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APPRAISAL PROCESSES IN EMOTION

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The Nature of the Appraisal Process

Usually, people's emotions arise from their perceptions of their circumstances—immediate, imagined, or remembered. This idea has been implicit in many philosophical treatments of emotions (e.g., in Aristotle, Spinoza, and even Descartes and James; see Ellsworth 1994a; Gardiner, Clark-Metcalf, & Beebe-Centa, 1980; Scherer, 2000) and explicit in some (e.g., Hume and Hobbes), and it is the central emphasis of current appraisal theories of emotion. Thinking and feeling are inextricably interrelated most of the time: Certain ways of interpreting one's environment are inherently emotional, few thoughts are entirely free of feelings, and emotions influence thinking. Reason and passion are not independent domains, or are rarely so. Of course there are exceptions: Brain stimulation, hormones, and drugs can produce emotions without external environmental circumstances, just as they can produce sensations, cognitions, and ideas without external environmental circumstances (Penfield, 1975). The fact that exceptions exist does not mean that there is no rule. The general rule suggested by appraisal theorists is that emotions consist of patterns of perception, or rather interpretation, and their correlates in the central and peripheral nervous systems (see Ellsworth, 1994c; Roseman & Smith, 2001; Scherer, 2001a, 2001b).

A further assumption is that emotions are fundamentally adaptive, rather than maladaptive. In order to survive, an organism cannot simply understand its situation; it has to be motivated to do something about it. Many species have solved this problem with a mechanism that triggers fixed action patterns in response to appropriate stimuli. Emotions provide a more flexible alternative. They imply action tendencies (Frijda, 1986) without complete rigidity. Lower organisms respond to stimulus patterns with behavior. Emotions, although they still motivate behavior, "decouple" it from the perception of the stimulus so that reconsideration is possible (Scherer, 1984). Fear creates a tendency to flee, but a person may quickly realize that the threat is directed at someone else (reinterpretation of the event) or that an aggressive stance will intimidate the attacker (reinterpretation of response alternatives). Emotions allow flexibility both in event interpretation and in response choice. Emotions, from this point of view, represent an important evolutionary alternative. The phylogenetic expansion of the cerebral cortex enabled an increasing variety of interpretations, emotions, and behavioral options (see Hebb, 1949).

History

Although some features of appraisal theory were foreshadowed in early work (e.g., Leeper, 1948; see also Reisenzein & Schönpflug, 1992), current versions of the theory trace their roots to the work of Magda Arnold (1960), who first used the term *appraisal*, in the sense of direct, immediate, and intuitive evaluations, to account for qualitative distinctions among emotions. She argued that organisms constantly evaluate the relevance of environmental changes for their own well-being, checking whether significant

stimuli are present or absent, beneficial or harmful, and easy or difficult to approach or avoid. These appraisals result in action tendencies, which are experienced as emotions. The most influential early appraisal theorist was Richard Lazarus (1966), who distinguished between "primary appraisals" of the implications of a situation for one's well-being and "secondary appraisals" of one's ability to cope with the situation. Although not all current appraisal theories maintain this distinction, two of Lazarus's other ideas are common to almost all current theories. First, he argued that because the human mind is capable of making subtle distinctions that allow for enormous variability in interpretation of the environment, human emotions themselves are characterized by enormous variability and subtle distinctions. Thus, initially, his appraisal theory rejected the idea that there is a limited number of categorically distinct basic emotions (although more recently he has claimed a limited number of "relational themes" somewhat reminiscent of discrete emotions; see Lazarus, 1991). Second, he proposed that the experience of emotion is a continuous process: The "same" event (including one's own reaction to the event) can be reappraised, so that the initial emotional response changes over time. This idea of emotion as process is widely shared among current appraisal theorists.

In the 1980s, the appraisal approach was "discovered" by a number of different researchers, largely working independently of each other, and became a major theoretical perspective in the study of emotion. The basic idea is that "emotional experience . . . is experience of the situation" (Frijda, 1986, p. 193) as interpreted by the organism. The emotions people feel are predictable from their appraisal of their circumstances (and, conversely, their interpretation of the situation is predictable on the basis of their emotional reactions). Each of the theorists went further and proposed a specific set of appraisals that would be particularly important in differentiating one emotion from another (De Rivera, 1977; Frijda, 1986; Oatley & Johnson-Laird, 1987; Ortony, Clore, & Collins, 1988; Roseman, 1984, 2001; Scherer, 1982, 1984, 1986a, 2001a; Smith & Ellsworth, 1985; Smith & Kirby, 2001; Solomon, 1976; Stein & Levine, 1987; Weiner, 1982, 1986). A more extensive description of the history of the appraisal approach can be found in Schorr (2001).

Basic Assumptions

Again, the basic premise of appraisal theories is that the organism's evaluation of its circumstances (current or remembered or imagined) plays a crucial role in the elicitation and differentiation of its emotions. Theorists differ somewhat on the appraisals they believe to be most important, but in general, the similarities among them are more striking than the differences. Table 29.1 shows some of the central dimensions proposed by four of the theorists of the 1980s. Novelty, intrinsic pleasantness, certainty or predictability, goal significance, agency, coping potential, and compatibility with social or personal standards are all commonly suggested dimensions. Some theorists include more, some fewer; and there are different arrangements of superordinate and subordinate appraisals. Some theorists have been primarily concerned with causation and agency (Abelson, 1983; Weiner, 1982), focusing on a somewhat more limited domain of emotions but sharing general agreement with other theorists within that domain. Others have proposed overarching themes related to centrally important universal goals, such as attachment or autonomy (Oatley & Johnson-Laird, 1987; Smith & Lazarus, 1993; Stein & Levine, 1987), adding a superordinate classification to the appraisal dimensions. Nonetheless, substantial consensus exists among the theorists in their descriptions of the appraisal dimensions and in their assumptions about the appraisal process during a particular emotional episode.

Table 29.1 Comparative overview of major appraisal dimensions as postulated by different theorists

	Frijda (1986)	Roseman (1984)	Scherer (1984)	Smith/Ellsworth (1985)
	Change		Novelty suddenness familiarity	Attentional activity
Novelty	Familiarity			
Valence	Valence		Intrinsic pleasantness	Pleasantness
	Focality	Appetitive/aversive motives	Goal significance concern relevance outcome probability	Importance
Goals/needs	Certainty	Certainty		Certainty
Agency	Intent/Self-other	Agency	cause: agent cause: motive	Human agency
Norms/values	Value relevance		Compatibility with standards external internal	Legitimacy

The idea of emotions as processes is central to most appraisal theories and is one of the ideas that most clearly distinguishes them from more structural theories (see Roseman & Smith, 2001). The idea that appraisals occur sequentially and that the nature of the emotional experience changes each time a new appraisal is added was first explicitly proposed by Scherer (1984) but is compatible with several appraisal theories. Generally, the first appraisal in the sequence is that of novelty—something in the environment (physical, social, or mental) changes, and the organism's attention is attracted. An orienting response may occur, and the organism is in a state of readiness for further emotional responding (Ellsworth, 1994c; Kagan, 1991). If whatever attracted the organism's attention cannot be disregarded as irrelevant to its well-being, further appraisal will take place. Very often the next step is a sense of intrinsic pleasantness or unpleasantness (Zajonc, 1980), often occurring so quickly that it is subjectively indistinguishable from the experience of attention. Especially when the valence is negative, further appraisals ensue, and the emotional experience changes from "feeling good" or "feeling bad" to some more differentiated state. Is this important to me (concern relevance)? Do I understand what's going on (certainty, predictability)? Is something impeding my progress toward a goal? Facilitating it (goal conduciveness)? What caused this to happen (agency)? Can this be controlled (controllability)? By me (power)? Has a social norm been broken (compatibility with standards)? By whom? By me? Different combinations of answers to these questions characterize different emotions. Of course, the person does not actually pose such a series of questions each time he or she appraises an event; appraisal is not an internal dialogue (see Kappas, 2001). How conscious the person is of the separate appraisals is a matter of debate. However, theorists generally assume that appraisals are often automatic and unconscious.

Whether the appraisals always occur in the same sequence (Scherer, 1984) or whether variable sequences are common is also a matter of debate, as is the issue of whether all of the appraisals must always occur. It should be noted that the assumption of sequential changes in appraisal results does not contradict the assumption of parallel information processing (see Scherer, 1999b, 2000a, 2001a).

Appraisal theories contrast sharply with categorical theories of emotions that posit a limited number of qualitatively distinct basic emotions, such as fear, anger, and sorrow. As originally proposed by Tomkins (1962, 1963, 1984), Ekman (1972), and Izard (1977), these theories suggested that each of these basic emotions is produced by an innate hardwired neuromotor program with characteristic neurophysiological, expressive, and subjective components. More recent versions have loosened up the model somewhat, to better capture the variety and subtlety of human emotional life, and now speak of "families" of emotions (Ekman, 1992). Appraisal theories postulate that emotions are composed of simpler but still meaningful elements, elements that correspond to the appraisals and their correlates. It implies that emotional experience is typically a process that changes over the course of an episode, sometimes very rapidly, sometimes more gradually—in line with additions and revisions in the appraisals. It implies a potentially infinite range of emotional experience, with intermediate or transitional states between the named categories of emotions; with vacillation between emotions that corresponds to uncertain or vacillating appraisals; with transitions between emotions that correlate with changes in specifiable appraisals; and with episodic, individual, and cultural variability within a given emotion, such as anger, depending on variations in the person's appraisal and reappraisal of the circumstances.[1]

Appraisal theories can also be distinguished from dimensional theories of emotion. These theories, which have existed in various forms for a century, generally focus on sensations, subjective experience, or, in philosophical parlance, on *qualia*. They postulate that emotions can be classified along certain underlying dimensions such as pleasantness, excitement, and tension (Wundt, 1874/1902), suggesting that each emotion occupies a unique region in this multidimensional space. The number of dimensions proposed varies, with most versions including only two—pleasantness and activation (Bradley & Lang, 1994; Plutchik, 1980; Russell, 1980; Schlosberg, 1952)—or three—pleasantness, activation, and some other (Osgood, 1966; Osgood, May, & Mirou, 1975; Wundt, 1874/1902). Unlike categorical theories, dimensional theories can account for an infinite number of emotional states and provide a basis for discussing similarities and differences among emotions, albeit typically only with respect to their valence and activation.

Appraisal theories attempt not only to describe but also to explain emotions: The appraisal process is a link between the organism and the situation that produces the emotion. Emotions are adaptive responses to the world, not simply abstract sensations, as dimensional theories seem to imply. Appraisal theorists would argue that fear and anger cannot be distinguished simply on the basis of differences in levels of activation and pleasantness.[2] In order to differentiate qualitatively different emotions, we need to know more about how the organism interprets its situation.

How Appraisals Work

The initial work of the appraisal theorists demonstrated that the general framework was heuristic and promising, as were the specific appraisals identified, at least as a starting point. The approach has generated a considerable

amount of research and even more discussion. Many issues remain unresolved, and new issues have been identified both by critics and by appraisal theorists themselves as the theories evolve.

Should appraisals be considered as antecedents (or even *causes*) of emotion, or should they be thought of as components of emotion? The sequencing of the emotional process has been a central issue for emotions theorists since William James (1884) upset received opinion by proposing that bodily responses preceded subjective feelings, and it was brought back to prominence when Zajonc (1980) again upset received opinion by proposing that subjective feelings preceded interpretations. With respect to appraisal theory, a simplistic view would seem to imply that the appraisals are clearly separable *antecedents* of emotion, that is, that the organism first evaluates the environment and then feels the appropriate emotion.[3]

An alternative view, held by many appraisal theorists, is that appraisals are components of emotions—that the subjective experience of fear, for example, is the feeling of high attention, negative valence, high uncertainty about what is happening or one's ability to cope with it, and so on (in addition to the physiological and motor reactions elicited by these appraisals).[4] Of course, when all the requisite appraisals occur, what the person feels is fear, not a collection of identifiable elements (see also the discussion in Kappas, 2001). This perspective is compatible with the idea of emotions as continuous processes, changing as appraisals are added or revised. When the first appraisal, typically the appraisal of novelty, is made, there are changes in the central and peripheral nervous system, in action tendencies (e.g., the ongoing action is interrupted), and in the organism's subjective feeling. With appraisals of valence, certainty, goal relevance, agency, and the other appraisals, new changes occur in all of these systems. Whereas the appraisals-as-antecedents point of view encourages the idea of a clear boundary between cognition and emotion or reason and passion, the appraisals-as-components view dissolves the boundary and renders meaningless a dichotomy which many theorists have considered dubious and even dangerous.

As soon as the initial appraisal is made, the organism is in a sense "emotional," compared with what it was before, although it is not experiencing any of the full-fledged basic emotions described by folk and category theories; the nature of this emotionality is highly fluid, constantly changing as appraisals are added and revised. Much of the writing and research on appraisal theory has explored the appraisal combinations that correspond to categories of emotion in an attempt to show that these categories have distinct profiles of appraisals. When the profile resulting from the appraisal process corresponds to a specific emotion category, the person feels "fear" or "anger" or "shame." But it does not follow that the person feels nothing at all *until* the full complement of appraisals is in place. The view that appraisals are components of emotion allows for *emotionality*, if not any named emotion, from the very beginning of the process.

The appraisals-as-components point of view also challenges the definition of individual emotions as bounded categories. Rather than a single emotion of anger, there can be many varieties of "almost-anger" and many nuances of the anger experience. If someone else causes something negative—but not *very* negative—to happen to me, I may feel irritation. If my sense of control is very high, and I feel that the person has broken a social or moral norm I care about, I may feel a rather pleasurable righteous indignation. If intensity is very high, and I am losing control, I may feel a desperate rage. Appraisal theories, like dimensional theories, are compatible with the idea of an infinite range of emotional states.

Empirical tests of the cause versus component versions of appraisal theories are more difficult than might be imagined and may inevitably be inconclusive because so much hinges on one's definition of "emotion" (see Scherer, 2000b, for more detail on definitional issues). The changes that accompany the novelty appraisal have already been well documented (Posner, 1992; Posner & Petersen, 1990), for example, but whether they correspond to *emotional* changes depends on how the theorist chooses to define emotion. Various theorists have attempted to resolve this problem by suggesting terms such as *preappraisals* (Lazarus & Smith, 1988) and *protoemotions* (Elster, 1999), but new semantic dichotomies are unlikely to be useful for empirical research unless they include clear operational definitions (which has not been the case so far).

The idea that a person who has made some but not all of the appraisals typically found in traditional categories of emotions is already "emotional" may also be useful in extending the theory to cover emotional states such as moods, which have generally been considered as different from emotions. Moods have valence; they may involve a sense of control or lack of it; but they lack novelty, agency, and other appraisals. In many circumstances all of the appraisals are made very quickly, and the person experiences the sudden onset of a very specific emotion. However, if one allows for the possibility that some appraisals are not made or remain ambiguous for longer periods of time, so that the person would admit to feeling "emotional" but would be unable to come up with a label more specific than "good," "bad," or "upset," then the range of appraisal theory is potentially expansible to include other feelings typically designated "borderline" or "nonemotional."

The idea of emotions as processes that develop over time also liberates the theory in directions that may succeed better than other theories in capturing some of the complexities of human emotion (Ellsworth, 1991). First, the person's initial emotional response to the situation may provoke behavior that changes the situation, so that

reappraisal is inevitable. Second, the person's emotional response to the situation also becomes a part of the situation; it too can be appraised and can result in further emotions. If my initial angry response strikes me as excessive, I may feel that I have been unjust and feel ashamed of my anger (Ellsworth, 1994b; Elster, 1999). Finally, emotions can bias further cognitions by facilitating the corresponding appraisals, so that an angry person is more likely to see other people as causal agents of new events (Keltner, Ellsworth, & Edwards, 1993), and a happy person is more likely to see favorable outcomes as likely (Johnson & Tversky, 1983).

Major Dimensions of Appraisal: Theory and Evidence

The central feature of an appraisal perspective on the elicitation and differentiation of emotion is the assumption that organisms constantly evaluate stimuli and events for their significance for the individual. This significance is operationally defined by a number of dimensions or criteria which constitute the meaning structure in which the evaluation takes place.

In this section, these dimensions are explored, with appropriate reference to the pertinent empirical evidence. Considerable emphasis is placed on the idea that appraisals can occur at several levels of processing. In 1987 Leventhal and Scherer proposed the idea that appraisals can occur at three different levels, specifically the sensorimotor, the schematic, and the conceptual level, and that processes occurring at different levels can interact: Subcortical processes can stimulate cortical involvement and vice-versa (Leventhal & Scherer, 1987; see also van Reekum & Scherer, 1997; Teasdale, 1999, for a review, and chapter 33, this volume). Related ideas have been proposed by Teasdale and Barnard (1993), Öhman (1987), Johnson and Multhaup (1992), and Logan (1988).

Basic Stimulus Characteristics: Novelty, Pleasantness

The most basic dimensions of stimulus events to be coded in perception are the novelty (with respect to the level of habituation) and the intrinsic pleasantness or valence of a stimulus. These dimensions are often coded at a very low level of processing, often in a highly automatic fashion. Some theorists object to the use of terms such as *evaluation* or *appraisal* for this kind of low-level information processing, insisting that these terms imply some higher, "properly cognitive" operation (see Scherer, 2001b; Schorr, 2001, for current and historical aspects of this ongoing debate). Because these dimensions are evolutionarily important and fundamental to the experience of emotion, and because they can be processed on different levels of cognitive functioning, they are included in this chapter.

Novelty

Because environments are not stable and changes may imply dangers (such as the appearance of predators) organisms need to be sensitive to novelty. A novel stimulus draws attention and mobilizes processing resources to determine whether ongoing activity can be continued or whether further processing and possibly adaptive action are required. It is thus to be expected that even at a very primitive level of sensory-motor processing, sudden and intense stimuli are registered as novel and deserving of attention. The literature on attention (Bargh, 1984; Parasuraman, 1983; Posner, 1992) and on the orienting reflex (Barry, 1996; Graham, 1979; Kimmel, van Olst, & Orlebeke, 1979; Siddle & Lipp, 1997; Sokolov, 1963; Turpin, Schaefer, & Boucsein, 1999) has demonstrated the existence of such primitive detection mechanisms and explored the nature of the neurophysiological changes induced by novelty detection. The studies in this area suggest a large number of factors (involving both stimulus characteristics, such as timing and intensity, and the prior state of the organism, such as arousal level) that affect novelty detection.

Beyond this most primitive level, the criteria for novelty detection may vary greatly for different species, different individuals, and different situations and may depend on motivational state, prior experience with a stimulus (e.g. habituation), or expectation. For example, whereas an amoeba might be able to detect only whether the temperature of the water is changing or not, humans can detect novelty on a number of dimensions. On the schematic level of processing, the detection of *familiarity* could be generated by the presence (and the well formedness) of stored schemata that match the input. On the conceptual level, an evaluation of the lawfulness or regularity of occurrence of certain stimuli or events can yield estimates of *probability* and *predictability*. Potentially, any improbable or unpredicted event (including the absence of predicted ones) requires the organism's attention to determine its potential consequences. Novel events may signal unusual dangers or opportunities. Novelty detection is directly concerned with "predictability" of stimuli or outcomes as used in the extensive literature on control of stimulation (see Miller, 1981; Mineka & Henderson, 1985), as it operates on the expectedness of stimulation, which would seem to be largely determined by predictability.

In summary, novelty detection in its various forms can be considered as a gateway to the emotion system. Emotions are relevance detectors (Frijda, 1986), and attention is the first step in the evaluation of the pertinence of an

event for the organism. There is also an important recursive aspect: Attention to an event is important for the elicitation of emotion; conversely, emotion leads to further deployment of attention (see also the work on the relationship between orientation and vigilance; Posner, 1992).

Valence/Intrinsic Pleasantness

Whereas novelty detection alerts the organism to potentially significant stimuli and motivates the search for appropriate information from the environment and from memory, the sense of intrinsic pleasantness or valence determines the fundamental reaction or response of the organism—liking or attraction, which encourages approach, versus dislike or aversion, which leads to withdrawal or avoidance (Schneirla, 1959). Pleasure and pain are so basic to many affective responses that emotion is often equated with the positive or negative reaction toward a stimulus. Even though the concept of pleasure is as old as the philosophical inquiry into human nature, and even though concepts of pleasurable rewards and reinforcement are the cornerstones of many influential psychological theories, we are still far from understanding which features of stimuli produce liking, pleasure, or preference on the one hand or dislike, aversion, or distress on the other hand.

One of the earliest efforts to specify the nature of hedonic tone was Wundt's (1874/1902) association of feelings of pleasantness and unpleasantness with different stimulus intensities. Berlyne (1960) formalized this assumption as an inverted U-shaped curve, with hedonic tone becoming more positive with the increase of stimulus intensity up to a maximum and then becoming negative as intensity increases further. From a comparative perspective, Schneirla (1959) made similar observations on approach-withdrawal processes in animal behavior, showing that low stimulus intensities tend to elicit and maintain approach responses, whereas high stimulus intensities tend to produce adjustment responses and withdrawal. In a similar vein, Tomkins (1962, 1963, 1984) hypothesized that the differential elicitation of various positive or negative emotions depends on the "density of neural firing" and argued that positive emotions are characterized by a decrease of the gradient of stimulation. Although there has been some empirical support for this general idea, many studies have shown that other stimulus characteristics, such as complexity, need to be taken into account (see Berlyne & Madsen, 1973, for an overview of different perspectives). Frequency of exposure also seems to increase intrinsic pleasantness evaluation, as shown by extensive research by Zajonc and his collaborators (Murphy, Monahan, & Zajonc, 1995; Zajonc, 1980; Zajonc & Markus, 1984).

In addition to general characteristics of stimuli such as intensity or complexity, it is likely that particular kinds of stimuli are evaluated as intrinsically pleasant or unpleasant by innate detection mechanisms. Comparative and developmental work suggests that this may be true for a number of different stimuli. For example, it has been shown that many animals, including humans, have an apparently hardwired preference for sweet and an aversion for bitter tastes (Chiva, 1985; Pfaffman, 1960, 1978; Rozin, 1996; Rozin & Fallon, 1987; Steiner, 1979). Similar results have been found for different odors (Engen, Lipsitt, & Kaye, 1963; Soussignan, Schaal, Marlier, & Jiang, 1997). Some facial features and expressions also seem to be intrinsically valenced (Vinter, Lanares, & Mounoud, 1985), possibly serving as simple "innate releasing mechanisms" for approach or avoidance responses (Eibl-Eibesfeldt, 1979; Hinde, 1974). Whereas some of these evaluation patterns might well be universal and even phylogenetically continuous, others are likely to be species specific. All of the foregoing examples share the characteristic of being very potent intrinsic elicitors; that is, the criteria utilized in the organism's intrinsic pleasantness detection are probably innate rather than acquired.

The intrinsic pleasantness appraisals described so far are likely to be processed almost exclusively at hardwired, sensorimotor levels. However, humans and many animals also have differential preferences that are not based on innate evaluation processes. As the huge literature on learning and conditioning shows, nothing seems to be easier than to acquire a like or a dislike for various things, even things that may never have been encountered before (through generalization, for example). Both the schematic level of processing (e.g., conditioning) and the conceptual level (e.g., judgment of anticipated or derived pleasantness) are likely to be involved. The detection of intrinsic pleasantness must include the evaluation of input in terms of learned preferences or aversions—a process which may produce different results for each individual organism. Obviously, one would expect very powerful cultural differences in this respect, as illustrated, for example, by food preferences (Rozin, 1996, 1999)

It is important to note that the intrinsic pleasantness or unpleasantness detected is mostly a characteristic of the stimulus. Even though the preference may have been acquired and processing may depend on sensory organ specificities or memory or both, it is independent of the momentary state of the organism. In contrast, the positive evaluation of stimuli that help us to reach goals or satisfy needs depends on the significance of the stimulus for the organism's current motivations (see the next subsection).

A special type of valence detection may underlie what is commonly called the *esthetic emotions*, that is, preferences or aversions with respect to music or art. Rozin (1999) suggests that although the hedonic evaluation underlying reactions to esthetically salient stimuli are differ-

ent from normal pleasure and pain, they involve the same neurobiological system.

Motivational Bases: Needs, Goals, Values

The appraisal of motivational relevance is essential because it determines to what extent a stimulus or situation furthers or endangers an organism's survival and adaptation to a given environment, the satisfaction of its needs, and the attainment of its goals. Some theorists even restrict the term *emotion* to reactions to goal-relevant events. In the original formulation of appraisal by Arnold (1960) and Lazarus (1966), the implications of the event for the well-being of the organism took center stage, involving "primary appraisals," according to Lazarus (see also Lazarus, 1999). This dimension also occupies a central position in all subsequent appraisal theories, albeit under somewhat different labels. Thus Roseman (1984, 2001) suggests the term *motive consistency* (distinguishing between aversive and appetitive motives), Smith and Ellsworth (1985) used *importance* and *perceived obstacle*, and Scherer (1982, 1984, 2001a) proposes *concern relevance* and *goal/need conduciveness* (Table 29.1 provides a comparative listing of some of the central terms used by major appraisal theorists).

This brief review of terminology suggests that there are at least three questions involved in the appraisal of motivational relevance: (1) Is the event pertinent at all? (2) If so, what are the motives or goals concerned? (3) Are the consequences of the event consistent or inconsistent with the respective motivational state or conducive or obstructive to reaching a goal or satisfying a need?

1. Most appraisal theorists (except Roseman) explicitly postulate that the organism evaluates the general motivational relevance or pertinence of an event on a separate dimension (Frijda, 1986, talks of *focality* for different concerns), presumably before determining its consistency or conduciveness. This seems reasonable with respect to both attention deployment and cognitive economy (e.g., the possibility of lower level processing). Individuals may have schemata that quickly dismiss entire classes of stimuli or events as being unworthy of further processing, based on built-in detection mechanisms (cf. the discussion on the "significance" of stimuli eliciting the orienting response; Bernstein, 1981; Öhman, 1987) or prior learning. Although this notion of *rapid relevance detection* seems reasonable at a high level of abstraction, it is difficult to conceive of the underlying mechanism, particularly if one wants to go beyond a simple binary relevant-nonrelevant distinction and determine the focality of an event or its position in the goal hierarchy, thus determining the importance of the specific goal affected by an event (see Scherer, 2001b). Relevance as a continuous dimension from low to high may depend on the number of goals or needs affected, their relative priority in the hierarchy, or both. For example, an event is much more relevant if it threatens one's livelihood or even one's survival than if it merely endangers one's need for peace and quiet.

Given the major importance of the appraisal of goal relevance for all ensuing appraisal processes, we need a much more sophisticated account of how motivational information is processed than is available so far. Unfortunately, although the phenomena of motivation and goal-directed behavior are central to behavioral science, we still have little concrete understanding of how the relevance of events to motives, needs, concerns, or goals is likely to be computed. Even the terminology is confusing; there is no consensus on the distinctions among such terms as *drive, need, instinct, motive, concern*, or *goal*, many of which cannot be used because they are burdened with connotations that stem from outdated theories (see Austin & Vancouver, 1996). There is also wide variation in theorists' conceptions of the nature of motivational goals. Some psychologists use the term *goal* as a general motivational construct, without implying awareness or conscious planning, whereas others presume goals to be conceptually represented end states.

In this section we use the term *goals* broadly so as to include basic needs (Maslow, 1962; Murray, 1938; Scott, 1958). In line with a long tradition of theorizing in psychology, we suggest that organisms have hierarchies of goals and needs that they try to satisfy (whether they know it or not, whether motivated by their own free will and decision or by "ultimative" factors related to natural selection). Given this broad conceptualization, we include goals as disparate as the goal of survival (which is obviously very basic in the hierarchy), the goal of maintaining positive social relationships, the goal of enjoying pleasurable experiences, and even the goal of crossing the street to buy a newspaper. It would be impossible even for simple organisms to check the relevance of an event for all possible goals and needs. Consequently, one must assume that the goal and need significance evaluation is based on those goals and needs that are high in priority at the moment. This notion seems well established in the literature on motive hierarchies and goal-directed behavior. As an emotional episode unfolds, the accessibility and priority of various goals may change, although some of the central goals and needs, such as survival and bodily integrity, probably have a stable position near the top of the hierarchy and will almost always assume priority when threatened.

The concept of goal conduciveness, so plausible and apparently simple, raises tricky issues of the relationships between conscious and unconscious goals, between idiosyncratic and universal goals and needs, and between current and latent goals, as well as a host of other distinctions that are beyond the scope of this chapter. The use of a term such as *relational theme*, which has been suggested by Lazarus and his collaborators (Lazarus, 1991; Smith & Laz-

arus, 1993) as the central motivational underpinning and differentiator of emotions, does not help to disentangle the manifold components of the underlying motivational constructs (see Parkinson, 2001).

2. Some appraisal theorists believe specification of the nature of the motives concerned is essential for predicting the ensuing emotion. Thus, Roseman (1984, 2001) uses the distinction between appetitive and aversive motives to make the distinction between relief (an aversive stimulation stops) and frustration (an appetitive stimulation stops). Furthermore, although any interruption of a goal-directed act or the thwarting of a need may result in frustration, the particular emotional state elicited may be determined by the nature of the motive concerned.[5] In general, it may be reasonable to expect that cross-cultural differences in appraisal and consequent emotional reactions are largely determined by differences in the nature of goals and goal hierarchies in different cultures (Mesquita, Frijda, & Scherer, 1997; Rozin, Lowery, Imada, & Haidt, 1999).

3. Many appraisal theorists believe that the single most important evaluation dimension is the conduciveness of a stimulus event to goal attainment or need satisfaction (see Scherer, 1999b). Acts or events can satisfy goals or needs or can make progress toward satisfaction. Events can also obstruct goal attainment by putting satisfaction out of reach, creating delays, or requiring additional effort (see Srull & Wyer, 1986, for a detailed analysis of these different types of obstruction). This is the classic case of "frustration," the blocking of a goal-directed behavior sequence. Obviously, both goal facilitation and goal interference can vary in strength.

Although this appraisal sounds straightforward, many problems emerge when we attempt to analyze the mechanism in detail. One problem is that the consequences of an event may be conducive for one goal and obstructive for another. If both goals are relatively important for the individual, goal or motive conflict may ensue, giving rise to ambiguous emotions, mixed emotions, or emotional conflict (Weigert, 1991). Furthermore, assuming that the conduciveness dimension is continuous, as previously implied, it remains to be specified how the degree of conduciveness is computed, for example, taking into account the importance (or focality) of the goals or values concerned, their position on the goal gradient, the expectedness of the outcome, the timing of gratifications or punishments, and so forth. It is unclear whether complex events are generally perceived in terms of a bottom-line value on the goal conduciveness dimension, or whether vacillation and ambiguity are common.

There is much debate about whether it is necessary to distinguish the intrinsic-pleasantness appraisal from the goal/need-conduciveness appraisal because both seem so intimately related to positive versus negative emotional experience (Frijda & Zelenberg, 2001). We consider *intrinsic* pleasantness to be independent of the motivational state of the organism, whereas motivational state is the decisive element in goal conduciveness. The difference is obvious in cases in which an inherently pleasant stimulus blocks goal achievement in a particular situation (such as the sitcom stereotype of the sexy girlfriend turning up at an inopportune moment or the sound of one's favorite music when one is trying to concentrate on a difficult task). Heroin addiction can destroy the possibility of achieving *any* major life goals, yet few present or former users would deny that the injections are intensely pleasurable (Berridge, 1999). Furthermore, whereas intrinsic-pleasantness detection provides the organism with *general* guidance on whether or not a stimulus should be approached or avoided, the goal/need-conduciveness evaluation provides the organism with information about *specific* adaptational responses or adjustments (see Scherer, 1988, 2001b).

In addition to the central dimensions of relevance and conduciveness, appraisal theorists have suggested a number of further dimensions related to the motivational domain. One dimension concerns the *probability* or *certainty* of the goal-relevant outcomes. Because it is often not the event itself but the outcome that matters to the individual, the likelihood or certainty of possible effects needs to be assessed. This is of particular importance in cases in which both the probability of the event occurring and its consequences are in doubt, as in the case of the *prospective* emotions, for example, hope and fear. But even when an event has already happened, the future consequences for the individual may be uncertain. For example, if a student fails an exam, some of the potential outcomes, such as the reaction of the parents, can only be assessed in a probabilistic fashion.

Urgency is another suggested dimension in the motivational domain (Frijda, 1986; Scherer, 1984, 2001a). The need for action is particularly urgent when high-priority goals or needs are in immediate danger, when it is likely that delay will make matters worse, or both. Urgency is also evaluated on a continuous scale: The more important the goals or needs and the greater the time pressure, the more urgent immediate action becomes. Urgency depends not only on the significance of an event but also on temporal contingencies and thus requires rather sophisticated contingency assessments and probability estimates.

The importance of motivational factors is related to the important adaptational function of emotion: to facilitate appropriate responses to environmental stimuli of major significance for survival and well-being. Unlike the automatism of simple reflexes, emotions provide a latency time for reevaluation of the stimulus and selection of the most promising response (see Scherer, 1984). Because the behavioral response is not automatically triggered, a risk exists that the organism will not respond at all, for example, because of indecision or intervening events. The safeguard

in the emotion system against this happening is that appraisal is repeated continuously as long as the stimulus is present, physically or in active mental representation. Thus the appraisal that one's goals are threatened provides a continuous warning signal until the appraisal changes, either because the organism acts on the stimulus (e.g., removing an obstacle by subduing an opponent) and thus gets closer to the original goal, or because it reassesses the priority of goals (the literature on reactions to frustration is instructive here; see Cofer & Appley, 1964), or because it reinterprets the stimulus. Until one of these resolutions is accomplished, the stimulus event continues to engage the emotional response system.

In spite of the importance accorded to motivational antecedents of emotion, goals may not be a necessary antecedent. For example, it is not clear whether we need goals or needs to account for vicarious emotions such as pity for someone's plight, the delight of watching a kitten play, or laughing with others at a joke. Of course, one can always postulate underlying motives, such as a "need to feel with others," but that becomes dangerously close to a tautological proposal of new needs for anything not yet accounted for by other "basic" needs (a procedure which led to the demise of McDougall's instinct theory; Krantz, Hall, & Allen, 1969). Similarly, esthetic emotions, such as the emotions produced by music or art, are not easily interpretable with respect to goal conduciveness.

Power and Coping

One of Lazarus's (1966) pioneering contributions was his insistence that emotion and stress depend not only on the evaluation of a situation's significance for our well-being (primary appraisal) but also on our assessment of our ability to deal with the situation (secondary appraisal). Appraisal is proactive, going beyond the immediate situation and assessing the probability of possible outcomes by taking into account the ability to change the situation and its consequences. The ability to cope with a stimulus event can be seen as the ability to free the emotion system from being controlled by this particular event or to reestablish a new equilibrium. This does not imply that the organism is necessarily able to reach its original goals; it may modify them, postpone them, or give them up altogether. The major function of the power or coping appraisal is to determine the appropriate response to an event, given the nature of the event and the resources at one's disposal. For example, in the case of a threat by a predator, the power or coping appraisal evokes flight if the organism is weak or powerless or fight if there is a likely chance of winning.

In evaluating one's power to deal with an event and its consequences, it is useful to know what caused the event. This is why some (but not all) appraisal theorists subsume the dimension of causation or responsibility (postulated by all appraisal theorists) under the general heading of power and control assessment. Weiner's (1985) attribution theory of emotion, developed to account for attribution in an achievement context, suggests that success and failure experiences (in addition to generating "primitive" positive and negative affect) generate distinct emotions depending on the result of causal attribution. Weiner suggested three fundamental dimensions that underlie causal attribution: (1) internal (to self) versus external (to others), (2) controllable versus uncontrollable outcomes, and (3) stable (e.g., dispositional) versus unstable (e.g., event dependent).

Like Weiner, all appraisal theorists postulate a dimension called *agency, responsibility*, or *causation* (see Table 29.1), reflecting the determination of the agent (oneself, someone else, or circumstances) and the cause (e.g., intention, chance) of the event. The attribution of agency has been shown to be particularly important in distinguishing among the negative emotions of anger (other agency), guilt (self-agency), and sorrow (circumstance agency; Ellsworth & Smith, 1988a). Several theorists postulate that, at least in the case of an animate agent, causal appraisal will include an inference about motive or intention (Michotte, 1950). Clearly, it makes a difference if someone steps on your foot by design or by mistake.

The attribution of casual agency, whether or not it is accurate, influences the organism's appraisal of its ability to deal with the event and its consequences. This dimension, postulated by all appraisal theorists, is often linked to the general notion of *controllability* or *coping ability* (see Table 29.1). Scherer (1984, 1988) has suggested distinctions among control, power, and adjustment capacity as separate aspects of coping ability. Control relates to the assessment of how well an event or its outcomes can be influenced or controlled by people, animals, or human artifacts. For example, while the behavior of a friend or the direction of an automobile is generally controllable, the weather or the incidence of a genetic disorder is usually not. Control is not the same as predictability, although it often implies predictability, particularly as far as offset of a stimulus is concerned (see Mineka & Henderson, 1985, pp. 508–509, for a detailed discussion of this point).

If the situation is controllable, the outcome depends on one's own power to exert control or to recruit others to help. Here, the organism evaluates the resources at its disposal for changing contingencies and outcomes according to its interests. Sources of power might be physical strength, money, knowledge, or social attractiveness, among others (see French & Raven, 1959). In the case of an obstructive event brought about by a conspecific aggressor or a predator, the comparison between the organism's estimate of its own power and the agent's perceived power is likely to decide between anger and fear and thus between fight and flight. In many aggressive encounters

the organism vacillates between fight and flight. This may reflect the constantly changing outcomes of these power comparisons, for example, as affected by the distance from the adversary and the reactions of other group members.

The independence of control and power needs to be strongly emphasized, since these two criteria are not always clearly distinguished in the literature, where "controllability" often seems to imply both aspects (see discussions in Garber & Seligman, 1980; Miller, 1981; Öhman, 1987). Control here refers exclusively to the perception that the course of events can be influenced. Power, on the other hand, refers to the perception that the course of events can be influenced by *oneself*, possibly with the help of others. A similar distinction has been suggested by Bandura (1977) in contrasting outcome expectation (contingency between response and outcome) and efficacy expectation (assumption that one's own response can produce the desired outcome). The important work by Bandura and his associates (1977, 1982; Bandura, Reese, & Adams, 1982) on self-efficacy illustrates how the individual's appraisal of his or her power can be empirically measured and manipulated.

Finally, the adjustment evaluation concerns the organism's potential to adapt to changing conditions in the environment. This is particularly important if the control and power appraisals suggest that it is not possible for the organism to change the outcome of an event. Here, the possibility of changing goals or reducing their priority and the cost of doing this is established. Lazarus (1991) refers to this aspect of coping ability as "emotion-focused coping potential."

Social Dimensions: Identity, Norms, Values, Justice

For the most part, the appraisals discussed so far are within the capability of many species, at least in a rudimentary fashion. This is why we have generally used the term *organism* in this chapter. Furthermore, they all concern motives, often with respect to rather basic concerns, that can exist without a social context (i.e., cases in which the attribution of agency and intentionality to another human being is an exception). If appraisal theory included only these dimensions, the criticism that it neglects the social dimension of appraisal and emotion (Kappas, 1996; Manstead & Fischer, 2001; Parkinson, 1997, 1999, 2001) might be justified. However, from its origin appraisal theory has recognized the important role of the social context of appraisal, particularly with respect to norms, values, and justice on the one hand and the self and its social identity on the other.

The underlying idea is that in socially living species it is important for an organism to take into account the reactions of other group members. Social organization depends on shared rules (norms) concerning status hierarchies, prerogatives, and acceptable and unacceptable behaviors. Such norms are sustained by appropriate emotional reactions of group members to behavior that violates norms, as well as to conforming behavior. The most severe sanction, short of actual aggression, a group can use on a norm violator is emotional avoidance, that is, excluding the individual and thus depriving him or her of the positive emotional atmosphere of group contact. Therefore, evaluating the social consequences of a particular action is an important step before finalizing the evaluation process and deciding on appropriate behavioral responses.

In consequence, several appraisal theorists have suggested dimensions such as *legitimacy, value relevance*, or *compatibility with external standards* (see Table 29.1), which are used to evaluate the compatibility of an action with the perceived norms of a salient reference group (discrepancy results, for example, in states that one could label *righteous rejection* when evaluating another person or *shame* when one's own behavior is evaluated). Anger often results when behaviors of others are judged to be in violation of social norms or salient values. In consequence, the appraisal on this "moral" dimension is a powerful factor in socialization and the maintenance of social order.

A particularly important dimension in this respect is the evaluation of *deservedness* or *justice*. Work by Mikula and his associates (Mikula, Petri, & Tanzer, 1990; Mikula, Scherer, & Athenstaedt, 1998) has shown that perceived injustice can provoke and increase the intensity of a number of different emotions, anger in particular. Appraisal theorists vacillate on whether to postulate justice or equity as a separate dimension, given their powerful effects, or to subsume them under a general dimension of moral and normative standards (see Scherer, 2001a).

Another eminently social aspect of the appraisal process is the evaluation of one's behavior with reference to the self-ideal, one's salient social identity or self-concept. This dimension, like the social-moral dimension described previously, is central for the genesis of the so-called self-reflexive emotions (see Tangney & Fischer, 1995). The individual consistently evaluates the extent to which an action falls short of or exceeds internal standards such as one's personal self-ideal (desirable attributes) or internalized moral code (obligatory conduct). Although these internal standards generally echo sociocultural values or moral standards, they can sometimes be at variance with cultural or group norms, particularly in the case of conflicting role demands or incompatibility between the norms or demands of several reference groups or persons. Discrepancy with the internal standards might lead to states often referred to as *contempt* in judging the behavior of others and as *guilt feelings* in the case of one's own behavior. Exceeding internal or external standards

may produce *pride*. Markus and Kitayama (1991) have highlighted the central role of the self-concept and its cultural variation in these processes.

Other Suggested Dimensions

The dimensions outlined herein are common to virtually all currently active appraisal theories and can be considered as the backbone of the appraisal system. Obviously, human beings evaluate events and their consequences on many other dimensions (see Frijda, 1986; Frijda, Kuipers, & ter Schure, 1989; Manstead & Fischer, 2001; Parkinson, 2001; and Reisenzein & Spielhofer, 1994, for some examples). We have described how the appraisal of control can be further refined into dimensions of controllability, power, and adjustment, and finer distinctions can undoubtedly be made for other appraisals as well. Clearly, the more dimensions one includes in trying to account for emotion differentiation, the more emotions can be explained, in an ever more subtle fashion. One drawback is a serious loss of parsimony (see Scherer, 1997a). More important, highly nuanced systems are likely to lack generality, because different individuals and cultures may elaborate the appraisal-emotion repertoire in different directions, and certain situations may also call for an elaboration of appraisals that is irrelevant to other situations.

Predictions and Efferent Effects of Appraisal (Including Recursiveness)

As outlined previously, appraisal theorists assume that the type of emotion elicited by an event can be reliably predicted if one knows how the individual has appraised the event. The result of this appraisal process can be represented as a profile of evaluation outcomes on the basic appraisal dimensions. Several appraisal theorists have ventured theoretical predictions about the necessary and sufficient profiles for some of the basic emotions. Table 29.2 shows an illustration of this approach in the form of a simplified, generic prediction table. One relatively straightforward way to test such predictions is to ask people to recall situations in which they experienced specific emotions and to then describe the way in which they had appraised the situation, using questionnaires based on the dimensions of hypothesized appraisal (Ellsworth & Smith, 1988a, 1988b; Fitness & Fletcher, 1993; Folkman & Lazarus, 1988; Frijda, Kuipers, & ter Schure, 1989; Gehm & Scherer, 1988; Mauro, Sato, & Tucker, 1992; Reisenzein & Hofmann, 1993; Reisenzein & Spielhofer, 1994; Roseman, Antoniou, & Jose, 1996; Roseman, Spindel, & Jose, 1990; Scherer, 1993b, 1997a; Smith & Ellsworth, 1985; Smith, Haynes, Lazarus, & Pope, 1993; Tesser, 1990).

Another method is to use naturally occurring events, such as examinations, or to induce emotions experimentally and obtain verbal reports on the appraisal processes (Folkman & Lazarus, 1985; Scherer & Ceschi, 1997; Smith, 1989; Smith & Ellsworth, 1987). Or the researcher can systematically construct scenarios that correspond to the theoretically postulated appraisal profiles and ask people which emotion they would feel if they were to find themselves in that situation (Borg, Staufenbiel, & Scherer, 1988; McGraw, 1987; Roseman, 1984; Russel & McAuley, 1986; Smith, Haynes, Lazarus, & Pope, 1993; Smith & Lazarus, 1993; Stipek, Weiner, & Li, 1989; Weiner, Amirkhan, Folkes, & Verette, 1987; Weiner, Graham, & Chandler, 1982; Weiner, Russell, & Lerman, 1979). Research using all of these methods has generally supported the theoretical predictions of appraisal theorists. Using methods of regression or discriminant analysis, the set of predictor dimensions outlined here generates correct classifications for about 40–50% of the emotions studied.

The fact that often the same respondents report on both the emotions they experienced and their appraisals of the situation raises concerns of circular or tautological reasoning (Matsumoto, 1995; Parkinson, 1997, 2001). This problem is somewhat less worrisome in studies that use systematically constructed, and thus manipulated, scenarios or vignettes. However, this method may be criticized for the hypothetical or inferential nature of the emotional experiences: Responses could be more representative of social stereotypes than of actual appraisal-emotion relationships. For this reason, several appraisal theorists have attempted to predict the relation between appraisals and other indications of emotion, such as motor expression or physiological responses. These predictions are based on functional considerations, hypothesizing that appraisal outcomes should produce appropriate adaptive reactions in these modalities. For example, Scherer, in his component process theory, has suggested that each individual outcome of a stimulus evaluation check (his term for appraisal) directly affects other organismic subsystems (e.g., the somatic and autonomic nervous systems) and has presented detailed prediction tables for the effects of appraisal outcomes on facial and vocal expression, physiological responses, and behavior tendencies (Scherer, 1984, 1986a, 1987a, 1992). Smith and Ellsworth (1985) and Frijda (1986) have suggested similar links between appraisal outcomes and response patterns. Smith (1989), using electromyography (EMG) measurement, showed a significant correlation between the appraisal of anticipated effort and corrugator activity. Frijda (1986, 1987) has demonstrated associations between appraisals and action tendencies (Frijda, Kuipers, & ter Schure, 1989). In a more theoretical vein, Ortony and Turner (1990) and Roseman (2001) also argue that appraisal categories correspond to specific response patterns. Some of these predictions have been confirmed in empirical studies of vocal expression

Table 29.2 Examples of Theoretically Postulated Appraisal Profiles for Different Emotions

Appraisal Criteria	Joy/Happiness	Anger/Rage	Fear/Panic	Sadness
Novelty	high	high	high	low
Intrinsic pleasantness	high	open	low	open
Goal significance				
Outcome probability/certainty	high	very high	high	very high
Conduciveness/consistency	conducive	obstructive	obstructive	obstructive
Urgency	low	high	very high	low
Coping Potential				
Agency/responsibility	self/other	other	other/nature	open
Control	high	high	open	very low
Power	high	high	very low	very low
Adjustment	high	high	low	medium
Compatibility with standards/ value relevance/legitimacy	high	low	open	open

(Banse & Scherer, 1996; Kappas, Pecchinenda, & Bherer, 1999), facial expression (Smith, 1989; Wehrle, Kaiser, Schmidt, & Scherer, 2000), and physiological responses (Banse, Etter, van Reekum, & Scherer, 1996; Kirby & Smith, 1996; Pecchinenda & Kappas, 1998; Pecchinenda & Smith, 1996; van Reekum et al., submitted).

Comparative, Developmental, and Cultural Aspects of Appraisal

Phylogenetic and Ontogenetic Development

Appraisal theorists explicitly claim that the differentiation of emotion is dependent on the evaluation processes described previously. This assumption has important consequences for three interesting issues: (1) the nature of emotion in different species of animals, (2) emotional development in human infants and children, and (3) cultural similarities and differences in emotion. Specifically, it implies that the complexity of the emotional reactions, and thus the emotional experience available to an organism, must be bounded by the sophistication of the cognitive abilities available to the organism. In a similar vein, Hebb (1949) very early argued for the existence of a positive correlation across species between cognitive sophistication and emotional differentiation, leading one to predict that the variety and differentiation of an organism's emotions depend on its phylogenetic or maturational stage.

So far, little attention has been paid to the comparative study of emotion in animals and humans. However, many of the emotion theorists who adopt a psychobiological approach (e.g., LeDoux, 1996; Panksepp, 1998; Plutchik, 1980; see also chapter 7, this volume), as well as proponents of evolutionary psychology (e.g., Tooby & Cosmides, 1990), suggest that there is phylogenetic continuity of emotion across species, by both homology and analogy. There is some evidence for such continuity in patterns of facial and vocal expression (Chevalier-Skolnikoff, 1973; Hauser, 1996; Redican, 1982; Scherer, 1985; Van Hooff, 1972). In consequence, it seems entirely reasonable to consider the application of the notion of appraisal to the study of animal emotions and to use similar hypotheses to predict modal patterns of reaction or individual differences in response to similar situations (e.g., the position of an animal in the status hierarchy should confer higher coping potential). Obviously, nonverbal techniques of assessing appraisal (discussed later in the chapter) will be required to study such predictions empirically.

With respect to ontogenesis, Scherer (1984) has suggested that a child's capacity for differentiated emotional reactions should depend on his or her current stage of cognitive maturation, which limits the complexity of available appraisal processes. In recent years, several cognitive developmental theorists have suggested that cognitive and emotional maturation go hand in hand and may be mutually dependent (Case, 1991; Case, Hayward, Lewis, & Hurst, 1988; Fischer, Shaver, & Carnochan, 1990; Mascolo & Fischer, 1995; Sroufe, 1996). Many of these suggestions are highly commensurate with appraisal theory. Based on empirical observations of the onset of different emotions in children, Scherer (1982) has made specific predictions concerning the links between the age of onset of the emotions in infants and children (as inferred from studies in this area, particularly those using facial expressions) and the cognitive capacity of the child, suggesting that the cognitively more complex dimensions will need to be evaluated only for emotions that are observed fairly late in development (see Scherer, Zentner, & Stern, 2001, for an attempt to empirically test this notion). It should be noted, however, that appraisal can occur at several levels of processing (Leventhal & Scherer, 1987; Teasdale, 1999; van Reekum & Scherer, 1997; see also chapter 33, this volume) and that infants and young children may rely to a large extent on the sensorimotor or schematic levels rather than the conceptual level of appraisal.

Individual Differences

Appraisal theorists claim that appraisal involves people's subjective perception of events rather than their objective characteristics and that the resulting emotion is determined by this subjective interpretation. The empirical confirmation of this underlying assumption would require a systematic assessment of individual differences in appraising similar events and the differences observed in the resulting emotions. However, so far there has been little research to identify the *stable* individual traits that might predispose persons to show systematic appraisal tendencies or even biases in the appraisal process.

On a theoretical level, van Reekum and Scherer (1997) have reviewed some of the individual difference factors that are likely to systematically affect appraisal. They suggest that appraisal may differ among individuals with respect to process characteristics such as speed, thoroughness, or completeness, degree of cognitive effort, or the relative complexity of the analysis, that is, gross versus more fine-grained appraisal. Further individual differences could exist for vigilance, that is, the detection of events that are marginally pertinent to an individual, the nature of the attention deployment strategies used, and the differential use of levels of processing. These authors further suggest that there may exist appraisal biases with respect to content, such as slow habituation and lack of inhibition in evaluating novelty, differences in the tuning of valence detectors for the evaluation of intrinsic pleasantness, and differences in the intensity of motivational striving that affect the evaluation of goal conduciveness, as well as differential ability to evaluate consequences of and establish links between events, resulting either in overassimilation and overgeneralization or in lack of concern or caring (e.g., the frontal lobe lesion syndromes described by Damasio, 1994). Personality traits such as optimism-pessimism, external-internal control, self-assurance, or self-efficacy may also play an important role, particularly for the appraisal of coping potential. As to the evaluation of individual and social standards, systematic differences can be expected for moral and ethical norms. As potential sources for individual differences in appraisal tendencies, Van Reekum and Scherer (1997) identify predispositions such as innate characteristics of the central nervous system (CNS) and/or autonomic nervous system (ANS), cognitive styles (e.g., holistic vs. analytic processing, field dependence, cognitive complexity, need for cognition, disposition to engage in effortful cognitive processing), and personality traits (e.g., extroversion, repression-sensitization, neuroticism, rigidity, dysphoria, worrying, sensation-seeking, or openness).

It can be expected that individuals who differ on these dimensions are likely to evaluate events differently and consequently to experience different emotions. While most of these differences may produce emotional reactions that remain within the limits of what is considered as appropriate, some individual differences or appraisal biases may be associated with affective disturbance. Scherer (1987b) suggested that different types of emotional disorders can be categorized on the basis of appraisal malfunctioning. While appraisal is subjective and may vary from individual to individual, it must bear a reasonable relationship to the objective situation (e.g., through reality testing) and to the coping potential that is within the individual's means. Violation of these appraisal reality constraints, as one might call them, will lead to abnormal or disordered emotion. For example, Scherer (1987a) proposed that one particular form of depression, helplessness, might be partly due to a consistent underestimation of one's coping potential. Similar descriptions for potential appraisal biases characterizing different types of affective disturbances can be easily derived (see Alloy & Abramson, 1979; Beck, 1967; Kaiser & Scherer, 1997; Roseman & Kaiser, 2001; Scherer, 1987a; Seligman, 1975). Whether these are mainly symptoms or have a part in the etiology of the disease remains to be established by future research.

Cultural Differences

According to appraisal theories, emotions and appraisals of events are likely to be culturally variable, but the relationship between appraisals and emotions is culturally general, perhaps even universal. This is the hypothesis of universal contingencies (Ellsworth, 1994b; Scherer, 1997a, 1997b): If people from different cultures appraise a situation in the same way, they will experience the same emotion. If they experience a different emotion, it is because they have appraised the situation differently. What is universal is the link between appraisal patterns and emotions—the if-then contingency. For example, appraisal theories predict that people everywhere will feel angry when they believe that another person has harmed them, though their beliefs about the kinds of harm that can be caused by other people, and even their definitions of "harm" may vary. Goals, values, and tastes can vary enormously across cultures, creating manifest and important differences in the *content* of emotional experience. According to appraisal theories the *process* remains the same: The appraisal of *goal conduciveness* has the same emotional consequences across cultures, regardless of cultural differences in the definition of what's worth striving for.

The universal contingency hypothesis does not imply universality of either the events that elicit emotions or of the emotions themselves. In some cultures the sight of a woman wearing shorts may elicit revulsion; in others, revulsion may be elicited by the sight of a woman being whipped because she is wearing shorts. Certain combinations of appraisals may be common in some cultures, rare in others, and perhaps even absent in some, and the corresponding emotion will likewise be common, rare, or absent

in those cultures. For example, in the United States, positive valence and a sense of high personal agency tend to cooccur, so that pride and a sense of high self-esteem are common (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997), whereas in other cultures agency attributions may generally be more mixed or ambiguous (cf. Matsumoto, Kudoh, Scherer, & Wallbott, 1988), so that unadulterated personal pride is less common. It is appraisal-emotion association that is assumed to be universal.

The hypothesis of universal contingency has received support from a number of cross-cultural studies, although so far there is not much research. Typically respondents are asked to remember times when they experienced particular emotions, and then to answer questions about how they appraised these emotional situations (Frijda, Markam, Sato, & Wiers, 1995; Haidt, Koller, & Dias, 1993; Mauro, Sato, & Tucker, 1992; Mesquita & Ellsworth, 2001; Roseman, Dhawan, Rettek, Naidu, & Thapa, 1995; Scherer, 1997a, 1997b). The research generally supports the hypothesis of universal contingency. Scherer (1997b) found that joy, fear, anger, sadness, disgust, shame, and guilt were characterized by similar appraisal patterns in 37 countries. Joyful situations were appraised as pleasant, expected, self-esteem enhancing, and requiring no action; fear situations were unpleasant, obstructing goals, and hard to cope with; anger situations were unpleasant, unexpected, obstructing goals, unfair, and caused by other people.

In general, the evidence supports the hypothesis of a cross-culturally similar experiential core of "equivalent" emotions, characterized by similar appraisals, but most researchers have also found cultural differences in the appraisal-emotion relationship. Scherer (1997b) found that people in African countries appraised negative emotions as more immoral, unfair, and externally caused, whereas those in Latin American countries appraised events leading to emotional situations as less immoral than respondents in other parts of the world. Mauro et al. (1992) found that the United States and three Asian cultures differed from each other in perceptions of the contributions made by effort, control, and responsibility to emotions (see also Roseman, Dhawan, Retteck, Naidu, & Thapa, 1995). Markus and Kitayama (1991) proposed that "interpersonal engagement" was an important appraisal dimension in Japan, although absent from (Western) appraisal theories.

These cultural differences remain largely unexplained (and unreplicated) so far. Appraisal theory is not a theory about cultural differences, and so explanations must come from collaboration with cultural experts. There are several possibilities, all interesting: Cultural differences may be due to the absence of an appraisal dimension proposed by the theorists, or to the existence of additional culture-specific appraisal dimensions, or to the presence or absence of certain combinations of appraisals in the same multidimensional space, or to all three. Some emotions may be considered desirable or unacceptable in some cultures, so that their experience always involves a set of secondary appraisals and emotions that increase the complexity of the experience; the same may be true of some appraisals, for example, personal responsibility (Mesquita & Ellsworth, 2001). At the moment, there are many more questions than answers, and the role of culture in appraisal is a provocative area for future research.

Problems (Real and Imaginary)

Appraisal theories have developed over the years. Both their possibilities and their problems are now more apparent. As they have become more widely known, they have inevitably become more widely criticized. Some of these criticisms reflect a misunderstanding of the theories, and we will deal with these first before going on to the more difficult problems.

Appraisal Theories Are Too Cold, Cognitive, Conscious, and Slow

The most frequent criticism in the literature is that the emotion process as described by appraisal theories is too cold, cognitive, conscious, and slow. Some critics accuse appraisal theories of equating emotional experience with conscious, cortical, deliberate thought: The appraisal researchers "assume that the kind of information that subjects use when they reflect back on an emotional experience is the same kind of information that the brain uses in creating that experience" (LeDoux, 1996, p. 52). At times these critics claim that appraisal theorists maintain that people are conscious not only of the appraisal process but also of the *basis* of the appraisal. At times they claim that appraisal theorists believe that emotions are nothing but collections of beliefs.

Appraisal theorists saw themselves as adding cognitions to the emotional mix, not as replacing the other, generally accepted components. They do not see their theories as incompatible with subcortical processing, autonomic responses, expressive responses, or action tendencies. Their goal was to bring the eliciting circumstances into the picture, and their assumption was that the emotional meaning of circumstances is inevitably mediated by the perceiver's interpretation of those circumstances.

In retrospect, the use of the term *cognitive* in some of the early publications of the appraisal theorists (Lazarus, Averill, & Opton, 1970; Roseman, 1984; Smith & Ellsworth, 1985) may have created a misleading impression, suggesting that the appraisals were verbal, propositional, conscious, or deliberate. The term *cognitive* was probably chosen by researchers in the 1980s partly to differentiate themselves from a concurrent proposal that emotional differentiation was produced by feedback from the facial

muscles (Izard, 1971; Laird, 1974; Tomkins, 1962) and partly in response to Zajonc's claim that affective responses to a stimulus precede cognitive evaluations of the stimulus (Zajonc, 1980; Zajonc & Markus, 1984).

Even a cursory examination of the actual appraisals common to appraisal theories makes it clear that they are not all cold, logical, verbalized cognitive evaluations. The very first appraisal, in most theories, is attention or novelty. Something changes in the environment, and the organism notices and orients toward the novel stimulus. This is not a cold verbal evaluation that "there is something new out there." It involves subcortical and cortical processing (Posner, 1992; Posner & Petersen, 1990), autonomic changes (e.g., slowed heartbeat), a change in facial expression—often to one of watchful anticipation—and an action tendency (orienting response). In many situations it occurs nearly simultaneously with another appraisal—intrinsic pleasantness, valence, or, in Zajonc's terms (1980), "preference." In some situations, such as the subliminal stimulus presentations used by Zajonc, valence may be elicited without attention. Valence may also be accompanied by subcortical (and often but not necessarily cortical) changes, autonomic changes, changes in facial muscle movements, and action tendencies (approach or avoidance). Again, there is no requirement in appraisal theory that the person should say, "I think this is a good thing."

Thus appraisals are not cold, and appraisal theories do not claim that emotions are nothing more than a combination of cognitions, because the appraisals themselves have physiological and experiential correlates which are also part of the emotional experience. They are not cognitive if the term *cognitive* is taken to imply propositional representation or deliberation. Appraisals may take this form, but they may also occur subcortically and automatically, as described previously.

Finally, the appraisal need not be conscious or felt as a separate phenomenon. It is important here to distinguish several types of consciousness, which have often been confused in the literature. First, Zajonc (1980), for example, argued that one could have an affective response without recognizing the *stimulus*, without consciousness of the stimulus object. Appraisal theories do not require that a stimulus must be recognized before an emotional response can occur or before a simple appraisal of pleasantness can be made, as in Zajonc's research.

Second, a person might be aware or unaware of the *separate appraisals*. If a person interrupts us, or cuts ahead in line, or speeds by us to take the last parking space in the lot, our attention is engaged, and we appraise the situation as unpleasant, our efforts to reach our goal thwarted, and the other person as responsible. These appraisals seem to occur automatically and are not experienced separately as appraisals: What we experience is *anger*. Emotion is defined by appraisal theorists as a combination of appraisals (and their correlates), but that does not mean that it is *experienced* as a combination of appraisals. In the usual situation, as Frijda argued in 1986, "One knows, generally, that one has an emotion; one does not always know why, and what exactly makes one have it; and if one does know, it is a construction, a hypothesis, like those one makes about the emotion of someone else" (1986, p. 464). Sometimes, for example in slow-developing or ambiguous situations, one may be aware of the separate appraisals, but awareness is not a necessary feature of the theory.

Most appraisal theorists would probably agree with Frijda that "one knows, generally, that one has an *emotion*," and they have reserved the vexing question of unconscious emotions for future exploration. Although many appraisal theorists may in fact be agnostic on the question of unconscious emotions, their initial goal was to account for the person's subjective experience of emotion at the time it is felt.

It should be clear by now that even though a fully developed emotion may involve a dozen or more appraisals and subappraisals, the process need not be a slow, sequential series of interpretations, each completed before the next begins, and in fact it very rarely is. Scherer (1999a) refers to this criticism as reflecting a "cranking-cogwheel" picture of appraisal and points out that "given the massively parallel architecture of cognitive appraisal, the entire process can take milliseconds," particularly in familiar situations such as that of the inconsiderate boor who steals your speaking time, place in line, or parking space. Many emotional situations involve familiar scripts and may elicit bundles of interrelated appraisals. The first time a person ever cut ahead of you in line, the appraisal process probably took longer.

The Theory and the Method

Many of the criticisms of appraisal theories may reflect a fundamental confusion between the theory itself and the methods used to test it. Even now, and especially in the initial empirical research on appraisal theory, most of the studies involved verbal reports of remembered emotional experiences (Folkman & Lazarus, 1988; Frijda, Kuipers, & ter Schure, 1989; Gehm & Scherer, 1988; Smith & Ellsworth, 1985). The initial goal of the appraisal theorists was to discover whether combinations of a limited number of different appraisals would be sufficient to differentiate among a much larger number of emotions—whether different emotions were characterized by distinctive appraisal profiles. In order to study all of the proposed appraisal dimensions at once, so that their large number of combinations could be compared, verbal measures seemed like the only choice at the time. Although some appraisals, such as attention and valence, might be measurable nonverbally, others, such as the perception of

responsibility or conformity with social norms, do not yet have recognized nonverbal correlates, and it seemed important to use the same method to measure all of the appraisals. The choice of this method did *not* rest on the assumption that the appraisals were verbalized or even verbalizable at the time of the original emotion but on the failure to come up with any other method that might provide an efficient test of such complicated models.

Nonetheless, the heavy reliance on verbal techniques seems to have misled some scholars about the nature of the theory itself. LeDoux, for example, begins by criticizing appraisal theories for "bas[ing] their understanding of appraisal processes largely on self-reports" (1996, p. 52) and, by degrees, comes to the conclusion that "appraisal theories did not quite get it right, as they required that the appraisal mechanism get all involved in introspectively accessible levels of higher cognition from the start" (1996, p. 64). The weaknesses of the method are genuine weaknesses, but they should not lead to the conclusion that there are analogous weaknesses in the theory. Historically, theories of emotion have often been far more subtle and complex than the methods available to test them.

Still, as a method, self-report has obvious drawbacks, and its prevalence in the study of appraisal and emotion has generated substantial criticism, both from critics of appraisal theories and from appraisal theorists themselves (Frijda, 1993; Lazarus, 1995; Parkinson, 1996; Parkinson & Manstead, 1992, 1993). Empirical tests of appraisal theories have not always relied on verbal reports of recalled memories (see the later discussion of alternative methods). However, many of the other methods also require conscious inferences about the appraisal-emotion relationship—participants either begin with the emotions and are asked about the corresponding appraisals or are given the appraisals and asked about the corresponding emotions. Verbal questions tell the participant what the investigator cares about and thus may encourage socially desirable, "rational," or "normal" answers (Aronson, Ellsworth, Carlsmith, & Gonzales, 1990; Schwarz, Groves, & Schuman, 1998). Verbal questions about *why* the person felt a particular emotion may ask for information about processes that the person cannot access, prompting the person to rely on "common knowledge" to generate a plausible answer on the spot (Nisbett & Wilson, 1977). Appraisal theorists rarely ask participants simply to explain why they felt the emotion (as Nisbett and Wilson did in several of their studies); instead they ask more specific questions: "Was it good or bad?" "To what extent was it caused by something you did?" These specific questions have the advantage of drawing people away from cultural stereotypes; however, they have the corresponding disadvantage of drawing them toward the hypotheses of the appraisal theorists. It is important to point out, however, that in the early studies the participants' responses sometimes did not correspond to the theorists' expectations, and the theories were revised (Smith & Ellsworth, 1985). Also, the appraisal dimensions generated by participants who were simply asked to describe emotions were somewhat different (and possibly more reflective of cultural stereotypes) than the dimensions generated by participants who were asked to remember an actual emotional experience (Ellsworth & Smith, unpublished ms., 1986).

Finally, there *have* been a few studies in which the measures are nonverbal. Smith (1989) showed that appraisals of effort corresponded to responses of the corrugator muscle, and he and his colleagues have made progress in linking other appraisals to facial, vocal, and physiological responses (Kappas, Pecchinenda, & Bherer, 1999; Kirby & Smith, 1996; Pecchinenda & Kappas, 1998; Pecchinenda & Smith, 1996). Scherer has explored links between appraisals and both vocal (Banse & Scherer, 1996) and facial (Wehrle, Kaiser, Schmidt, & Scherer, 2000) expression, and both Kappas and Scherer and their colleagues, manipulating appraisals by varying the events in computer games, have measured a variety of physiological, facial, and vocal responses, in addition to verbal descriptions (Banse, Etter, van Reekum, & Scherer, 1996; Kaiser & Wehrle, 1996; Kappas & Pecchinenda, 1999; van Reekum et al., 2001; van Reekum, Johnstone, & Scherer, 1997). Kubzansky and Ellsworth (1999) used speech hesitations as an indicator of uncertainty.

It is obvious that exclusive reliance on self-report measures leaves many questions unanswered, including the fundamental question of whether the reports reflect the actual experience or a later reconstruction. The addition of nonverbal measures is an important step, and one that should be encouraged and expanded. The substitution of nonverbal for verbal measures, however, is not advisable, as nonverbal measures raise different problems. First, diagnostic nonverbal indicators of specific emotions are rare and, except for facial muscle movements (the nonverbal indicator most subject to conscious control; Ekman, 1984), capable of far less subtle variation than language. Diagnostic nonverbal indicators of appraisals are even less common, and for some appraisals, such as attributions of agency or perceptions of compatibility with social norms, none have even been suggested. Second, many nonverbal measures, especially behavioral measures, have multiple meanings, and thus the evidence they provide for the existence of a corresponding appraisal is typically suggestive rather than definitive. Checking a 6 on a 7-point scale of uncertainty has more face validity than a sudden increase in speech hesitations; thus, although the use of novel nonverbal methods has obvious benefits for the theory as a whole, it may lessen the persuasiveness of any particular study.

In the future the development of new methods and the use of multiple methods (not necessarily in every study but in the field as a whole) are centrally important (see Scherer, 1993a). We should recognize, however, that the

value of any given method may not be the same for all appraisals: Attention, for example, may be better assessed nonverbally than verbally, whereas attributions of agency may be more reliably assessed with verbal measures. There is no reason to assume that the same measures will work equally well for all appraisals.

Theoretical Issues

Although appraisal theory has been doing rather well in explaining many aspects of emotion, there are some phenomena that may challenge its generality. First, many people report feeling emotions in response to instrumental music, a problem discussed by Ellsworth (1994c) and one which leads Elster to conclude that "it strains belief to argue that the feeling . . . simply *is* the pleasurable perception of arousal, action tendency, etc." (1999, p. 28); instead there is a unique emotional *quale* or "feel" which is more than, or different from, the sum of its parts. Elster adduces brain stimulation and chemical inductions as additional evidence, but these are less problematical, as brain stimulation and chemical inductions can induce all manner of mental phenomena, perhaps by mimicking the central nervous system correlates of the naturally induced versions. Visual images, auditory perceptions, and memories can all be stimulated artificially and do not lead us to doubt our usual theories of information processing in these systems. Music is different, because there *is* an external stimulus, and, aside from novelty and valence, the usual appraisal dimensions do not seem relevant. Novelty and valence are relevant, but they are insufficient to account for the complex emotions many people feel when they listen to music (Budd, 1995). Perhaps musical rhythms and phrases create physiological responses that mimic the physiological and noncognitive aspects of appraisals and emotions, so that, by association, the emotion itself is elicited. In any case, neither appraisal theory nor any other current emotion theory can easily accommodate emotional responses to music (see Scherer & Zentner, 2001, for different *production rules*).

Although there has been little research on Solomon's (1980) opponent process theory of emotion in recent years, strong evidence for this theory would also be troublesome for appraisal theorists. According to Solomon's theory, the termination of one emotion triggers the opposite emotion automatically, without new appraisals. The rebound is more than a homeostatic return to baseline: It is an actual stimulus for a different emotion, and the rebound emotion becomes greater after many trials. There is very little controlled laboratory research on this phenomenon in humans, especially research that rules out reappraisals (but see Mauro, 1988), but if the phenomenon proves to be robust, it poses a challenge to appraisal theories.

There are also emotions, or emotion-like phenomena, that have been avoided by appraisal theories (and by most of the rival theories). Love and desire are conspicuous examples. *Love* is usually set aside as a term that embraces too many different feelings—love of a parent for a child, a child for a parent, a lover for a lover, an unrequited lover for a lover, an owner for a pet, a patriot for a country. But this dismissal is not entirely satisfactory, as most theories of emotion, including appraisal theories, do not deal with *any* of the varieties of love. Desire also has many emotion-like qualities and has often been set aside as some lower drive, like hunger. But research by Robinson and Berridge (1993) on addiction suggests that "wanting" is not the same as "liking" (or valence), that a stimulus can demand attention and exert a powerful attraction without being seen as positive (Robinson & Berridge, 1993). Appraisal theories which make a distinction between intrinsic pleasantness and goal conduciveness may hold promise for dealing with the emotions involved in addictive cravings; but Robinson and Berridge (1993) argue that in some cases neither intrinsic pleasantness nor goal conduciveness exists, yet still the addict desperately craves the experience. It would be easy to simply dismiss addictions as "beyond the scope of the theory," but to do so would also be somewhat evasive and artificial. It would be preferable to at least consider these emotions as special cases, involving special appraisal dimensions or relations.

Another problem is that appraisal theories do not match intuitions. Folk theories generally favor the categorical point of view. Fear, anger, and grief are categories that come naturally to people and that seem to have considerable cross-cultural generality (Russell, 1991; Shaver, Wu, & Schwartz, 1992). In experiments, results often show stronger effects for emotion ratings than for appraisal ratings (Tiedens, Ellsworth, & Mesquita, 2000). Of course the mismatch between folk theories and scientific theories is no reason to reject the scientific theories. Black, white, and red are also categories that come naturally to people and that have enormous cross-cultural generality (Berlin & Kay, 1969), but we do not feel that this challenges the scientific view that brightness and wavelength are continuous or that the rods and the cones make different appraisals of light. Still, the fact that, among the infinity of emotions conceivable by appraisal theories, certain ones seem much more salient and available than others and that there is even some cross-cultural generality (although also considerable variability) in these, raises interesting questions. What role does language play? That is, are nameable emotions experienced more commonly than unnamed states? More cross-cultural work on emotions in relation to local emotion words is needed. Do certain appraisals tend to occur together, independent of language? For example, can we imagine positive valence combined with many goal obstacles? Yes—for example, the hour before an important test or contest—but it is rare. Can we imagine a great and certain loss, like the death of a loved one, combined with a high sense of power? Even less

likely. Although appraisal theories generally envision a vast multidimensional space in which an infinity of named and unnamed emotional states exists, there still may be magnetic regions in this space, perhaps named regions, that attract ambiguous emotions and are salient in folk psychology (cf. Lewis & Granic, 1999).

Finally, the idea that appraisals can occur at different levels, from the sensorimotor to the conceptual, raises as many questions as it answers, forcing us to attend to the relationships among processes at these different levels. If valence can be registered unconsciously, how does that process relate to the conscious perception of valence? Is it the same process, but communicated to the cortex, and, if so, why is it sometimes communicated and sometimes not? Is it a different process, and, if so, what is the relationship between processes? The same questions could be asked about other appraisals, and indeed about the combinations of appraisals we label "emotions." How do "learned" emotions, such as disgust at the thought of eating pork, come to trigger apparently "innate" mechanisms, such as nausea? These problems are not fatal flaws. They are, however frustrating, opportunities, because they force as to consider new questions, questions that would have been harder to formulate before appraisal theory, questions that will push our thoughts in new directions.

Summary and Outlook

This chapter has provided a general overview of the way in which appraisal theorists attempt to explain the elicitation and differentiation of emotion processes and of the problems encountered by this approach. We have given preference to the treatment of conceptual issues that may be of interest to researchers in the affective sciences rather than discussing the empirical data generated by this vigorous research tradition. This information can be found in the comprehensive volume edited by Scherer, Schoor, and Johnstone (2001), which surveys theories, methods, and, in particular, empirical findings, with contributions by most major appraisal theorists.

Judging by the achievements in its brief history as a testable theory rather than a philosophical presupposition, appraisal theory has been quite successful. It has succeeded in raising hard questions which had hitherto been ignored or muddled, and that is one of the hallmarks of a useful theory. One of its advantages, apart from a strong convergence of opinion between different theorists, is its capacity to synthesize theoretical input from many areas of psychology—cognitive psychology, neurophysiological social psychology, social psychology—so that emotion can be considered as the truly interdisciplinary phenomenon it is. Another advantage is its capacity to generate empirical research, both inside and outside of the laboratory. Chances are, then, that this tradition of work can usefully contribute to further theorizing and research in the affective sciences.

NOTES

1. Scherer (1984) has argued that we can feel as many different emotions as there are reliably differentiated appraisal outcomes. He proposes to call the emotions for which cultures provide distinctive labels in their respective languages *modal* emotions (Scherer, 1994), suggesting that the underlying appraisal profiles occur disproportionally frequently.
2. This does not exclude the possibility of mapping a more complex emotion categorization onto a simpler two-dimensional space with respect to one of the components of emotion, subjective experience, or feeling (see Scherer, 2001a).
3. This is the view that is generally attributed to appraisal theory by its critics, and appraisal theorists have been criticized for failing to demonstrate experimentally that appraisals play a *causal* role in generating emotions.
4. Scherer (1984) has suggested viewing feelings as a monitoring instance that reflects the appraisal process and the reactions produced by its results.
5. For example, in summarizing the findings on emotion-eliciting situations from a study of emotional experience in several European countries, Scherer (1986b) distinguished three major types of motives or concerns: person concerns (survival, bodily integrity, fulfillment of basic needs, self-esteem), relationship concerns (establishment, continued existence and intactness of relationships, cohesiveness within social groups), and social-order concerns (sense of orderliness and predictability in the social environment, including phenomena such as fairness and appropriateness). The findings showed that the different emotions were not evenly distributed across these three classes of basic concerns. Person concerns, such as physical welfare and self-esteem, produce mainly joy and fear, depending on whether the goals concerned have been attained. Relationship needs lead to joy or sadness experiences, depending on how well things go in the relationship or group. Social-order concerns are often at the root of anger emotions, particularly in cases in which the social order is disrupted by inappropriate, norm-violating, or unjust behavior (see Kulik & Brown, 1979, for an experimental demonstration).

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