Cognitive antecedents of emotions: Findings and future directions

KAORI KARASAWA
Meitoku Junior College of Nagoya, Fukinodai, Tokai 476

Cognitive theories of emotion contend that people's appraisal or interpretation of events or circumstances determines the quality of emotion. This paper reviews theoretical and empirical work attempting to identify cognitive antecedents of emotions. Comparisons of dimensions proposed by Scherer, Roseman, Smith and Ellsworth, Manstead and Tetlock, Frijda, Reisenzein and Hofmann, Weiner, and Lazarus reveal that there are five major appraisal dimensions: Pleasantness, Expectedness/Certainty, Causation, Coping Potential, and Importance. It is argued that future studies need to (a) refine the conceptual definition of the dimensions, (b) identify minor dimensions that account for the differences among similar emotions, (c) examine the importance of social relationship dimensions, (d) incorporate individual differences in appraisal patterns, and (e) extend their theoretical framework from cognitive aspects to the whole system of emotion. It is also suggested that the cognitive theories have much to contribute to the study of communicative function as well as cultural aspects of emotion.

Key words: emotion, cognitive appraisal theories, cognitive appraisal dimensions.

People experience a number of distinct emotions. Some emotion theorists have identified 6 to 10 so-called basic emotions, such as anger, fear, shame, joy, sadness, distress, excitement, surprise, happiness, disgust, and anxiety (Ekman & Friesen, 1975; Izard, 1977; Plutchik, 1980). If the subtle differences among similar emotions are considered, the number of discrete emotions dramatically increases. According to the literature on emotion knowledge and lexicon, adult humans can distinguish at least 50 to 100 emotional states (Fehr & Russel, 1984; Shaver, Schwartz, Kirson, & O'Conner, 1987). How is this wide variation of human emotion explained? What is the nature of factors that determine the quality of each emotion? The answer to this question has been explored from two theoretical standpoints. The first approach emphasizes a feedback from physiological responses (e.g. Izard, 1977; Zajonc, Murphy, & Inglehart 1989). Empirical evidence, however, suggests that the physiological feedback has only a limited effect to produce emotion and dose not account for the variety of human emotion (see Matsumoto, 1987).

The second and more dominant approach emphasizes the role of cognition. The cognitive theories, which are often called "cognitive appraisal theories," contend that the way people appraise or interpret events and circumstances determines the quality of emotion (Arnold, 1960; Frijda, 1986; Lazarus, Kanner, & Folkman, 1980; Roseman, 1984; Scherer, 1984a; Smith & Ellsworth, 1985; Weiner, 1986). They further assume that the appraisal is conducted along a reasonable number of dimensions and have tried to identify the precise nature of appraisal dimensions that determine the quality of emotional experiences. To date, several theoretical and empirical works have proposed cognitive dimensions to discriminate emotions.

This paper discusses and evaluates appraisal dimensions proposed by cognitive emotion theorists. First, this paper reviews the theories and empirical studies that contributed to this field significantly. More specifically, dimensions proposed by
Scherer, Roseman, Smith and Ellsworth, Manstead and Tetlock, Frijda, Reisenzein and Hofmann, Weiner, and Lazarus are discussed (see Table 1). Then, their findings are compared and integrated to reveal the nature of appraisal dimensions. Finally, future research questions of the cognitive theories and the possibility of expanding the scope of the cognitive theories are discussed.

The Nature of Cognitive Antecedents: A Review of Major Theories

Scherer’s Component Process Model

Scherer’s component process model contends that a sequence of various cognitive evaluations of the stimulus event differentiates the quality of emotion (Scherer, 1982, 1984a, b). He assumes that the evaluation process consists of five hierarchically organized stimulus evaluation checks (SEC). SECs are rapidly occurring information processing, including both mere perceptions and complex interpretations of stimuli. The first SEC, novelty check, detects if there is a change or an unexpected event in the external and internal environment. The second SEC evaluates intrinsic pleasantness or unpleasantness of the event. This evaluation determines whether the stimulus event itself is pleasant or unpleasant, independent of its relevance to one’s goal at the particular moment. The third SEC evaluates the significance of the stimulus to one’s goals, and consists of three types of subchecks. These subcheck examine if the stimulus event is relevant to specific goals (relevance subcheck), if the outcome is consistent with the expected state (expectation subcheck), and if the event is conducive or obtrusive to attaining goals (conduciveness subcheck). The forth SEC evaluates one’s coping potential. This check consists of four subchecks: a causation subcheck that determines the causal agent of an event, a control subcheck that examines the degree of control over the event, a power subcheck that evaluates if one has a power to avoid or change the outcome, and an adjustment subcheck that assesses the potential for adjustment to the final outcome. The fifth SEC is a norm/self compatibility check. This check examines whether one’s or other’s action conforms to social norms or expectation of others (external standard subcheck) and to internalized norms or the ideal self (internal standard subcheck).

Scherer has not formally discussed the kind of emotions associated with particular combination of SECs, but considers that an emotion resulting from the earlier SEC is further differentiated as the stimulus evaluation process continues. For example, although surprise may be elicited by the first novelty SEC, the intrinsic pleasantness SEC may further distinguish “positive surprise” and “negative surprise.” In addition, an emotion resulting from early SECs can be replaced by those produced by the later SECs. For instance, the early negative surprise may be replaced by anger after the evaluation of other-agency.

Roseman’s Structural Theory

Roseman’s structural theory (1984, 1991; Roseman, Spindel, & Jose, 1990) assumes that the quality of emotion is determined by its association with a particular combination of cognitions along five appraisal dimensions: situational state, motivational state, certainty, power, and agency. These dimensions evaluate the emotional event in terms of one’s motivational relevance since emotion is experienced when an event is relevant to one’s active motives or preference. Guided by the analyses of written accounts of
<table>
<thead>
<tr>
<th>Scherer</th>
<th>Roseman</th>
<th>Smith and Ellsworth</th>
<th>Manstead and Tetlock</th>
<th>Frijda</th>
<th>Reisenzein and Hofmann</th>
<th>Weiner</th>
<th>Lazarus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novelty</td>
<td>Situational state</td>
<td>Pleasantness</td>
<td>Human agency</td>
<td>Situation</td>
<td>Pleasantness</td>
<td>Human agency</td>
<td>Expectedness</td>
</tr>
<tr>
<td>Intrinsic pleasantness</td>
<td>Motivational state</td>
<td>Activity</td>
<td>Anticipated effort</td>
<td>Obstacles</td>
<td>Certainty</td>
<td>Legitimacy</td>
<td>Importance</td>
</tr>
<tr>
<td>Goal significance</td>
<td>Certainty</td>
<td>Power</td>
<td>Agency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Relevance</td>
<td></td>
<td></td>
<td></td>
<td>Valence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Expectation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Conduciveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coping potential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Causation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) Adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norm/Self compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) External standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Internal standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
emotional experience and subsequent empirical research, he has proposed that these five dimensions differentiate major emotions.

The first dimension, situational state, evaluates whether the situation is consistent or inconsistent with one’s motive. The appraisal on this dimension distinguishes positive emotions from negative emotions. Second, the dimension of motivational state distinguishes two types of motivational state, reward and punishment. Both the presence of reward and the absence of punishment are appraised as motive-consistent, whereas both the absence of reward and the presence of punishment are evaluated as motive-inconsistent. However, reward and punishment should be distinguished since they lead to different emotions. For instance, one feels joy when a good thing (i.e., reward) has happened but feels relief if he or she avoided something negative (i.e., punishment). Similarly, one feels sorrow when he or she missed something good but feels discomfort or disgust if something negative has happened. The third dimension, certainty, distinguishes between events perceived as definite, those perceived as uncertain, or those of which the nature is unknown. It is assumed that a perception of uncertainty leads to hope or fear whereas surprise is elicited if the event is unknown. The fourth dimension concerns the perception of one’s power, either strong or weak, in the situation. The source of power perception includes the perceptions of one’s ability of doing something and one’s superiority to others. The perception of strong power is associated with frustration, anger, and regret while that of weak power elicits sorrow and shame. The fifth dimension, the agency of the event, distinguishes the events caused by circumstance, the events caused by other people, and the events caused by oneself. For instance, joy, hope and fear are elicited by circumstance-caused events, liking, disliking and anger are associated with other-caused events, and pride, guilt and shame are generated when events are self-caused.

Smith and Ellsworth’s Studies on Cognitive Appraisal

Smith and Ellsworth expanded Scherer’s and Roseman’s theories, and conducted a series of empirical studies that examined the cognitive dimensions to discriminate emotions. In their early studies (Smith & Ellsworth, 1985, 1987), subjects rated their past and current emotional experiences along various appraisal dimensions, and principal component analyses and Multi-Dimensional Scalings were conducted to recover orthogonal dimensions. They also investigated the association between appraisals and complex emotion blends by asking subjects to recall experiences that were characterized by particular appraisals (Ellsworth & Smith, 1988a, b).

Although there are minor differences among the results of these studies, there seem to be five definite dimensions; pleasantness, agency (human agency and situational control), attentional activity, anticipated effort, and obstacles. The pleasantness dimension refers to the degree of pleasantness or unpleasantness of the situation that elicited the emotion, and distinguishes positive emotions from negative emotions. The agency dimension determines if the responsibility and control agent is the self, other, or the circumstance. The agency may be appraised along two sub-dimensions, human agency (self responsibility and control vs. other responsibility and control) and situational control (the degree that the situation controls the event; see Smith and Ellsworth, 1985). The agency dimension primarily contributes to the differentiation among negative emotions. Shame and guilt are associated with the perception of self-agency, anger is characterized by its high other-agency, and sad-
ness is associated with the perception of situational control. The attentional activity dimension evaluates the extent to which the attention is directed to the situation. Boredom and disgust are distinguished from other emotions by their low attentional activity. The anticipated effort evaluates the degree of effort required in the situation and mainly discriminates positive emotions: challenge is associated with high effort, interest and hope with moderate effort, and surprise with low effort. In addition, apathy and boredom are distinguished from other negative emotions by their low level of anticipated effort. The obstacle dimension evaluates the extent to which one perceives obstacles or problems hampering goal attainment. Generally, the perception of high obstacles elicits negative emotions while low obstacles lead to hope.

The less definite dimensions are certainty, legitimacy, and importance. The certainty dimension, which refers to one's certainty of events, distinguishes fear and surprise by their low degree of certainty. The legitimacy dimension, which highly correlates with other-responsibility and control, evaluates the degree of perceived fairness of the situation, and mainly predicts anger. The importance dimension, which refers to the importance of an event, distinguishes some pleasant emotions; hope, love, and surprise are experienced in high-importance situation, while playfulness is associated with low importance.

The validity of these appraisal dimensions was examined by studies that attempted to replicate and expand Smith and Ellsworth’s findings. Manstead and Tetlock (1989) adopted a method similar to Smith and Ellsworth (1985) and recovered four dimensions: pleasantness, human agency, expectedness, and situational-control.

Frijda and his colleagues’ studies have also replicated Smith and Ellsworth’s findings (Frijda 1987; Frijda, Kuipers, & ter Schure, 1989). Based on appraisal ratings for 32 emotions, Frijda et al. (1989) extracted 11 dimensions: valence, human agency, importance, expectedness, controllability, novelty-familiarity, certainty, effort, focal-global, time of event, and interestingness. Most of them had already been proposed in previous studies (Scherer, 1984a; Smith & Ellsworth, 1985, 1987), but a few new dimensions were also discovered. The focal-global dimension distinguishes responses to specific events from more diffuse emotional states. For example, “romantic” and “warm feeling” are rated high on globality. Time of event, which specifies the time focus of the appraised event (i.e., past, present, or future), differentiates hope from other emotions.

Reisenzein and Hofmann’s Study

Reisenzein and Hofmann (1990) claimed that previous studies examined only the dimensions considered important by the investigators. Consequently, important appraisal dimensions may have been ignored simply because scales were not included to assess them. In addition, dimensions that were not naturally used in the appraisal process may have been recovered. To overcome these problems, they proposed a new method (Rep method) to extract naturally used appraisal dimensions. In their study, subjects were presented a pair of emotion episodes associated with two different emotions and indicated the feature that discriminated the two situations. Content analyses and cluster analyses revealed that there are at least 10 reliable appraisal dimensions. Eight of them, valence, causality/responsibility, moral evaluation, time of event, importance, expectedness, familiarity, and perceived control, had been identified in the previous studies. In addition, this study recovered two new dimensions: focus of event and quality of social relationship. Focus of event concerns
whether an event affects primarily oneself or other people, and contrasts self-directed emotions (e.g., embarrassment, anxiety) with other directed emotions (e.g., pity, remorse). Quality of social relationship refers to one's evaluation of a person (i.e., like-dislike). Gratitude, love, and pity are associated with liking while jealousy, envy, and contempt are associated with dislike.

**Weiner's Attribution Theory of Emotion**

Weiner's theory focuses on one particular form of cognition, that is, causal attributions, and discusses its relevance to a limited number of emotions. His attribution theory of emotion and motivation (Weiner, 1986) proposes that a causal attribution of a positive or a negative outcome determines the subsequent emotional and motivational state. He argues that there are three causal dimensions underlying causal explanations: locus, stability, and controllability. Each dimension has its unique role to elicit certain emotions.

The locus dimension refers to whether a cause is located within the person or the environment, namely internal or external to the person. This dimension is linked to pride and self-esteem: an internal attribution of a positive outcome leads to pride whereas that of a negative outcome lowers one's self-esteem (Weiner, Russel, & Lerman, 1978, 1979). The stability dimension refers to the temporal duration of a cause, that is, whether it is permanent or temporary. This dimension relates to expectancy and expectancy related emotions (Weiner & Litman-Adizes, 1980). For instance, a negative outcome may produce hopelessness and fear if it is attributed to a stable cause but may lead to hope if it is attributed to an unstable cause. The controllability dimension concerns whether the cause is under volitional control by the person. This dimension is associated with "moral emotions," namely, anger, pity, guilt, and shame. Attributions to a controllable cause elicit anger and guilt whereas those to an uncontrollable cause lead to pity and shame (Weiner, Graham, & Chandler, 1982).

In addition to these "attribution-dependent" emotions, the theory also discusses "outcome-dependent emotions": valence of the outcome itself elicits happiness or sadness, independent of attributions. Furthermore, importance of an outcome is considered to increase the intensity of emotions (Brown & Weiner, 1984).

**Lazarus's Cognitive Appraisal Theory**

Lazarus's cognitive appraisal theory, which discusses appraisal-emotion relationships in the context of coping, also has focused on two specific appraisal processes: primary appraisal and secondary appraisal. Primary appraisal is the evaluation of "transaction," that is, an ongoing person-environment relationship of mutual influence, in terms of its relevance to one's well-being. This appraisal is made along two dimensions, motivational relevance and motivational congruence. Motivational relevance refers to the evaluation of whether the transaction is relevant to one's personal goals, while motivational congruence concerns the extent to which the transaction facilitates or inhibits the personal goals. In secondary appraisal, one evaluates his/her coping resources and options along four dimensions: accountability, which determines who is to be blamed or
K. Karasawa

deserves credit, problem-focused coping potential, which evaluates one’s ability to manage the demands posed by the situation, emotion-focused coping potential, which evaluates the possibility of regulating one’s emotional state in a harmful or threatening situation, and future expectancy, which concerns the possibility that the situation will be more motivationally congruent or incongruent (see Lazarus and Smith, 1988). His theory assumes that primary appraisal determines the onset of emotion whereas secondary appraisal determines the quality of emotions. For instance, if the situation is appraised as harmful, negative emotions may be elicited, but the exact quality of the emotion depends on secondary appraisal.

What Kind of Cognitions are Important?: Summary of the Proposed Dimensions

In Table 2, the proposed appraisal dimensions are listed to allow comparisons among the theories and studies discussed above. The dimensions are categorized in terms of general features of events to be appraised. As the table shows, most theories agree that dimensions evaluating the pleasantness, expectedness/certainty, and causation of the event play a significant role in characterizing major emotions. The dimensions evaluating two other aspects, coping potential and importance of the situation, can be also regarded as major dimensions although there is a lesser agreement among the theorists. Other than these five dimensions, there are several “minor” dimensions, such as norm/self compatibility, motivational state, attentional activity, time of event, focal-global, interestingness, focus of event, and quality of social relationship. These dimension are referred by only a few theorists.

The characteristics of each major dimension are discussed below. In particular, an effort is made to capture the convergence among the dimensions proposed by different theorists and to integrate their ideas. Therefore, it is assumed that the appraisals on the major dimension are relatively complex and a set of appraisals along sub-dimensions is needed. Based on this assumption, the definition of the dimensions proposed by each theorist are compared, re-conceptualized as sub-dimensions representing a part of more complex appraisal dimension, and integrated as the major dimension.

Pleasantness

The dimension evaluating the pleasantness of the situation is consistently identified by most theories as the major dimension that accounts for a large amount of variances for the classification of emotions (for an exception, see Reisenzein and Hofmann, 1990). This dimension distinguishes positive emotions from negative emotions but plays little role in further distinctions. As Lazarus and Smith (1988) suggest, this dimension seems to be defined in terms of two different appraisals: the pleasantness of the situation itself and the presence or the absence of an object that facilitates or inhibits one’s goal attainment. While Scherer’s intrinsic pleasantness check belongs to the first category, his goal conduciveness, Lazarus’s motivational congruence, and Roseman’s situational state belong to the second category; these dimensions define a situation that facilitates one’s goal or motives as pleasant, while those that inhibit the goal as unpleasant. Other theorists do not explicitly distinguish between these two, but they adopt scales that capture both of these aspects to measure the pleasantness dimension.

Expectedness/Certainty

Most emotion theories implicitly accept the Darwinian perspective that emotions have survival value and function adaptively. From this perspective, expectedness and certainty
<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Scherer</th>
<th>Roseman</th>
<th>Smith and Ellsworth</th>
<th>Manstead and Tetlock</th>
<th>Frijda</th>
<th>Reisenzein and Hofmann</th>
<th>Weiner</th>
<th>Lazarus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pleasantness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Intrinsic pleasantness</td>
<td>Intrinsic pleasantness</td>
<td>Pleasantness</td>
<td>Pleasantness</td>
<td>Valence</td>
<td>Valence</td>
<td>Valence</td>
<td>Valence</td>
<td>Motivational congruence</td>
</tr>
<tr>
<td>2. Motive consistency</td>
<td>Conduciveness Expectation</td>
<td>Situational state</td>
<td>Pleasantness</td>
<td>Valence</td>
<td>Valence</td>
<td>Valence</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Expectedness/Certainty</strong></td>
<td>Novelty</td>
<td>Certainty</td>
<td>Certainty</td>
<td>Expectedness</td>
<td>Expectedness</td>
<td>Expectedness</td>
<td>Familiarity</td>
<td>(Stability)</td>
</tr>
<tr>
<td>1. Expectedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Certainty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Causation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Property of the cause</td>
<td>Causation Control</td>
<td>Agency</td>
<td>Human agency Situational control Legitimacy</td>
<td>Human agency Situational control</td>
<td>Human agency Causality/ responsibility Perceived control Moral evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Agency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coping Potential</strong></td>
<td>Power</td>
<td>Power</td>
<td>Controllability (Controllability)</td>
<td>Problem-focused coping potential Emotion-focused coping potential</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Ability to control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ability to adjust</td>
<td>Adjustment</td>
<td>Anticipated effort Obstacles</td>
<td>Effort</td>
<td></td>
<td>Controllability (Controllability)</td>
<td>Problem-focused coping potential Emotion-focused coping potential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Effort require</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Probability of situational change</td>
<td>Goal relevance</td>
<td>Importance</td>
<td>Importance</td>
<td>Importance</td>
<td>Importance</td>
<td>Importance</td>
<td>Motivational relevance</td>
<td></td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Goal relevance</td>
<td>Importance</td>
<td>Importance</td>
<td>Importance</td>
<td>Importance</td>
<td>Importance</td>
<td>Motivational relevance</td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Norm/self compatibility</td>
<td>Motivational state</td>
<td>Attentional activity</td>
<td>Time of event Focal-global Interestingness</td>
<td>Time of event Focus of event Quality of relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
of the situation should be a very basic appraisal to elicit emotions that prepare one to cope with the sudden change of the situation and its unfamiliarity. Indeed, most theorists acknowledge the importance of anticipation-related appraisals. An examination of the dimensions proposed by the theorists suggests that there are two distinct appraisals: expectedness of an event that has already happened and certainty of the current and future course of the event. These two appraisals are often highly correlated since an unexpected event tends to be associated with uncertainty. Therefore, the scales tapping these two aspects were sometimes clustered together into one dimension (e.g., Ellsworth & Smith, 1988b; Smith & Ellsworth, 1987). However, they should be distinguished conceptually. The evidence suggests that unexpectedness is associated with surprise while uncertainty predicts anxiety and fear. In addition, high certainty for the future seems to be necessary for some positive emotions such as joy and enthusiasm (see Frijda et al., 1989; Roseman et al., 1990).

Some emotion theories, specifically so-called discrepancy theories, argue that unexpectedness has a special role of eliciting emotions (Berlyne, 1960; Hebb, 1946; Lewis & Goldberg, 1969). These theories consider that emotions result from discrepancies or incongruencies between external events and expected states. Namely, a violation of expectancy alerts the organism and produces an emotional response that is equivalent to surprise. The specific emotions that follow depend on the context and other cognitions. While the discrepancy theories consider that unexpectedness is necessary for any emotional reaction, cognitive theories generally consider that unexpectedness characterizes mainly anticipation-related emotions such as surprise, fear, and anxiety.

**Causation of the Event**

This dimension determines who or what is responsible and to what extent. Various appraisal scales have been proposed by the theorists to capture this dimension, such as “who was responsible?” “who had the control?” “was it legitimate?” “was it fair?” etc. Among them, Weiner’s theory taps causation most directly. His theory deals with causal perception and the characteristics of causes in terms of the three attributional dimensions: locus, stability, and controllability. On the other hand, other theorists have proposed that appraisals regarding causation are made in terms of the responsibility and control of three causal agents: self, other, and circumstance. These three agents are distinguished (Ellsworth & Smith, 1988a, b; Roseman, 1984), although some empirical studies have recovered only two dimensions, self vs. other agency and situational control (Frijda et al., 1989; Manstead & Tetlock, 1989; Smith & Ellsworth, 1985).

Recently, Smith and his colleagues argue that appraisals of self and other responsibility are more directly related to emotions than attributions. That is, for emotions to occur, the causal facts as perceived by the individual must be further appraised in terms of responsibility. Therefore, although attribution influences emotions, its effect is mediated by the appraisals of a responsibility agent (Smith, Haynes, Lazarus, & Pope, 1993).

Indeed, it is possible to describe the agency dimension in terms of Weiner’s scheme by assuming that the appraisal of responsibility is based on an implicit causal judgment. Self will be perceived as responsible when an internal × controllable attribution is made. The appraisal of other-agency primarily results from an external-controllable attribution, and occasionally from an external-uncontrollable attribution, although the external agent is limited to a person. Circumstance-agency seems to be based on
an external-uncontrollable attribution when the external agent is non-human, and possibly an internal-uncontrollable attribution, since the idea of circumstance-agency ("nobody but the situation controls the event") actually refers to an uncontrollable event.

This analysis, however, suggests that both Weiner’s scheme and the agency dimension are somewhat imperfect; Weiner’s scheme does not distinguish human agent and non-human agent, while the agency dimension cannot accommodate the situation when the cause is perceived as internal-uncontrollable. Furthermore, this analysis indicates that the agency dimension does not accommodate the role of the stability dimension. As Weiner (1986) argues, the stability dimension relates to anticipation-related emotions, and thus, it may be relevant to the certainty dimension.

The causation of an event mainly characterize negative emotions, especially those called “moral emotions.” Anger and resignation are strongly associated with the appraisal of other-agency or attribution of the problem to something controllable by others. On the other hand, the attribution of other’s problem to an uncontrollable cause elicits pity. Guilt is elicited by the perception of self-responsibility while sadness is experienced when situational control is high. Among the positive emotions, an experience of pride requires the perception of self-responsibility or an attribution of success to an internal cause.

Coping Potential

Regarding the evaluation of one’s coping potential, proposed dimensions seem to consider two different aspects of coping. Some dimensions directly tap one’s ability to cope with the situation while others refer to the situational features that may influence the coping. Furthermore, each of these is appraised along two sub-dimensions. One’s ability is evaluated in terms of one’s power to control the situation (i.e., Scherer’s power sub-check, Roseman’s power, Lazarus’s problem-focused coping potential, and Frijda’s controllability) and one’s ability to adjust the situation (Scherer’s adjustment sub-check and Lazarus’s emotion-focused coping potential). The situational feature is appraised in terms of the degree of anticipated effort required by the situation (Frijda, Smith, & Ellsworth) and the possibility that the situation may change to be more or less motivationally congruent (Lazarus’s future expectancy, and Smith and Ellsworth’s obstacles).

It is speculated that the appraisal of coping potential is influenced by causation appraisals. For instance, the perception of self-control (i.e., internal × controllable attribution in Weiner’s terms) may lead to the appraisal of high ability to control the event in the future. Moreover, an attribution to an unstable cause may lead to a high subjective possibility for the situation to change. Indeed, both Scherer and Lazarus have proposed that the perception of causation is one component of the appraisal of coping potential.

Although the role of the coping potential dimension in emotion discrimination has not been fully documented yet, a small number of empirical and theoretical works suggest that each sub-appraisal has a unique contribution. For instance, Roseman et al. (1990) argued that strong power distinguishes frustration, anger, and regret from other negative emotions. Smith and Ellsworth (1985; Ellsworth & Smith, 1988a, b) showed that anger, resignation, and challenge are associated with high anticipated effort and hope is elicited by low obstacles.

Importance

Intuitively, an event must be more or less important to elicit an emotion. Indeed, evidence indicates that almost all the emotions are experienced when the event is appraised...
as important (Frijda et al., 1989). Another intuition is that a stronger emotion is elicited to the extent to which an event is important. Brown and Weiner (1984) revealed that one experiences more intense happiness, or unhappiness and shame after he/she succeeded in or failed in an important task than an unimportant task. It is questionable, however, that this dimension plays a major role in determining the qualitative differences among emotions; while the degree of importance appraisal varies across emotions, the dimension is not essential to define emotions since it covaries with the intensity of emotions (Ellsworth & Smith, 1988). Therefore, the importance seems to be more strongly associated with the process of emotion activation rather than with the differentiation of the quality of subjective emotional experiences.

Other Dimensions

The dimensions proposed only by one or two theorists are classified in this group. Studies suggest that some of these dimensions play an important role to characterize certain emotions: norm/self-compatibility is associated with guilt and shame, attentional activity characterizes boredom and disgust, and the quality of social relationship distinguishes positive attitudinal emotions (e.g., love, gratitude) from negative attitudinal emotions (e.g., envy, contempt). Although these dimensions may not be relevant to the entire domain of emotions, appraisals along them seem to be essential for evoking certain emotions.

On the other hand, some of the dimensions in this category may not be qualified as cognitive antecedents; interestingness proposed by Frijda seems itself to represent an emotional state, and time of event proposed by Frijda, and Reisenzein and Hofmann may merely specify the chronological relationship between the event and the time of the appraisal. A further examination is needed to determine if these dimensions are the central ones to characterize emotions or peripheral dimensions that are discovered accidentally because of their correlation with the true cognitive antecedents.

Summary

The review of the proposed dimensions suggests that there is good convergence regarding the major dimensions. Most theorists contend that the appraisal of pleasantness, expectedness/certainty, causation, coping potential, and importance are needed to characterize a wide variety of emotions. Although there are some disagreements on the conceptualizations of the dimensions, they are actually compatible, representing the different aspects of more complex dimensions. The above-discussed structure of the major dimensions of appraisal is rather speculative, but it is apparent that the cognitive theories need to consider a certain structure among appraisals and clarify the relationship among them.

Research Questions

The above review indicates that the studies on cognitive antecedents of emotion have successfully identified important cognitive dimensions to discriminate emotions. In addition, the review clearly shows that at least several dimensions are needed to characterize major emotions. While past studies investigating the dimensions of emotions, mostly on the dimensions of subjective feeling state and facial expressions, proposed only two or three dimensional structures of emotional experience (e.g., Russell, 1983; Schlosberg, 1954), cognitive appraisal theories demonstrated that the rich diversity of human emotion cannot be captured by these simple yet sterile structures.

However, some research questions still
remain to be answered in order to provide a more complete picture of the cognition-emotion relationship. First, as discussed earlier, to determine the dimensions that are truly critical to define emotions, the refinement of the conceptual definition of the dimensions and the clarification of the relationship among them are needed. This work should be based on a careful examination and comparisons of the sub-dimensions and scales that represent each dimension.

The second problem concerns the identification of the minor dimensions, which characterize only a small number of emotions. While some dimensions are relevant to the majority of emotions (i.e., pleasantness) and classify them into large categories (i.e., positive vs. negative emotions), there may be some dimensions that characterize only a small number of emotions but play a central role in defining them (e.g., norm/self compatibility for guilt and shame). These dimensions may also contribute to discriminating similar emotions from each other. However, the minor dimensions have been relatively ignored by most theories discussed so far. This is partly due to the current research paradigm that has more or less focused on the identification of the major dimensions; researchers have assumed a multi-dimensional space that covers the entire domain of emotions, and have tried to extract the dimensions that explain the large amount of variances among the situational features associated with emotions. Although this method has successfully identified major dimensions necessary to discriminate a wide variety of emotions, it has failed to recover the minor dimensions that are relevant only a small number of emotions. Indeed, the above review has suggested that the dimensions proposed thus far are not sufficient to differentiate similar emotions and to characterize the non-basic but still important emotions, such as contempt, regret, frustration, etc.

Therefore, studies focusing on the distinction among a small number of similar emotions are needed. At the exploratory stage of research, the application of the Rep method (Reisenzein & Hofmann, 1990) may produce fruitful results.

To integrate the major and minor dimensions into one theoretical framework, it may be necessary to assume that appraisal dimensions are organized, in some part, under a hierarchical structure. As Shaver et al. (1987) has demonstrated, our cognitive representation of emotion words has a hierarchical structure in which basic emotion categories are located at the top and similar emotions are clustered as sub-categories under them. If there is a correspondence between the structure of emotions and that of dimensions, dimensions could also be organized hierarchically. That is, major dimensions that discriminate among basic emotions are located at the top whereas minor dimensions that are relevant to a small number of emotions are located at the bottom of the hierarchy. In addition, similar emotions may have similar appraisal patterns (Frijda, 1987), and discrimination among similar emotions requires somewhat unique dimensions that are different from those discriminating among basic emotions.

The third issue concerns the type of cognitive antecedents that are relevant to define the quality of an emotion. Most of the cognitive theories on emotions mainly concerned the cognitions regarding an emotional event, that is, the event considered as the immediate cause of the emotional experience. While the importance of such cognitions is quite apparent, some studies argue that other types of...
cognitions are also crucial for the definition of the quality of emotion. For instance, Kemper (1978), from a sociological standpoint, has proposed that the power and the status structure in a given situation determines the quality of emotion to be experienced. Power and status refer to the relationship aspect between the person and his/her interaction partner rather than the features of the emotional event itself. The importance of dimensions evaluating the nature of social relationships should be more acknowledged since, as Reisenzein and Hofmann (1990) maintained, many emotions may be based on both the evaluation of the event and the evaluation of the interaction partner. Indeed, the dimensions tapping social relationships may be essential to characterize attitudinal feeling toward others, such as love, respect, envy, and contempt.

Consideration of the other types of cognitive dimensions, of course, should be based on a careful examination of their impact on emotional experiences; some cognitions may contribute to emotional experiences only indirectly by providing contextual information to guide the direction of appraisals. Regarding this issue, Lazarus and Smith (1988; Smith et al., 1993) argue that there are two kinds of cognition relevant to emotion: knowledge and appraisal. Knowledge is cognitions about the facts concerning an event that elicits emotions whereas appraisal has to do with the personal meaning of an event to one's well-being. They further argue that knowledge itself does not result in emotion. That is, knowledge is a distal cognition which needs a further process of appraisal to generate emotions, and appraisal directly determines whether an emotion is elicited, and the kind and intensity of the generated emotion. This distinction would provide a theoretical guidance for studies focusing on the process in which the quality of emotion is determined, as well as for studies on the structure of cognitive dimensions.

The fourth problem relates to a neglect of variations in dimensional structures across individuals. To date, cognitive appraisal theories have tried to identify universal dimensions but exerted less effort to incorporate individual differences in appraisal patterns. However, it is apparent that interest, motives, self-concept, and dispositions influence the way people appraise events. These variables guide an appraisal that in turn creates the emotionality unique to each individual. Therefore, the origin of the individual differences in emotional experiences should be partly explained by the patterns of cognitive appraisals. This further implies that the cognitive appraisal theories have a possibility of providing a theoretical framework to integrate a variety of measures and constructs that have been conceived to describe the individual differences in emotionality.

Finally, as Izard (1993) discusses, the role of cognitions in the whole emotion system should be considered. Emotion theorists emphasize that emotion is a complex system; it includes the cognition of the stimulus event, physiological responses, subjective feeling states, motivational states, and facial and behavioral expressions. Although cognitive theories, in their most extreme form, have insisted that cognition is a necessary and sufficient condition to evoke an emotion and to determine the quality of emotion, they do not discuss the whole emotion system. Indeed, cognitive theories are those of the differentiation of emotion but not comprehensive emotion theories that deal with the complete emotion system.

Two issues should be considered before the findings of the cognitive theories are incorporated into a theory of the emotion system. First, the system to accommodate complex evaluations made along appraisal dimensions should be considered. One possibility is that we engage in a series of judg-
ments every time we encounter an emotional event. Another possibility is that we have prototypes of the situations associated with each basic emotion (e.g., core relational themes: see Lazarus, 1991), and that our first emotional response is determined by the prototypical features of the situation. Second, the relationship between the cognitions and physiological responses should be considered. Cognitive theories generally consider that physiological responses are the part of emotional experience and predicted by the appraisals on various dimensions (see Smith, 1989). However, as Zajonc et al. (1989) suggest, physiological responses may explain the occurrence of general positive or negative feelings at the neurophysiological level, but further differentiation of emotions may require the evaluation of the event. More theoretical and empirical works are need to reveal the function of cognition in the emotion system.

Expansion of Cognitive Theories

At the final point of this paper, two research areas to which cognitive theories have a potential to contribute are suggested. First, the communicative function of emotion may be explored in terms of cognitions required to experience emotions. Cognitive theories have demonstrated that emotions are associated with particular configurations of appraisal on dimensions characterizing emotional events. In other words, they have documented that people share emotion knowledge in which the antecedents of each emotion are represented as particular cognitive appraisal patterns. This suggests that, by applying knowledge of the association between antecedents and emotions, people who observe others’ emotional expressions infer how they perceive an emotional event. For example, if one is angry, an observer infers that the person considers someone else is responsible for his or her negative outcome (Graham, 1984). Although such inferences may be a significant determinant of interpersonal attitudes, an emotion’s communicative function has not been explored except for the inference of attribution from emotion (for a review, see Weiner, 1986).

Second, this approach may encourage cross-cultural studies of emotion by providing a tool to overcome language problems. Cross-cultural comparisons of emotions are quite important since emotions are culture-dependent. That is, each culture has somewhat unique concepts to describe particular subjective states, and its own rules to feel and display them. Therefore, a comparison of emotions reveals unique characteristics of the compared cultures. In addition, cross-cultural studies help the identification of biological and socio-cultural determinants of emotion.

However, a reasonable number of studies exists only in the area of facial expressions of emotion (e.g., Ekman, 1982; Izard, 1977). This may be due to the special difficulty imposed on the comparisons of emotion words. Since emotion words themselves are culture-dependent, the effort to identify cultural differences through the direct comparison of emotions in different languages may often be ineffectual; researchers can’t determine whether the disparities come from the difference of the quality of the emotional experience or the word choice when translating one emotion word to another language. Moreover, as Wierzbicka (1986) contended, the comparison itself is sometimes impossible since some emotion concepts are unique to a particular culture and its language so that finding a corresponding word is simply impossible. Cognitive theories may enable cross-cultural studies to overcome these problems by providing a neutral meta-language system to describe emotions since emotions can be defined in terms their association with relevant cognitive antecedents.
One possibility to expand the scope of cross-cultural studies is to compare the structure of appraisal dimensions in different cultures. For instance, the dimension that is dominant in one culture may not be important in other cultures; it is speculated that the appraisals on relationship quality are more important in Japanese culture, where people define their self-concepts in terms of their relationships with others (cf. Kitayama & Markus, 1994). In addition, the correlational structure among the dimensions may be different across different cultures. These cultural differences, if they are any, not only indicate the difference of cognitive antecedents of emotions per se but also imply the difference of the way people construct their subjective reality of events. To date, some empirical studies revealed that different cultures share major appraisal dimensions (e.g., Mauro, Sato, & Tucker, 1992), but the difference across cultures has not been well documented yet. The cultural differences of cognitive dimensions, however, would provide us with an interesting tool to understand the cultural variations in fabricating the reality, and definitely an important research direction to pursue.

References


(Received Dec. 24, 1993; accepted July 2, 1994)