Some Implications of Cognitive Appraisal Theories of Emotion

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The opposition of cognition and emotion in psychological theory has, I believe, been one of those "killer dichotomies" (Berthoff, 1990) like nature and nurture, or language and thought, that has advanced many a scientific career while muddling science itself. The idea that reason and passion are alternative ways of responding to events is an ancient and persistent one, often accompanied by the companion ideas that reason is the more highly evolved, the more mature, the more masculine, the more civilized, the superior alternative. Human emotion resides somewhere beneath human cognition, somewhere under the frontal lobes, where it is stimulated by the body, the autonomic nervous system, and the primal hormonal soup, but not by the heavenly cerebral hemispheres, whose only relation to the emotions is that of gentlemanly victim attacked by the riffraff, struggling to quell the rebellion. I have exaggerated this idea but not invented it. Like all such dichotomies it makes us attend to the rather barren question "whether", in this case whether cognition influences emotion, whether cognition is necessary for emotion, or whether cognition is antithetical to emotion, and not to the more interesting question "how". For the time being, I am taking the perspective that the relation between cognition and emotion is mutual, dialectical, and marvellous.

Stated in the abstract, this statement seems commonsensical. It is implied in the theories of famous peripheralists (eg William James 1890/1950; Tomkins, 1962, 1963) and in those of our grandmothers ("Look on the bright side, dear"). Stated in the abstract, it did not lead to much. Although cognition was implicit in the theory of William James, who referred to emotion-arousing perceptions like "being insulted by a rival" and "reading a letter announcing the death of a loved one", which clearly involve fairly complex cognitive processing, for the next three-quarters of a century the cognitive aspects of emotion were rarely singled out for theoretical attention. Cognitive components were assumed, of course, by most researchers who relied on their commonsense and intuition to create situations that they thought would make their subjects feel specific emotions—Landis (1924) had his bucket of frogs, Ax (1953) his exploding polygraph—but they received little theoretical attention. Finding a situation that would make subjects feel fearful or angry or happy was an ad hoc methodological issue, not a theoretical issue leading to any sort of general principles.
In 1962, Schachter and Singer made explicit the idea that cognition was an essential component of emotion, and so helped bring the notion of a cognitive component into current prominence. Their theory, however, while generating an enormous amount of research and theory in a variety of areas (placebo effects, pain tolerance, and self-attribution more generally), did not significantly advance the study of emotion, except by stimulating those who profoundly disagreed with it. My own debut in the field of emotion (Ekman, Friesen & Ellsworth, 1972) was in part a reaction against Schachter and Singer's claim that the role of cognition was to provide emotional color to preexisting undifferentiated physiological arousal.

Although Schachter and Singer revitalized the idea that in order to understand the person's emotion it was necessary to understand the person's cognitive interpretation of the situation, they had little to say about the kinds of cognition that were important in differentiating among the emotions. Methodologically, like their predecessors, they relied on the face validity of ad hoc situational manipulations, while conceptually they referred generally to social comparison theory (Festinger, 1954), without specifying exactly how it applied to the domain of emotion.

In the early 1980s a number of researchers, working independently, began to develop models designed to go beyond the general statement that cognition is an important component of emotion, models that would specify the kinds of cognitive interpretations that lead to different emotions. The basic premise is that emotions result from the way people interpret or appraise their environment. Different patterns of appraisals result in different emotions. The reason sorrow is different from anger is that people who are sad see their situation (and themselves in relation to that situation) differently from people who are angry.

The term "appraisal", I believe, was first used in this context by Magda Arnold (1945, 1960), who argued that as organisms move through their physical or mental environments they are ceaselessly engaged in evaluating the significance of environmental changes for their own well-being. These appraisals result in Action Tendencies, which are felt as emotions. Although this general perspective started no immediate movement in the field, it was kept alive by Richard Lazarus (eg Lazarus, 1968). For Lazarus, the subjective experience of emotion includes the appraisal, the associated physiological feedback, and the motivation to relevant action. Unlike Arnold, Lazarus reasoned that since human beings have the capacity for immense variability in their appraisals of situations, human emotions should also be immensely various; the idea that the world of emotions is made up of a few large distinct categories (such as joy, sorrow, and fear) is misleading (Lazarus, Kanner & Folkman, 1980; see also Frijda, 1986, chapter 4).

Over the past decade, interest in this general perspective has spread widely, and there are now more than half a dozen appraisal models of emotion bearing a close family resemblance to each other (for example Frijda, 1986; Roseman, 1984; Scherer, 1984; Wiener, 1985). Each of these models differs in some ways from all the others, but there is also considerable overlap. There is general
agreement that the emotions, including the "basic" emotions identified by categorical theorists, can be broken down into smaller components, and that many of these components correspond to cognitive appraisals (Ortony & Turner, 1990). The purpose of this chapter is to discuss some implications of this general point of view for a few issues that have been of perennial concern to students of emotion, and to suggest a few new hypotheses generated by an appraisal point of view. That is, rather than nitpicking about the relative virtues and vices of the various members of this family of models, I want to talk about what the family as a whole has to offer. (I hasten to add that I have no idea whether the authors of the other models would agree with the ideas presented here.)

**THE SMITH AND ELLSWORTH MODEL**

In our first study (Smith & Ellsworth, 1985), Smith and I proposed eight dimensions of appraisal that differentiate emotional experience: attention, pleasantness, certainty, perceived obstacle, anticipated effort, responsibility, control and legitimacy. We asked people to remember and try to reexperience a specific situation in which they had experienced each of 15 different emotions, to describe the situation, and to rate their perceptions of the situation on scales designed to tap the eight appraisal dimensions. We found six orthogonal dimensions that reliably differentiated among the emotions. Four of these corresponded to our proposed appraisals of attention, pleasantness, certainty, and anticipated effort. The other two were combinations of our proposed responsibility and control dimensions. The first, human agency, reflected the perception that the event was caused by oneself (at one pole of the dimension) or by some other person (at the opposite pole). The second, situational control, reflected the perception that the event was caused by a human being (any human being or beings, oneself or someone else) or by impersonal circumstances beyond human control.

Thus for example, although fear, anger, and sadness were all unpleasant, fear was associated with moderately high anticipated effort and very high uncertainty; anger was associated with moderately high effort and certainty, and with a very strong perception that some other human being was responsible for the adversity; and sadness was associated with lower attention, lower perceived effort, and a very strong perception that the adversity was brought about by circumstances beyond anyone's control. Thirteen of the 15 emotions we studied were characterized by a unique constellation of appraisals (shame and guilt did not differ, nor did anger and contempt). Thus we have gone beyond previous work on dimensions of emotion, which has been dominated by studies of differences along simple pleasantness and activation dimensions, and have put some specific content into the cognitions associated with various emotions.

Whether these are the "right" dimensions or the only dimensions of appraisal is an open question, but it is not a question to be addressed in this chapter. I would be astonished if any one of the appraisal researchers had managed to
get the details right in less than a decade of work, but I do not think the details should be our only concern. Leaving aside the particulars of the various appraisal theories, I want to examine the implications and the heuristic value of the general perspective.

BASIC EMOTIONS, UNIVERSAL EMOTIONS

Theories of emotion can be categorized in terms of the number of emotions they postulate: two, a few, quite a few, or an infinite number. Two-emotion theories are valence theories: the organism feels good and approaches, or feels bad and withdraws (Young, 1943; Zajonc, 1980). By adding an intensity or activation dimension, orthogonal to the valence dimension, many theorists have expanded the basic positive-negative dichotomy into a two-dimensional space into which many, possibly an infinite number of emotions can be fitted (Woodworth & Schlosberg, 1954; Russell, 1980). These models have been criticized on several grounds. In particular, the major negative emotions common to almost all categorical theories of emotion—grief, fear, and anger—are all intense, unpleasant states, and thus fall very close to each other in the two-dimensional space. Phenomenologically, something important seems to be missing from a scheme that characterizes fear as a more activated version of grief, or grief as a more unpleasant version of anger (Frijda, 1986, chapter 4).

Those who posit a few emotions (Tomkins, 1962, 1963; Ekman, 1984; Izard, 1977, among others) reject the notion that differences in activation and valence, or even differences along three dimensions (Wundt, 1907; Schlosberg, 1954; Osgood, 1966), can adequately capture the fundamental qualitative differences in the subjective experience of various emotions. Instead, they postulate a small number of innate, categorically distinct, hardwired neural programs corresponding to certain “basic” emotions: fear, sorrow, happiness and anger are included on the lists of almost all these categorical theorists; after that the lists diverge. Each of the basic emotions has distinct neurophysiological, expressive, and subjective characteristics.

There are two major problems that proponents of this categorical viewpoint have to face: the problem of subjective emotional experiences that do not fit into any of the basic categories (e.g., pride, frustration, jealousy, pity) and the problem of transitions between emotions. One common way of dealing with the first problem is simply to deny that these other affective states are emotions (Ekman, 1984). This tactic raises the awkward question, “What are they then, and what is their relationship to the states we have decided to define as true emotions?” Another common way of dealing with the first problem is to speak rather metaphorically of “blends.” Thus, for example, Plutchik (1984) considers remorse to be a blend of the basic emotions of disgust and sadness, love to be a blend of joy and acceptance. While various versions of the blend idea may be more or less satisfactory on a metaphorical level, they all beg the question of what is actually happening. Are both neural programs firing...
simultaneously at partial strength? A similar problem arises with transitions between emotions, particularly gradual transitions. Consider the common transition from distress to anger. You come home late through the freezing rain and discover that you are locked out—the house key is not in its usual hiding-place. As you rack your brains about what to do and where the key might be and slowly come to the realization that your husband must have used it without remembering to put it back where it belongs, your initial distress changes to anger. Does the distress program switch off and the anger program on? Or does the distress program slowly wane while the anger program slowly waxes? In either case, why do these changes occur?

According to an appraisal point of view, a new appraisal has been added—you realize that someone else is responsible for your misery, and the emotion changes correspondingly from distress to anger. A dimensional, appraisal point of view is compatible with an infinite number of emotional states (Lazarus, Kanner & Folkman, 1980; Mandler, 1975). As a person’s appraisal of the situation changes, so will his or her emotion, gradually or suddenly depending on the speed of the appraisal change.

One hypothesis raised by this point of view is that transitions between some emotions should be easier (more likely, faster) than transitions between other emotions, depending on the number of appraisals they have in common. In our theory, hope and fear are both characterized by high levels of uncertainty, high attention, and the perception of an obstacle, differing only on the dimension of pleasantness; therefore the transition from hope to fear should be an especially easy one. Someone waiting for news that may or may not be good provides a classic example of the vacillation between hope and fear as attention is focused first on the possible success, then on the possible failure. Fear and sadness are further apart in dimensional space (at least in our model), hope and sadness further still. Transitions between these states should be correspondingly more difficult.

A primary argument in favor of a limited number of primary emotions, raised by Darwin in 1872 and revived a hundred years later by Tomkins (1962), Izard (1971), and Ekman, (1972, 1984), is that there are distinctive, culturally universal facial expressions corresponding to some emotions but not others. These emotions, then, must be innate and somehow more basic than the others.

Cognitive appraisal theories propose that emotions are the resultants of a set of appraisals; what we feel is some sort of combination of appraisals. What does this suggest about emotional facial expressions? It suggests the hypothesis that the so-called basic facial expressions may also be composed of more primitive, but still meaningful elements—elements corresponding to the appraisals of pleasantness, certainty, and so on (Ortony & Turner, 1990). An examination of the prototypical examples of the facial expressions corresponding to the basic emotions proposed by Tomkins (1962, 1963), Izard (1977), and Ekman and Friesan (1975) reveals that the expressions of different emotions have elements in common. The eyebrows and lids are raised in both fear and surprise, the brows are drawn
together in both anger and disgust. Also, just as the same elements may appear in different emotions, so the "same" emotion may be expressed with somewhat different combinations of elements. Although all the published prototypical expressions of sadness are recognizably sad and the expressions of anger recognizably angry, they are not identical. Anger, for example, may be expressed with an open mouth that bares the teeth or with tightly compressed lips.

An appraisal point of view implies that angry faces resemble each other because the experience of anger is the product of a particular set of appraisals and it is these appraisals that are reflected on the face. Typically the angry person perceives an obstacle—this perception of an obstacle may be reflected in a frown. A frown will also occur, however, when people who are not angry perceive an obstacle—people who are fearful, for example, or simply puzzled. Likewise we may hypothesize that an angry person who is exercising a high level of control will have compressed lips, but an angry person who is less in control will have an open mouth.

In our initial research (Smith & Ellsworth, 1985), each time we asked our subjects to remember a particular emotion we also asked them to show us the corresponding facial expression. We found that a number of specific facial movements were significantly correlated with specific situational appraisals. While these results were encouraging, they were by no means conclusive. The expressions were posed, and the data were correlational.

In a follow-up study, Smith (1989) tested the hypothesis that the appraisal of an obstacle results in a frown—the eyebrows drawn together through the action of the corrugator muscle. Previous research and theory had generally designated the frown as a sign of negative affect; if, however, it also reflects the perception of an obstacle, it should show up in certain positive states as well, such as interest or challenge. Smith used a directed imagery task in which subjects were asked to imagine themselves in various pleasant situations. The appraisals of perceived obstacle and agency (self or other) were systematically varied across the situations. Challenging a friend to a race was an example of a high obstacle situation; relaxing in the sun after finishing an assignment a low obstacle situation. The frown, along with various other facial muscle movements, was measured by EMG. As expected, the eyebrows were drawn together significantly more when the subjects imagined situations involving an obstacle than when they imagined situations requiring no effort, even though all the imagined situations were pleasant ones.

This study provides the first experimental evidence for the hypothesis that facial movements that are components of emotional facial expressions reflect appraisals that are components of emotional experience. Other physical responses may also reflect appraisal components. Indeed, in the same study Smith found that heart rate differed significantly for high effort and low effort scenarios, and Scherer (1986) has presented evidence linking speech parameters to appraisals.

Obviously this research represents a very preliminary first step, and raises more questions than it answers. Students of emotion have generally assumed that certain combinations of facial elements tend to co-occur—that typically
the facial expression of an emotion will show the common prototypical combination of elements rather than a partial or mixed pattern. The first question is, is this true? We may have assumed that these prototypical patterns are the most common ones because they are the ones we have studied. Early researchers, using less carefully selected photographs, found less evidence for basic recognizable emotions (cf Munn, 1940). Subjects in our experiments, unless we explicitly direct them to focus on instances when they felt a single, "pure" emotion, rarely do so. Usually they report feeling more than one emotion (Smith & Ellsworth, 1987; Ellsworth & Smith 1988a,b). Perhaps complete unblended facial expressions of emotion are relatively rare. The second question is, if it is true that certain facial elements tend to co-occur, why do they? Is it because they are biologically wired to co-occur, or because the appraisals tend to co-occur? (See Ortony & Turner, 1990 for an excellent discussion of why appraisals might tend to co-occur.)

Cultural patterns

A second line of questions goes as follows. If the appraisals correspond to facial movements, could the appraisals be universal components of emotion? Cultures may differ in the sorts of things that command attention; arouse basic positive or negative feelings, are believed to be caused by self, other, or no one; or are seen as obstacles. But if appraisals are universal components of emotion, we would predict that people in different cultures will feel angry when they believe that someone else has caused them trouble, though their beliefs about the kinds of trouble that are caused by other people, and even their definition of trouble, may vary. There is now some evidence for cross-cultural generality of some of the basic appraisals (Scherer, Wallbott & Summerfield, 1986; Mauro, Sato & Tucker, 1990).

Appraisal theories also suggest interesting hypotheses for exploring cultural diversity in emotions, not just cultural similarity. Suppose, for example, cultural world views differ in ideas about the forces that control human endeavor. Some cultures, such as our own, might emphasize human agency and individual enterprise, while others assign greater power to destiny or to supernatural powers less easily controlled by human efforts. Might we then predict differences in the socialization, the frequency, and even the experience, of anger and sorrow?

Individual patterns

Of course, cultures are not the only source of variation in the way human beings understand their environments. A perennial issue in research on emotions has been the range of individual variability within a single culture (typically our own). When faced with the same situation, different people often respond with different emotions. An obvious implication of the cognitive appraisal viewpoint is that people respond with different emotions because they appraise the situation differently. This general statement, of course, may be painfully self-evident, but appraisal theories go beyond the general statement to specify the differences in interpretation that produce the differences in emotions. An event may be seen
as an obstacle by one person but not by another. Or people may differ in the amount of control they feel they have over events (cf Peterson & Seligman, 1987). If people habitually tend to favor some appraisals over others, differing in their “appraisal styles”, we would predict that they would respond more readily and more frequently with the corresponding emotions. A person who characteristically sees her misfortunes as caused by bad luck or uncontrollable circumstances may be prone to depression, while one who characteristically attributes misfortune to other people’s malice may be prone to aggression (cf Roseman, 1984; Wiener, 1985). Other individual differences may also affect a person’s appraisals. Differences in self-concept are one major source of emotional differences. A person who is confident of her social skills will experience less uncertainty, and thus less fear, when faced with a large crowd of merrymakers than a person who is less confident. Differences in socialization can affect our taste in food, amusements, and other people, and thus our initial appraisal of a new exemplar as positive or negative.

EFFECTS OF EMOTION UPON COGNITION

Most of the work on cognitive appraisals and emotion has so far been concerned with the hypothesis that a given pattern of appraisals results in a particular, predictable emotion. This has been the working assumption; in fact, most of the work to date has been aimed at establishing the correlations between appraisal patterns and emotions in describing the domain of emotional experience. Nonetheless, the hypothetical sequence that has formed the basic working assumption of these endeavors is that appraisals cause the emotions. Studies using imagery (e.g., Smith, 1989) and vignettes have begun to examine the question of causality more directly, but there is still a great deal to be done along these lines.

Little attention has been devoted to exploring another possible causal sequence: the possibility that emotions influence future appraisals. Other researchers not associated with the cognitive appraisal perspective have studied the effects of emotion on cognition. Forgas and Bower (1987) review a number of studies showing that a generally positive or negative mood affects estimates of personal efficacy, judgments of political circumstances, and evaluations of one’s own behavior in a social situation (see also Isen, 1984). Johnson and Tversky (1983) found that a negative mood brought on by reading newspaper reports of tragic events substantially increased people’s estimates of the likelihood of other, unrelated catastrophes, while a positive mood decreased their likelihood estimates. This effect operated at a very general affective level: the surface similarity between the events in a newspaper story and the specific future risk evaluated did not affect subjects’ estimates of the likelihood of the future risk. Reading about someone who was killed in a fire increased estimates of the likelihood of dying from cancer as much as it did estimates of dying from a fire or flood.
Work in this tradition has been limited both in the choice of emotional antecedents and in the choice of cognitive consequences. On the antecedent side, the "emotions" investigated are typically points on a simple positive-negative dimension; the experimenter compares a good, pleasant mood with a bad, unpleasant mood, occasionally adding a no-treatment control group to represent some intermediate point on the same dimension. On the consequence side, most of the influences that mood has been shown to exert on judgment can be characterized as simple optimism and pessimism.

A fundamental principle of appraisal theories is that different negative emotions (and, for that matter, different positive emotions) are quite dissimilar in their patterns of appraisal, suggesting that fear, sadness, and anger should affect future judgments in different ways. An emotion may affect people's judgments of new situations in ways that correspond to the appraisals that are most diagnostic of that emotion. For example, since the perception of agency has repeatedly been found to be important in differentiating among negative affective states (Ellsworth & Smith, 1988a; Roseman, 1984), one might predict that different negative emotions will result in different perceptions of the causes of subsequent events. Angry people should be prone to see other people as responsible, sad people to see the same events as caused by uncontrollable situational forces, guilty people to see themselves as responsible.

Some preliminary data (Keltner & Ellsworth, 1990) indicate that emotions can affect judgments in more specific ways than global optimism or pessimism, and in ways that are directly predictable from the appraisal model. In one study, we induced subjects to feel sad or angry by having them read detailed stories of a tragic or infuriating event. Then, following Johnson and Tversky (1983), we asked subjects to estimate the likelihood of various life events, some positive and some negative. Half of these events were described as the result of human agency ("Because of a dishonest salesman a new car you buy turns out to be a lemon"; "You meet your loved one through a friend"), while the other half were described in relatively impersonal terms ("Because of a factory problem a new car you buy turns out to be a lemon"; "You meet your loved one in a random encounter"). As predicted, compared to sad subjects, angry subjects rated events caused by other people as more likely and events caused by impersonal circumstances as less likely. It is especially striking that although all subjects were in a negative mood, the bias in estimates of agency affected perceptions of the likelihood of both positive and negative events.

In a second study, we predicted that when angry and sad people are confronted with a new situation that is ambiguous, allowing for several possible interpretations, the angry subjects would focus on the actions and intentions of other people and the sad subjects on situational causes. Anger and sadness were induced as in the previous study, we then gave the subjects a fairly long, complicated story and asked them to imagine themselves as the protagonist. In the story, the protagonist meets a wonderful new man (or woman if the subject was male), gushes about him to her room-mates, and invites him to a party.
When he finally arrives, he brings a date, the room-mates laugh, the man and his date seem upset, everyone keeps glancing at the embarrassed hostess, and all in all it is a social mess. Responsibility for this mess could be assigned to other people (eg the room-mates, the new man), to no one, or to oneself as protagonist. As expected, angry subjects were more likely than sad subjects to blame others and less likely to attribute the imbroglio to circumstances beyond anyone’s control. (We attempted to run a guilt condition as well, but this failed.)

These results are quite preliminary, and do not yet provide unequivocal evidence for the effects of emotion on future cognitive appraisals. For one thing, the study needs to be replicated using an emotional induction that is less cognitive in order to avoid the problem that appraisals prime appraisals, with no causal role for the emotion.

Nonetheless, the results are encouraging. The idea that emotion exerts powerful effects on cognition is an ancient one, providing a central theme in literature ranging from great tragedies to innumerable self-help books. Scientifically the idea is also old, but it has remained fairly primitive. Most theory and research has argued either that emotions influence cognition by disrupting it (eg Claparède, 1928; Mandler, 1975) or that pleasant emotions lead to pleasant thoughts and unpleasant emotions lead to unpleasant thoughts. Both of these hypotheses are undoubtedly correct, at least some of the time, but even taken together they seem a bit thin for a century of research. Cognitive appraisal theories suggest new directions to follow in exploring the effects of emotions on cognition. We have begun to explore the agency dimension, but others—attention, perceived obstacle, certainty—may prove heuristic in generating new hypotheses as well.

THE SEQUENCING OF EMOTIONAL EXPERIENCE

Episodic sequencing

The commonsense, lay view of emotions, at least in this culture, is that they are immediate, holistic, subjective responses to arousing stimuli. When thwarted, we feel anger; when threatened, we feel fear. One of the earliest (and some would argue most pernicious) scientific theories of emotions explicitly took issue with this commonsense theory of sequencing. William James (1884, 1890) proposed that the exciting stimulus produced a specific pattern of autonomic arousal and muscular activity that either caused or defined the subjective experience of emotion. While the question “Which comes first, the feeling or the ‘expression’?” has occupied researchers off and on for a century (James, 1884; Cannon, 1927; Tomkins, 1962; Laird, 1974; Tourangeau & Ellsworth, 1979; Winton, 1986), most of the discussions of this question have explicitly or implicitly assumed that the bodily response corresponding to a specific emotion has no time sequence of its own, nor does the subjective experience. The major disputes about the time course of an emotional episode have centred around the order of the central and peripheral components.
Appraisal theories put forward a different set of questions about an emotional episode. They suggest that full-blown emotions are not unitary, that not all of the components of the subjective experience, or of the peripheral response, emerge simultaneously. Some appraisals may be more immediate than others, suggesting that any given emotional experience may be broken down into a microsequence of events both centrally and peripherally. The existence of the general term “emotion” and the assumption that certain basic states such as fear, anger, joy, and sadness were prototypical examples of this general category may have led us unwittingly to assume more unitary experiences within each category and more similarity in the time sequence across categories than is justified. If appraisals are made sequentially, there may be much more variability in the states typically labelled “emotions” than previous researchers have considered.

Klaus Scherer (eg Scherer, 1984) has described some of the implications of the assumption that appraisals occur sequentially, and my own thinking follows very similar lines. According to this view, a possible sequence in the development of an emotion might be as follows.

First, something attracts the person’s attention. This event is similar to Mandler’s (1975) notion of an interruption. The arousal of attention is the first step in entering the emotional system; if nothing attracts or changes the focus of the person’s attention, no emotion will be felt, or if the person was already experiencing an emotion, no new emotion will be felt. Scherer (1984) refers to arousal of attention as an evaluation of novelty. At this point the person may identify the arousing stimulus as uninteresting or inconsequential (the sudden noise was the dishwasher moving into a new cycle, the scream was part of a TV show) and no further progression towards a full-fledged emotional experience will occur. This is roughly the sort of process that Schachter and Singer (1962) posited for the subjects in their “informed” conditions; their attention was aroused in part by their own physiological arousal, but because they believed it was merely a side-effect of the drug they had taken, no emotion followed.

Before discounting or further appraising the eliciting stimulus, the person may experience startle or surprise. This view of surprise is common across many theories, not just appraisal theories (cf Tomkins, 1962, 1984). There is considerable controversy over whether surprise should be considered an emotion or not. It has a clear facial expression (Tomkins, 1962), which is recognizable cross-culturally, although not as readily as some other emotional expressions (Ekman, Sorenson & Friesen, 1969; Izard, 1971), but some theorists feel that not enough has happened for surprise to be considered an emotion: it is too reflex-like and primitive (Lazarus, 1982). It does not even have a valence, like other emotions (Ortony & Turner, 1990). It cannot last long without disappearing or turning into some other emotion. Appraisal theorists (and dimensional theorists in general) are less interested than other theorists in deciding which states are “really” emotions and which ones are not. In their view, surprise fits naturally into the sequence of emotional events at a very early stage (Scherer, 1984), and involves only one appraisal. The decision about whether surprise does or does
not have enough in common with other emotions to deserve the label "emotion" is an arbitrary one.

Given that attention has been aroused, the next step in the sequence is a global response of positive or negative affect, a sense of pleasantness or unpleasantness. This may often occur simultaneously with the arousal of attention, as argued so persuasively by Zajonc (1980). In the case of basic sensory experiences—smells or tastes or walking out into a balmy spring day—the positive or negative response is probably immediate. Certainly there is strong evidence that a primitive positive or negative affective response can occur very early, even before other significant aspects of the stimulus (eg gender) can be identified (Murphy, 1990).

In other cases, as when we meet a new person, it may be immediate, but it may not. We may instead feel uncertain, or vacillate between positive and negative views, or even feel fairly neutral. More complex stimuli may introduce a sense of "feeling emotional" before a clear-cut emotion emerges. For example, the news that East and West Germany were to be reunited may have elicited an immediate positive or negative response in some people, but other people may have responded, even immediately, with ambivalence or with undifferentiated excitement, sensing that this was emotionally relevant news but not immediately clear whether it was positive or negative.

If an immediate positive response occurs (and if we could stop the sequence then, or if there were no further developments), the person might say that she is feeling "good" or "happy". In general, the positive emotions seem to be less well differentiated than negative emotions (Ellsworth & Smith, 1988b), perhaps because the label happy can be applied to this fairly simple, immediate state. If the initial appraisal is negative, more is generally needed before the person can give the emotion one of the common emotion labels. The person may say she feels "unhappy" or "bad", meaning that she does not feel happy, but more is needed before she can say she feels angry, or sad, or frightened.

Zajonc (1980), as well as some appraisal theorists (eg Scherer, 1984), has argued that a definite pleasantness–unpleasantness response occurs at this early stage. Undoubtedly it often does, but I am arguing that this is not necessarily the case. The sequence of appraisals, once attention has been aroused, may be somewhat variable. Sometimes a sense of strong uncertainty may occur before a person feels positive or negative. Seeing a stranger walking up the driveway towards one's door may arouse strong curiosity (interest), which may turn to fear if a closer approach reveals an expression of hostility on the person; or pleasure, if it turns out not to be a stranger but a close friend; or anger, if a clipboard reveals that it is yet another door-to-door salesman.

These brief examples involve appraisals along other dimensions—appraisals of uncertainty, obstacle, and agency. The order in which the various appraisals take place may be quite variable depending on properties of the eliciting circumstances themselves and of the current state of mind (eg current goals) of the perceiver.

There are several implications of this point of view. One is that a substantial proportion of our emotional lives may be spent in emotional states that do not
correspond to any of the prototypical “basic” emotions because we have not yet made all of the appraisals necessary to reach such a state (cf. Stein & Levine, 1990). Being in one of these states may make some emotions more probable than others, in that some of the requisite appraisals have been made. Likewise, emotional responses to major life events with many implications are notoriously fluid (Parkes, 1972); the immediate emotion changes as the perceiver focuses on different aspects of the situation.

A second implication is that emotions may vary substantially in terms of their latencies. At least since Cannon’s (1927) critique of the James–Lange theory of emotions, in which one of Cannon’s arguments was that the autonomic nervous system responds too slowly to account for the immediate subjective experience of emotion, we have tended to assume that immediacy is a general characteristic of emotion, perhaps even criterial (cf. Ekman, 1984). This assumption has distracted us, as researchers, from the possibility of slower sequences, or different sequences. Perhaps one of the reasons that the emotion of love has been ignored by many theorists is that it typically lacks the sudden onset implied by the commonly accepted view of emotion. Categorical theories which are based on the firing of discrete emotional programs make little allowance for differential latencies. Tomkins’ theory allows differential latencies between emotions but does not easily accommodate the single emotion of anger developing quickly or gradually. One way to avoid this issue, of course, is to say that it is not anger (or fear, or sorrow) until the moment when the last step is taken and the program fires, or the last appraisal is definite. This may be a tidy answer but the question “What was it before that?” lingers in the air. A definitional answer simply distracts attention from a host of unanswered questions about sequence.

I have no doubt that many emotional experiences may be immediate and complete: in appraisal terms, all the appraisals are made in extremely rapid sequence and the subjective experience is much the same as we would expect if the underlying process were the firing of a complete program. But I also have no doubt that some emotional experiences follow other sequences. They may be slower. They may never get to an end state corresponding to one of the commonly recognized basic emotions. The person may remain uncertain about a key appraisal (e.g., What is responsible for my misfortune?) and so may remain indefinitely ambivalent. I believe it would be very useful for an understanding of emotion to turn our attention to emotional sequences that do not fit the standard theories. There are obvious cases where everything seems out of order. People who just barely avoid an automobile accident, for example, often report that the behavior (swerving to avoid the oncoming car) precedes both the appraisal and the emotion. People often seem to feel no affect at all for a brief period after hearing about some catastrophe. Eventually a theory of emotion must account for the exceptional cases as well as the rule, if it is the rule (cf. Stein & Levine, 1990).

The view that appraisals, rather than whole emotions, are the basic units of affective processing not only suggests new questions about the sequencing of
emotional experience, but also provides a new perspective on the traditional questions of sequence. From James (1884) to the Zajonc–Lazarus controversy (Zajonc, 1980, 1984; Lazarus, 1982), questions about the episodic sequence of emotional experience have provoked some of the most heated debates in the field. The three most commonly proposed sequences are:

1. The commonsense theory:
   Stimulus→interpretation→affect→behavior
   The commonsense theory could also be called the cognitive science theory (Ortony, Clore & Collins, 1988) and has been implied, if not explicitly stated, in most of the cognitive appraisal theories (Frijda, 1986; Roseman, 1984; Scherer, 1984; Wiener, 1985, Stein & Levine, 1989; Smith & Ellsworth, 1985). A person perceives (or evaluates or appraises or interprets) a stimulus and a subjective emotional experience results, followed by behavior.

2. The affective primacy theory:
   Stimulus→affect→interpretation→behavior
   This view was proposed by Wundt (1907) and revived in 1980 by Zajonc. In Zajonc's words, "it is entirely possible that the very first stage of the organism's reaction to stimuli and the very first elements in retrieval are affective. It is further possible that we can like something or be afraid of it before we know precisely what it is and perhaps even without knowing what it is" (Zajonc, 1980, p. 154; see also Murphy, 1990). The interpretation (sometimes, in this view, a justification) follows.

3. Motor feedback theories:
   Stimulus→behavior→affect→interpretation
   Here the visceral and motor response "follow directly the perception of the exciting fact" (James, 1890/1950, p. 449) and the awareness of the bodily changes is the emotion. The example of the near accident is a classic Jamesian sequence. Recent facial feedback theories (Tomkins, 1962; Izard, 1971; Laird, 1974) also assume this kind of sequence.

Most of the proponents of these three sequences have put forward theories that are far more complex, and often qualified, than these simple schematic representations. Most of them have focused primarily on the first two stages after the eliciting event—interpretation preceding affect, affect preceding interpretation, or behavior preceding affect—and have been less clear about the last link (the role of behavior in the first two theories, the role of interpretation in the last). Also, considerable complexity is introduced when various definitions of "behavior" are considered—autonomic behavior, expressive (usually facial) behavior, or "instrumental" responses such as running away or striking a blow. I have obviously oversimplified all three points of view.
Nonetheless, many of the authors of these theories have themselves presented their ideas in strong, simple, provocative terms, introducing the complexities and qualifications only later, and this, I think, has led many readers, including many psychological researchers, to assume that interpretation, subjective experience, and possibly behavior are themselves somehow units. Thus the common view of the first theory is that all the interpretation must take place before any affect is felt, while in the second theory a complete emotional experience pops into existence before any interpretation takes place.

Appraisal theories, by breaking down the interpretation stage of the process into components, suggest that the stages implied by these theories are far too global. There is no reason to believe that a subjective sense of emotion must be delayed until all the appraisals have been made. Rather, the emotional experience develops over time in a rapid sequence of appraisals, bodily responses, and subjective changes. We have seen that individual appraisals can produce changes in facial expression (Smith, 1989) and we propose that they can produce changes in autonomic processes and affective experience as well. At the moment when the organism's attention is aroused, bodily changes take place (orienting response) and the organism feels different from the way it did before the event. When the organism senses that the stimulus is pleasant or unpleasant, the experience and the bodily responses change again. As each appraisal is made, the body and the affective experience change. The sequence may be so rapid as to be perceived as instantaneous or it may be considerably more drawn out. When all appraisals are clear, it may result in a "pure" emotion corresponding to one of the basic emotions proposed by the categorical theorists. When one or more appraisals are ambiguous, the person may say that she does not know what she is feeling, but would have no doubt that she is feeling "emotional". When one or more appraisals is variable, the person may vacillate among emotions. And, of course, the event itself may develop over time, so that initial appraisals are replaced by new ones.

In effect, this point of view allows the person to feel affect very early in the sequence, certainly as early as the initial assessment (or experience) of valence, possibly earlier. It also allows for some emotional states, such as guilt or anger, to depend on considerably more cognitive processing. Many of the debates among proponents of the time sequences outlined above are in fact debates about when in the sequence we are willing to say the person crosses the threshold into what we want to call an emotion. If emotions develop over time (even if very rapidly), then the answer to this question becomes somewhat arbitrary depending on the theorist's definition of emotion. In our view, feelings come first, and they also come last.

Ontogenetic sequencing

A further implication of appraisal theories is that if an organism lacks the cognitive capacity to make a particular appraisal, it will not feel emotions that depend on that appraisal. A newborn can feel a generalized distress (positive-negative
appraisal), but cannot feel anger or sadness, which depend upon more sophisticated appraisals of agency. Scherer (1984) has proposed an ontogenetic sequence of the emergence of some of the basic emotions, based on his appraisal theory, and Stein and her colleagues (Stein & Levine, 1989, 1990) have done considerable work on appraisal–emotion relationships in older children. Further developmental work would be enormously useful for exploring hypotheses about whether the capacity for various appraisals is necessary for the experience of various emotions.

CONCLUDING REMARKS

Basically, this chapter has been a highly self-indulgent account of why I find my own theory, and others like it, so interesting. It has allowed me to discuss ideas and implications that I have barely begun to study empirically, and some that I have not studied at all, in the hope that they will be taken up and incorporated into other people’s research, to be developed, revised, or refuted. I have not dealt with certain fundamental problems that emotions theorists must face, most notably the questions of unconscious emotions, vicarious emotions, and unconscious appraisals leading to conscious emotions. I have not claimed that emotion is impossible without appraisal. I have not even tried in this chapter to argue that the appraisal theories of emotion are true, but to argue that they are heuristic. They suggest lines of investigation that are not suggested by other theories, and they suggest that certain commonly held assumptions about emotions may need to be examined more closely. Because I wanted to put forward a wide range of implications, my treatment of each one of them has inevitably been superficial.

REFERENCES


