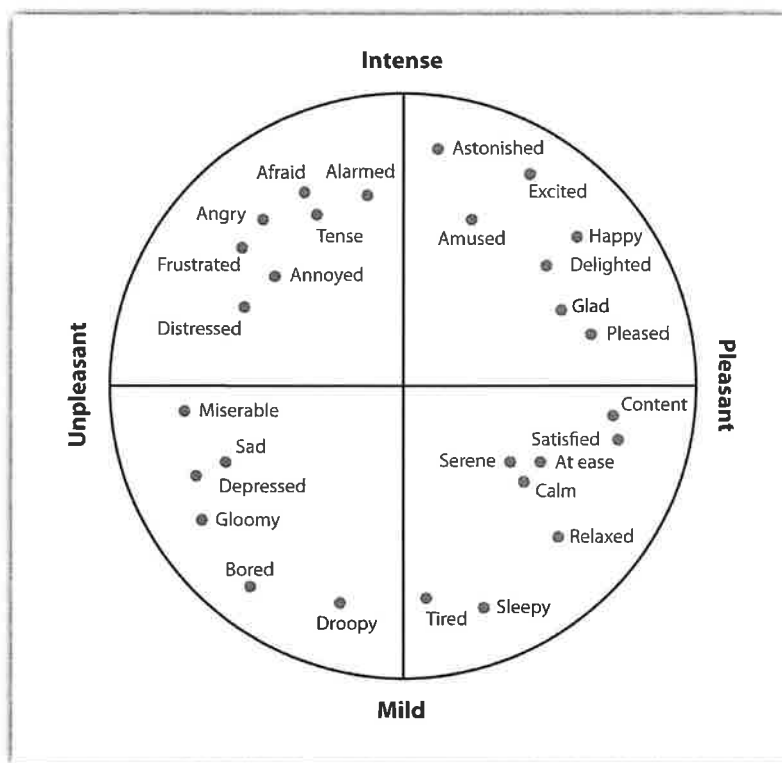
The most fundamental emotions, known as the basic emotions, are those of *anger, disgust, fear, happiness, sadness, and surprise*. The basic emotions have a long history in human evolution, and they have developed in large part to help us make rapid judgments about stimuli and to quickly guide appropriate behavior (LeDoux, 2000). The basic emotions are determined in large part by one of the oldest parts of our brain, the limbic system, including the amygdala, the hypothalamus, and the thalamus. Because they are primarily evolutionarily determined, the basic emotions are experienced and displayed in much the same way across cultures (Ekman, 1992; Elfenbein & Ambady, 2002, 2003; Fridland, Ekman, & Oster, 1987), and people are quite accurate at judging the facial expressions of people from different cultures. View Note 10.8 “Video Clip: The Basic Emotions” to see a demonstration of the basic emotions.

Video Clip: The Basic Emotions

(click to see video)

Not all of our emotions come from the old parts of our brain; we also interpret our experiences to create a more complex array of emotional experiences. For instance, the amygdala may sense fear when it senses that the body is falling, but that fear may be interpreted completely differently (perhaps even as “excitement”) when we are falling on a roller-coaster ride than when we are falling from the sky in an airplane that has lost power. The *cognitive interpretations that accompany emotions*—known as cognitive appraisal—allow us to experience a much larger and more complex set of *secondary emotions*, as shown in Figure 10.2 “The Secondary Emotions”. Although they are in large part cognitive, our experiences of the secondary emotions are determined in part by arousal (on the vertical axis of Figure 10.2 “The Secondary Emotions”) and in part by their *valence*—that is, whether they are pleasant or unpleasant feelings (on the horizontal axis of Figure 10.2 “The Secondary Emotions”).

Figure 10.2 The Secondary Emotions



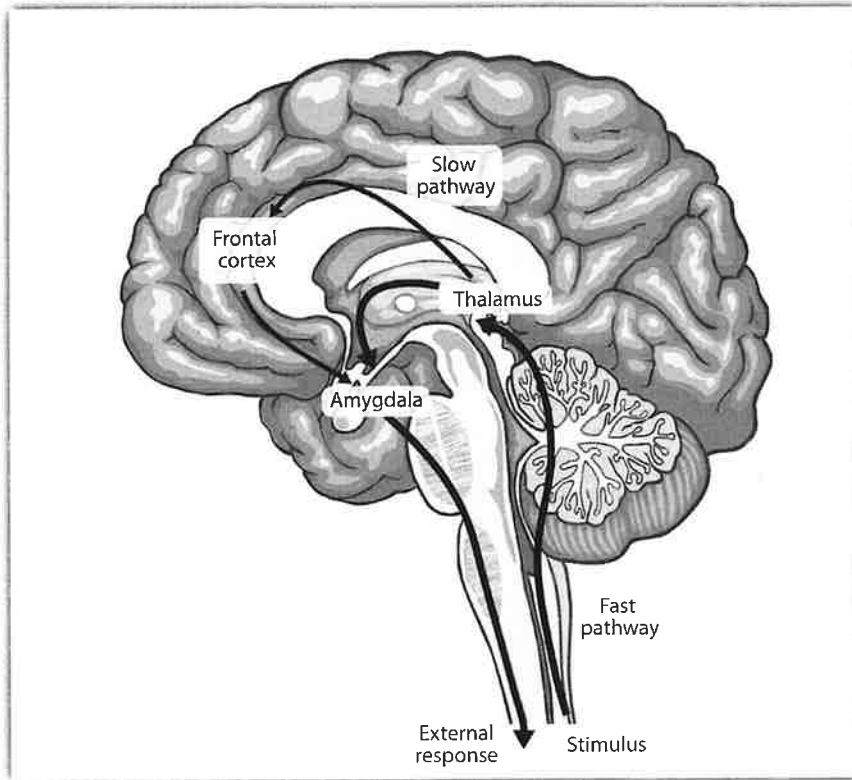
The secondary emotions are those that have a major cognitive component. They are determined by both their level of arousal (low to high) and their valence (pleasant to unpleasant).

Adapted from Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, 39, 1161–1178.

When you succeed in reaching an important goal, you might spend some time enjoying your secondary emotions, perhaps the experience of joy, satisfaction, and contentment. But when your close friend wins a prize that you thought you had deserved, you might also experience a variety of secondary emotions (in this case, the negative ones)—for instance, feeling angry, sad, resentful, and ashamed. You might mull over the event for weeks or even months, experiencing these negative emotions each time you think about it (Martin & Tesser, 2006).

The distinction between the primary and the secondary emotions is paralleled by two brain pathways: a fast pathway and a slow pathway (Damasio, 2000; LeDoux, 2000; Ochsner, Bunge, Gross, & Gabrielli, 2002). The thalamus acts as the major gatekeeper in this process (Figure 10.3 “Slow and Fast Emotional Pathways”). Our response to the basic emotion of fear, for instance, is primarily determined by the fast pathway through the limbic system. When a car pulls out in front of us on the highway, the thalamus activates and sends an immediate message to the amygdala. We quickly move our foot to the brake pedal. Secondary emotions are more determined by the slow pathway through the frontal lobes in the cortex. When we stew in jealousy over the loss of a partner to a rival or recollect on our win in the big tennis match, the process is more complex. Information moves from the thalamus to the frontal lobes for cognitive analysis and integration, and then from there to the amygdala. We experience the arousal of emotion, but it is accompanied by a more complex cognitive appraisal, producing more refined emotions and behavioral responses.

Figure 10.3 Slow and Fast Emotional Pathways



There are two emotional pathways in the brain (one slow and one fast), both of which are controlled by the thalamus.

Although emotions might seem to you to be more frivolous or less important in comparison to our more rational cognitive processes, both emotions and cognitions can help us make effective decisions. In some cases we take action after rationally processing the costs and benefits of different choices, but in other cases we rely on our emotions. Emotions become particularly important in guiding decisions when the alternatives between many complex and conflicting alternatives present us with a high degree of uncertainty and ambiguity, making a complete cognitive analysis difficult. In these cases we often rely on our emotions to make decisions, and these decisions may in many cases be more accurate than those produced by cognitive processing (Damasio, 1994; Dijksterhuis, Bos, Nordgren, & van Baaren, 2006; Nordgren & Dijksterhuis, 2009; Wilson & Schooler, 1991).

The Cannon-Bard and James-Lange Theories of Emotion

Recall for a moment a situation in which you have experienced an intense emotional response. Perhaps you woke up in the middle of the night in a panic because you heard a noise that made you think that someone had broken into your house or apartment. Or maybe you were calmly cruising down a street in your neighborhood when another car suddenly pulled out in front of you, forcing you to slam on your brakes to avoid an accident. I'm sure that you remember that your emotional reaction was in large part physical. Perhaps you remember being flushed, your heart pounding, feeling sick to your stomach, or having trouble breathing. You were experiencing the physiological part of emotion—arousal—and I'm sure you have had similar feelings in other situations, perhaps when you were in love, angry, embarrassed, frustrated, or very sad.