PSYCHOLOGY OF EMOTION
SECOND EDITION
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A Psychology Press Book
Since the turn of the twenty-first century, the psychology of emotion has grown to become its own field of study. Because the study of emotion draws inspiration from areas of science outside of psychology, including neuroscience, psychiatry, biology, genetics, computer science, zoology, and behavioral economics, the field is now often called emotion science or affective science. A subfield of affective science is affective neuroscience, the study of the emotional brain.

This revised second edition of Psychology of Emotion reviews both theory and methods in emotion science, discussing findings about the brain; the function, expression, and regulation of emotion; similarities and differences due to gender and culture; the relationship between emotion and cognition; and emotion processes in groups.

Comprehensive in its scope yet eminently readable, Psychology of Emotion serves as an ideal introduction for undergraduate students to the scientific study of emotion. It features effective learning devices such as bolded key terms, developmental details boxes, learning links, tables, graphs, and illustrations. In addition, a robust companion website offers instructor resources.

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The first edition of the Psychology of Human Emotion was a textbook written for doctoral students of social psychology in European countries. The task of revising the book for a second edition, this time targeted at undergraduate psychology majors in North America, was a monumental undertaking. Not only did the textbook require stronger organization and far greater accessibility, but research findings that had been published since 2006 also had to be incorporated.

We could never have accomplished the feat of revising (or, more accurately, writing anew) this textbook without, first, the tireless help of Crystal Hanson. Crystal performed the herculean tasks of referencing; creating tables and figures; proofreading; managing information, communication, and personnel involved in the project; and basically being a production manager. Thank you, Crystal, and don’t move too far away.

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Our families suffered through our grumpy and sometimes absent moments with great humor and resourcefulness. We love you.

Finally, one of our mothers Corrine Niedenthal, became ill during the revision of the textbook. She passed away during its production, and was the best mother in the world, and we dedicate the book to her.
How to Use This Book

The *Psychology of Emotion*, Second Edition, is intended to introduce undergraduate students to the scientific study of emotion. Since the turn of the twenty-first century, this endeavor has become its own field of study. Because the study of emotion draws inspiration from areas of science outside of psychology, including neuroscience, psychiatry, biology, genetics, computer science, zoology, and behavioral economics, the field is now often called *emotion science* or *affective science* (terms we use interchangeably). A subfield of affective science is affective neuroscience, the study of the emotional brain.

The explosion of ideas and research findings in emotion science created a quandary for the present authors. We had to decide what the book was going to include and not include. Because of our combined expertise in social psychology, cognitive science, and social cognition, we decided to focus the textbook on emotion in the typically developing individual. In other words, our textbook does not include chapters on emotion and mental health (e.g., affective disorders). Also, we focus largely on processes basic to emotion. We chose to omit historical and philosophical analyses in favor of summarizing and interpreting contemporary scientific methods and discoveries. We do believe it is important to provide students with that intellectual groundwork. However, as university professors who teach courses on the psychology of emotion, we find we prefer to present such material in lecture.

Lest the reader wonder what remains: a lot. Our chapters review theory and methods in emotion science; we discuss findings about the brain and the function, expression, and regulation of emotion; we delve into similarities and differences due to gender and culture; we examine the relationship between emotion and cognition; and we account for emotion processes in groups. We have made every effort to organize, prioritize, and interpret the meaning of the research findings featured in each chapter. We have also added some effective learning and teaching devices. In particular, each chapter includes:

- Bolded key terms, which flag concepts students should master.
- Developmental Details boxes, which zoom in on chapter topics as they relate to a point in the life cycle, most often infancy or childhood.
- Learning Links, which are suggested Internet sites that provide illustrations of or enrichment ideas about topics addressed in each chapter. (The links were active as of 2016. Should they become inactive, please use the information provided to locate the same material on a new site.)
- Tables, graphs, illustrations, and comics designed to expand on the chapter discussions.

Enjoy.
1 Theories of Emotion

Imagine what your life would be like if you could not experience emotion. What if you felt no joy at seeing a newborn baby and no pride upon receiving a long worked-for diploma? What if you felt no anger and no fear when you heard that a terrorist attack had occurred in your country? What if you felt no jealousy at seeing a boyfriend or girlfriend flirt with someone else at a party, and you felt no awe when standing on the rim of the Grand Canyon? What would your life be like then? Would we even call it human life? And could human life indeed exist if we felt no emotion?

Perhaps life without emotion would still seem human if you believed that emotions were undesirable states, reflecting animalistic vestiges of our evolutionary past. A theme in philosophy for many hundreds of years was that emotions, or passions as they were sometimes called, were at odds with the more desirable and lofty processes of reason (Solomon, 1976, 1993). A wide range of philosophers, including Plato, the Stoics (Zeno of Citium, Epictetus, and Marcus Aurelius, among others), and Descartes, argued that reasoning and having emotions were antithetical to each other. They viewed reason as a uniquely human achievement and a virtue. In contrast, they viewed emotions as the province of animals (and sometimes women
and children!), as primitive drives that interfered with reason. Even in today’s world, people in some cultures consider displays of emotion, particularly in public places, as undesirable and as casting doubt on the psychological health of the person expressing emotions. Of course, in other cultures, public expression of emotion is so commonplace it attracts no attention at all.

These days most emotion scientists believe that emotions are absolutely essential to human life and we could not survive without them (Barrett & Salovey, 2002; Damasio, 1999; Frederickson, 2001; Keltner & Haidt, 2001; Mehu & Dunbar, 2008; Niedenthal & Brauer, 2012). As you will see throughout this book, emotions hold people together in relationships and social groups; help to determine priorities within relationships; signal to the person experiencing the emotion the state of her relation to the environment; and are an important part of the functional evolution of our nervous systems, attentional processes, decision making, communication, and behavioral regulation.

This textbook introduces you to the psychology of emotion. Because our aim is to show you how hypotheses and predictions about emotion are tested with the tools of science, we will also refer to the science of emotion. In the present chapter you will learn how emotion scientists define emotions as well as the principles of the major theoretical approaches to the topic of emotion. Chapter 2 introduces you to the tools of the science of emotion. You will learn how to induce emotions and measure their occurrence. Part of having emotion involves events that take place in the brain. After learning about methods for imaging the brain, Chapter 3 then introduces you to the main neural circuitry and chemistry that support our emotional responding. We have already noted that emotion scientists believe that emotions are functional, and Chapter 4 shows you how that is so. One of the functions of emotions is to communicate to others, and Chapter 5 discusses the expression of emotion on the face as well as through the body and voice. In Chapters 6 and 7 you will learn about the more complex self-conscious emotions and the very popular emotion of happiness, respectively. Chapter 8 details the many relationships between emotion and other mental processes such as attention, memory, and decision making. Some of the relationships are related to the strategies that people use to control or regulate their emotions, which are summarized in Chapter 9. Lest you think that emotions are a personal affair, Chapter 10 reviews research on how people share emotions in groups and have emotions due to the fact that they are members of groups. And speaking of groups, there is variation in how people express and to some degree experience their emotions as a function of gender (Chapter 11) and culture (Chapter 12) as well.

Because most everyone has emotions, you might feel that you are already an expert on emotion. But scientific findings have a way of surprising you. When it comes to something as important and weighty as emotion, it helps to look at the findings of basic research; you might just learn something about yourself! In order to begin this discovery, though, we need to begin with a definition of our topic.

**Definitions of Emotion**

In psychology, we find it useful to distinguish between different types of mental states and their associated behaviors. For instance, some scientists study learning, or memory, or perception, or the focus of this book, emotions. In reality, all of these processes are occurring simultaneously and influencing one another so that it can be quite difficult to determine, for instance, where perception “ends” and cognition “begins,” or what behavior is driven by emotion versus some other mental state. It is impossible to truly isolate a single mental process, and most processes, from scratching your nose to falling in love, involve complex neural systems working in synchrony. Similarly, feeling an emotion like fear depends on the ability to perceive something in the world, remember it as a threat, and act to escape it. In turn, an emotion such as fear has powerful influences on the content and structure of other cognitive and behavioral processes.
Given how intertwined emotions are with other mental and behavioral states, how do scientists even begin to define them?

A simple way to distinguish between emotions and other mental processes is to consider their function (see Chapter 4). We have big, wrinkly brains that allow us to compose sonnets, raise children, tell jokes, and invent wheels; but none of these cognitively complex tasks would be accomplished if we were not motivated—motivated to survive, have fun, explore, avoid danger, connect with one another, and all the other things we want in life. Emotions are the fire that fuels human behavior and the driving motivational forces in life.

The first step in the science of emotion is settling on a more specific definition of the term. Keltner and Gross define emotions as “episodic, relatively short-term, biologically-based patterns of perception, experience, physiology, action, and communication that occur in response to specific physical and social challenges and opportunities” (Keltner & Gross, 1999, p. 468). This definition is not simple, nor is it accepted by all scientists or interpreted by all scientists in the same way. It does, however, narrow our focus to relatively brief states that arise in response to an object or event. The important thing is that emotions are responses to things, people, and events we encounter in the world and to our own thoughts. They are not affective disorders, personality temperaments, or moods. In addition, this definition acknowledges that emotions can be functional. That is, emotions help people attract the right things and protect themselves from the wrong things. Put in another way, “Emotions are a kind of radar and rapid response system, constructing and carrying meaning across the flow of experience. Emotions are the tools by which we appraise experience and prepare to act on situations” (Cole, Martin, & Dennis, 2004, p. 319).

Theories of Emotion

Before you can evaluate the scientific study of emotion and understand why researchers have conducted research as they have, you need to be familiar with the major theories of emotion. Theories of emotion are testable statements about exactly how emotions come about. To understand what we mean by this, let’s examine a theory that was famously proposed by Schachter and Singer (1962): the Two-Factor Theory of emotion. Schachter and Singer claimed that emotions come about through the combination of 1) autonomic arousal—caused by almost anything; and 2) a label that describes the experience in terms of the current situation. The theory is depicted in Figure 1.1.

As an example of how this theory explains emotions, imagine you and your friend both drink a highly caffeinated beverage that makes you both very aroused, causing your heart rate to increase and your palms to sweat. Now imagine that you are teleported to a wedding in a fun location. Meanwhile, your friend is teleported to the edge of a cliff. The Two-Factor Theory predicts that you would label yourself “happy” and enjoy the full experience of joy, whereas your friend would label herself as “afraid” and experience fear. Your arousal would get labeled by the nature of the circumstances you found yourself in, and an emotion would result. According to the Two-Factor Theory, this is all we need to know about emotions.

![Figure 1.1](image-url)
Contemporary emotion scientists believe that there is more to emotions than arousal and labels, and we will discuss three other ways to explain how emotions happen. The theories we consider in this chapter are evolutionary theories, appraisal theories, and psychological constructionist theories. To compare the specific ideas and preoccupations of the distinct groups of theories, we need to understand each one’s claim about:

1) The **antecedents** of an emotion (what causes them)
2) The **biological givens** (innate emotional capacities)
3) The **integration** of emotional experience (how components of emotion fit together)

As we investigate theories of emotion in this chapter, keep in mind that the various theories are not equally concerned about addressing each claim. In an oversimplification we could say that, that traditional appraisal theories are most focused on antecedents, evolutionary theories on biological givens, and psychological constructionists on how learning and experience cause the integration of emotional experience. Nonetheless, we will attempt to explain what roles emotion antecedents, biological givens, and integration play in each theory.

### Developmental Detail

**What Is a Developmental Theory of Emotion?**

Developmental theories of emotion both acknowledge that emotional development is partly preprogrammed in the organism and recognize that all aspects of emotion are responsive to the context in which the child is developing. That is, our emotions incorporate social experience, including cultural rules and norms (Saarni et al., 2008). In developmental theories, then, both **nature** (genes) and **nurture** (experience) make possible the full differentiation and elaboration of emotional life (Pollak, 2013).

A developmental perspective on emotion involves more than documenting the ages at which the components of emotion are first observed in infants and children and charting their course over the life cycle. A complete developmental theory associates the unfolding of the components of emotion with that of many other skills and capacities (Saarni, 2008). These include maturation of the visual and motor systems and the acquisition of complex cognitive capacities, such as the ability to represent the self as an object of thought. For example, the behavioral and physiological components of fear rely on having a body with response systems that are mature enough to detect danger and run away. Similarly, as we discover in Chapter 5, emotions such as envy and pride require the cognitive abilities of self-reflection and social comparison (Lewis, 2007).

An important social context for the development of emotion and emotional competencies (such as empathy) is the initial attachment relationship with a caretaker. If an infant’s caregiver is responsive to her needs (including the needs for warmth and soothing, food, and predictability), she learns that the world is a safe place and that other people can be trusted. From this
Evolutionary Theories

Evolutionary theories of emotion are based in the writings of Charles Darwin (Darwin, 1872/1998). Darwin was interested in using facial expression of emotion to support his general theory of evolution by natural selection. Facial expression was particularly useful for developing his theory because the continuity of expression across species of animals was relatively easy for him to document. Darwin examined the emotional displays of animals and compared them to humans. He also solicited information from missionaries living outside of his native England to examine the possibility that the same facial expressions of emotion were found all over the world. Darwin believed that the results of his studies demonstrated cross-species continuity and universality of a number of facial expressions of emotions. Based on these types of observations, he developed hypotheses about the causes of emotional expressions.

Darwin thought that facial expressions came about because they were serviceable habits, or gestures that solved whatever problem elicited in the first place. For example, exposure to contamination (e.g., poison, decaying food) is a problem of survival because contamination can kill you. Fortunately, such exposure causes disgust, which serves to shut you off from further contact with potentially harmful substances; it is designed to expel things from the mouth and to prevent the intake of odors through the nose (e.g., Susskind et al., 2008). These days, individuals do not have to worry too much about ingesting a food or drink that is dangerous. However, because in our evolutionary past the facial gesture associated with expulsion was serviceable, we still make this grimace when we encounter things, such as dog feces, that generate feelings of disgust.

Darwin also proposed a communicative function of facial expression. Specifically, he suggested that facial expressions tell members of the same species how the expresser is feeling. Such communication is useful because the feelings of another person provide important information about the current situation and about what actions might be required to deal with it. If you see that someone looks happy, you typically want to begin doing what she is doing. Darwin did not conduct scientific studies of the communicative function of facial expression, but many scientists subsequently did (Buck, 1983; Buck et al., 1992; Ekman & Friesen, 1971, 1975; Horsmann, 2003; Keltner & Kring, 1998; Marsh & Ambady, 2007).

Causes of Emotion: Adaptive Challenges and Opportunities

In evolutionary theory, adaptive problems—challenges to survival and opportunities for reproduction—emotions that result in actions designed by evolution to solve the problem (Cosmides & Tooby, 2000; Tooby & Cosmides, 1990). High cliffs and wild predators, for example, have repeatedly threatened survival (Öhman, 1986). Because they signal that a problem...
Theories of Emotion

for survival is being experienced cause, these signs of danger are called signal stimuli (and sometimes biologically prepared stimuli). A potential mate is also a signal stimulus. Signal in theory have the same survival meaning for all people, and they reliably cause a particular emotion because that emotion confers an adaptive benefit (Öhman & Mineka, 2001). The benefit goes beyond the function of facial expression. In theory, emotions are associated with action tendencies, which make the person ready to perform specific behaviors to successfully address challenges and take advantage of opportunities (Frijda, 1986). The term “action tendency,” rather than “action,” is intended to suggest that the action is not inevitable. It could be adapted to best fit the specific situation, or even prevented from occurring if necessary.

Researchers have defined adaptive problems for humans by looking at animal behavior. What do animals face in their environment, and what actions do they take to survive? Drawing on Scott’s (1958) analysis, Plutchik (1980, 1984) enumerated the actions that reflect stereotypical responses to problems of adaptation. He then tried to show how specific emotions motivate the actions that respond successfully to the problems. The actions and their corresponding emotions are listed in Table 1.1. You can see that signal stimuli that represent the possibility for mating and bonding cause positive emotions such as joy and acceptance (or love). These emotions then generate a set of responses that make the mating and bonding actually happen. When threats occur, fear and anger occur, and those two emotions motivate appropriate action for the threat conditions, either withdrawing or attacking, respectively.

Many of the behaviors described by Plutchik involve responding to opportunities and threats to reproduction. However, it is a mistake to classify adaptive problems in terms of short-term survival of the individual. The concern of evolution, according to most current theories, is the survival of the gene. That means a particular feature of a species’ neural architecture will spread over generations because it enhances the possibility of dealing successfully with recurring reproductive opportunities (such as the appearance of a potential mate) or, alternatively, threats to reproduction (such as the appearance of a sexual rival).

Also, these opportunities and threats are not limited to a small number of behaviors such as sex, violence, and eating. Rather, an evolutionary approach to emotion requires an ongoing, meticulous, give-and-take mapping of different adaptive problems to the structure and function of the emotions.

Biological Given: Basic Emotions

Silvan Tomkins (1962, 1963), and subsequently Carroll Izard (1977, 2007) and Paul Ekman (1992), theorized about the biological bases of emotions from the perspective of evolutionary theory. They endorsed the existence of a small set of emotions, which they called basic
emotions. Basic emotions are innate neural and bodily states that are elicited rapidly and unintentionally—automatically—by the signal stimuli we just learned about (cf. Buck, 1999; Ekman, 1994; Izard, 1977; Johnson-Laird & Oatley, 1992; MacLean, 1993; Öhman & Mineka, 2001; Panksepp, 1998). Because no one has ever opened the body and head and found something like a basic emotion inside, theorists have had to propose testable criteria for classifying an emotion as basic. Such criteria now include:

- Universal expressions, which may involve more than just the face (e.g., the voice)
- Discrete physiology
- Presence in other primates
- Automatic appraisals or evaluations of the environment

This list means that if you take everything you ever considered to be an emotion (joy, sadness, jealousy, guilt), only those that are identifiable by a bodily and facial response, have a specific signature in the body’s physiology, appear in nonhuman primates, and involve predictable assessments of the environment get to be called basic emotions. Because scientists have not yet tested these features for all emotions, there is not yet a definitive set of basic emotions. Based on existing research, however, the emotions of fear, disgust, anger, surprise, joy, and sadness have been called basic. Those six are represented by the distinct facial expressions shown in Figure 1.2. The emotion of contempt has been included as a seventh basic emotion (Ekman, 1999). More recently, researchers have also found evidence at least for the universal expression of other emotions such as shame and pride (Chapter 5; Tracy & Robins, 2004), whereas others argue that disgust and surprise should not count as emotions (Ortony & Turner, 1990; Panksepp, 2007). As you can see, the list of so-called basic emotions changes as science moves forward.

The evidence used to support the existence of six or seven basic emotions comes from tests of the first two criteria in the previous list, namely on the universality of facial expression and the differentiation of patterning in the automatic nervous system.

![Figure 1.2 The expressions of the six basic emotions.](image-url)

In Chapter 5 you’ll read about evidence suggesting that facial expressions corresponding to the six basic emotions are recognized and produced cross-culturally (Ekman, 1999; Ekman & Rosenberg, 2005; Ekman et al., 1969; Keltner & Ekman, 2000; Keltner et al., 2003). These expressions appear to constitute a universal repertoire of human communication. The expressions
Theories of Emotion

also exist in the communicative displays of primates (e.g., Parr et al., 2007; Waller & Dunbar, 2005). This occurs despite variation in details of the facial anatomy across species and even across individuals.

The autonomic nervous system (ANS) is a control system that regulates the workings of bodily organs—such as the heart, lungs, and stomach—that are responsible for making us feel aroused and active. It controls heart rate, digestion, and breathing, among other things. William James (1890) proposed that the ANS could make us feel discrete emotions, arguing that the combined working of these organs could create different types of arousal that make up the feelings we call anger, fear, disgust, sadness, and joy. This peripheralist position—so called because it held that emotions were composed largely of specific activity in the peripheral nervous system—was attacked for over a century, both by scientists who believed that arousal was nonspecific, and thus could not possibly cause the experience of qualitatively different emotions, and by those who believed that the ANS responds too slowly to support discrete emotional states.

Figure 1.3 Heart rate and skin conductance during six emotional configurations. Adapted from Levenson, Ekman, and Friesen (1990).
The question of whether different emotions have different ANS profiles has since been studied systematically by emotion scientists. Levenson et al. (1990), for instance, induced emotions in participants with the use of a method called the Directed Facial Action task. In this task, the experimenter points at muscles on an experimental participant’s face and asks her to contract them. By choosing specific muscles, the experimenter can get the participant to form each of the six basic facial expressions without mentioning the facial expression at all. While participants held each facial expression, Levenson and colleagues measured, among other things, heart rate, finger temperature, and skin conductance—activity of the ANS. As you can see in Figure 1.3, the six emotions seemed to have different ANS patterns. For instance, anger showed more pronounced finger temperature changes than all the other emotions studied. By the same token, anger, fear, sadness, and disgust were all associated with greater changes in skin conductance (more sweating, that is) than were surprise and happiness. These same results were also obtained in a study in which the participants were men in West Sumatra (Indonesia) who lived in isolation from Western cultures (Levenson et al., 1992).

Subsequent studies also suggest that discrete emotions like fear, anger, and sadness have distinct physiological profiles (Friedman, 2010; Kreibig, 2010; Rainville et al, 2006). Still, despite demonstrations of ANS differentiation of emotion, sufficient confusion exists in the literature to lead some researchers to conclude that there is no distinct ANS patterns for any single emotion (Barrett, Ochsner, & Gross, 2007). This ambiguity may be due to the fact that experiments all vary in context, emotional intensity levels, or motivational states (Larsen et al., 2008; Stemmler et al., 2001; Stemmler & Wacker, 2010 for discussion).

The Integration of Experience: Affect Programs

According to the definition of emotion given earlier in the chapter, emotions are composed of many components, more than the arousal and labels that make up the Two-Factor Theory of Schachter and Singer. Theories of emotion specify whether the components of emotion all occur every time an emotion occurs and, if so, in what order (e.g., Lazarus, 1991; Roseman, 1984, 1991; Scherer, 1984). Evolutionary theories say that the components of emotion occur in concert every time you have an emotion. All of the components of an emotion happen together (or “cohere”) because they are integrated in an affect program, a term attributed to Tomkins (Tomkins & McCarter, 1964). Affect programs are innate brain systems that are preset to tell the body what to do when faced with a particular event (i.e., the adaptive tasks just discussed). In this view, there is a distinct program for each of the basic emotions. This does not mean that everyone’s anger looks and feels exactly the same. Although affect programs develop similarly for all people (they are innate), they can change to include knowledge gained through individual experience (Ekman & Cordaro, 2011).

There is some evidence that the components of emotion do cohere. The strongest evidence in favor of coherence usually comes from studies linking facial expression to self-reported feeling (Bonanno & Keltner, 2004; Fridlund, Ekman, & Oster, 1987). Mauss et al. (2005) also found evidence of some coherence for amusement and for sadness, using films to induce those emotions. Feelings of amusement and facial expressions were positively related and also positively related to activity of the autonomic nervous system. Sad experiences and facial behaviors were positively related to one another and negatively related to activity in the autonomic nervous system. However, as reviewed later, many other studies show little coherence in the components of emotion. For example, having strong feelings of disgust does not mean that a facial expression or change in autonomic activity is guaranteed to co-occur.

In sum, an emotion from the perspective of evolutionary theories is illustrated in Figure 1.4. Biologically prepared signal stimuli reliably elicit affect programs designed to respond adaptively.
Theories of Emotion

Appraisal Theories

Whereas evolutionary theories link emotions to biological adaptation in the distant past, appraisal theories link emotions to people’s immediate evaluation of their circumstances. Appraisal theorists believe that very few objects or events inevitably cause the same emotion in all people (Arnold, 1960; Frijda, 1986; Lazarus, 1966; Roseman & Smith, 2001). That is, they do not recognize the existence of signal stimuli. Rather, they note that failing an exam, losing a favorite hat, or accidentally missing a meeting with a friend might cause sadness in one person, but shame or anger in another person. Appraisal theories are designed to explain the variation, not the sameness, of emotional life.

The claim of these theories, therefore, is that emotions are determined by how an individual appraises his or her circumstances. Appraisal is the mental process that allows you to detect objects and events in your environment and evaluate their significance for your immediate well-being (Ellsworth & Scherer, 2003; Frijda, 1986; Lazarus, Averill, & Opton, 1970; Parkinson & Manstead, 1992; Reisenzein, 2001; Roseman, 1984; Smith, 1989; Smith & Lazarus, 1990). Appraisals are not as simple as judgments of “good” or “bad” for your well-being, though. Circumstances can be appraised in many ways, and it is the pattern of appraisals across those ways that is so important for understanding and predicting emotions. For example, many appraisal theories state that individuals evaluate their surrounding circumstances in terms of how positive, novel, relevant to current goals, and congruent with norms their circumstances are, as well as whether the self or someone else was the initial cause of the circumstances.

Possible formations of appraisals are given in Table 1.2 (from Ellsworth & Scherer, 2003). In theory, if you knew how people appraised a given circumstance, such as giving a public speech, you would be able to figure out if they were happy or afraid to give the speech. We will see how this works in the next section. For now, note that appraisals are not on and off; they are a matter of degree. That is, things that you encounter and experience are not just good or bad, or just controllable or not. Circumstances might be a little, somewhat, or very novel and a little, somewhat, or very positive. In other words, appraisals are experienced on a continuum (like a scale from 1 to 10). In appraisal theory, this type of continuum is known as a dimension. Importantly, theorists do not assume that people making appraisals are doing so consciously and intentionally. Individuals assign values (a little, somewhat, and so forth) to appraisals rapidly, and they usually do so unconsciously and unintentionally.

The claim that people can experience different emotions in response to the same event as a function of their appraisal of the circumstances was demonstrated in a delightful study conducted in the Geneva, Switzerland, airport (Scherer & Ceschi, 1997). The investigators videotaped travelers as they reported that their luggage was lost to an agent at the baggage

Figure 1.4 A schematic diagram of evolutionary theory.
claim office. The investigators then interviewed the travelers about their appraisals of the situation and about their subjective feelings. As expected by appraisal theory, individuals varied in their emotional reactions to the same experience of losing luggage. Moreover, and consistently with most appraisal theories, the more that the event was perceived as obstructing one’s current goals, the more the individual experienced anger and, to some degree, worry.

In a laboratory study that tested the same hypothesis of differing emotional reactions as a function of divergent appraisals, an experimenter gave ambiguous, negative feedback to participants as they engaged in a difficult task (Siemer, Mauss, & Gross, 2007). The feedback caused different emotions across participants. Some felt shame, some guilt, some anger, and some reported experiencing sadness. Appraisals of the feedback situation, especially in terms of how important it was for the self, who caused it, and whether or not it was expected, predicted which of those negative emotions the participants reported feeling.

**Causes of Emotion: Specific Appraisal Patterns**

In appraisal theories, specific emotions result from distinct patterns of appraisals. To be able to predict a given person’s emotional reaction, therefore, appraisal researchers first map out the relationships between a particular appraisal pattern (the cause) and the resulting specific emotion, such as fear, anger, joy, or sadness (e.g., Roseman, 2013; Siemer, Mauss, & Gross, 2007). In studies designed to extract the precise pattern of appraisals that determine specific emotions, participants are asked to recall an emotional event from their past and then to rate it on the appraisal dimensions nominated by the researcher, such as those in Table 1.2 (e.g., Frijda, Kuipers, & Ter Schure, 1989; Kuppens et al., 2007; Fischer & Roseman, 2007). Other evidence comes from studies in which participants read descriptions of events that have been designed to elicit specific patterns of appraisal and then rate their expected emotional reactions (e.g., Ellsworth & Smith, 1988; Reisenzein & Hofmann, 1990). Perhaps most compelling are the studies in which emotions are manipulated or measured in real-life circumstances while specific appraisals are manipulated or measured at the same time (Kreibig, Gendolla, & Scherer, 2010; Moors & De Houwer, 2001; Smith & Kirby, 2009).

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**Table 1.2** Comparative overview of major appraisal dimensions as postulated by different theorists. From Ellsworth & Scherer (2003).

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Novelty</strong></td>
<td>Change</td>
<td>Familiarity</td>
<td>Novelty</td>
<td>Attentional activity</td>
</tr>
<tr>
<td><strong>Valence</strong></td>
<td>Valence</td>
<td>Focality</td>
<td>Intrinsic pleasantness</td>
<td>Pleasantness</td>
</tr>
<tr>
<td><strong>Goals/needs</strong></td>
<td></td>
<td></td>
<td>Goal significance</td>
<td>Importance</td>
</tr>
<tr>
<td><strong>Certainty</strong></td>
<td></td>
<td></td>
<td>Concern relevance</td>
<td>Certainty</td>
</tr>
<tr>
<td><strong>Agency</strong></td>
<td>Intent/Self-other</td>
<td>Agency</td>
<td>Cause: agent</td>
<td>Human agency</td>
</tr>
<tr>
<td><strong>Norms/values</strong></td>
<td>Value relevance</td>
<td></td>
<td>Compatibility with standards</td>
<td>Legitimacy</td>
</tr>
</tbody>
</table>

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A summary of the various findings has allowed appraisal theorists to assert, for instance, that fear occurs when circumstances are appraised as novel, negative, uncontrollable, and inconsistent with expectations. A visual summary of some regular patterns of appraisals found to be associated with different basic emotions is presented in Figure 1.5 (based on Smith & Ellsworth, 1985).

More recently, some appraisal theorists have backed away from the claim that appraisals are antecedent causes of emotions (Clore & Ortony, 2008; Moors, 2013; Scherer, 2009). In this view, the appraisals serve to describe one’s experience of the emotion rather than trigger it per se. Such theories may harken back to the Two-Factor Theory and, as we shall see, to the ideas of William James (1890), in that some kind of bodily reaction is present before the appraisal cognitions.

**Biological Givens: Valence and Novelty Appraisals**

Magda Arnold (1960) described appraisals in terms that sounded innate. She proposed that organisms are constantly evaluating whether the environment is beneficial or harmful for them. Later theorists distinguished between primary appraisals that are adaptive in being very fast and clear-cut and secondary appraisals that involve high-order mental processes and are probably learned (Scherer, 2001). For instance, whereas a primary appraisal might judge a snake as dangerous, a secondary, more deliberate appraisal might involve the nuanced judgment that this particular snake is actually dead or a harmless variety and thus can be easily coped with.

![Figure 1.5 Patterns of appraisal across different basic emotions. Adapted from Smith and Ellsworth (1985).](image-url)
The primary appraisals that could be considered innate are the appraisals of novelty and of valence (Scherer, 2001). The appraisal of novelty is the detection of new or changed elements of the environment. An ability to detect novelty is present in newborns and is shared with other animals. The parts of the brain that are responsible for this appraisal are also evolutionarily old. For example, the amygdala, a structure deep in the brain’s limbic system (see Chapter 3), seems to control orienting responses (Holland & Gallagher, 1999) and is activated when an organism is exposed to novel objects (Schwartz et al., 2003; Wright et al., 2006). Lesions to the amygdala also disrupt primates’ typical responses to novelty (Prather et al., 2001).

Whereas novelty tells an organism if there is something significant to pay attention to, the assessment of valence tells the organism whether it should be approached or avoided. Appraisals of valence also seem to be present in newborns and animals. In human adults, the amygdala also responds to positive and negative faces (e.g., Zald, 2003), scenes (e.g., Anders et al., 2008), words (e.g., Posner et al., 2009), and odors (e.g., Anderson et al., 2003). Moreover, the detection of valence triggers the same cardiovascular systems as the detection of novelty (Mendes et al., 2007). However, even if they share old neural systems, novelty appraisals and pleasantness appraisals are separate detectors (Weierich et al., 2009). In other words, if something is novel, we can’t know if it is also positive. We need both appraisals.

**The Integration of Experience: Independent Components**

Some appraisal theorists believe that all of the components of emotion are elicited as a package upon the occurrence of an appraisal. This idea is reflected in Frijda’s (1988, pp. 349) assertion; “[i]nput some event with its particular meaning; out comes an emotion of a particular kind.” Although initially appraisal theories were developed to predict experiences that are usually labeled with discrete category labels such as “joy” and “fear,” contemporary appraisal theorists think that the components of emotion are not triggered in an all-or-none fashion. Such appraisal theories are called “componential theories” (e.g., Scherer, 2009). In this view, the different components of emotion can be caused independently by different appraisals. Fear, for instance, might be characterized by several component parts: a facial expression, ANS arousal, a tendency toward flight. The componential theorist is interested more in those components than in linking them to an overall state. So instead of trying to predict the occurrence of joy or fear, these theories may try to predict tendencies to reject, freeze, or approach (Moors, 2013). Or they may try to predict how the activation of different facial muscles are caused by different appraisals rather than linking them to the expression of a single emotional state (Scherer & Ellgring, 2007a, 2007b). Thus, the components of emotion could be caused by different objects or events and proceed independently, or else combine in innumerable ways to produce highly nuanced emotional experiences (Clore & Ortony, 2000; Ellsworth & Scherer, 2003).

Indeed, componential theorists focus on evidence suggesting that components of emotion actually do not typically cohere. (Bradley & Lang, 2000; Cacioppo et al., 2000; Reisenzein, 2000). Although some research found relationships between facial expression and reported emotion, Reisenzein, Studtmann, and Horstmann (2013) reviewed evidence of the relationship between reported feelings and appearance of specific facial expressions (based on Ekman, 1972, 1993) of amusement, disgust, surprise, sadness, anger, and fear. Except for amusement, the emotions and the facial expressions did not reliably co-occur.

The reality is that the question of whether emotions are tightly bound packages or sets of loosely connected pieces is one that is very hard to answer. It could be that in real-life, naturally occurring, and high-intensity emotions, the components are usually coherent. After all, the apparent decoupling of the component parts is based on observations from laboratory
demonstrations in which experimental participants were induced to experience emotions but did not need to act on those emotions. If individuals do not have to act, or cannot act due to features of the laboratory environment, then certain parts of the emotion may not occur. Perhaps the component processes usually cohere and all point to the same emotional experience only, but very quickly until other processes come into play to decouple them. For example, it could be that after all components of anger come together, other processes intervene to control or change that emotion if it is unacceptable in the current social situation. For example, social norms within a culture can dictate the regulation of emotion and thus exert an especially strong influence on its outward expression of an emotion. For example, social norms within a culture can influence the outward expression of an emotion. Thus, an individual in an industrialized Western country might feel like laughing at a funeral because she suddenly remembers a funny joke about a priest and a rabbi. However, especially after a particular age, she would probably control her laughter, suppress a smile or tendency to giggle, and display sadness at least on her face, if not also in bodily gestures (Cole, Zahn-Waxler, & Smith, 1994; Diener & Mangelsdorf, 1999; Eisenberg & Morris, 2002). Still, the fact that emotion components can be decoupled over time does not necessarily mean that they do not initially occur in a coherent way, particularly if the opportunity to act on emotion is present.

In sum, an emotion from the perspective of appraisal theories is illustrated in Figure 1.6. Circumstances are detected as important and appraised along a set of dimensions, including novelty, valence, and controllability. Distinct patterns of appraisal reliably elicit the components of emotion, including expressive, physiological, and cognitive responses, as well as action tendencies, although they do not have to occur in one package. Components of emotion may be augmented or prevented due to social or cultural rules. The resulting responses constitute the total emotion.

Figure 1.6 A schematic diagram of appraisal theories.

Psychological Constructionism

Whereas evolutionary psychologists study the function of emotion and appraisal theorists study why different people have different emotions in the same circumstances, psychological constructionism tries to explain the huge variation—both within and across individuals—in how emotions look and feel (Barrett, 2006; Cunningham & Brosch, 2012; Kirkland & Cunningham, 2012; Lindquist & Gendron, 2013; Russell, 2003, 2009; Widen, 2013). These theorists ask questions like is there really such a thing as anger, or are there actually many different experiences that we call “anger,” just for convenience’s sake? Psychological constructionists treat variability in emotion language, knowledge, and responding as indications that the things we
Theories of Emotion

call “sadness” and “disgust,” for example, are created in the mind of the person experiencing the emotion at that time; emotions are first and foremost psychological realities.

An interest in the construction of specific emotions can be traced in part to the Two-Factor Theory of emotion, which we encountered earlier in the chapter, but even more strongly to the writings of William James (1890). James famously noted that most people of his time (scientists and laypeople alike) seemed to believe that having an emotion involved perceiving an emotionally arousing stimulus (he usually referred to a bear in the woods), feeling an emotion, and then taking action (running away from the bear). That is not right, James claimed. Instead, he argued that people perceive the emotionally arousing stimulus, get all jazzed up and take action, and later introspect on their actions and body to fashion an emotion. Constructing the emotional experience involved thinking about their state in their own way and through their own understanding of the situation. In other words, James thought people took a bunch of elemental biological and psychological states and constructed a personal emotional experience for themselves (Lindquist, 2013).

Both William James’s ideas and the Two-Factor Theory of emotion were simple ideas that foreshadowed modern constructionist theories. In constructionist theories, primitive feeling states that have a biological basis are shaped into a psychologically reality—into the experiences called “joy” or “disgust”—by the mental processes of perception and interpretation. Modern constructionist theories, in contrast to Schachter and Singer (1962), try to specify how people’s knowledge of emotion categories shapes core affect into specific emotional experiences.

Causes of Emotion: Categorizing Affect Responses

From a constructionist perspective, emotions are not elicited by signal stimuli, but through principles of associative learning (Barrett & Bliss-Moreau, 2009). For instance, if a child sees a parent express pain at being bitten by a dog, the dog will come to produce generally negative feelings in the child. The novel contribution of psychological constructionists is the causes of specific emotions: specific emotions are caused by applying learned categories to experience. Whether or not experience is categorized as an emotion depends upon many things, including the individual’s own knowledge and sophistication about emotion (Kashdan, Barrett, & McKnight, 2015), as well as the cultural and linguistic context in which the individual lives (Tsai, Simeonova, & Watanabe, 2004). Once categorization gets going, moreover things get interesting.

Categorization is the mental process that takes experience and gives it structure and meaning (Barrett, 2006; Lindquist, 2013). Categories contain information about the probable causes of general feelings, the relationships among the bodily changes, and predictions about what behavior should be taken (Fehr & Russell, 1984; Russell & Fehr, 1994). Most constructionists believe that when you learn to recognize a particular emotion (e.g., what sadness looks like, feels like, and motivates people to do) and to label that emotion (e.g., “sadness”), you start to shape general affective responses into discrete emotional experiences. Sometimes theorists call this a “conceptual act” (Lindquist & Barrett, 2008). Once you engage in the conceptual act of categorizing your emotions, you are more able to fully experience them as distinct and informative states.

Constructionist theories can easily account for similarity and variation in experiences of emotions across cultures. Some emotion categories exist across most societies, perhaps because they relate to universal concerns that arise from living in large, complex groups. Other emotion categories are culture specific and perhaps exist to solve problems associated with the ecological challenges or social values of that particular group. This can be appreciated by noting that languages describe emotions in very distinct ways. For instance, in Anuak, a language in the Sudan, emotions are described by reference to the liver. Sadness is having a “heavy liver.”

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Marshallese, a language in Micronesia, emotions are described by reference to the throat. Pride is having a “high throat.” Associating emotions with different body parts will give them slightly different meanings.

The existence of a specific set of emotion categories within a given culture and language group is presumed to come from social consensus about the most useful way to differentiate feeling states. In this view, feeling states are labeled for reasons that correspond to real social motivations and social problems, but not because biological entities exist called “disgust,” “fear,” and “sadness” (Barrett, 2009). Just what is biologically given in this view?

Biological Given: Core Affect

In psychological constructionist theories, the innate component of emotion is core affect. Core affect is generally thought to be composed of two fundamental dimensions of conscious experience. The two dimensions correspond to the degree to which a state is pleasant versus unpleasant \( (\text{valence}) \) and the degree to which a state is activated versus deactivated \( (\text{activation}) \) (e.g., Barrett & Russell, 1999; Feldman, 1995a, 1995b; Lang, Bradley, & Cuthbert, 1990; Larsen & Diener, 1992; Mayer & Gaschke, 1988; Reisenzein, 1994; Russell, 1980, 1989; Watson & Tellegen, 1985). To express the same quality as pleasant versus unpleasant, some researchers have used the labels good–bad, pleasure–pain, approach–avoidance, rewarding–punishing, or positive–negative. But all such terms more or less refer to the subjective state that stands for “how well one is doing” (Russell & Barrett, 1999). In addition, labels other than activation have been used, such as arousal, tension, and activity, but such labels all refer to the level of experienced energy or mobilization of the state.

The dimensions of valence and activation have been demonstrated using the statistical techniques of factor analysis and multidimensional scaling. These tools show that the two dimensions best describe how people arrive at judging the similarity between the meaning of two emotion words (Reisenzein, 1994; Russell, 1979) or between two facial expressions of emotion (Russell & Bullock, 1985), how they describe their mood using typical emotion words (Barrett, 1996; Mayer & Gaschke, 1988), and even the way that the body responds to emotional stimulation (Cacioppo, Gardner, & Berntson, 1999; Lang, 1995). There is also evidence that the basic sensations of pleasantness and arousal are the product of two independent neurophysiological systems (Posner, Russell, & Peterson, 2005). Pleasantness–unpleasantness is associated with asymmetric activation of the frontal lobes and projections to and from parts of the limbic system of the brain, such as the amygdala (Davidson, 1992; Heller, 1990; Tomarken et al., 1992). Activation–deactivation is associated with right parietotemporal activation in the brain and projections to the reticular activation system in the brainstem (Heller, 1990, 1993).

The evidence for two dimensions comes from statistical modeling of self-reported feelings. It is interpreted as meaning that states we call happy and sad and angry can be reduced to the biological dimensions of pleasantness and activation and that any given emotion can be described as a blend of pleasantness and activation. For example, many states that we call anger could be characterized as highly unpleasant and moderately activated. And many states of fear could be described as moderately unpleasant and highly activated (e.g., Russell & Barrett, 1999).

In another view, the structure of emotion is best described as a circumplex (e.g., Barrett, 2004; Barrett & Russell, 2009; Larsen & Diener, 1992; Russell, 1989; Watson & Tellegen, 1985). Very simply, a circumplex is a circle and a set of axes. The circle illustrates people’s perceptions of similarity between the objects. The axes represent the psychological properties that explain what is similar and different about people’s perceptions of those objects. An affect circumplex represents how people perceive similarities and differences in their experience of emotion.
Figure 1.7 shows the circumplex and some of the emotion states that define its perimeter. The circumplex is useful because it provides a good description of how people generally experience their emotional state, while also suggesting hypotheses about individual differences in affective experience (Barrett & Niedenthal, 2004).

**Figure 1.7 Circumplex of emotion. From Russell & Barrett, 1999.**

### The Integration of Experience

Most psychological constructionists believe that the components of emotion do not necessarily happen inevitably, all at the same time. Whether facial expression, autonomic activity, or specific mental processes occur depends upon the category that is used to construct an emotion in the situation in which it is occurring (Lindquist, 2013). For instance, if you are having a pleasant experience with a partner, you might be very likely to smile because your specific experience of happiness in the situation involves communicating the happiness with the other person. Some of your experiences of happiness when alone might not include smiling.

Variability in how emotion components fit together may be caused by stable individual differences. Some people may react to all emotional events primarily with facial expressions, whereas others may mostly show strong autonomic responses (Marwitz & Stemmler, 1998). There are individual differences in the complexity of cardiac responses across different experiences of stress that are provoked in the laboratory (Friedman, 2003). Psychological constructionists also suggest that the components of emotion are controlled by distinct neural and bodily systems that respond to particular features of the event in which an emotion was experienced (Russell, 2003; Stemmler, 2003). In their view, then, an emotion emerges from conceptualizations that trigger multiple response systems rather than one affect program.
An emotion from the perspective of psychological constructionist theories is illustrated in Figure 1.8. When events are encountered that have acquired emotional significance through learning, they cause a change in core affect. The changes are conceptualized in terms of emotion categories that are relevant to the current circumstances. The categorization may trigger some of the components of emotion, although they do not have to occur in one package. Components of emotion can be augmented or prevented due to social or cultural rules. The resulting responses constitute the total emotion.
Summary

- Theories of emotion are testable statements about 1) the causes of an emotion, 2) what people are born with (biological givens), and 3) how different components of emotion come together in the emotional expressions.

- Evolutionary theories of emotion hold that emotions are biologically evolved, functional responses to certain opportunities and challenges posed by the environment. One of the key predictions of the evolutionary theory of emotion, which we will revisit several times in this book, is that a set of universally recognized facial expressions of emotion exists.

- The major contribution of cognitive appraisal theories of emotion is the idea that emotions are elicited and differentiated by evaluations (appraisals) of the environment with respect to the current goals and interests of the individual experiencing the emotion.

- The psychological constructionist theory of emotion states that emotions are phenomena that are given shape by the process of categorization. Emotions are not stable biological entities, but rather elaborated within linguistic and cultural contexts.

- Appraisal and constructionist theories agree that the different components of emotion can be quite separate and have separate time courses and that an inevitable set of components does not accompany all emotional episodes.

Learning Links

1. Experience this documentary essay on the basic emotions. https://www.youtube.com/watch?v=V_b_jctSKZM

References


Theories of Emotion


Methods for the Science of Emotion


The Emotional Brain


Functions of Emotion


Expression of Emotion


**Happiness**


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**Emotion and Cognition**


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Emotion and Group Processes


Gender and Emotion


