

AFFECTIVE CAUSES AND
CONSEQUENCES OF
SOCIAL INFORMATION
PROCESSING

Gerald L. Clore
University of Illinois
Norbert Schwarz
University of Michigan
Michael Conway
Concordia University

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The study of affect is as old as scientific psychology itself. A hundred years ago, two of the most influential psychologists were Wilhelm Wundt and William James. Both were centrally concerned with affect but in different ways -- Wundt was a structuralist and James a functionalist. Wundt (1897) was concerned with the underlying structure of emotions, and his conclusions were similar to those of recent investigators concerning the dimensions of emotional quality (e.g., Russell, 1980). But James was more concerned with function than structure. When it came to questions of structure and classification, James believed that the number of emotions was infinite, and hence not susceptible to systematic treatment. He said that he "should as lief read verbal descriptions of the shapes of the rocks on a New Hampshire farm as toil through the literature of emotion ..." (James, 1890, p. 448).

Emotion is again a central problem in psychology, and the distinction

between structure and function is still important. This distinction is reflected in the organization of this chapter. Before reviewing work on structure and function, however, we need to establish what we mean by "emotion." Hence, the first section asks, "What is an Emotion?" Issues of terminology turn out to be important in part because there is not broad agreement on certain key issues in the study of emotion. This will be followed by the second section on "The Cognitive Causes of Emotion," which takes a cognitive approach to Wundt's question about the structure of emotion. The third and final section concerns "The Cognitive Consequences of Emotion," which takes a cognitive approach to James's question about the function of emotion.

WHAT IS AN EMOTION?

A central issue about emotion that social psychologists have addressed recently concerns whether the concept of emotion can be defined. Russell (1991) argues that it cannot be defined in classical terms, and that the best one can do is to specify the features that tend to occur in prototypical examples (see also, Fehr & Russell, 1984). Russell proposes that prototypes are required for understanding lay concepts of emotion, but necessary and sufficient conditions might still be sought for arriving at a technical definition.

In response, Clore and Ortony (1991) argue that these two approaches to definition serve different functions. Prototypes contain typical attributes and are used to identify instances of emotion. Concepts, whether lay concepts or technical ones, contain more than a list of typical attributes. They specify the relations among the attributes, and are therefore useful for

reasoning about emotion. That is, concepts contain theoretical information that can be used to support reasoning about emotion. They also provide back-up criteria for identifying emotions when the matching-to-prototype heuristic fails.

As an alternative, Clore and Ortony suggest a combined approach. They argue that if people had only prototypes of emotion, they would be able to identify an emotion, but they would have no understanding of why emotions have the attributes they do or how a deviant example could still be a category member. Conversely, if people had only classically represented concepts, they would have a hard time identifying emotions. They suggest combining the best aspect of prototype theory, namely, that category membership can often be determined by similarity to a prototype, with the best aspect of the classical view, namely, that members of the same category often share properties that are not perceptually available.

How Do Emotions Differ from Nonemotions?

In order to assess theories of emotion, it is important to be able to distinguish emotions from non-emotions. Several investigators have focused on the problem, including Shields (1984), Mees (1985), and Ortony, Clore, and Foss (1987). Although much of the research concerns emotion words, the focus is on the attributes of the psychological conditions referred to by the words that make them emotional or nonemotional. Emotions are not primarily linguistic phenomena, of course, but the best access we have to the variety of emotions is through language. The power of words to

distinguish many emotions and to do so with precision greatly exceeds what can be done in terms of physiology, expression, or behavior.

The need to distinguish emotions from nonemotions is evident in approaches in which dimensions are derived from similarity judgments among words denoting emotions. The sample of states on which Russell's (1980) well known dimensions are based, for example, includes a number, such as, sleepy, tired, and calm, that may not be good examples of emotions (Morgan & Heise, 1988). One of the reasons for disagreement among empirically derived lists of emotions is that no effort is usually made to control whether subjects consider the candidate terms in the context of "feeling something" or "being something." Clore and Ortony (1988) argue that, in English, good examples of emotion terms seem equally emotional in both feeling and being contexts. "Being angry" sounds just as emotional, for example, as "feeling angry," but this is not the case for such conditions as "neglected." "Feeling neglected" is emotional, but "being neglected" is not. If one were aware of being neglected and one cared about being neglected, then "being neglected" might cause an emotion, but "being neglected" is clearly not itself an emotion.

Ortony et al. (1987) conducted an analysis of 600 words taken from frequently used lists of emotions. The goal was to arrive at a principled basis on which to determine which ones were emotions and why. They concluded that emotion terms refer to internal mental states that are primarily focused on affect (where "affect" simply refers to the perceived goodness or badness of something). Terms judged to be poor

examples fail to satisfy one or more critical conditions. Some of the rejected terms, for example, refer to what they called "external conditions" (e.g., abandoned) rather than internal conditions, some refer to bodily states (e.g., tired) rather than mental states, and some to nonstates (e.g., faithful) rather than states. Some terms that did refer to states did not qualify as emotions because they were behavioral states (e.g., cowering) or cognitive states (e.g., confused) rather than affective states (e.g., happy). About 200 affective terms were isolated that were good candidates for emotions. The entire 600 words were then analyzed in a scaling study (Clore, Ortony, & Foss, 1987). The results showed that this characterization embodies the same distinctions as those made implicitly by subjects rating the terms. It became clear that good examples of emotion terms (e.g., adore, afraid, aggravated, angry, anguished, annoyed, anxious, apprehensive, ashamed, awe-struck, etc.) do not refer directly to events, bodily reactions, feelings, or behavior, but to the mental events that tie these things together.

How Do Emotions, Moods, and Affect Differ?

In our usage, affect refers simply to valence -- the positive and negative aspect of things. All emotions are affective, but not all affective things are emotions. Preferences and attitudes, for example, are affective but they are not emotions. Emotions are states, while preferences and attitudes are dispositions. This distinction is reflected in the characterization of emotion noted above as "internal mental states that are primarily focused on affect". However, that characterization did not distinguish

emotions from moods. Moods are also affective states.

The distinction between emotions and moods has recently attracted considerable attention. They have, for example, been distinguished in terms of external versus internal concerns, present versus future orientation, and object versus objectless focus. For Morris (1992), emotions concern appraisals of external circumstances, while moods concern the state of internal resources. Batson, Shaw, and Oleson (1992) suggest that emotion concerns the present, while mood concerns anticipation of the future. Schwarz and Clore (1988) and also Frijda (1986) discuss emotions as having a specific focus, while moods are nonspecific. And, a related emphasis of Averill's (1980) is that emotions have an object that moods may not have. We shall emphasize this distinction. Thus, one might experience the emotion of sadness over the death of one's pet, and this event might also leave one in a sad mood that would no longer be specifically about the loss of the pet but would involve a general gloomy perspective along with dysphoric feelings. But moods need not be caused by emotions. One can have a series of quite minor setbacks, none of which give rise to an emotion, but which collectively leave a residue of depression or irritability. In our usage, then, mood refers to the feeling state itself, which need not be about anything, while emotion refers, not only to how one feels, but also to what the feeling is about. These characteristics are reflected in our use of language that implies specific referents for emotions but not for moods. Thus, we say that we are afraid "of" something and angry "about"

something, but that we are "in" a happy or sad mood.

One consequence of this stance is that cognitive causes may be essential for emotion but not for mood (Clore, Ortony, Dienes, & Fujita, 1993). Thus, a person can be in a depressed mood on a cold, dreary morning simply because the absence of sunlight inhibited the release of a particular hormone, rather than as a result of having appraised the day's opportunities as unpromising. Similarly, anti-depressants may change the mood of depressed individuals by acting directly on their neurochemistry. These changes tend to alter moods rather than emotions, although they may then change the likelihood of positive or negative emotions.

The basic cognitive model, then, is that emotions result from ongoing, automatic, but implicit, appraisals of situations with respect to whether they are positive or negative for one's goals and concerns (e.g., Arnold, 1960). Since mood refers to the feeling state itself (regardless of how it is caused), the same is sometimes but not always often true of mood. The experience of emotion serves as internal communication (Oatley & Johnson-Laird, 1987), feedback (Carver & Scheier, 1990), or information (Schwarz & Clore, 1983) about the nature and urgency of the situation. The output of this process has control precedence (Frijda, 1986), serving to reorder information processing priorities (Simon, 1967).

A cognitive view in no way implies that emotion is not also a set of neurochemical, physiological, and muscular changes, a set of universal social signals, and a set of motivational and perhaps behavioral inclinations that

have some commonality across species. The idea that emotions are caused by cognitive appraisals of situations does not imply that people are rational. Neither is it implied that people cannot be surprised by their own emotions, or that people necessarily know why they are happy or upset. It does imply that there is order to emotions, that emotions serve specific identifiable functions for the organism, and that they can be studied to advantage by the methods currently available to investigators of social cognition.

What are the Necessary Conditions for Emotion?

Emotions are multi-faceted phenomena, and it seems unlikely that any one feature can be said to be a sufficient basis for deciding that a psychological state is an emotion. But are there conditions that are necessary? Much work has been done on facial expressions, for example, and expressions often serve as reliable signals of the presence of a particular emotion, but clearly they are not sufficient, since actors routinely pose expressions without necessarily being emotional first. Indeed, Ekman, who has been one of the chief proponents of expression as a central aspect of emotion now says that a distinctive facial expression is not a requirement for an emotion (Ekman, 1992, August).

Feeling, however, is often used synonymously with emotion. Is feeling either a necessary or a sufficient condition? That feeling is probably not a sufficient condition can be seen by considering instances in which the feelings are produced directly in the laboratory without an emotional cause. For example, stimulation of the posterior hypothalamus in the cat

produces what is called "sham rage" (Bard, 1928). If such a procedure in humans gave rise to reports of anger-like feelings or angry behavior, most people would agree that "sham anger" would be a better label for the state than "anger," since part of what we mean by anger is that one is angry about something (see Oatley & Johnson-Laird, 1987, for an alternate view).

Is feeling a necessary condition? Linguistic tests would suggest it might be. It would be very odd, for example, to say "I was angry but I did not feel anything," but quite acceptable to say "I was angry but I did not do or say anything." On such grounds, feeling might be a good candidate for a necessary condition for emotion. This would require, however, that one deal satisfactorily with situations in which the person acts emotional and can perhaps be shown to have relevant physiological activity but reports no emotional feelings (Lang, 1988).

If one decided that feelings are necessary, then is the appropriate physiology to support such feelings also necessary? It may be a mistake to assume, as is often done, that emotional feelings amount to nothing more than sensing particular patterns of autonomic activity. Mees (1990) indicates that some emotional feelings, such as contempt (Niewenhuyse, Offenbergh, & Frijda, 1986) or pride, can be experienced without perceiving any physiological changes. And Parrott (1988) argues that experiencing distinctive thoughts should be included as part of emotional feelings. He points out that the experience of jealousy, for example, is more than a dull ache in the stomach or other bodily symptoms. The jealous person also experiences

troubling thoughts and images of his or her loved one in the arms of another and so on. From this view, the concept of emotional feelings might include all of the experiential aspects of emotion -- including the subjective experience of thoughts, bodily sensations, awareness of desires, and the feedback from posture, expressions, and anticipated or actual behavior.

What about cognitive processes -- the largely unconscious appraisal activity that gives rise to emotional thoughts and feelings? A coherent argument can be made that a necessary condition for a state to be an emotion is that it is caused by a cognitive evaluation or appraisal of something as positive or negative. In a review of current definitions of emotion, Strongman (1987) suggests that of the various components of emotion sometimes mentioned in definitions, the cognitive component may be the only necessary one. Ortony and Clore (1989) argue for the necessity of appraisal processes in emotion by considering the relation of feelings to emotions as analogous to the relation between symptoms and diseases. Feelings function as a symptom of emotion just as, for example, temperature is a symptom of disease. But before we conclude that a person has a particular disease, we must be able to make a good case that the symptom has the right kind of cause. It is not the presence of symptoms, but the presence of symptoms that are assumed to be appropriately caused that result in diagnoses. Similarly, with respect to emotions, it is not feelings however they are caused that are important, but feelings that are assumed to arise from an emotional source (Ortony & Clore, 1989).

What is Basic About Basic Emotions?

In chemistry, the scientific strategy that turned out to be best involved searching for basic elements. Particular chemical elements were found that are irreducible, meaning that there are no more primitive entities at the same level of analysis. It became possible to characterize all physical matter as combinations of basic chemical elements. A similar path was pursued in the study of color vision. All possible colors turned out to be combinations of two or three basic colors. In the study of emotion too, the concept of basic emotions has been popular for over a hundred years (e.g., James, 1884; Ekman, 1992).

However, Ortony and Turner (1990) argue that the concept is too ill-defined to anchor emotion research on a firm footing. As a result there is little agreement on such issues as how many basic emotions exist. The possibilities include two (Weiner & Graham, 1984), three (Watson (1930), four (Gray (1982), five (Oatley & Johnson-Laird, 1987), six (Ekman et al., 1982), seven (McDougall, 1927), eight (Plutchik, 1980), nine (Tomkins, 1984), ten (Izard (1971), or perhaps eleven (Arnold, 1960). In addition, some of the emotions that are called basic by some investigators are questionable as examples of emotions. For example, it has been argued that interest (Izard, 1971) and surprise (Plutchik, 1980) fail to meet reasonable criteria for being emotions at all, let alone basic emotions (Clore & Ortony, 1988). Ortony and Turner argue convincingly that the usual logical criteria for basicness in other fields have not been addressed by emotion theorists. For example, basic emotion theorists have not shown that emotions believed to be

basic are irreducible (for a relevant exchange, see Frijda, 1987; Oatley & Johnson-Laird, 1987). Also, they have not specified how basic emotions combine to form nonbasic emotions.

In reply, defenders of the idea (e.g., Ekman, 1992; Izard, 1992; Panksepp, 1992) point out that despite uncertainty about the total number of basic emotions, good agreement exists on the basicness of some emotions (e.g., anger, fear, joy). They also indicate that their idea of basicness mainly concerns whether an emotion has an identifiable biological substrate. Basic emotions (i.e., emotions that are tied to specific biological structures) are believed to be more likely to be found across cultures and across species, whereas nonbasic emotions are more likely to vary across cultures and to be species specific. Some of the evidence for basicness comes from the extensive research by Ekman and his colleagues, who have isolated distinctive facial expressions for emotions believed to be basic (Ekman et al., 1982). They also show that these emotions are reliably recognized even in culturally remote societies (Levenson, Ekman, Heider, and Friesen, in press), and that some of them have distinctive physiological markers (Ekman, Levenson, and Friesen, 1983).

Ortony and Turner suggest that one might develop an alternative, component model, in which basicness resides not in the emotional expressions themselves, but in some components of them. Facial expressive movements, such as furrowing the brows, which characteristically occur as part of the anger expression, may indicate effort, for example. They may occur in expressions of anger, not because anger expressions operate as a functional

whole, but because angry situations are likely to involve effortful responding. Shaver, Wu, and Schwartz (1992) argue, however, that the existence of subcomponents that are themselves basic does not argue against the basicness of the whole.

Some emotion theorists (e.g., Plutchik, 1980) use a palette metaphor when discussing how basic emotions (like colors) combine. Scherer (1984), reflecting the view that there are basic components of emotion rather than basic emotions, prefers the metaphor of a kaleidoscope, whereby any number of emotions can emerge from combinations of components. At the same time, Scherer suggests that a degree of pre-wiring probably constrains the possible combinations. Thus, the organism may be prepared for various kinds of emotional syndromes without there being a small set of basic emotions.

Firm conclusions about basic emotions would be premature at this time. It is not yet clear whether the concept will turn out to be critical to the study of emotion. Ortony and Turner's challenge has, however, encouraged investigators to be more specific about what they mean, so that the utility of the basic emotions concept can be assessed.

Distinguishing Emotions.

Emotions have many facets. Some emotions are characterized by distinctive patterns of thought (Parrott, 1988) and feeling (Davitz, 1969); Di Rivera, 1977; Russell, 1980). A fair number have distinctive facial expressions (Darwin, 1872; Ekman, Friesen, & Ellsworth, 1972; Izard, 1971) and perhaps vocal properties (Scherer, 1986). Some emotions

emerge developmentally before others (Campos & Barrett, 1984). A few can also be distinguished in terms of the patterns of autonomic (Ekman, Levenson, & Friesen, 1983), and neurological activity (Panksepp, 1992). Some emotions are represented by many words and some may not be represented at all in certain cultures and languages (Lutz & White, 1986). And, much effort has been invested on the faith that some emotions have distinctive motor programs or action tendencies (Berkowitz, in press; Frijda, 1986; Leventhal, 1982; Plutchik, 1980). Clearly there are a number of features that are likely to differentiate one emotion from another. There are at least four major approaches to the question of how specific emotions differ from each other. These include psychometric, physiological, expressive, and cognitive approaches.

Psychometric

Investigators taking the psychometric approach have generally collected ratings of emotional words, faces, or experiences. These are usually analyzed using factor analytic or multidimensional scaling techniques (e.g., Russell, 1980). Following in the footsteps of Wundt, the object is to determine the underlying perceptual dimensions. These are usually characterized as a dimension of valence (e.g., positive versus negative) and a dimension of arousal (e.g., excited versus relaxed). The facet of emotion that is focused upon in this approach is presumably how the various emotions feel when experienced.

Physiological

Because the experience of emotion often has strong bodily components, many investigators have sought to

distinguish among individual emotions physiologically. This has, however, proved surprisingly difficult. Lack of progress in this endeavor was an important argument in favor of Schachter and Singer's (1962) popular view that the physiological component of emotion could be reduced to nonspecific autonomic arousal. On this view, distinctions among emotions depend on the interpretations that people place on their experience of nonspecific autonomic arousal. Although this view contributed to the perceived viability of a cognitive approach to emotion, the theory itself is no longer a strong contender, in part, because of most investigators' belief that different emotions must have some distinctive physiology. Modest success has been reported by Ekman, Levenson, and Friesen (1983) in differentiating emotions in terms of patterns of heart rate and skin conductance. Despite the scarcity of systematic data, the effort to map emotions physiologically still seems promising, if for no other reason, because it jibes with one's personal experience, for example, that the feeling of being flushed when embarrassed is quite different from feeling a pit in one's stomach when anxious.

Expressive

Investigators have been much more successful at distinguishing emotions in terms of facial expressions (e.g., Ekman, Friesen, & Ellsworth, 1972). The wide-eyed look of fear is easily discriminable from the glare of anger, for example. By painstakingly mapping the muscles of the human face, a reliable coding system has been developed for facial expressions

(Ekman & Friesen, 1975). Despite the demanding requirements for using the system, it has achieved wide currency among emotion researchers. In addition, facial electromyographic activity (EMG) that is too subtle to be socially perceptible has been shown to vary, for example, as a function of the pleasant versus unpleasant nature of visual stimuli (e.g., Caccioppo, Bush, & Tassinari, 1992).

Cognitive

In addition to the fact that emotions differ in terms of how they feel, in their physiology, and in the facial expressions that make them known, emotions also differ from each other in terms of the situations that give rise to them, or more exactly, the cognitive representations of those situations. The situations in which fear arises, for example, are different from those in which disappointment or nostalgia arise. The second section of the chapter will focus on recent work on the cognitive contribution to emotion variation.

THE COGNITIVE CAUSES OF EMOTION

Having discussed some general issues about the nature of emotion, we shift focus to Wundt's question concerning the structure of emotional differentiation. Turning aside James' implied admonition to avoid such problems, we review some recent attempts to classify emotions. Agreement with James that the number of possible emotions may be infinite need not imply that they have no order. Although a merely descriptive approach might be endless and pointless, recent attempts to classify emotions with respect to their causal components appear more promising.

As we shall see, there is a lot of convergence on the important cognitive causes of the emotions, and this is a notable advance in an area that has seen little agreement over the last century.

Central Concepts for a Cognitive Analysis:

Goals and Standards

Goals

People's behavior is not random and is not driven solely by momentary external forces, but in addition reflects some internal structure of goals, interests, and beliefs. These kinds of mental structures are central concepts in cognitive analyses of emotion. It is generally assumed that positive emotions result from goal satisfaction and negative emotions from goal thwarting. By itself these assertions seem noncontroversial, but they do require some qualification. For example, is it the case that goal satisfaction is required for a positive emotion? Probably not. One may be pleased, for example, simply at progress toward a goal or displeased at making what seems like insufficient progress. Indeed, Carver and Scheier (1990) maintain that it is rate of progress that triggers emotion, regardless of whether the goal is ever achieved. Positive emotion occurs when the rate of progress toward a goal is greater than expected and negative emotion when it is less than expected.

At first glance some emotional events may seem to fall outside of an analysis based on goals. Pleasant emotions experienced while walking on a beach or in response to a beautiful sunset would seem to occur precisely because one is not pursuing a goal at the time. However, emotion theorists use the

concept of goal in quite a broad way. Schank and Abelson (1977), for example, distinguish Achievement goals, Satisfaction goals, Entertainment goals, Preservation goals, Crisis goals, and so on. Ortony, Clore, and Collins (1988) have simplified these to three kinds of goals -- Active pursuit goals (things one wants to get done), Interest goals (things one wants to see happen), and Replenishment goals (things that recur on a regular basis). The active pursuit goals are intended to include many of Schank and Abelson's more specialized goals. High level, active pursuit goals may be quite implicit and may endure for a long time (e.g., achieving a sense of fulfillment in one's work; getting married and having a large family). Lower level active pursuit goals may be more explicit and last less long. They are more likely to be the immediate conscious reasons for action. Interest goals differ in that they involve things one wants to see happen but that one is not normally able to influence (e.g., to see one's favorite team win). These include Schank and Abelson's preservation goals, where the object is to maintain some status quo (e.g., maintain one's health). A threat to interest goals can also lead to active pursuit goals (e.g., one may react to illness with instrumental action). Interest goals may last forever, such as one's perpetual interest in one's own well-being. Different from either active pursuit or interest goals are replenishment goals, which include many biological needs. These are goals that cannot be discarded when fulfilled, because they have a cyclical character (e.g., sleeping, putting gas in one's car). Is it the case that any goal achievement (or any rapid progress toward goal achievement) results in positive

emotion? Again, probably not, since some instances may be too trivial, and may give rise to emotional potential but not to an emotion as such (Ortony et al., 1988). According to Wyer and Srull (1989), goal importance and other variables affect intensity. They conclude from prior research that one should be more upset at an interruption the greater the goal importance, the greater the investment, and the less the distance to the goal. Thus, if one planned to go to the theater but was prevented from doing so, one should be more upset if the play was of special interest, than if it was only of mild interest (goal importance). One should be more upset if someone just ahead in line got the last ticket than if the last ticket had been sold months before (distance to goal). And one should be more upset if one had gone to a lot of trouble to get to the ticket office than if one had invested little effort (investment). These factors are formalized in the following equation:

$$\text{Negative affect} = V(1 - k_2D),$$

where V is goal importance, I is investment or sum of the weights (W) of the goals that will have to be retraced, and D is the distance to the goal. The distance, D, equals the difference between the total time and effort required to reach the goal and the sum of the weights of the subgoals already reached. The k's refer to constants.

The ticket example refers to an active-pursuit goal, but the same analysis applies to other goals. Negative emotions based on thwarting of a preservation goal, for example, involve something one already had that is taken away. Since the thwarting occurs when one has already reached the goal, the

distance from the point of interruption to the goal (D) would be zero. And since intensity is greater the less the distance to the goal, this scheme predicts that people should react intensely to the disruption of their preferred states of affairs, at least assuming the implicit goal is important (V) and one had made some investment (I) in attaining it.

For positive emotions, Wyer and Srull give a similar analysis. Emotions such as pride, satisfaction, and joy resulting from goal accomplishment should be more intense the more effort and time one expended in the achievement, and also the less the a priori likelihood or expectation of achieving the goal. Thus, the intensity of positive affect experienced at any point along the path to a goal is given by:

$$\text{Positive affect} = V(1 - P)D_b,$$

where V is the subjective value of the goal, P is the subjective likelihood of attaining it, and D_b is simply the sum of the weights of the various subgoals involved in attaining it. This formulation has the advantage that the same general set of parameters that predict intensity of negative emotions also predicts the intensity of positive emotions.

Such formalisms are useful in that they force one to be explicit about how the relevant factors are interrelated. It would be wrong, however, to infer from them that precise predictions can be made. There is no way of knowing, for example, which of many possibly relevant goals a particular person will think of when a certain event occurs, just as one cannot know which path a particular leaf might take when falling from a tree. In addition, it would be wrong to assume that such a formalism

includes all of the relevant variables. Kahneman and Tversky (1982), for example, suggest that how upset the person would be about the theater tickets would depend on rather different factors. One's response would depend, they suggest, on the experiential outcomes of mental simulations of scenarios in which one acted differently. One would be more upset, for example, if it were easy to imagine a scenario in which one could have succeeded in getting tickets by doing something slightly different.

Goal Importance

In cognitive accounts of emotion (Ortony et al., 1988; Wyer & Srull, 1989), goals are assumed to exist in a hierarchy. Goals that are higher in a hierarchy are more important than goals lower in a hierarchy because they carry more implications. High level goals of surviving, maintaining one's health, and so on are necessary conditions for satisfying most other goals. Although important, such goals are often not particularly salient. The ultimate goal of eating, for example, may be survival, but this goal is not usually salient as one tucks into one's dinner. It seems likely that the impact of a goal on emotional intensity, therefore, may depend less on its abstract importance in the entire goal structure than on its salience in the moment.

In one recent study of sports fans, for example, college basketball fans indicated their emotional reactions to their team's performance during each game of a championship season (Clore, Ortony, & Brand, in preparation; Ortony, 1990, August). At the start of the season, the fans had indicated that in the context of their life goals in

general, the success of the team was not very important, but during the actual games, many of these fans became highly emotional. Apparently, the importance or salience of a goal is context specific. During a sports event such as a basketball game, a fan gets to live in a simplified world in which only a few well-defined goals are salient. And, with respect to these goals, the positivity and negativity of each event is clearly defined. In the heat of the moment, the fan's belief that the referee has called a blocking foul for what was obviously a charging foul can take on inordinate importance. For the moment, such concerns as marriage, death, and taxes can become irrelevant. Indeed, this is presumably part of the appeal of sports events and entertainment more generally, to allow one to take a mental vacation from one's everyday goals and concerns.

Goal Conflict

We are arguing that the importance or weighting of a given goal varies with the situation. This is not at all surprising, given that a primary function of emotion is to reorder the processing priorities as situations change (Simon, 1967). This process goes a long way toward explaining the extraordinary ability of people to be flexible and adapt to changing circumstances. But the same process sometimes leads people to sacrifice more important goals for less important ones, often resulting in regret. Indeed, such emotional short-sightedness is a common theme in literature and drama. The supreme example is perhaps that of Faust selling his eternal soul to the devil and then living to regret it. The results of a program of research on goal conflict by Emmons and King (e.g., 1988) would presumably be no surprise

to Faust. They find that conflicting goals affect not only moods and emotions, but even the propensity for becoming physically ill.

Standards

Cognitive theories of emotion generally focus on goals as the primary basis for appraisals and on events as the object of those appraisals. But some appraisals may be based not on goals but on standards, principles, or norms. For example, Higgins (1987) distinguishes emotions based on oughts from those based on ideals, and Ortony et al. (1988) distinguish emotions based on standards from those based on goals. These concepts become useful when considering such emotions as pride and shame. In some accounts (e.g., Shaver, Schwartz, Kirson, & O'Connor, 1987) pride is considered a form of happiness and shame a form of fear. That view implicitly assumes that all emotions are based on the relevance of situations for goals. An alternate view is that pride and shame do not concern the satisfaction or thwarting of goals, but rather the meeting or falling short of oughts (Higgins, 1987) or standards (Ortony et al., 1988).

Virtual Cognitive Structure

The assumption that appraisals are made with respect to some sort of enduring cognitive structures, such as goals, is basic to most cognitive accounts of emotion. But a close inspection of that assumption raises some questions. Is it reasonable, for example, to assume that one carries around in one's head a representation of everything to which one aspires no matter how trivial? An alternative possibility is that we construct them as we need them, and that one's goal hierarchy is a virtual rather than an

actual structure. Although people behave as if there were such a representation, many goals may be constructed as required from a combination of general aspirations and momentary, local considerations. One may have a variety of abstract goals, standards, values, and attitudes that represent what generally matters to the person. But the more specific goals with respect to which a situation may elicit an emotion may not exist before the appraisal is made. Ortony et al. (1988, p. 47) propose that:

Presumably most of what we have stored are high-level, relatively nonspecific goals, standards, and attitudes, all of which have powerful generative capabilities. For example, if one has as a standard that people ought not to inflict needless pain, one presumably has implicitly (or sometimes explicitly) a host of instantiations of this standard such as that one ought not to harm animals and so on.

People continually propagate inferences about the implications of the specific situations in which they find themselves or imagine they might find themselves. If these inferences make contact with elements in the appraisal structure, then goals, standards, or attitudes are activated. When this happens, the situation is seen by the person as relevant to his or her concerns and the possibility of emotional reactions that will impinge on conscious experience arise.

The concept of virtual cognitive structure comes from the computer science literature. Few psychologists have concerned themselves with the nature of appraisal processes at this level. Exceptions include Carver and

Scheier (1990), Mandler (1984), Oatley and Johnson-Laird (1987), and Ortony et al. (1988). But in the artificial intelligence literature, some models of simplified situations with goals and affective reactions built into them are beginning to appear (for a review see Pfeifer, 1988). Many of these do not yet make substantive predictions of special interest to investigators of social cognition, but the general idea of asking questions about emotion from the point of view of system design would seem to have a lot to recommend it. This approach contrasts with the more microscopic concerns of traditional psychology in which questions about the function of particular processes in the larger cognitive system often remain unasked.

Methods

Before detailing specific theories of emotion, a brief discussion of method is in order. There are at least four different methods that have commonly been used including those focused on emotion vignettes, emotion prototypes, on-line emotions, and recalled emotions. Some investigators (e.g., Weiner, Graham, & Chandler, 1982) have employed standard vignettes in which one or more situational feature is varied. Subjects read the vignettes and imagine how they would respond emotionally in each situation. A related method is one in which subjects essentially serve as cultural informants (e.g., Shaver et al., 1987). They are asked to draw on their general knowledge to indicate for a particular emotion what eliciting conditions, responses, feelings, and so on are typical. A third method involves studying emotions on-line, as they occur. Typically a standard questionnaire about subjects'

experiences is administered during or soon after an emotionally relevant event such as taking a final exam (e.g., Smith & Ellsworth, 1987).

Recall, one of the most common methods (e.g., Roseman, Spindel, & Jose, 1990), involves asking subjects to recall when a given emotion was felt, to tell what happened, and to rate aspects of the situation believed to be cause the emotion. To measure perceptions of one's own responsibility, for example, Roseman et al. had subjects make ratings on a 9-point scale ranging from "Thinking that I was not at all responsible for the event" to "Thinking that I was very much responsible for the event." Similar items measured perceptions of the responsibility of other people and of the circumstances.

There are potential problems with each method, but we will focus briefly on the recall method. One problem concerns the degree to which subjects have access to the critical information. Use of this approach assumes that whatever appraisal dimensions were active at the time of the emotion were encoded by individuals in way that would allow them to be recalled and rated. A second problem concerns the influence of folk theories about emotions on subjects' responses. As they attempt to understand their own experience, subjects' memories may become assimilated to conventional beliefs about emotion (Parkinson and Manstead, 1992).

A third problem concerns the potentially confounding effects of intensity. Emotional episodes vary both qualitatively and quantitatively. Depending on the terms used, a request for an anger event, for example, might yield a memory of a relatively intense

situation, such as a serious argument with a spouse, while questions about feeling guilty might elicit a less intense event, such as failing to send a birthday card to one's grandmother. The problem, of course, is that the variables found to differentiate such episodes are as likely to reflect the differences between strong and weak states as the differences between anger and guilt (see Frijda, Ortony, Sonnemans, & Clore, 1992 for an analysis of the concept of emotional intensity and the problem of equating the intensity of different emotions).

Despite these problems, the methods that have been used appear generally appropriate to the task at hand, which is primarily to make rough cuts among cognitive and perceptual variables with respect to their general relevance to large numbers of common emotions. Given the number of emotions of interest in these general theories, it would be difficult to devise multiple measures for each emotion, to attempt to capture in vivo instances, or to devise laboratory inductions for each. Such efforts might, however, be useful and appropriate for in-depth studies of particular emotions.

Much more might be said about method in the study of emotion (see Scherer, 1988 for a brief review), but we turn now to the main concern of this section, a review of some current psychological models of the cognitive bases of emotional variety.

Cognitive Accounts of Emotional Variety

The work of Arnold (1960) is important as an early statement of the cognitive approach to emotion. Her concept of appraisal has been particularly influential. She proposed that people

implicitly evaluate everything they encounter, and that such evaluations occur immediately and automatically. The sources of evaluation come from the immediate experiences of pleasure and pain, from memory of the affect associated with previous experiences, and from imagining possible good and bad consequences, so that, according to Arnold, appraisal depends on memory plus expectation. Others whose research has been especially important in defining a cognitive approach to emotion include Schachter and Singer (1962), Lazarus (1966), and Mandler (1975). But this early work tended not to include overall schemes for categorizing emotions, so that they will not be reviewed in depth in this chapter.

The effort to provide a comprehensive cognitive account of emotion variation is a relatively recent enterprise; most of the theories have been published within the last ten years. Hence, few studies allow direct comparisons among theories. Still, as we shall see, there is considerable convergence on some important issues. In the following section, we outline the basic idea behind several recent theories, and compare them using the relatively comprehensive account proposed by Ortony et al. (1988) as a common reference point. Some of the theories in this section are focused on a particular principle or concept, such as attribution (Weiner, 1985), self-discrepancy (Higgins, 1987), or prototypes (Shaver et al., 1987). Some have a unique focus that sets them apart, such as a focus on action readiness (Frijda, 1986) or on the temporal sequence of cognitive processes (Scherer, 1984). Still others are eclectic and focus primarily on the

variables that predict various emotions rather than theorizing about the cognitive processes involved (Roseman, 1984; Smith and Ellsworth, 1985). For the most part, however, the theories are based on similar principles, and at the present early stage of development, they are known only by the names of their authors.

An Hierarchical Theory

An account proposed by Ortony, Clore, and Collins (Ortony et al., 1988) (herein referred to as the OCC account) maintains that the emotion one experiences depends on the aspect of a situation to which one attends. There are three kinds of things on which one can focus, including events, actions, or objects. In particular, one can focus on the outcomes of events, the agency of actions, the attributes of objects, or on some combinations of these. In this view, all emotions involve positive or negative (affective) reactions to something. In the case of events, the basic affective reaction is to be pleased or displeased about the outcomes of events. Hope, fear, relief, disappointment, happiness, sadness are some of the ways of being pleased or displeased at the outcomes of events, or in the case of hope and fear, the possible outcomes of events. These emotions appear in the left branch of Figure 1. When focusing on actions rather than events, the

 Insert Figure 1 about here

basic affective reaction is to approve or disapprove of the actions of an agent. Pride, shame, admiration, and reproach are some of the ways of approving or disapproving of the actions of agents.

These emotions appear in the middle branch of Figure 1. Finally, when focusing on objects, the relevant affective reaction is to like or dislike the attributes of an object. Love, hate, and disgust are common emotions that involve liking or disliking the attributes of objects. These emotions appear in the rightmost branch of the Figure. Finally, in addition to the possibility of focusing on one of these three possible aspects, one can also focus on two aspects of a situation at once. Gratitude, for example, involves both being pleased about the outcome of an event and approving of relevant actions at the same time. Similarly, anger involves both being displeased and disapproving at the same time.

As in all cognitive models of emotion, it is assumed that the positive or negative nature of affective reactions depends on appraisals of a situation in terms of personal concerns. In the OCC account, the nature of the goodness or badness depends on what one is focussing upon. In the case of events, one has the affective reaction of being pleased only if one sees the outcome of events as desirable. In the case of actions, one has the affective reaction of approval only if one sees someone's action as praiseworthy. And in the case of objects, one has the affective reaction of liking only if one finds the attributes of an object appealing. These perceptions arise from a process of appraising the implications of the situation for one's personal concerns. The kind of personal concern also varies with the focus. The outcomes of events are appraised relative to one's goals, the actions of agents are appraised relative to one's standards, and the attributes of

objects are appraised relative to one's attitudes or tastes.

According to the OCC account, then, three affective reactions (e.g., pleased, approving, liking) are based on three kinds of appraisals (e.g., desirability, praiseworthiness, and appealingness) of three kinds of things (events, actions, objects). And these three kinds of appraisals are made with respect to three kinds of cognitive structures (goals, standards, attitudes). According to the OCC (1988) account, all emotions are differentiated forms of these three general affective reactions - (1) being pleased or displeased at the outcome of events appraised as desirable or undesirable with respect to one's goals, (2) approving or disapproving of the actions of agents appraised as praiseworthy or blameworthy with respect to one's standards, and (3) liking or disliking the attributes of objects appraised as appealing or unappealing with respect to one's tastes or attitudes.

A major aim of the theory is to use a consistent set of terms in a clear and precise way. To do this, some terms such as "being pleased/displeased" or "desirable and undesirable event" take on specialized meanings. It should be noted that since emotions are states, the terms "liking" and "disliking" are used in the momentary sense of experiencing a feeling of liking or disliking rather than in the dispositional sense of having an attitude toward something.

One virtue of proposing multiple bases for emotional appraisals is the ease with which it allows one to account for multiple reactions to the same situation. Suppose, for example, that one were to learn that one's neighbor beats his children. How might one go about

predicting which emotion is most likely? One possibility is that it depends on the aspect to which one attends. One might feel pity, sympathy, and sadness if one focuses on the outcomes for the children, but one might feel reproachful, indignant, and outraged if one focuses on the neighbor's actions alone. Anger might occur if one were to focus on both the outcomes and the action at the same time. Or one might feel dislike, disgust, and contempt if one focuses on the neighbor as a person. The hypothesis that different emotions result from taking different perspectives on a situation might be tested using a priming methodology, but no such study has yet been reported in the literature. If one were actually exposed to such a situation, all of the these feelings might be experienced in succession. Since emotional states can linger, more than one might even be active at the same time.

Cognitive Prerequisites of Specific Emotions

According to the OCC (1988) account, affective reactions often involve an appraisal that implicates one's goals, standards, or attitudes. Specific differentiated emotions, such as anger, fear, pity, or shame require in addition that certain cognitive distinctions also be made. These include such distinctions as whether the implications for one's goals have already been realized or are only possibilities, whether the person responsible is oneself or another person, and so on. Thus, the emotion of fear, for example, is a differentiated form of the affective reaction of "being displeased." The formal specification of fear in this system is "being displeased at the prospect of an undesirable event". To

see what this means in the context of Figure 1, follow the event-based branch. Assume one is focusing on the consequences for self (rather than for another), on the prospect of an event happening (rather than on an event that has definitely occurred), and on the possible outcomes that are undesirable (rather than desirable). When these cognitive conditions exist, then the resulting affective reaction, if any, is a kind of fear emotion. It is important to note that Figure 1 is intended to emphasize a logical and not a temporal structure. The cognitive distinctions that are involved in particular emotions often occur simultaneously as features of a single perception.

The eliciting conditions for 22 emotion types are given in Figure 1. Emotions sharing common eliciting conditions form groups (Fortunes-of-others emotions, Well-being emotions, Prospect emotions, Attribution emotions, Attraction emotions, Well-being-Attribution Compounds). The number of emotions that can be distinguished on some basis is presumably large. These 22 emotion types, for example, may each encompass several tokens -- terms denoting specific states within the same type. The states denoted by these tokens may differ in a number of ways from others in the same type, but they all share the same general eliciting conditions. A couple of examples of the emotion specifications given for each of the 22 emotions can be seen in Table 1.

 Insert Table 1 about here

The Well-being emotions form a particularly large category, including all states in which one focuses on events and is pleased or displeased at the desirable or undesirable outcomes for oneself. Many of the emotions in the distress type differ from each other mainly in the specific goal that is thwarted, including grief (distress at the loss of a loved one), lonesomeness (distress at being alone), homesickness (distress at not being home), or lovesickness (distress at not being with a lover). Some may involve seemingly irrevocable losses, as in sadness, and some may involve the interruption of subgoals on the way toward a larger goal, as in frustration. These emotions may each have unique implications, but all share the same general eliciting conditions. Consequently, all are considered examples of the same emotion type, labelled "distress" in the figure. In the lower half of Table 1, the formal specification of the distress emotions can be seen.

The emotions toward the bottom of Figure 1 are cognitively differentiated forms of the three affective reactions at the top of the figure (e.g., being pleased, approving, liking). They achieve their distinctiveness as they are cognitively constrained. The least cognitively differentiated are some of the object-based (Attraction) emotions. Disgust at the prospect of eating a cockroach (Rozin & Fallon, 1987), for example, is surely one of the less cognitively involved of emotional reactions. Similarly liking and disliking are often relatively undifferentiated reactions, and people can be quite inarticulate about why they like or dislike something.

Evidence for the proposed scheme comes from a study of 120 college

basketball fans who recorded their reactions before, during, and after the games that they watched (Clore, Ortony, & Brand, in preparation; Ortony, 1990). The data were analyzed separately for wins and losses, and in both, cluster analyses showed that the emotions grouped themselves into the predicted categories of goal-based, standard-based, and attitude-based emotions.

The data also allowed a number of other hypotheses to be tested. For example, the distinction between goal-based and standard-based emotions could be seen in fans' reports of "disappointment." It turned out that when fans said they were "disappointed," some were disappointed-about the outcome of the game, and some were disappointed-in the actions of the team. The difference between these two states was apparent in the fact that some instances of disappointment clustered together with such emotions as sad and frustrated (which are clearly goal-based), while others clustered with such emotions as ashamed and embarrassed (which are hypothesized to be standard-based). A second form of evidence concerned the variables that governed the intensity of emotion. The disappointment of subjects who appeared to be disappointed-about the outcome was made more intense by beliefs that the game was an important one, and expectations that the outcome would be different -- factors concerned with goals and outcomes. The disappointment of those that appeared to be disappointed-in the performance of the team was made more intense by perceptions that the team had "not played well," that they had "not hustled," and that they did "not deserve

to win" -- all concerned with standards of play. Although both sets of fans were distressed, some were focused on the outcome and some on the quality of play.

A Motivation-plus-Cognition Theory

Roseman (1984) proposed a structural theory of emotion in which combinations of 5 appraisals determine which of 14 emotions will be experienced. The important dimensions of appraisal include whether something is event-caused or person-caused, whether the outcome is positive or negative, certain or uncertain, whether the motivation is appetitive (reward-seeking) or aversive (punishment-avoiding), and whether the self is strong or weak. The emotions covered include hope-fear, joy-sadness, liking-disliking, pride-shame, relief-distress, and also disgust, frustration, anger, and regret. For example, Roseman, Antoniou, and Jose (1992, p. 3) propose that, "...sadness results from an event that is inconsistent with an appetitive (reward-seeking) motive, is certain to occur, and is caused by circumstances, when the self is weak. In contrast, anger results from an event that is inconsistent with either an appetitive or an aversive (punishment-avoiding) motive, and is caused by other persons, when the self is strong."

 Insert Figure 2 about here

Supported Hypotheses

The most recent version of Roseman's theory (Roseman et al., 1992) is shown in Figure 2. Evidence from Roseman's research and the research of others

provides support for many of the proposed factors, as follows:

1. Motive Consistency. Events appraised as motive-consistent elicit positive emotions, and events appraised as motive-inconsistent elicit negative emotions (e.g., Roseman et al., 1990). The idea that the valence of emotions comes from the extent to which events are motive-consistent is implicit or explicit in all cognitive accounts.

2. Appetitive vs. Aversive Motivation. Events related to appetitive motives elicit joy or sadness and events related to aversive motives elicit relief, distress, or disgust (Roseman, 1991; Roseman et al., 1992). The notion that one feels sad after failing to achieve pleasure but distress after failing to avoid pain represents an interesting distinction that has not been made by others, except for Higgins (1987) who makes this observation the centerpiece of his theory.

3. Certainty. Positive events appraised as uncertain elicit hope rather than joy or relief, and negative events appraised as uncertain yield fear rather than sadness, distress, or disgust (Frijda, 1986; Roseman et al., 1992; Smith & Ellsworth, 1985; Tesser, 1990). Certainty is also a variable in the Smith and Ellsworth theory to be discussed next, as well as in Scherer's (1984) theory. In the OCC (1988) account, hope and fear are isolated from other similar emotions through the "Prospect relevant vs Non-prospect relevant" distinction. Certainty is considered primarily as a variable that influences the intensity rather than the kind of emotion.

4. Self vs. Other Caused. Positive events caused by self yield pride, while those caused by others might yield

love. Negative events caused by self yield shame, guilt, or regret, while those caused by others might yield dislike or anger (Frijda, 1986; Smith & Ellsworth, 1985; Tesser, 1990; Weiner, Graham, & Chandler, 1982). The self-other distinction is common to most cognitive theories and does similar work in separating self-focused vs. other-focused emotions.

Changes from 1984 Theory

In addition, Roseman et al. (1992) report research in which subjects recalled events in their lives that triggered one of several emotions. They described the events and then made a series of ratings on the proposed appraisal dimensions. On the basis of their own results and those of others, they made several alterations in the original 1984 theory, including replacing two of the original dimensions, adding a new dimension, and dropping an old one, as described below:

1. Unexpectedness. Because it predicts surprise, unexpectedness replaces uncertainty. Ratings of neither novelty (Scherer, 1984), unfamiliarity, nor uncertainty (Roseman, 1984) was successful in predicting surprise (Roseman et al., 1992). In the OCC account, surprise is not considered an emotion (because it is not inherently good or bad), but unexpectedness (surprisingness) is included as a global intensity variable for all emotions.

2. Control Potential. Control potential is introduced as a replacement for power. Predictions concerning power have not been supported in that people do not see themselves as more powerful in situations that lead to frustration, anger, and regret (Roseman, et al., 1990). Neither the variables of own

power (Roseman, 1984; Scherer, 1988), stimulus power (Arnold, 1960), nor stimulus controllability (Frijda, 1986) were predictive. Negative events that one could in principle do something about (high control potential) are frustrating, while events that could not be controlled at all make one simply sad.

Roseman also interprets a perception of illegitimacy as conferring control potential on a situation. The idea is that perceiving injustice gives one a sense of control potential. Predictions about legitimacy on its own were not supported.

3. Characterological vs. Noncharacterological. This factor is added because some results (Roseman et al., 1992) suggest that shame and guilt might be distinguished by whether the problem is with the person as object (characterological) or merely the behavior or noncentral attribute of the person (noncharacterological). When others are the object, this distinction yields contempt vs. anger. Also, disgust may be felt for an object that is bad in itself, while frustration will be felt if only its effect is bad. Here Roseman seems to be making the same distinction as the object vs. event focus distinction in the OCC (1988) account. Reviewing inconsistencies across several studies, Roseman also implicitly arrives at the event vs agency distinction found in the OCC account, saying :

“circumstance-caused' emotions (Roseman, 1984a) can also be elicited when no cause is specified for an event (Weiner, 1985), or when a causal agent is identified but the agency information is disregarded in a person's focus on the

event itself (cf. Ortony et al., 1988). If subjects disregard agency information and focus on events (e.g., focus on the fact of an unreasonable delay, disregarding who or what caused it), the event-directed emotion (e.g., frustration) would be experienced regardless of whether the agent was self, other, or circumstance" (Roseman et al., 1992, pp. 28-29).

4. Attribution to Circumstances. Roseman et al. (1992) eliminates "attribution to circumstances" as a necessary determinant for circumstance-caused emotions such as fear, frustration, joy, and sadness. The idea is that causal attribution is simply not the focus for many emotions. One may feel sad, for example, about an event that was clearly caused by someone if it is the case that one's focus is not on causation or blame but simply on the unfortunate nature of the outcomes. The major feature of the OCC (1988) account is that it is built around this variation in focus. According to that view, of the many characteristics of a situation, only some are salient within a given focus, and the emotions triggered will depend on those features.

Convergence with the OCC Account

The proposed changes increase the convergence between Roseman's theory and the OCC account. In particular there are three changes that make the two theories similar. Roseman's theory accomplishes certain goals by introducing new variables, and the OCC account does so by hypothesizing different points of attentional focus:

(1) One change is the new emphasis on the fact that causal attribution is only sometimes the focus. At other times, one may focus on outcomes without

regard to causation. In a similar way, a central feature of the OCC account is that eliciting conditions are arranged hierarchically, such that some variables are relevant for one affective focus but not another.

(2) The characterological vs. noncharacterological (behavioral) distinction allows Roseman to separate disgust from frustration, contempt from anger, and shame from guilt. Similar distinctions are made in the OCC account (except for the distinction between shame and guilt). Rather than a local "characterological vs noncharacterological" variable, however, the OCC account achieves the same end with the hierarchical structure in which some emotions involve a focus on outcomes, some on actions, and some on the objects themselves. Thus, disgust, contempt, and shame involve a focus on the object itself, whereas frustration, anger, and guilt involve a focus on either outcomes or actions.

(3) The effect of the new control potential variable also is similar to the effect of OCC's focus variable. In Roseman's theory, control potential distinguishes anger from dislike and also guilt and shame from regret. The OCC account distinguishes among them by assuming that sometimes one focuses on actions and sometimes on outcomes. When focused on actions and appraising them relative to standards, some are seen as blameworthy, so that anger rather than dislike is felt or guilt and shame rather than regret. Some of the same explanatory power can be achieved either by adding new variables (Roseman) or by capitalizing on the fact that one can focus on some aspects

of a situation to the exclusion of others (OCC).

The Theory As a Hierarchy

Roseman's theory is diagramed in Figure 2. This representation (Roseman et al., 1992) looks like an Anova design with some missing cells. The missing cells reflect the fact that the variables are not completely crossed; that is, some play a role under some conditions but not under others. In other words, the structure is actually hierarchical, as can be seen in Figure 3. The figure shows the same information as Figure 2 rearranged as a hierarchy. If one views Roseman et al.'s "Circumstance-caused" category as equivalent to the "Event Focus" category in the OCC account, and Roseman et al.'s "Other-Caused" and "Self-Caused" categories as reflecting an "Action Focus," the two theories look very much the same. As discussed earlier, Roseman's "Certain" vs "Uncertain" distinction reflects the "Prospects Relevant" vs. "Prospects Irrelevant" distinction in the OCC account. Also, the characterological-noncharacterological distinction in Roseman's theory mirrors the "Object Focus" vs the other two possible foci ("Events" and "Actions") in the OCC theory.

 Insert Figure 3 about here

However, Roseman makes one distinction that Ortony et al. do not, concerning appetitive vs aversive motivation. This distinction allows Roseman to account for relief as distinct from joy, and distress as distinct from sadness. The OCC account distinguishes relief from joy in

a slightly different way by making a hierarchy under hope and fear (uncertainty or prospect emotions) in which the hope or fear either is confirmed (yielding satisfaction or disappointment) or disconfirmed (yielding fears-confirmed or disappointment). But the sadness vs. distress distinction (also seen in Higgins) is not included in the OCC account.

Individual Differences

Roseman et al. (1992) propose that we need a motivation-plus-cognition theory rather than simply a cognitive theory of emotion. They suggest that emotions may be influenced by what one wants as well as by what one thinks. Although motivation is clearly already present in goal-based cognitive theories, they see this as a way of incorporating into emotion theory individual differences in motivation, such as an elevated need for intimacy or power and so on. They predict that differences in motive could produce differences in emotion, even when cognitions about a situation are the same.

The question of how differences in temperament or chronic motivation affect the emotion process is an interesting one. Within the OCC (1988) account, chronic motives should change intensity via changes in the desirability of relevant outcomes, the praise or blameworthiness of relevant actions, or the appealingness of relevant objects. So, a person with a heightened motivation for power might feel worse than someone else when he or she fails to be elected to office, because more of the person's goal hierarchy is involved in the goal for power. Alternatively, heightened

motivation might lower the threshold for emotion, making relevant emotions more likely or more intense. The same analysis might also handle differences in temperament. Thus, for hostile persons, less added frustration would be necessary to trigger anger. Similarly, for anxious persons, less added threat would be needed for fear, and perhaps for happy people, less added humor would be required to burst into laughter.

A Dimensional Theory

A related account has been proposed by Smith and Ellsworth (1985). These authors have not proposed a distinctive view of the processes involved in emotion production. Instead, they have taken an eclectic approach in which they reviewed previous research and abstracted eight dimensions proposed by various other writers as important in differentiating emotions. These included pleasantness, effort, attention, certainty, responsibility, control, legitimacy, and obstacles.

It is clear from even a casual reading of these first three theories that there is considerable convergence of view.

Table 2 summarizes the similarities and differences among these approaches by listing the common and unique cognitive distinctions hypothesized to account for emotional variety.

 Insert Table 2 about here

Smith and Ellsworth (1985) asked subjects to recall situations in which they felt each of 15 different emotions (happiness, sadness, anger, fear, disgust, surprise, challenge, boredom, hope, interest, contempt, frustration,

pride, shame, and guilt). These situations were then rated on the eight proposed appraisal dimensions. The results showed that six dimensions were useful in distinguishing among subjects' emotions, including the proposed dimensions of pleasantness, anticipated effort, attentional activity, and two dimensions that were combinations of the originally proposed responsibility and control dimensions. These were human agency (whether self or other was responsible and in control of the situation) and situational control (whether the situation was being controlled by a human agent or by impersonal circumstances). The proposed dimensions of legitimacy and perceived obstacle did not turn out to stand on their own.

Smith and Ellsworth found a unique pattern of cognitive appraisals for each emotion except that shame and guilt were not distinct, nor were anger and contempt. The roles played by the dimensions are summarized below:

1. Pleasantness: Not surprisingly, the pleasantness variable accounted for a sizable amount of variance (20-25%).
2. Anticipated Effort: With respect to the anticipated effort to remove an obstacle to a goal, most negative emotions were high, as was challenge, while happiness and boredom were rated as involving little effort. In the OCC account, neither challenge nor boredom are considered emotions, and effort is included as an intensity variable rather than as an eliciting condition. In Smith and Ellsworth's data, effort differentiated annoyance and rage, although these too may differ primarily in intensity.
3. Certainty: Uncertainty about whether something will or will not

happen distinguished fear, hope, and surprise from other emotions. In the OCC account too, fear and hope are characterized by uncertainty. As indicated earlier, however, surprise is not considered an emotion but as an intensity variable in the OCC account.

4. Attentional Activity: According to Smith and Ellsworth (1985), the first appraisal that is made is whether to attend to, ignore, or avoid a stimulus. No similar variable is included in the OCC or Roseman accounts, but in Scherer's account, to be considered next, a novelty check serves the same function. Smith and Ellsworth found that frustration, interest, challenge and most positive emotions were associated with a desire to attend, while boredom and disgust were associated with a desire to avoid attending.

5. Responsibility and Control: Subjects' perception of causes differentiated the emotions of sadness (chance), shame or guilt (self-caused), and anger (other-caused). This is generally compatible with the OCC account, although the latter begins at a somewhat different point. In the OCC account, attribution of cause is also a feature of shame and anger, but sadness involves focusing primarily on the undesirability of the outcomes rather than on causes. Thus, while attributions to chance might sometimes be involved in sadness, it seems unlikely that sadness generally involves a focus on chance. Indeed, a common reaction to reading about horrible crimes that are clearly caused by a person is not so much anger as sadness that such events happen. As discussed earlier, an emotion like sadness is not (according to the OCC and new Roseman accounts) an emotion that achieves its distinctive character by

virtue of a causal attribution. Such emotions are simply not about responsibility, but about the undesirability of outcomes.

In a follow-up study, Smith and Ellsworth (1987) obtained cognitive appraisals and reports of emotional states both before students took a midterm examination and immediately after receiving their grades. At both times, most students reported feeling more than one emotion. The study is interesting because subjects were actively experiencing emotions as opposed to simply recalling earlier situations. They assessed their experience of six emotions, including anger, happiness, hope, challenge, apathy, fear, and guilt. Most were associated with a characteristic appraisal. Anger was associated with appraisals of unfairness, apathy with appraisals of other agency, fear with unpleasantness, hope/challenge with anticipated effort, and happiness with appraisals of pleasantness. Sadness did not emerge in the exam situation as an independent emotion, and guilt, while present, was not predicted by the appraisal dimensions assessed.

Smith and Ellsworth (1987) focus on the dynamic nature of emotional life, noting that most of the emotions occurred along with other emotions rather than by themselves. Moreover, subjects often reported contradictory emotions. For example, most subjects (60%) who felt guilty also felt angry, even though attributing the negative action to another person is a prerequisite for anger and attributing it to oneself is a prerequisite for guilt. Presumably they felt they had not studied as much as they should have (self-agency), but also that the test had too many picky, unfair, multiple choice

questions (other agency). In other research from this perspective, Smith (1989) used an imagery task to explore the links between the appraisal dimensions and both physiological activity (e.g., heart rate and skin conductance) and expressive behavior (e.g., EMG's indicating eyebrow frowns and smile).

Tesser (1990) report a conceptual replication of Smith and Ellsworth (1985). They interviewed subjects and asked them to recall eight different situations, indicating the degree to which they had experienced each of 18 emotions (the 15 studied by Smith and Ellsworth plus jealousy, envy, and pride-in-other). The patterns of the emotions along the appraisal dimensions were highly correlated with those reported by Smith and Ellsworth. In fact, the average correlation of the location of the 15 emotions on each of the 6 dimensions with the earlier patterns was $r = .85$, with only situational control correlating less than $r = .50$. Among the new emotions studied, the dimensions were not related to pride-in-other, but accounted for about 40 per cent of the variance in reports of jealousy and envy.

Manstead and Tetlock (1989) conducted a similar study of some of the appraisal dimensions and emotions examined by Smith and Ellsworth (1985) and also added some new ones. The results were generally compatible. They found evidence for the usefulness of new factors they called "unexpectedness," "own and others benefit," and "inconsistency with behavioral standards." These new variables, except for unexpectedness, are also parts of the OCC account.

What is an Appraisal?

The use of the term "appraisal" by Roseman, Smith and Ellsworth, and also Frijda differs from the usage in some other models. They include, for example, whether an action is caused by self or other as an example of an appraisal. In some other theories, such as the OCC account, appraisals must be affective; they must concern the goodness or badness of something. Appraisals can include whether something is desirable, praiseworthy, or appealing, but not whether an action is one's own or someone else's. Appraisals are differentiated into specific emotions when modified by whether an action is one's own or someone else's, whether an outcome is known or unknown, and so on. We are inclined to view these factors, however, as descriptive features of the situation rather than as appraisals. They are perceptual constituents of emotion, while appraisals concern the ways in which a situation is positive or negative.

Correlates vs Causes

Smith and Ellsworth think of the cognitive conditions of emotion elicitation as a set of dimensions with continuous variation. The more one feels that another person is responsible for a negative event, for example, the more one's emotional reaction will be characterized by angry rather than sad feelings. This dimensional approach contrasts somewhat with a discrete emotions view, but Smith and Ellsworth suggest that continuous dimensions are not necessarily incompatible with discrete emotions. One can think of common discrete emotions as representing regions of the dimensional space that frequently occur or that are subjectively salient. Alternatively, within a discrete

emotions view, the dimensions may be useful for describing differences among the emotions. By contrast, the cognitive variables in the OCC (1988) account are seen as the necessary conditions for the elicitation of a particular emotion, rather than variables that are simply descriptive of or associated with the emotion.

A Sequential Process Theory

A number of cognition-emotion theorists have focused on the order in which cognitive operations occur in the appraisal process (e.g., Arnold, 1960; Lazarus, 1966; Schachter & Singer, 1962; Weiner, 1985). The most detailed proposals about the sequence of processes in emotion elicitation, however, come from Scherer (1984; 1988). Scherer's component process model of emotion uses the logic of facet theory as a framework for thinking about all aspects of emotion, including their cognitive elicitation. He assumes that the various component processes can combine to form any number of emotions. Scherer proposes that emotions result from a sequence of "stimulus evaluation checks" that all organisms go through.

Novelty Check. The first of these checks is an evaluation of the novelty or unexpectedness of the stimulus. This stage includes such pre-cognitive operations as the startle reflex or the orienting response, as well as more extended processing. Boredom and surprise, which he considers emotions, emerge at this stage. Also, in the case of a stimulus that is unexpected, subsequent stimulus checks may be speeded up.

Intrinsic Pleasantness or Unpleasantness Check. The second check involves evaluating the intrinsic

pleasantness or unpleasantness of the stimulus, as opposed to its potential for goal satisfaction. Disgust would be an example of an emotion based principally on the inherent unpleasantness of a stimulus. Scherer's intrinsic pleasantness-unpleasantness check is comparable in the OCC account to the experience of momentary liking or disliking based on tastes or attitudes.

Goal/need Conduciveness Check. The third stimulus evaluation check is the assessment of the Goal/need conduciveness of the stimulus. To show the difference between the value of a stimulus based on inherent pleasantness and goal conduciveness, Scherer points out that even intrinsically pleasant stimuli can interrupt ongoing plans and be evaluated negatively in terms of goal attainment. In the OCC account too an appraisal based on goals can conflict with an appraisal of the same stimulus based on inherent pleasantness. Going to the dentist may facilitate health maintenance goals but is often inherently unpleasant.

Coping Potential. The fourth stimulus evaluation check determines the coping potential of the organism with regard to a past or future event. It includes four subchecks, including checks for cause (who or what caused the event), control (whether the consequences can be controlled), power (one's relative power with respect to obstacles), and adjustment (the ease of adjusting to uncontrollable events). Sadness is expected to result from events judged both negative and uncontrollable. Anger might result when, after negative events, one judges oneself to have high power; while fear might result from judgments of low power.

Norm/Self Compatibility Check. Scherer suggests that while all species should show the first four stimulus checks, perhaps only humans (and their close mammalian relatives) engage in a norm/self compatibility check. This check involves comparing the actions of oneself and others against applicable standards, such as social norms or one's self-concept. As in the case of the OCC account and of Higgins' theory, this check is relevant to such emotions as embarrassment, shame, and guilt. Theories that include only motives or goals and not standards as sources of value (e.g., Roseman, 1984) may be less able to treat these emotions satisfactorily.

The stimulus evaluation process is a continuous loop, and although some of the steps may be skipped, as when one re-evaluates stimuli, Scherer says that they will always occur in the same hierarchical order. Each stimulus check further differentiates the emerging emotional state. Surprise, for example, may result from the first stimulus check (the novelty check) and may then become a more specific emotion after subsequent checks. The inherent pleasantness check or the goal conduciveness check might turn the neutral or ambiguous surprise response into a positive emotion. As indicated above, Clore and Ortony (1987) have argued that surprise is not a good example of an emotion for precisely this reason. To be an emotion a state must be positive or negative, but one can be surprised about either positive or negative events. Hence, surprise may modify an emotion (e.g., make it more intense) but not fit comfortably as an emotion per se into the category of emotions.

The elicitation variables proposed by Scherer, although anchored in a somewhat different theory, are comparable to those suggested in the OCC account, in Roseman's account, and in Smith and Ellsworth's (Table 2). These approaches depend on such factors as whether the event is caused by personal or impersonal forces, whether the personal agent is self or other, how probable or expected the event was, the implications for one's goals, whether standards are relevant, and the potential for control.

Cross-cultural Research

An issue that arises is the degree to which these appraisal factors are universal and the degree to which they are local to the countries of the investigators. There appear to be some unique emotions or emotion concepts in some cultures (Lutz & White, 1986), but the most common emotions seem quite universal, and systematic studies in diverse countries consistently show that the cross-cultural variation in the relations between the cognitive appraisal dimensions and particular emotions show little systematic variation across cultures (Wallbott & Scherer, 1988; Mauro, Sato, & Tucker, 1992). Mauro et al. (1992) found evidence for the role of pleasantness, certainty, attentional activity, coping ability, and need/goal conduciveness with little or no effect of culture. Similarly, the roles of norm/self compatibility and legitimacy in emotion elicitation also showed little cultural variation.

An Action Readiness Theory

The most distinctive feature of Frijda's (1986) theory, however, is the fact that he distinguishes emotions not only in terms of patterns of cognitive

appraisals, but also in terms of the actions they prepare one for. According to Frijda, emotions involve states of action readiness elicited by events appraised as emotionally relevant. He considers action readiness as part of the emotion itself, rather than being an outcome of the emotion. The action readiness concept includes both minute facial muscle changes and gross motor behavior, and also both automatic fight/flight reactions and learned behavior. He views the physiological components of emotion as serving the patterns of action readiness, which in turn are reflected in feelings of action readiness, facial expressions, and, of course, actual behavior.

Frijda, Kuipers, and ter Schure (1989) examined the role of 17 action tendencies and 13 appraisal factors to determine how well they were related to self-reports of 32 emotional states. Subjects recalled instances of several emotions and indicated the relevance of a variety of appraisal dimensions and action readiness modes to each. The action readiness modes were:

moving toward, against, or away
 hyperactivation, helplessness,
 disappear from view attending,
 disinterest;
 exuberance, inhibition excited, rest;
 in command, submitting interruption,
 helping, rejecting don't want

The appraisal dimensions included:
 valence*importance modifiability,
 certainty agency interestingness,
 expectedness fairness*changes in self
 esteem,

effort*familiarity affecting someone else.

controllability

By now these dimensions should look familiar. Except where indicated with an asterisk (*), they overlap those suggested by Roseman, Smith and Ellsworth, and OCC (see Table 2). In addition, familiarity is included in Scherer's account.

The results showed that appraisal cues led to 40% correct prediction of emotions and action readiness cues to 46%. Together they yielded almost 60% correct predictions. The largest appraisal factor was valence or pleasant-unpleasant and the largest action readiness factor revolved around the item "don't want". All of the negative emotions studied were associated with the appraisal dimensions of "unpleasantness" and "importance" and with the action tendency modes of "don't want". In addition, a sample of the results shows that:

1. Anger (anger, contempt, annoyance, rage) was related to the appraisal dimensions of "certainty" and "agency other" and to the action tendency mode of "moving against".
2. Disgust (disgust, aversion) was not distinct from anger in appraisal dimensions but was associated with action tendencies of "moving away" rather than "moving against".
3. Fear (fear, anxiety, startled) was associated with appraisal dimensions of "uncertain," "unexpected," "controllable," and "familiar" and to action tendencies to "move away" but also to "approach."

4. Shame (shame, regret, guilt) was related to appraisals of "certainty," and "self-agency". Shame alone, but not regret and guilt, was associated with "disappear from view."

With few exceptions, the appraisal results are similar to those reported by others. As in studies by Roseman, fairness did not show up as a general factor of appraisal. But it did differentiate several negative emotions, again suggesting a hierarchical rather than a dimensional structure. No action readiness modes differentiated such complex emotions as jealousy, regret, distrust, and disappointment apart from the general "don't want" and in some cases "attending."

A great deal of attention has been devoted in recent years to the cognitive eliciting conditions of emotions. By contrast, work is just beginning on the output of emotions, and Frijda's work, along with that of Shaver and Schwartz (Shaver et al., 1987), is an important beginning. One problem with the theory at the present stage of development is that there is no principled criterion for deciding what counts as an action readiness. Some of the action readiness items (e.g., "Boiling inwardly") seem to be better examples of feelings than of action readiness. Others (e.g., "I felt I was in command") seem like what others include as an appraisal, and some (e.g., "crying," "blushing") seem to be expressions.

An Attribution Theory

Weiner (1985) has proposed an account focused on emotions that involve attribution. He conceptualizes emotion as a more or less automatic response of pleasure or displeasure concerning the outcome of an event. Then, especially

if the emotion is negative and unexpected, one is believed to engage in a search for causes. The causal attribution that is made can be seen to vary in terms of whether the cause is internal vs. external, stable vs. unstable, and controllable vs. uncontrollable. These dimensions are important because they have strong implications for motivation and emotion. A tennis player, for example, that believes her failure in a match was caused by a lack of talent should have low motivation to continue, because lack of talent is a stable and uncontrollable cause. She might also feel shame, because lack of talent is an internal as opposed to an external cause.

Weiner is concerned primarily with emotions that are relevant to achievement situations. He proposes that one first responds with outcome-related emotions of happiness or frustration, which are attribution independent. Then, one of seven emotions might occur, depending on how this first reaction is explained. These include pride, anger, pity, guilt, shame, gratitude, and hopelessness. For example, whether one feels anger, pity, guilt, or gratitude depends on the controllability and internality of the attribution. In a 2 x 2 matrix varying controllability (controllable vs not) and locus of causation (failure of self vs other), guilt, shame, anger, and pity fall into the four cells. Both guilt and shame are reactions to failures of the self, guilt being felt when the failure is controllable and shame when it is not. Anger and pity concern the failures of others, anger being felt when the failure is controllable and pity when it is not. Wiener (1985, p. 562) says, "We feel anger toward the lazy and therefore punish lack of effort, but we feel pity

toward the unable and therefore do not punish lack of ability". The proposed eliciting conditions for anger parallel those proposed in the OCC (1988) account. "The attributional antecedent for anger is an ascription of a negative self-related outcome or event to factors controllable by others" (Weiner, 1985, p. 562). Thus, attributions to lack of effort elicit guilt from self and anger from others. Shame, on the other hand, concerns failures seen as self-relevant and uncontrollable, such as lack of ability.

A 2 x 2 matrix can also be made for positive outcomes by varying stable vs unstable and internal vs external causes. The matrix includes pride, relief, gratitude, and surprise. Pride and relief both concern internally caused successes, pride occurring when the cause is assumed to be stable, relief when unstable. Gratitude and surprise are reactions to externally caused successes, gratitude occurring when the cause is assumed to be another person who intended to help (stable cause), and surprise occurring when the cause is unstable (e.g., good luck).

Weiner points out that socially shared knowledge about the emotional effects of various attributions underlies the practice of giving excuses that will help the other person avoid an internal attribution. Saying one is ill, for example, protects the self esteem of others more than saying one does not enjoy being with them.

When do Attributions Occur?

An issue that arises in attributional accounts concerns the timing of attributions and emotions. As indicated above, Weiner (1985) shares with Arnold (1960) and Lazarus (1966) a two-stage model in which emotional

reactions typically involve first a primary and then a secondary appraisal. The primary appraisal establishes the goodness or badness of the event, and the secondary appraisal the cause. Success or failure is believed to first produce primitive reactions of happiness or frustration which then stimulate a search for a cause. Depending on the attributions made, new emotions result.

The idea that attributions involve a separable stage of the emotion process was also characteristic of Schachter and Singer's (1962) attributional approach. They induced in subjects a state of undifferentiated arousal by injecting them with epinephrin and then arranged for a confederate in the same room to act either angry or playful in order to influence subjects' interpretations of their experience of arousal. This method was dictated by the Schachter-Singer model that the physiological component of emotion was a state of undifferentiated arousal, and that the emotional quality depended on cognitive interpretations of that arousal. Although Schachter and Singer made it clear that perceptions of arousal and attributions were often simultaneous, their method encouraged the idea that attributions usually come later.

A somewhat different emphasis can be seen in the writing of Heider (1958), the originator of attribution theory. Heider is a gestalt psychologist for whom attributions are often an inseparable part of perception, not something that occurs after perception. When one sees one billiard ball strike another, and the second begins to move immediately, we perceive the first ball as having caused the second to move. We do not first see motion and then ask

ourselves why; the causal attribution is part of the perceived event.

Weiner's (1985) model is not intended to be a comprehensive theory of emotion, but the eliciting conditions it specifies for the attribution emotions are generally similar to those proposed in the OCC account. In the OCC account, if one perceives an action as praiseworthy, one might feel admiration if the actor is another person and pride if the actor is one's self. Admiration and pride are differentiations of the affective reaction of approval, but it is not the case that one first experiences approval and then has to ask what caused the action of which one is approving? Rather, as in Heider's account, the self vs other attribution is often part of the initial perception.

Liu, Karasawa, and Weiner (1992) have recently extended the attributional approach. They note that dispositional attributions are more likely for negative than for positive emotions. They infer that this is a consequence of the functional difference between positive and negative emotions. Following Schwarz (1990), the underlying notion is that negative emotions require action, and action requires one specific target of effort, whereas positive emotions generally signal that things are fine, and that one can continue doing the same thing. In addition, happiness may generally require that many things fall into place so that one can reach one's goal, whereas unhappiness can result when a single link in the chain fails. In three scenario experiments, Liu et al. show that scenarios depicting negative emotions are more likely to be followed by attributions to one and only one sufficient cause, whereas positive

emotions evoke inferences of multiple causality.

Learned Helplessness

Weiner has distinguished a variety of emotions using attributions, but the majority of research on attribution and emotion has concerned a single emotional state -- depression. For example, the work of Seligman (e.g., Seligman, Abramson, Semmel, & Von Baeyer, 1979) and of Alloy and Abramson (e.g., 1979) focuses on the fact that attributions of negative outcomes to internal, stable, uncontrollable causes produce feelings of hopelessness, helplessness, and depression. Stemming from the original demonstration of learned helplessness in dogs (e.g., Seligman, Maier, & Solomon (1971), these investigators have explored the consequences of learned helplessness beliefs for depression and the role of individual differences in attributional style in the risk of depression.

Implicit Theories of Ability.

In a related line of work, Dweck and Leggett (1988) propose that the power of attributions flow from a person's implicit theory of the domain in question. They show how individual differences in implicit theories of intelligence affect a person's goals, emotions, and behavior. Dweck and Leggett refer to individuals who believe ability to be fixed and unchanging as "entity theorists" and those who believe ability to be malleable and controllable as "incremental theorists". Even though entity theorists do not differ in ability, they are prone to helplessness in the face of failure. Consequently, they appear to avoid situations where they might fail and adopt performance goals

(to look good) rather than learning goals. In contrast, incremental theorists have a mastery orientation and are challenged by failure. Thus, they appear to seek out challenge and to adopt a goal to learn.

In terms of the OCC account, entity theorists are focused on themselves as objects and on ability as fixed. Incremental theorists, on the other hand, do not have a preoccupation with themselves as fixed entities, success and failure conveys information about the world and about their strategy rather than about themselves. With respect to their achievement goals, entity-oriented theorists would be likely to experience self-as-object emotions such as self-disgust or contempt when they fail, whereas incremental theorists should be more likely to experience outcome-based emotions such as frustration. With respect to their performance goals, entity-oriented subjects should experience fear, but incremental theorists should experience hopefulness. To the incremental theorist, failure can serve as an incentive since it is a sign that learning can take place. Indeed, Diener and Dweck (1978) showed that after failure, mastery-oriented children often become more rather than less motivated. Entity theorists, on the other hand, find in failure evidence of personal flaws and are motivated to cover up and avoid disclosing their inadequacy (performance goals) rather than risking failure in order to learn. One of the most interesting aspects of Dweck and Leggett's work is their generalization of their theory from success and failure in academic pursuits to other domains, including reactions to social rejection and moral failure.

A Prototype Theory

For the appraisal theorist, the important part of reality is in the mind of the perceiver. For the prototype theorist, the important part of emotion is also in the mind of the perceiver. While most investigators of emotion use subjects' concepts of emotion as a proxy for studying emotions themselves, investigators of emotion prototypes study such concepts for their own sake. For example, Shaver, Schwartz, Kirson, and O'Connor (Shaver et al., 1987) obtained similarity ratings on 250 emotion terms and then conducted a hierarchical cluster analysis. They isolated three levels corresponding to (a) general positive and negative affective reactions, (b) middle level concepts consisting of five basic emotions (love, anger, happiness, sadness, fear), and (c) subordinate emotions (e.g., liking, hope, disgust, shame, anxiety). The authors envision the emotional process as one in which eliciting conditions give rise to a basic emotion that might then be differentiated on the basis of the situational context into one of the subordinate forms.

In common with other cognitive accounts, Shaver et al. assume that the elicitation of an emotion ultimately depends on a person having appraised a situation as relevant to his or her goals. Of most interest, however, is data collected on the content of people's prototypes about the basic emotions. They solicited open-ended answers to questions about the antecedents, responses, and self-control procedures for each of the basic emotions. For example, subjects mentioned that fear was elicited by threat of social rejection, threat of harm or death, being in the dark, and so on. They mentioned that responses to fear include feeling

nervous, having a trembling voice, whimpering, and fleeing, and that coping with fear can involve trying to keep calm and hiding the fear from others. On the basis of these kinds of responses, Shaver et al. provide maps of the content of common emotion prototypes.

The approach taken by Shaver and Schwartz and their colleagues is both similar to and different from that taken in the OCC (1988) account. The approaches are similar in that emotions are seen as hierarchically structured in both. Also both consider that some emotional reactions are cognitive differentiations of other emotions. However, Shaver and Schwartz take a strong stand on the issue that there are five basic emotions from which all other emotions emerge. Ortony et al. (1988) recognize that some emotions can serve as a basis for others, but express doubt that there is a single set of irreducible emotions that combine to account for all others. Of course the concept of a basic level category in a conceptual system is not necessarily the same thing as a basic emotion in a biological sense.

The most fundamental difference between the Shaver and Schwartz approach and the others discussed here lies in the prototype approach they have adopted. As indicated above, Shaver and Schwartz focus on the conditions for the use of emotion concepts rather than the eliciting conditions for emotions themselves. Thus, one is more likely to apply the concept "anger" in a situation which resembles one's prototype of anger. If someone sees a person who is red in the face hit another person who has just insulted him, one is likely to infer the presence of anger. This prototype approach

concerns beliefs about eliciting conditions, which may or may not encompass the actual elicitation conditions for emotions. However, a strong argument in favor of this approach comes from a recent study by Shaver et al. (1992) who compared the categories of emotion terms used by Chinese, Italian, and U.S. subjects and found strong agreement. On the basis of these results, they argue that certain emotions are universal, and they see in this universality evidence for a biological basis for these emotions.

As discussed earlier, the basis of a prototype position is the belief that it is impossible to specify the necessary and sufficient conditions for the concept of emotion, and perhaps for emotions themselves (Fehr & Russell, 1984; Russell, 1991). To the extent that other cognitive theories are, at least implicitly, attempts to specify the necessary and sufficient conditions for emotions, then Shaver et al.'s view is fundamentally at odds with them. On the other hand, progress can be made by studying the various facets of emotion specifying the conditions of emotions without taking a position on whether emotion is definable or not.

A Self-Discrepancy Theory

Higgins (1987) has proposed an hypothesis that focuses on self schemas and the emotional consequences of self-discrepancy. The idea is that one has a general schema for one's self (actual self) that can be more or less discrepant from schemas about the way one would like to be (ideal self) or the way one thinks one should be (ought self). Each of these viewpoints on the self, moreover, can be from one's own standpoint or from the standpoint of one or more others. The basic

possibilities are that an actual self schema (from own or other's standpoint) may be compared with either an ideal or an ought self schema (also from own or other's standpoint). The ideal and ought selves are believed to function as "self-guides," and comparisons between these self-guides and one's actual self are believed to have emotional consequences.

The formulation does not attempt to explain the usual set of specific emotions. It focuses instead on two general kinds of emotional outcomes -- feeling dejected and feeling agitated. The hypothesis is that self-ideal discrepancy should induce feelings of dejection and self-ought discrepancy, feelings of agitation. So, for example, if Pauline is a movie reviewer whose ideal is to be a writer of snappy prose, but who finds instead that her writing puts people to sleep, she should feel dejection, sadness, and discouragement. If she also thinks she ought to formulate her own opinion, but on occasion gets her material from other reviewers, she might feel agitated and experience emotions of shame, worry, and fear.

A study by Strauman and Higgins (1988) provides supporting data. They found that actual-ideal self discrepancies were associated with reports of disappointment and dissatisfaction, whereas actual-ought discrepancies were associated with reports of fear and restlessness. A second study also found that actual-ought discrepancies were related to social anxiety (agitation), while actual-ideal discrepancies were associated with depression (dejection). Strauman and Higgins (1987) also showed that these emotional consequences could be triggered by priming material in

memory relevant to ideal or ought selves. In a clinical population, Strauman (1989) found an association between clinical depression and actual-ideal discrepancies and between social anxiety and actual-ought discrepancies. Further supporting data has come from nonclinical populations (e.g., Higgins, Klein, & Strauman, 1985; Higgins, Bond, Klein, & Strauman, 1986).

A recent study found a relationship between these processes and birth order (Newman, Higgins, & Vookles (1992)). It was reasoned that because of the more intense parenting styles experienced by first-born children, parental ideals and oughts should have a bigger impact on first-borns. As expected, first-borns had smaller discrepancies between their actual self and parental ideals and oughts than did later-borns, and the discrepancies that did exist were more highly correlated with their emotions than was the case with later-borns.

The hypothesis has also been applied to the emotional consequences of failing to meet culturally prescribed sex role standards (Gohm, 1992). Subjects' actual selves and ideal and ought self-guides were obtained using the Bem Sex Role Inventory. The deviations of actual selves from sex role stereotypes were associated with agitation for women and with dejection for men. This suggests that the feminine cultural stereotype may act as an ought standard and the masculine cultural stereotype as an ideal standard.

Method

The method that Higgins and Strauman have used involves having subjects list in an open-ended fashion traits or other attributes describing themselves and their self-guides. Subjects list up to 10

attributes describing their actual selves and up to 8 attributes for each self-guide. Each attribute is rated on a 4-point scale in terms of the degree to which it applies. Dejection is the sum of ratings on 9 emotions including depressed, disappointed, discouraged, hopeless, low, sad, happy (-), optimistic (-), and satisfied (-). Agitation is the sum of ratings on the emotions of agitated, dread, guilty, irritable, on-edge, restless, tense, threatened, and uneasy. Recent research by Ahadi (1993) defining the various selves using more traditional personality measures failed to find the relationships hypothesized by Higgins. It may be that Higgins and Strauman's practice of obtaining depictions of the self in subjects' own words is an important step in tapping active cognitive construals of the self.

In the most recent version of the theory (Higgins, 1990), several new concepts and comparisons are added. The concept "can" is added in recognition that sometimes one's ideal is within reach and sometimes it is not. Thus, although discrepant from one's ideal, one's actual self may or may not be all that one can do. An expectation factor concerning what one thinks one will be in the future is also added. Although discrepant from one's ideal, one's actual self may or may not be discrepant from what one expects to do in the future.

Self-Discrepancy Theory and the OCC Account

Higgins couches his predictions not in terms of specific emotions but in terms of general feeling tones of dejection and agitation. Dejection might appear as sadness, depression, or disappointment, and Higgins includes both anxiety and shame as examples of

agitation emotions. The process whereby failing to meet one's goals results in sadness seems straightforward, but the inclusion of anxiety and shame as reactions to a failure to meet standards implies a more complex process. Presumably one would feel shame about the action itself but would also fear possible outcomes in terms of rejection from others. To relate the Higgins' and OCC accounts requires looking separately at the predictions of sadness and anxiety and the prediction of sadness and shame .

Consider first the prediction of sadness and anxiety. One's ideal self concerns what one wants to be like and is based on approach goals and possible rewards. The loss of such rewards should result in sadness (dejection). The ought self, on the other hand, concerns avoidance of possible punishment. The threat of such negative outcomes should result in anxiety (agitation). Roseman (1984) also distinguishes approach motivation from avoidance motivation. He hypothesized that thwarted approach motivation leads to sadness and thwarted avoidance motivation to distress. The approach-avoidance variable is not part of the OCC account, but the distinction concerning whether prospects are relevant or not makes the same sadness vs. anxiety prediction. That is, sadness would reflect current goal failure, while anxiety would reflect the prospect of future punishment.

Now consider the prediction of sadness and shame. In the OCC (1988) account, sadness reflects a focus on outcomes, whereas shame and guilt reflect a focus on the blameworthiness of actions. A joint consideration of

situations relevant to both goals and standards is illustrated in Figure 4. The figure shows (around the outside of the circle) the OCC predictions

 Insert Figure 4 about here

for situations varying in standard vs. goal consistency. It shows along the axes (on the inside of the circle) Higgins' predictions (agitation vs. dejection) for the same situations considered as varying in ought vs. ideal consistency. The OCC account specifies pride vs. shame when focussing on standards (oughts) and joy vs. sadness when focussing on goals (ideals). Higgins makes predictions only at the discrepant ends of the dimensions but not at the consistent ends. The figure raises interesting questions about what happens in situations in which ideal and ought selves are both salient at the same time. In situations that are both goal-discrepant and standard-discrepant, the OCC account predicts the occurrence of self-anger (self-reproach, remorse, penitent etc.), and Higgins would presumably predict the occurrence of both dejection and agitation at the same time. In situations that are both goal-consistent and standard-consistent, the OCC account predicts the occurrence of gratification (pleased-with-oneself, self-satisfaction, smug etc.), and Higgins does not address positive states.

Neither theory has anything to say about the remaining possibilities, where ought and ideal are in conflict. How does students feel after cheating on an exam in order to achieve their ideal grade versus after passing up an

opportunity to do so and condemning themselves to a lower grade? These are approach-avoidance situations in which people might experience multiple emotions rather than a single hybrid emotion. Presumably the emotion experienced in the moment coincides with the focus of attention, so that choosing to abstain makes one feel proud about the act but sad about the grade, whereas giving in to temptation makes one feel happy about the grade, but ashamed about the act. As indicated in the figure, things that one ought to do but does not want to do might be thought of as duties, while things that one wants to do but ought not to do might be thoughts of as sins.

Criteria For Emotion Theories.

There are many theories of emotion, some of which have been described briefly above. It should be apparent that all can account for at least some of the known facts about emotion elicitation. Many of the theories make similar predictions, but they nevertheless differ in a variety of ways. One way to compare the theories is with respect to how well they deal with certain enduring problems, including the problem of positive emotions, the relation between emotions and emotion words, whether the theory is testable, how the theory relates emotion to behavior, and the degree to which the theory can be formalized.

Accounting for Positive Emotions

One criterion for assessing emotion theories is whether or not they accommodate positive emotions as something more than the mere absence of negative emotion. In goal-based theories, the valence of an emotional state reflects whether goals are satisfied or thwarted. As a result, goal-based

theories can, at least in principle, handle positive and negative emotions equally well. These would include such theories as that of Abelson (1983), Frijda (1986), Oatley and Johnson-Laird, (1987), the OCC (1988) account, Roseman (1984), Scherer (1984), Smith and Ellsworth (1985), Wyer and Srull (1989), and others. However, theories that rely specifically on the interruption of goal-directed activity as the trigger for emotion, such as Mandler's (1975; 1984) and Berscheid's (1982), have a more difficult time handling the positive emotions and seem limited for that reason.

The work of Lazarus and his colleagues was not reviewed since they have not focused on emotional structure as such. Nevertheless, they have done a more thorough job than most of analyzing how positive emotions function in the coping process. Lazarus, Kanner, and Folkman (1980), for example, discuss how positive emotions make the act of "taking a breather" from stressful activity an effective way to cope. They also discuss how positive emotions act as "sustainers" that energize coping efforts, and as "restorers" during the later stages of coping, when healing and recovery take place.

Ellsworth and Smith (1988) made a point of studying the positive emotions. They concluded that the positive emotions (and their associated appraisals) are somewhat less differentiated than the negative emotions. They nevertheless found considerable differentiation among six states that they considered positive emotions, including interest, hope/confidence, challenge, tranquility, playfulness, and love. Each had a distinctive pattern of appraisal.

One of the salient facts about the emotion lexicon is that there are more emotion terms for negative than for positive emotions. However, this fact is not necessarily a reliable guide to the number of emotion types that exist. The disproportionate number of negative terms may indicate that negative events are more frequent or that there is greater survival value in precise communication about negative states. Most theorists also focus their explanations on negative emotions. For example, in most lists of "basic emotions", joy is usually the only positive emotion that is listed. The OCC (1988) account is unusual in that it includes an equal number of positive and negative emotion types. It assumes that variables that have negative implications for one's goals, also can have positive implications, creating the possibility of a positive state that parallels each kind of negative state. For example, anticipation gives some emotions a distinctive character, but in addition to anticipation of threat, as in fear, there is also anticipation of opportunity, as in hope. In addition, it is easier for events to have a negative rather than a positive effect with respect to certain kinds of goals (e.g., preserving one's health). While this might increase the incidence of negative emotions, it would not seem to require the postulation of different kinds of elicitation factors or emotions.

Emotions and Emotion Words.

A related issue concerns the role of natural language terms for emotion in theory construction. Since the object is to construct theories of emotions rather than theories of emotion terms, this is an important issue. Some argue that we should develop new emotion concepts based solely on covariances established

by psychological research. Such a position has been championed in personality by Cattell (1946) and in the developmental study of emotion by Kagan (1984). We see no prospect of developing a system of emotion that ignores the concepts provided by language. Emotions are not themselves linguistic phenomena, but they are richly represented in language by emotion words and phrases.

Still, while it offers a useful starting place, the emotion lexicon does not provide a perfect map of emotions. It is not the case, for example, that there is one term for every emotion, and one emotion for every emotion term. Do "annoyed," "furious," "peeved," or "enraged" refer to four different kinds of emotion or to different forms and intensities of the same kind of emotion? In addition to such redundancy, there are also linguistic gaps. But, does the failure of a language to have a single lexical entry for an emotion mean that members of that culture do not experience the emotion? Despite the obviousness of this problem, almost all of the systems that we have reviewed equate the emotions in their theories with single English language emotion terms. The shortcoming of this approach is that it may be difficult to achieve any more order in one's theory than is found in the rather disorderly language of emotions.

Rather than focusing on emotion words, the OCC (1988) account characterizes types of emotions that share cognitive eliciting conditions. The terms of the theory are not, therefore, particular English words (e.g., fear) but specifications of these emotion types. As was shown in Table 1, the emotion type of which the English term "fear" would be a token,

for example, is "being displeased at the prospect of an undesirable event". Because such terms as "displeased" and "undesirable" have particular meanings in the theory, one can know more precisely what is and is not being explained than if a term such as "fear" were used.

A related problem is that it is often unclear how the emotion terms that are included in a theory are related to other emotion terms that are not included. Shaver et al. (1992) relate them empirically. They used similarity ratings of emotion terms by speakers of different languages, and the terms were then reduced to groups of terms by hierarchical cluster analyses. The OCC (1988) theory also focuses on emotion types as specified in terms of cognitive eliciting conditions. For each type there are multiple emotion tokens (specific emotion terms).

Testability.

An important criterion for a good emotion theory is that it be testable and that it generate empirical research. Frijda's, Higgins', Roseman's, Scherer's, Smith and Ellsworth's, and Weiner's, theories have been especially generative. Many of the approaches attempt to establish the elicitation variables completely empirically by computing correlations between potentially important factors and reported emotions. When reviewing studies taking this approach, however, one cannot help but feel that it is a blunt instrument for attempting to cut nature at its joints. In a large scale study by Wallbott and Scherer (1988), for example, all of the appraisal factors were to a greater or lesser extent correlated, however minimally, with all of the emotions studied, and it is not

clear how to separate variables that merely covary with the emotions and those that are causally related to their occurrence. Within a correlational approach, what would be needed is a multivariate analysis focused on latent variables with multiple measures for each variable, and it is not clear that that is feasible.

In the absence of the ability to discover emotional structure empirically from the ground up, it might be useful to start with a logical analysis of the meaning of the emotion concepts to be studied. This was the approach taken in the OCC account. It has been argued by Smedlsund (in press) that many of the propositions of cognitive emotion theories have no empirical content. In the OCC case in particular the proposed eliciting conditions are essentially analyses of what the emotion terms mean. Thus, what one means when one says that someone is fearful, for example, is something like their being displeased at the prospect of an undesirable outcome. Hence, conducting a study to see if people report being afraid when they are displeased about the possibility of an undesirable event is a bit like testing to see if all bachelors are unmarried. A failure to confirm the hypothesis would reflect only on the procedure and measures and might never lead one to change one's definition of "fearful."

On the other hand, the empirical enterprise involves more than testing hypotheses. It also includes establishing measures and procedures within which to study emotional phenomena. Moreover, failures of predictions from do lead to changes in the way specific emotions were characterized (e.g., Roseman et al., 1992). Indeed, even the adequacy of

statements that are intended as nothing more than definitions can be challenged by finding examples that should be accommodated but are not. Thus, there may not be as sharp a dividing line between analytic and synthetic truth as one might assume, at least in psychology.

One of the limitations of research aimed at testing the cognitive factors in emotion elicitation is that it often requires subjects to agree on the qualitative distinctions between such states as resentment versus anger or sympathy versus pity. An alternative is to focus research on emotional intensity (Frijda, et al., 1992). A unique characteristic of the OCC account is that it includes proposals about the cognitive variables governing the intensity of emotions in addition to those that elicit them. In addition, the theory hypothesizes that emotions sharing the same set of eliciting conditions should also share a common set of intensity variables. These intensity hypotheses put empirical meat on the definitional bones of the OCC account, affording a strong quantitative basis for testing hypotheses not only about the intensity variables themselves, but also hypotheses about the relations among the emotions, and hypotheses about the proposed structure as a whole. One of the advantages of using intensity predictions as a way of assessing the proposed structure is that quantitative comparisons can be made. That is there is less opportunity for ambiguity in the quantitative tests of hypotheses about whether more or less of a given emotion was experienced than in research attempting to make qualitative tests of whether subjects felt anxious or guilty.

Accounting for Behavior

The theories on which we have focused concern emotion elicitation, but a comprehensive theory might be expected also to indicate how emotions are related to behavior. However, only Frijda's (1986) theory offers a systematic treatment of the action implications of emotion. Frijda suggests that the emotions are characterized by particular patterns of action readiness, as discussed earlier, and that these patterns are responsible for the distinctive experience of each emotion. An alternative possibility, however, is that the effects on behavior may be indirect, stemming from changes in goals. Indeed, almost all of Frijda's action readiness modes are statements beginning with "I wanted," implying that they concern not so much motor programs but desired states or goals. For example, the action readiness found in shame, "I wanted not to be noticed by anyone," may not refer so much to an action tendency as to a goal.

The structures responsible for emotions in humans presumably evolved out of systems that were dominated by automatic response patterns. It seems likely, as Frijda argues, that part of the experience of emotion reflects these impulses. But one of the chief advantages of emotions appears to be that they allow the organism to go beyond the limitations of reflexes and fixed action patterns (see Scherer, 1984, for an excellent discussion of this point). What does it mean, then, to suggest, as is often done, that fear involves behavioral tendencies to escape, that anger involves activation of aggressive responses, that shame involves tendencies to hide, and so on? Such words as "behavior," "response,"

and "action," even when qualified by such words as "tendencies," "readinesses," or "inclinations," imply that specific large muscle groups and motor circuits are activated when angry, fearful, or ashamed. Are one's legs automatically programmed to run when afraid, one's arm programmed to hit when angry, or one's hands programmed to cover one's face when ashamed? It might be interesting to see EMG studies aimed at testing such hypotheses. An emotion such as fear presumably does involve a redistribution of blood from the viscera to the large muscles, and such effects would presumably enable one to engage in rapid action or extreme exertion. But such general activation is not the same thing as a specific action tendency or a motor program.

As indicated above, perhaps similar advantages can be had if one assumes that the direct effects of emotions are motivational rather than behavioral. One can probably achieve more agreement about the likely goals of angry, fearful, or ashamed persons than about their likely behavior. It seems clear enough, for example, that fear involves a heightened desire to avoid harm or loss, but it is not at all clear whether the attainment of this goal would necessitate selling one's stocks, listening to the weather report, or running fast. The immediate effects of emotion may, therefore, be as much mental as behavioral. Indeed, in the final section of this chapter, we review the growing body of research investigating the implications of emotions for styles of cognitive processing. The data suggest that negative affect creates an analytic, detail-oriented mental set, whereas

positive affect fosters global, heuristic processing.

A position that sees emotion as relevant to behavior but that avoids assuming a direct link to behavior is proposed by Carver and Scheier (1990). They suggest that behavior is guided by a hierarchy of control mechanisms in which the output of one often serves as the input to another at a higher level. They propose that emotion is a signal to pursue a particular superordinate goal. A person who is about to touch a snake as part of a treatment for snake phobia, for example, is likely to experience fear. The function of the fear, they suggest, is to inform the system that a superordinate goal that is highly relevant to this situation is being thwarted, in this case, the goal of safety.

Degree of Formalization

Few of the theories reviewed here have attempted much in the way of formalization. Exceptions can be found in the work of Wyer and Srull (1989), Carver and Scheier (1990), and the OCC (1988) account. Wyer and Srull have proposed mathematical formalizations aimed at quantifying the likely intensity of emotional responses when goals in a goal hierarchy are satisfied or thwarted. The formulas are an aid to systematic exploration of the implications of assumptions about goals and their relation to emotion. It is less clear how meaningful the actual numbers are because of the serious assumptions required -- such that all of the goals and their interrelationships in a system are known, for example. Still this is an encouraging beginning and a practical aid to making at least ordinal predictions.

Carver and Scheier (1990) see emotion elicitation as a function of the process of monitoring one's progress toward goals. They suggest that what is important is not one's discrepancy from the goal, but the rate at which this discrepancy is being reduced. In this formulation, behavior is analogous to distance, and what the monitoring system responsible for emotion is sensitive to is a quantity analogous to velocity. In formal terms, velocity is the first derivative of distance over time. To the extent that this physical analogy is meaningful, the perceptual input responsible for emotion is the first derivative over time of the input information used by the action monitoring loop. They suggest that the process functions as a feedback loop in which the rate of discrepancy reduction is compared to some reference value, which is an acceptable or desired rate of behavioral discrepancy reduction. One kind of output of the comparison process they propose is experiential. The comparison produces both a hazy sense of outcome expectancy and a feeling of positiveness or negativeness. Positiveness reflects a faster than satisfactory progress toward a goal and negativeness a less than satisfactory rate of progress. Among the implications of this model, is the observation that the kinds of actual-ought and actual-ideal discrepancies focused on by Higgins (1987) should not be as important as the rate at which such discrepancies are being reduced relative to expectations.

A different kind of formalization has been undertaken by the OCC account. With an eye to AI applications, they have attempted to write a system of rules and representation about the elicitation of emotions, a first step

toward building AI programs that can reason about emotion. The eliciting conditions that were earlier shown in Figure 1 have been written as production rules of the kind also found in Anderson's (1983) ACT theory. For example, for the joy emotion one of these rules might be as follows (Ortony et al., 1988, p. 182):

```
(1) IF DESIRE (p,e,t) > 0
    THEN set JOY-POTENTIAL (p,e,t)
    =
        fj[ / DESIRE (p,e,t) / , Ig (p,e,t) ]
```

This formalism just says that if the computed desirability (DESIRE) of an event is positive, then the amount of joy potential (JOY-POTENTIAL) is a function of the how desirable the event (e) is for this person (p) and this time (t) and also of the combined effects of the intensity variables (Ig).

Whether one feels joy in fact would depend on the outcome of a rule such as rule 2 (Ortony et al., 1988, p. 183):

```
IF JOY-POTENTIAL (p,e,t) > JOY
THRESHOLD (p,t)
THEN set JOY-INTENSITY (p,e,t) =
    JOY-POTENTIAL (p,e,t) - JOY-
    THRESHOLD (p,t)
ELSE set JOY-INTENSITY (p,e,t) = 0
```

This rule simply checks to see whether joy potential exceeds the threshold required to have a joy emotion. There are benefits of distinguishing emotions and emotion-potentials. For example, it would allow a natural-language understanding system to deal with sentences like: "John was in a wonderful mood that morning. When his children were obnoxious at breakfast, it didn't bother him at all" (Ortony et al., 1988, p. 184). In such

an example, a good mood might be thought of as raising the threshold for anger, such that factors producing anger potential might not produce an anger emotion.

One goal of the theory is to produce specifications of emotions and their intensity variables of the kinds that could enter into successful AI programming. The goal is not to produce a computer that feels, but one which could reason about emotions or understand text that required emotion concepts, such as stories or narratives of everyday behavior. Success in such an endeavor requires a system of rules and representations about the elicitation of emotions. It should be mentioned that while interesting and potentially useful, such rules deal mainly with emotion identification. Modeling emotion generation will involve modeling the appraisal process itself, in which the desirability or goal conduciveness values are computed (see Pfeifer, 1988, for a review of existing AI models of emotion). Regardless of whether computers can be made to reason about emotion, the kind of preliminary formalization seen in the OCC account is desirable as a way of fostering more precise and systematic theory.

In summary, we have now focused on two of our three topics. The first section, "What is an Emotion?", included a discussion of various definitional and conceptual issues in the study of emotion. The second section, "The Cognitive Causes of Emotion," concerned proposals about the cognitive causes of emotions. This material has addressed questions about the structure of emotion, which we referred to initially as Wundt's question. We turn now to the third

section, "The Cognitive Consequences of Emotion." This material addresses questions about the function of emotion, which we referred to initially as James's question. It will be divided into three parts corresponding to research on the role of affect in memory, judgment, and cognitive processing.

COGNITIVE CONSEQUENCES OF EMOTION

An individual's affective state may influence each and every step of the information processing sequence, from selective attention to information, to the encoding of information and its subsequent retrieval from memory. In addition, affective states may influence evaluative judgments and individuals' choice of heuristic or systematic processing strategies. Whereas there is little disagreement that affective states may have these influences, there are differing views regarding underlying processes and the specific conditions under which various effects may emerge. More than other areas of social cognition research, current thinking about the interplay of affect and cognition is characterized by a considerable number of distinct theoretical models that are formulated in terms of different constructs and assumptions, and that frequently lead to different and sometimes opposite predictions. The area is rich for debate, as data seems available to lend support to the various positions advanced.

In this section of the chapter, we summarize what we consider key theoretical positions, identifying major and distinctive predictions, inconsistent findings and issues for future research. We first review models that bear on the impact of affective states on the

encoding, storage, and recall of information. Next, we turn to the impact of affective states on evaluative judgments. Finally, we return to many of the issues raised in these sections and cast them in the broader framework of affective influences on the spontaneous use of heuristic or systematic processing strategies. In reviewing empirical work we do not strive for comprehensiveness, but limit ourselves to exemplary studies bearing on key theoretical issues. Moreover, we focus more on experimental mood induction research than on studies using clinical populations, given the interpretive difficulties that may arise in the latter case. A more comprehensive review of empirical findings, including studies based on clinical populations, is provided by Morris (1989).

Mood and Memory

Recent theorizing about the impact of affective states on memory has been dominated by two distinct approaches. One line of research (see Ellis & Ashbrook, 1988, for a review) explored the impact of affective states on individuals' attentional resources and emphasized disruptive effects of affective states on memory performance. The other line of research conceptualized affective states in terms of units in memory representation and emphasized facilitative as well as inhibiting effects on memory performance, depending on the match between affect at learning and affect at recall, or the match between affect at recall and the valence of the to-be-recalled material (see Blaney, 1986, for a review).

Disruptive Effects of Affective States:

The Resource Allocation Model

In general, the amount of attentional resources people can invest is assumed to be limited and variable, being influenced by factors such as age, arousal, and emotional states (Hasher & Zacks, 1979). Whereas one may assume that any affective state, if sufficiently intense, may capture attention and may therefore decrease attention to other, external stimuli, most researchers focused on the impact of negative affect on attentional resources (e.g., Ellis & Ashbrook, 1988; Roy-Byrne, Weingartner, Bierer, Thompson, & Post, 1986; Sullivan & Conway, 1989). According to Ellis and Ashbrook's (1988) resource allocation model, negative affective states are likely to reduce the resources that can be allocated to a given task because mood-congruent thoughts intrude into consciousness; these thoughts may include reflections about one's current mood state, one's bodily sensations, or the sources of one's mood. In line with this assumption, several studies indicated that people in an induced or chronic negative mood have difficulty suppressing mood-congruent material when instructed to do so (Howell & Conway, *in press*; Wenzlaff, Wegner, & Roper, 1988). Moreover, induced and chronic negative affect are associated with greater self-focused attention (e.g., Conway, Giannopoulos, Czank, & Mendelson, 1993; Ingram, 1990; Wood, Saltzberg, & Goldsamt, 1990), which may involve attempts at self-understanding that require the investment of attentional resources. As a result of these intruding thoughts and ruminations, negative affective states may interfere with information processing that requires more than minimal amounts of attentional resources. Accordingly, depressed

individuals are expected to engage in less processing and/or more simple processing of information; they are likely to evidence a different amount or type of elaboration and organization in the encoding of information. Several studies support this position (see Ellis & Ashbrook, 1988).

For example, Ellis, Thomas, and Rodriguez (1984) explored the impact of depressed moods on the recall of words presented in contexts that varied the amount of required elaboration. Previous work demonstrated that in the absence of mood inductions, recall is greater for words presented in a context that requires more elaboration at the encoding stage relative to words presented in low-elaboration contexts (Stein & Bransford, 1979). However, being in a depressed mood eliminated this elaboration effect, suggesting that negative affective states may interfere with elaboration. These findings have been replicated with naturally depressed subjects identified on the basis of self-report measures such as the BDI (Potts, Camp, & Coyne, 1989).

Induced negative affect has also been shown to limit people's tendency to impose organization on information they are trying to learn. In perceptual grouping tasks that involve the repeated presentation of letter strings that are identical in sequence but that differ in grouping (e.g., CA DM ET and C ADME T), learning is typically facilitated by reorganizing the material into more meaningful units (e.g., CAD MET). Leight and Ellis (1981) observed that induced negative affect interfered with such reorganization and led to reduced recall. Related evidence for less organization under negative affect has been obtained with clinically depressed subjects. For example,

Watts and Cooper (1989) asked depressed and control subjects to memorize a story. Usually, people better remember the central aspects than the peripheral aspects of a story (Mandler, 1984); this effect, however, relies on people organizing the presented material in terms of the story structure. In contrast, depressed subjects did not show a recall advantage for central material, which suggests that they did not organize the presented material. They did, however, show greater recall of highly imageable items, a recall advantage that is not considered resource dependent.

In addition to interfering with elaboration and organization at encoding, dysphoric affective states may also reduce performance at retrieval (Ellis, Thomas, McFarland, & Lane, 1985). After being presented the same sentence stimuli as used in Ellis et al. (1984), mood was induced and recall assessed. Subjects experiencing negative affect recalled fewer words than neutral mood control subjects, regardless of whether the words had been encoded in high or low elaboration contexts. In general, the negative impact of dysphoric mood states on recall performance is more evident for less structured, less organized material (Ellis & Ashbrook, 1989).

These and related findings suggest that dysphoric affective states can interfere not only with the elaboration and organization of information at encoding, but also with retrieval. Overall, recall performance can be expected to be worse. Whereas Ellis and Ashbrook's (1988) resource allocation model attributes these effects to reduced attentional resources, Hertel and colleagues (Hertel & Hardin, 1990;

Hertel & Rude, 1991; for a similar position, see Fiedler, 1991) suggested that these findings reflect a deficit in initiative. According to this assumption, depressed individuals are less likely to instigate strategies or to generate appropriate hypotheses when performing unstructured tasks. However, when they are provided instructions that enable them to structure their tasks, they reveal fewer or no performance deficits, suggesting that they have sufficient resources to complete tasks effectively if they are guided to use appropriate strategies. Of course, one may argue (see Ellis, 1990; 1991) that an examination of various possible strategies and the initiation of one of them requires attentional resources; hence, guiding subjects' choice of strategies reduces resource demands, rendering Hertel's findings compatible with the resource allocation model. According to this model, the negative impact of dysphoric states should decrease as the demand on attentional resources decreases.

In summary, negative affective states have been found to reduce the elaboration and organization of material at the encoding stage and to interfere with retrieval, much as the assumption that negative affective states reduce attentional resources would lead us to expect. The most compelling evidence, however, has been provided by studies that used material that is itself not affective in nature, as the studies reviewed above illustrate. When the to-be-learned material is strongly valenced, affective states may inhibit as well as facilitate encoding and recall, as we shall see below. Moreover, other researchers (e.g., Mackie & Worth, 1989) suggested that positive affective states

can also limit attentional resources, and may even do so to a higher degree than dysphoric states, although this hypothesis has to our knowledge not been tested in the memory domain. Finally, research into affective influences on other aspects of cognitive performance has produced a large number of findings that are incompatible with the predictions of the resource allocation model. We review these findings in the context of our discussion of affective influences on processing strategies.

Affective States and Information Valence:

The Associative Network Model

Whereas the resource allocation model focuses on affective influences on attentional resources, a second line of research conceptualizes affect in terms of units in memory representation. Extending Anderson and Bower's (1973) human associative memory model, Bower (1981) proposed an associative network model in which emotions are represented by emotion nodes (see also Bower & Cohen, 1982; Gilligan & Bower, 1984; Bower, 1991). According to this model, emotions function as central nodes in an associative network, which are linked to related ideas, events of corresponding valence, autonomic activity, and muscular and expressive patterns. When new material is learned, it is associated with the nodes that are active at the time of learning. Accordingly, material that is learned in a particular affective state is linked to the respective emotion node. When an emotion node is stimulated, activation spreads along the pathways, increasing the activation of other nodes connected to the emotion node. Activation of a

node above a certain threshold brings the represented material into consciousness.

These assumptions lead to four key predictions that received considerable attention in recent research (see Blaney, 1986; Forgas & Bower, 1988; Singer & Salovey, 1988, for reviews). First, the model predicts state-dependent recall as a function of matching moods at the time of learning and at the time of recall. In general, any contextual factor may serve as a discriminatory cue facilitating memory when the context at recall matches the context at learning (e.g., Godden & Baddeley, 1975); context can refer both to the state of the learning environment and of the person. According to the associative network model, affective states may also serve as discriminatory cues, facilitating recall of material learned in the same mood. Presumably, material that is learned while in a certain mood is associated with the respective mood node. If this, rather than another, mood node is activated at the time of recall, the excitation spreading from the mood node increases the likelihood that the excitation of the node that represents the learned material exceeds threshold, thus bringing the material into consciousness. Note that this state-dependent recall prediction is based on matching moods at learning and recall. In contrast, a second prediction is based on matching valences of mood at the time of recall and of the to-be-recalled material, independent of the mood at time of learning. This prediction is referred to as mood congruent recall. Again, the activation spreading from an emotion node may increase the activation of related nodes above threshold, resulting in increased recall of material that matches the valence of

the current mood. Although state-dependency and mood-congruency can be clearly distinguished conceptually, they are often difficult to separate empirically, as we shall see below. A third prediction from the model concerns mood congruent encoding of new material. The spreading of activation from a mood node may prime mood congruent concepts, and may hence result in mood congruent encoding of ambiguous information. In addition, the activation of mood congruent concepts and associations may facilitate the elaboration of new information that may be related to these concepts, resulting in a richer network of associations for material that is congruent rather than incongruent with mood at encoding. Finally, the assumption of mood congruent encoding and recall processes leads to the prediction of judgmental biases, independent of whether the judgments are made on-line or off-line (Hastie & Park, 1986). As we shall see below, it is often difficult to determine which of these distinct effects is reflected in a particular finding, and the model fares best under conditions where several of these effects are likely to combine.

A similar model has been proposed by Spies and Hesse (1986) on the basis of Anderson's (1983) ACT model. In addition, Wyer and Srull (1989, Chapter 12) offered a related conceptualization in the framework of their storage unit ("bin") model of memory. Aside from using a different model of memory structure, Wyer and Srull's account also differs with regard to the representation of emotions in memory. Bower assumes that "about six (plus or minus a few) basic emotions are biologically wired into the brain, and that a number of innate as

well as learned environmental situations can turn on a particular emotion node. When a particular emotion node is turned on (...) it spreads activation to a variety of indicators, such as characteristic physiological and facial expressions" (1991, p. 32, emphasis added), as well as to nodes that represent associated semantic material. In this biological conceptualization, the activation of the emotion node drives the corresponding physiological and expressive reactions. In contrast, Wyer and Srull (1989) assume that what is represented in memory are "concepts of different emotions or affective states" and that these concepts "can be retrieved and used to process information (...) in much the same way as other concepts" (p. 352, emphasis added). According to their model, what drives affective influences on recall is not the affective experience per se, but the activation of the appropriate emotion concept, which is essentially semantic knowledge. "If emotion concepts happen to be in the work space at the time information (...) is sought, these concepts and their associated features may fortuitously be included among the probe cues that are compiled" to search memory for relevant material (Wyer & Srull, 1989, p. 377). This conceptualization allows that mood congruent recall may be observed in the absence of affective experiences, provided that the appropriate emotion concept is activated. Moreover, mood congruent recall may not be observed despite affective experiences, if these experiences are not labeled with the corresponding emotion concept (see Wyer & Srull, 1989, p. 382, and our discussion of Parrott and Sabini, 1990, below).

In a closely related vein, Isen, Shalke, Clark, and Karp (1978, p. 2), had suggested for positive mood that "thoughts associated with or responsible for the good mood or mood inducing event may serve to cue us to positive material in memory in much the same way that a category name has been found to cue material of that category that was previously learned" (see Isen, 1987, for a more extended discussion of this view). Reflecting the attention that these different models received in recent research, however, our discussion will focus on Bower's (1981, 1991) network theory.

Mood Congruent Exposure and Encoding

Several studies indicate mood effects on the exposure to and encoding of valenced information (e.g., C. Kelley, reported in Bower, 1983; Forgas & Bower, 1987; Mischel, Ebbesen, & Zeiss, 1973). For example, Forgas and Bower (1987) observed in an impression formation task that happy subjects spent more time examining positive rather than negative information about the target person, whereas sad subjects dwelt longer on the target's negative rather than positive characteristics. According to the associative network model, these differential exposure times reflect that mood congruent material evokes more associations than mood incongruent material and hence results in richer elaboration, which takes more time (Bower, 1991, p. 40). Consistent with this elaboration interpretation, longer exposure times were associated with better recall (Forgas & Bower, 1987). In a similar vein, Bower, Gilligan, and Monteiro (1981, Exp. 1 and 5), using hypnotic mood inductions, had subjects read a story describing positive and

negative events and characters. As predicted, subjects tended to recall information about story characters whose affect was congruent with their mood at the time of encoding, again suggesting that this material received more elaboration. Findings of this type suggest that the disruptive effects of affective states on the encoding and organization of information hypothesized by the resource allocation model (Ellis & Ashbrook, 1988) may be limited to material that is affectively neutral and hence does not lend itself to mood-congruent elaboration.

State-Dependent Recall

In general, recall is facilitated when the context at the time of recall matches the context at the time of learning (e.g., Eich, 1980; Godden & Baddeley, 1975; see Tulving, 1983, pp. 226-238, for a review). Several studies, employing different kinds of mood manipulations, indicate that affective states may serve as relevant discriminatory cues, much as has been shown for other contextual cues (see Singer & Salovey, 1988, for a review). Not surprisingly, the impact of affective states as of other contextual cues is reduced, as the need for retrieval cues declines. For example, state-dependent learning effects are more likely to be observed in free recall than in recognition tasks and in a two-list interference paradigm than in a single-list paradigm.

In the single-list paradigm, subjects learn one list of material while in a certain mood and recall the material while in the same or a different mood. Although superior recall under matching than under mismatching moods has occasionally been observed in a single-list paradigm (e.g., Bartlett & Santrock, 1979; Bartlett, Burleson, &

Santrock, 1982, Exp. 2), many studies failed to obtain strong evidence for state-dependent recall effects under this condition (e.g., Bartlett et al., 1982, Exp. 1 and 2; Bower, Monteiro, & Gilligan, 1978, Exp. 1 and 2; Leight & Ellis, 1981). In contrast, more consistent results were initially obtained in a two-list interference paradigm, where, for example, List A is learned while in a happy, and List B is learned while in a sad mood. In this case, being in the same mood at the time of recall facilitated recall in several studies, whereas being in the opposite mood led to reduced recall (e.g., Bower, Monteiro, & Gilligan, 1978, Exp. 3; Schare, Lisman, & Spear, 1984, Exp. 3). For manic-depressive patients, Weingartner, Miller, and Murphy (1977) assessed free associations at different times of their manic-depressive cycle, and later asked them to recall these associations during a similar or dissimilar phase of the cycle. Again, superior recall was observed under conditions of matching affective states. However, subsequent studies (e.g., Bower & Mayer, 1985; Marshall-Garcia & Beck, 1985; Wetzler, 1985) failed to replicate state dependent recall in a two-list paradigm. Of these studies, Bower and Mayer's presents the most problematic failure to replicate because these authors used the materials employed in the successful Bower et al. (1978) study and induced moods of comparable intensity. At present, a theoretical rationale that would account for the inconsistent findings seems lacking. Indeed, Bower and Mayer (1985, p. 42) concluded that "mood-dependent retrieval is an evanescent will-o'-the-wisp, and not the robust outcome suggested by earlier reports."

Mood Congruent Recall

Whereas state-dependent recall requires matching moods at the time of encoding and recall, independent of the valence of the to-be-learned material, mood congruent recall refers to a match of mood at recall with the valence of the recalled material, independent of mood at learning. However, the distinction between the valence of the material and mood at learning is problematic. Most importantly, mood congruent recall has been demonstrated most convincingly for autobiographical memory. In several studies (for reviews see Blaney, 1986; Morris, 1989; Singer & Salovey, 1988), subjects were more likely to recall happy memories when in a happy rather than sad mood, or sad memories when in a sad rather than happy mood (e.g., Bower, 1981; Madigan & Bollenbach, 1982; Mathews & Bradley, 1983; Natale & Hantas, 1982; Snyder & White, 1982; Teasdale & Taylor, 1981; Teasdale, Taylor, & Fogarty, 1980).

It seems reasonable to assume, however, that happy events induce a happy mood at the time of their occurrence, whereas sad events induce a sad mood. If so, the valence of the event is inherently confounded with the experiencer's mood at the time of encoding. Accordingly, facilitative effects of mood on the recall of autobiographical memories may reflect state-dependent recall rather than mood congruency per se. In light of the inconsistent findings obtained in the state-dependent recall studies reviewed above, which have typically used neutral rather than strongly valenced material, this suggests that mood effects on recall may be most reliable under conditions where (a) the valence

of the to-be-recalled material matches the mood at recall and (b) the material was initially learned in a matching mood state. Thus, mood congruent selectivity in recall may be most likely under conditions that simultaneously satisfy the criteria for state-dependency and mood congruency.

As Morris (1989, p. 72) observed, although mood congruency and state dependency are "conceptually distinguishable, in practice it is virtually impossible to tell which one might be accounting for any given set of results." In fact, several authors pointed out (see Blaney, 1986; Teasdale & Russell, 1983) that even the repeatedly observed impact of moods on word associations or the recall of valenced words (e.g., Isen et al., 1978; Madigan & Bollenbach, 1982, Exp. 2; Laird, Wagener, Halal, & Szegda, 1982) may involve a component of state dependence. To the extent that words of a given hedonic tone are more likely to be used in contexts characterized by a similar hedonic tone, they may be differentially associated with the user's affective state.

Finally, the recall of autobiographical memories shows an interesting asymmetry, as noted by Blaney (1986) and Singer and Salovey (1988). In several studies (e.g., Natale & Hantas, 1982; Salovey & Singer, 1985), happy moods reliably facilitated the recall of happy memories and inhibited the recall of sad memories, relative to neutral moods. In contrast, although sad moods inhibited the recall of happy memories, they did not facilitate the recall of sad ones, relative to neutral moods. Hence, selectivity in recall under sad mood is often restricted to less recall of happy memories, in

contrast to what the associative network model would predict.

Several accounts for this asymmetry have been offered. Most frequently, the asymmetric impact of positive and depressed mood has been attributed to mood repair efforts (e.g., Isen, 1984; Singer & Salovey, 1988). According to this account, individuals in a depressed mood may attempt to "repair" their mood by avoiding further negative memories. In fact, considerable evidence indicates that individuals in a depressed mood engage in a variety of mood repair efforts, including self-reward, helping behavior, or distracting activities (see Morris & Reilly, 1987, for a review). Such controlled processes may presumably override the automatic impact of mood congruent accessibility. Whereas this assumption is in line with the observation that sad moods are not associated with increased recall of sad memories, it also suggests that individuals in a sad mood may deliberately try to recall happy memories, resulting in mood incongruent recall. The evidence bearing on this implication, however, is mixed. As noted above, most studies observed that subjects in a depressed mood recalled less positive events than subjects in an elated mood. However, control conditions in which moods are not manipulated are typically missing (see Blaney, 1986; Morris, 1989; Salovey & Singer, 1988, for reviews). Hence, it is conceivable that depressed subjects recall more positive material than subjects in a neutral mood, as the mood repair hypothesis would suggest, although less positive material than subjects in an elated mood.

More important, Parrott and Sabini (1990, p. 321) noted that "standard laboratory procedures may discourage

this activity (i.e., mood repair) while encouraging mood congruent recall. Cooperative subjects may inhibit their attempts at mood repair if the mood instructions, mood measures, or cover story causes them to suspect that such attempts would interfere with the experiment. At the same time, many laboratory procedures may expose subjects to stimuli that semantically prime mood congruent concepts and memories, thus augmenting any tendencies toward mood congruent recall that are produced by mood alone." Consistent with these arguments, studies that did obtain symmetrical effects of happy and sad moods on recall have typically used hypnotic mood inductions, along with instructions to maintain the induced mood throughout the experimental session.

A direct test of the hypothesis that standard laboratory procedures inhibit mood repair yielded mixed results, however. In a provocative set of studies, Parrott and Sabini (1990) observed mood congruent recall when subjects were instructed to get themselves into a happy or sad mood while listening to appropriate music (Experiment 3). Under this condition, depressed subjects recalled events from their high school days that were more negative than the events recalled by elated subjects. Moreover, this result was obtained independent of whether subjects were told to sustain their mood after the mood induction. Mood congruency was not observed, however, when subjects were unaware that the music played to them might alter their mood (Experiment 4). Under this condition, the first high school event recalled by depressed subjects was a happy one, whereas the first

event recalled by elated subjects was a sad one, indicating that the events that were most accessible in memory, and hence recalled first, were mood incongruent. Identical findings were obtained in two additional studies that used naturally occurring events, such as the return of a graded exam (Experiment 1) or sunny versus cloudy days (Experiment 2), as quasi-experimental mood manipulations: in both cases, the first event recalled was again mood incongruent. In all three studies, however, the observed mood incongruency was limited to the first event recalled, whereas the subsequent events tended to reflect mood congruency.

How are we to interpret this set of findings? That subjects recalled mood congruent events when instructed to get themselves into a certain mood, but initially recalled mood incongruent events when they were unaware of the mood related nature of the study, indicates that standard laboratory procedures do indeed facilitate mood congruent recall, as Parrott and Sabini (1990) suggested. In contrast to their interpretation, however, it seems questionable that this reflects an inhibition of mood repair efforts under standard laboratory conditions. Although the observation that sad subjects initially recalled a happy event is in line with the mood repair notion, the parallel observation that happy subjects initially recalled a sad event is not. To account for this unexpected pattern, Wyer and Srull (1989, p. 383) suggested that, when asked to recall a past event, individuals may think about the past in relation to the present. When they are in a good (bad) mood, they may feel that "things aren't always that good (bad)", prompting the recall

of a mood incongruent event. Having recalled a mood incongruent event, however, they may notice that "things aren't always that bad (good) either", again prompting the recall of an event of opposite valence, resulting in mood congruency on the second event recalled, as observed in Parrott and Sabini's (1990) studies.

If it is not mood repair, however, what is it that drives the differences between standard laboratory procedures and less obtrusive mood inductions? One possibility has again been suggested by Wyer and Srull (1989, Chapter 12). As discussed above, Wyer and Srull assume that mood congruent recall does not result from the affective state itself, but from the label attached to it. According to their model, what is represented in memory is not the emotion itself but a semantic emotion concept. This concept is always activated when subjects are explicitly told to get themselves into a particular affective state. Under more natural conditions, however, this concept is activated only when subjects use it spontaneously to interpret their current feelings. If the appropriate emotion concept is activated, it may serve as a search cue, resulting in the recall of other material to which the label has been attached. As a result, mood congruent recall would be more likely to be obtained when the appropriate concept is explicitly activated by the mood induction procedure than when it is not.

Note, however, that Wyer and Srull's (1989) assumptions provide no obvious mechanism to account for the frequently observed asymmetric impact of happy and sad moods on recall, although their model does account for the differential effects of obtrusive and

unobtrusive mood inductions that have been observed by Parrott and Sabini (1990). Neither, however, do Parrott and Sabini's findings provide consistent support for a mood repair explanation of asymmetric recall effects, which would require that mood incongruent recall is limited to sad subjects.

As an alternative account, the observation that happy moods facilitate the recall of mood congruent material, whereas sad moods primarily inhibit the recall of mood incongruent material has been traced to structural differences in the storage of positive and negative material. Some authors (e.g., Cramer, 1968; Isen, 1984; Matlin & Stang, 1979) suggested that positive material is more interconnected in memory than negative material. If so, a two step process may account for the observed asymmetry. Specifically, being in a good mood may facilitate the recall of some positive event, which in turn may facilitate the recall of other positive events, assuming that they are connected in memory. In contrast, being in a bad mood may also facilitate the recall of a congruent, negative event. However, this event would not facilitate the recall of other negative events, assuming that negative events are less likely to be interconnected. As a result, mood congruent recall would be more pronounced under good than under bad mood, but only part of this facilitation effect would be directly due to the impact of mood per se.

Unfortunately, the available data do not allow an evaluation of this possibility. Moreover, it seems unclear why memories of positive events should be more interconnected in memory, given that negative events are more likely to trigger explanatory efforts (e.g., Bohner, Bless, Schwarz, & Strack,

1988), which, in turn, should establish pathways between negative memories.

Much as it is difficult to separate the relative contributions of state dependency and mood congruency in studies using autobiographical recall, it is also difficult to separate the relative contributions of mood congruent recall and mood congruent encoding in many studies that used non-autobiographical material. As Morris (1989) noted, many studies that obtained selective recall of mood congruent material have allowed subjects to control the length of exposure to the to-be-remembered material (e.g., Derry & Kuiper, 1981; Forgas & Bower, 1987). In this case, the obtained selectivity in recall may reflect mood congruent elaboration of the presented material at encoding, as discussed above, as well as the facilitating effect of mood at the recall stage.

In summary, mood congruent recall has been found to be a rather fragile phenomenon, that is sometimes difficult to obtain in empirical studies (cf. Blaney, 1986; Bower & Mayer, 1985; Morris, 1989). Most importantly, mood congruent recall is most likely to be obtained for self-referenced material, such as autobiographical memories, and it is "impossible or difficult to demonstrate when stimulus exposure occurs under sets that are explicitly antithetical to self-referencing" (Blaney, 1986, p. 232). Moreover, mood congruency may be limited to relatively unstructured material and tends to be difficult to find when material is presented in narrative form, such that positive and negative elements are clearly interconnected (Mecklenbr e ker & Hager, 1984;

Hasher, Rose, Zacks, Sanft, & Doren, 1985) or otherwise well organized (Fiedler, Pampe, & Scherf, 1986). Finally, the relative contributions of mood congruency, state dependency, and mood congruent encoding are difficult to disentangle in many studies and mood congruent selectivity in recall may be most likely to be obtained when several of these processes operate in combination.

In addition, the notion of mood congruency in recall predicts mood effects on evaluative judgments, a possibility that we address in more detail below.

Mood and Evaluative Judgments

One of the most reliable findings regarding the interplay of affect and cognition concerns the impact of moods on evaluative judgments. In general, a target is likely to be evaluated more favorably when the judge is in a positive rather than a negative mood (see Forgas, 1992; Morris, 1989; Schwarz, 1990; Schwarz & Clore, 1988, for reviews). Experimental demonstrations of this basic finding cover a wide variety of evaluative judgments, ranging from satisfaction with consumer goods (e.g., Isen et al., 1978) and the evaluation of other persons (e.g., Forgas & Bower, 1987), selected activities (e.g., Carson & Adams, 1980) or past life events (e.g., D. M. Clark & Teasdale, 1982), to reports of happiness and satisfaction with one's life as a whole (e.g., Schwarz & Clore, 1983). According to models of mood congruent memory (e.g., Bower, 1981; Isen et al., 1978), these findings reflect biased recall of valenced information from memory. As an alternative account, Schwarz and Clore (1983, 1988) suggested that

mood effects on evaluative judgments can reflect the use of affective states as a source of information. Below, we address both of these accounts in light of the available data, speculating on the conditions under which one or the other process may mediate mood congruency in evaluation.

In addition, affective states may influence judgments by eliciting different processing strategies, which, in turn, may result in a differential use of information. This possibility is addressed in the next section of this chapter, bearing on moods and processing strategies.

Mood Congruent Recall and Evaluative Judgments

Assuming that judgments are based on the information that is most accessible at the time (see Higgins, 1989; Higgins & Bargh, 1987, for reviews), the associative network model reviewed above predicts mood congruent biases for on-line as well as off-line (Hastie & Park, 1986) judgments. In the case of memory based ("off-line") judgments, this presumably reflects the mood congruent recall of valenced material from memory. In the case of on-line judgments, this presumably reflects the impact of mood congruent associations in response to the stimulus. According to these assumptions, mood effects on evaluative judgments are mediated by affective influences on the accessibility of mood congruent valenced information and this information is used in forming a judgment.

Consistent with these assumptions, a significant relationship between mood congruent recall and evaluative judgments has been observed in some studies (e.g., Forgas, in press). Numerous other studies, however,

generated data patterns that are inconsistent with the predictions of the associative network model. Hence, we first introduce the competing feelings-as-information model and evaluate the evidence by contrasting the predictions derived from both models.

Feelings as Information:

The "How-Do-I-Feel-About-It?"
Heuristic

Emotion researchers have long assumed that moods reflect the general state of the organism, an assumption that prompted Jacobsen (1957) to refer to moods as "barometers of the ego." Similarly, Nowlis and Nowlis (1956, p. 352) suggested that moods are "a source of information or discriminable stimuli to the organism about the current functioning characteristics of the organism." Extending these assumptions, Wyer and Carlston (1979) suggested that individuals' affective states may serve as information in making judgments, a possibility that was systematically explored by Schwarz and Clore (1983, 1988; see also Clore, 1992; Clore & Parrott, 1991; Schwarz, 1987, 1990).

According to this feelings-as-information hypothesis, individuals may use their apparent affective reactions to a target as a basis of judgment. In fact, some evaluative judgments refer, by definition, to one's affective reaction to the stimulus. For example, when asked how "likeable" a person is, we may base this judgment on our own feelings towards the person, rather than on a review of the person's features. Other evaluative judgments may not refer directly to one's feelings about the target but may pose a task that is complex and demanding. Again, the judgmental task

may be simplified by assessing one's own feelings about the target. Rather than computing a judgment on the basis of recalled features of the target, individuals may ask themselves, "How do I feel about it?". In doing so, they may mistake feelings due to a pre-existing state as a reaction to the target stimulus, resulting in more positive evaluations under pleasant than under unpleasant moods. This assumption generates a number of predictions that cannot be derived from the assumption that mood effects on evaluative judgments are mediated by mood-congruent recall or encoding, of which we only review two (see Schwarz & Clore, 1988; Schwarz, 1990, for more detailed discussions).

Perceived Informational Value

The most crucial prediction is that the impact of affective states on evaluative judgments is a function of the states' perceived informational value. If individuals attribute their current feelings to a source that is irrelevant to the evaluation of a target stimulus, the informational value of their affective state should be discredited, and their feelings should not influence the evaluative judgment. According to models of mood-congruent recall, on the other hand, the impact of affective states should depend only on the evaluative implications of the information retrieved from memory, rather than on information provided by the affective state itself. Therefore, models of mood congruent recall predict that manipulations of the informational value of one's current affective state will not influence its impact on evaluative judgments.

In line with the feelings-as-information hypothesis, Schwarz and Clore (1983)

observed that the impact of mood on judgments of life satisfaction was eliminated when subjects attributed their current feelings either correctly (Experiment 2) or incorrectly (Experiment 1) to a transient source. For example, subjects reported higher life satisfaction, and a more elated current mood, in telephone interviews when called on sunny rather rainy days. This difference was eliminated, however, when the interviewer mentioned the weather as part of a private aside, thus directing subjects' attention to this source of their elated or depressed state (Experiment 2). Similarly, recalling a sad life event did not influence subjects' judgments of life satisfaction when they could misattribute the resulting sad feelings to the alleged impact of the experimental room (Experiment 1); in addition, current mood, as assessed at the end of the experiment, was more strongly correlated with judgments of life satisfaction when subjects' attention was not directed to a transient source of their feelings than when it was. Conceptual replications of these findings have been reported by Keltner, Locke, and Audrain (1993), Schwarz, Servay, and Kumpf (1985), and Siemer and Reisenzein (1992).

In combination, these findings indicate that individuals may use their current feelings as a basis of judgment unless the diagnostic value of their feelings for the judgment at hand is called into question. This discounting effect (Kelley, 1972) is incompatible with predictions based on mood congruent recall, because the attributional manipulations only discredit the implications of one's current feelings but not the implications of valenced information about one's life, recalled

from memory. Given these findings, it is not surprising that mood effects on evaluative judgments have been observed in the absence of any evidence for mood effects on the recall of relevant information from memory (e.g., Fiedler, Pampe, & Scharf, 1986).

Relative Contributions of Mood and Thought Content

In addition, the predictions of both models differ with regard to the contributions of mood at the time of judgment and the specific content by which the mood is induced. From the perspective of an associative network model of memory, judgments should be most consistent with current mood when mood is induced by a technique that itself increases the accessibility of mood-congruent material that is relevant to the judgment at hand. For example, a depressed mood that is induced through thoughts about a serious disease should affect judgments about diseases more strongly than a depressed mood that is induced by other thoughts, because information about diseases would be activated by both the content of one's thoughts and one's depressed mood. According to the feelings-as-information hypothesis, on the other hand, the nonemotional content of the mood-inducing stimulus should be irrelevant, unless it influences the apparent informational value of the accompanying feelings.

In line with the latter hypothesis, several studies indicate that mood effects on evaluative judgments are largely independent of the specific content by which the mood was induced (e.g., Johnson & Tversky, 1983; Mayer, Gaschke, Braverman, & Evans, 1992; see Schwarz & Clore, 1988, for a review). For example,

Johnson and Tversky (1983) observed that reading descriptions of negative events, which presumably induced a depressed and slightly anxious mood, increased judgments of risk across a wide set of targets. Most importantly, the impact of mood was independent of the object of judgment or the content by which the mood was induced. Reading about cancer, for example, affected judgments of the risk of cancer, but had equally strong effects on judgments of the risk of accidents and divorce. Such thoroughly generalized effects, undiminished over dissimilar content domains, are incompatible with models of mood congruent recall. However, they are consistent with the feelings-as-information hypothesis. According to this hypothesis, individuals may simplify the difficult task of evaluating unknown risks by consulting the feelings that the stimulus apparently elicits. If they feel depressed and anxious, they may conclude that the risk they are asked to evaluate is indeed depressing and threatening and may then evaluate it as being more severe than they would under a more positive mood. This assumption leads to the prediction that the impact of mood is independent of the content by which it was induced, unless its informational value is discredited.

In combination, these and related findings (see Clore, 1992; Schwarz, 1990; Schwarz & Clore, 1988, for reviews) demonstrate that individuals may use their perceived affective state as a basis of judgment, according to what one might call a "How-do-I-feel-about-it?" heuristic. Whereas these findings are incompatible with the assumption that mood effects on evaluative judgments are necessarily

mediated by mood congruent recall, they do obviously not preclude that mood congruent recall may result in biased judgments as well, an issue to which we return below.

The Informational Value of Moods and Specific Emotions

Whereas the preceding discussion, and most of the empirical evidence currently available, focused on the impact of global moods, the same general logic holds for specific emotions. In applying the feelings-as-information model to specific emotions, however, it is important to consider the different informational values of moods and emotions. Specifically, a central characteristic of mood states is their diffuse and unfocused quality (see Clore, 1985; Ewert, 1983), which sets them apart from specific emotions. In contrast to moods, emotions are specific reactions to particular events, reflecting specific appraisal patterns as discussed in the first section of this chapter. Moods do not always have easily identifiable causes. They may come about gradually, and they tend to last longer than emotions. Moreover, moods may develop as the residual of a specific emotion, once the emotion's intensity dissipates and its cause is no longer in focal attention (Bollnow, 1956). Thus, the cause of a mood tends to be more remote in time than the cause of an emotion and tends to be less clearly defined for the experiencer.

It is this undifferentiated and unfocused nature of mood states that leads them to be used as information in making a wide variety of different judgments. In fact, when subjects are induced to attribute their moods to specific causes -- as in the Schwarz and Clore (1983)

experiments reviewed above -- its impact on judgments that are unrelated to that source vanishes. These considerations suggest that the informational value of specific emotions is more restricted than the informational value of global moods. Given that the source of an emotion is more likely to be in the focus of attention, one's emotional feelings may be more likely to be attributed (correctly) to a specific event. This should reduce their potentially biasing role in judgments that are unrelated to this event.

This hypothesis is supported by research by Keltner et al. (1993). These authors induced a sad mood by having subjects vividly imagine a negative life event. Subsequently, some subjects were asked to describe "what emotions" they currently feel, whereas others indicated where and when the negative event took place. Compared to the latter group, those subjects who labeled their current feelings with specific emotion terms were considerably less affected by the mood manipulation and reported significantly higher life satisfaction, despite being in a depressed mood. In fact, describing one's current emotions was as effective in reducing the impact of a sadness inducing imagined event on life-satisfaction judgments as misattributing one's sad feelings to the experimental room. In combination, these studies suggest that labeling their current feelings with specific emotion terms induced subjects to identify specific causes for their current feelings, thus leading subjects to consider them as uninformative for subsequent evaluative judgments that did not pertain to these specific causes. A particularly interesting implication of

this analysis holds that specific emotions may be unlikely to affect unrelated judgments shortly after their onset, when the event that elicited them is still salient. Rather, their more general impact may be expected after the emotion dissipates, leaving the individual in a diffuse mood as described by Bollnow (1956).

Note, however, that these considerations do not imply that specific emotions would not serve informative functions -- they only emphasize that their informational value is likely to be more restricted and specific. On theoretical grounds, this specification likely reflects the implications of the appraisal pattern that underlies the respective emotion. In line with this hypothesis, Gallagher and Clore (1985) observed that feelings of fear affected judgments of risk but not of blame, whereas feelings of anger affected judgments of blame but not of risk. Similarly, Keltner, Ellsworth, and Edwards (1993) observed in several experiments that angry subjects assigned more responsibility to human agents than to impersonal circumstances, whereas sad subjects assigned more responsibility to impersonal circumstances than to human agents, reflecting the appraisal patterns of anger and sadness. In combination, these findings illustrate that, unlike global mood states, specific emotions have very localized effects on judgment. Much as in the case of moods, however, these effects are eliminated when the informational value of the emotion is called into question by misattribution procedures (e.g., Schwarz et al., 1985).

Similarly, the impact of arousal states (e.g., Zillman, Johnson, & Day, 1972; see Zillman, 1978 for a review) and

bodily sensations (e.g., Martin, Harlow, & Strack, 1992; Strack, Martin & Stepper, 1988; see Adelman & Zajonc, 1989 for a review); see Clore, 1992, for a review) has been found to depend on their perceived causes, consistent with the logic of the feelings-as-information model. For example, in Zillman's (1978) excitation transfer paradigm, effects of physical arousal induced by vigorous exercise on judgment and behavior have only been observed under conditions where subjects were unlikely to attribute their feelings to the impact of the exercise. Extending this line of work, Martin et al. (1992) observed that induced facial expressions affected the interpretation of an ambiguous social situation and that these effects were more pronounced when subjects were aroused. However, the impact of arousal as well as facial expression was largely eliminated when subjects (correctly) attributed their arousal to physical exercise, thus rendering subjective experience uninformative for the judgment at hand.

Finally, the impact of non-affective phenomenal experiences, such as the ease with which information comes to mind, follows the same pattern (see Clore, 1992, for a review). One study, for example, explored the role of the phenomenal experience of ease of recall, which is central to Tversky and Kahneman's (1973) availability heuristic (Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simons, 1991). Subjects were found to rely on the ease with which some information came to mind only when the informational value of this phenomenal experience was not discredited by misattribution manipulations. In related work (Clore

& Parrott, in press), feelings of uncertainty were induced in subjects who later read a poem and rated their ability to understand it. They were more likely to believe that they understood the poem when the feelings of uncertainty they experienced were attributed to the experimental manipulation than when they saw them as part of their reaction to the poem (see Clore, 1992; Clore & Parrott, 1991; Schwarz et al., 1991; Strack, 1992, for a more extended discussion of the informational value of non-affective experiences).

In summary, the reviewed findings indicate that individuals may use phenomenal experiences of an affective as well as non-affective nature as a source of information in making a judgment. However, they will rely on these experiences only if they can consider them to reflect their reaction to the target. If the experiences are attributed, either correctly or incorrectly, to some other source, their informational value for the judgment at hand is called into question, eliminating the otherwise observed impact.

What Determines the Use of One's Feelings as a

Basis of Judgment?

The reviewed findings indicate that mood effects on evaluative judgments often reflect the use of one's affective state as a source of information, rather than any impact of mood congruent recall of information from memory. However, these findings do not preclude that mood congruent recall may produce evaluative biases as well. Next we consider the conditions that may determine if judgments are directly based on the informational

implications of one's mood or on recalled information.

Consistent with what one would expect on theoretical grounds, the currently available evidence suggests that the use of the "How-do-I-feel-about-it?" heuristic is particularly likely under the following four conditions: First, when the judgment at hand is affective in nature (e.g., liking for another person); second, when little other information is available; third, when the judgment is overly complex, and cumbersome to make on the basis of a piecemeal information processing strategy; and, fourth, when time constraints or competing task demands limit the attentional resources that may be devoted to forming a judgment. Recall mediated effects, on the other hand, should be particularly likely when individuals engage in an effortful piecemeal judgmental strategy, have sufficient time and attentional resources to do so, and when the somewhat tricky prerequisites for mood congruent recall, discussed above, are met (see Forgas, 1992, for a related discussion). We discuss each of these aspects in turn.

A judgment that refers explicitly to how one feels about the object of judgment renders one's feelings highly relevant. Accordingly, it is not surprising that judgments of liking and preference have been found to be strongly influenced by respondents' feelings (e.g., Clore & Byrne, 1974; Zajonc, 1980). Moreover, one's feelings are sometimes the only source of information that may be available to form a judgment, as may be the case, for example, when subjects are asked to judge the evaluative meaning of unknown Chinese ideographs. Facing this task, subjects may base their

judgment on their apparent affective response to the target, unaware that this response was elicited by the subliminal presentation of happy or frowning faces that preceded the ideograph (e.g., Murphy & Zajonc, 1993). In combination, findings of this type suggest that individuals are likely to consult their feelings about the target when little other information is available.

Complementing these findings, other studies indicate that the impact of feelings decreases as the amount or salience of competing information increases. For example, Srull (1983, 1984) reported that subjects' mood influenced their evaluations of unfamiliar, but not of familiar products. In addition, Strack, Schwarz, and Gschneidinger (1985, Experiments 2 and 3) observed that subjects who provided short, non-emotional reports of a past life event used this event as a standard of comparison, resulting in contrast effects on judgments of current life satisfaction. Subjects who had to report a past life event in an emotionally involving style, on the other hand, relied on the elicited mood state in evaluating their current life satisfaction, resulting in assimilation effects (see Clark & Collins, in press; Clark, Collins, & Henry, in press, for conceptual replications). Findings of this type suggest that individuals may rely either on thought content or on the feelings elicited, depending on which source of information is more salient. In general, other sources of relevant information may be increasingly ignored as the salience or intensity of the affective state increases.

Whereas the preceding findings suggest that individuals may consult their feelings due to a lack of other relevant

information, they may also do so because too much information is available or because limited attentional resources do not allow for the systematic use of available information. In either case, asking oneself how one feels about the target may provide an efficient heuristic that greatly simplifies the judgmental task and limits the demands on attentional resources. For example, Schwarz, Strack, Kommer, and Wagner (1987, Experiment 1) observed pronounced mood effects on judgments of general life satisfaction, but not on judgments of satisfaction with specific life domains, such as one's income. This presumably reflects that evaluative criteria for specific life domains are well defined and that comparison information is easily available, whereas the evaluation of one's life-as-a-whole requires a multitude of comparisons along many dimensions with ill-defined criteria (see Schwarz & Strack, 1991, for a more detailed discussion). Consistent with this assumption, subjects who were put into a bad mood by being in an overheated, dirty room with an offensive odor reported lower general life-satisfaction, but higher satisfaction with their own apartment, than subjects in a more pleasant room (Schwarz et al. 1987, Experiment 2). Thus, they used their affective state to evaluate their overall well-being, but easily accessible descriptive information to evaluate their apartment. In a similar vein, Levine, Wyer, and Schwarz (in press) observed mood effects on judgments of global self-esteem but not on judgments of domain specific self-esteem, again provided that relevant descriptive information was accessible. In each of these studies, subjects were more likely to rely on their feelings at

the time of judgment when the judgmental task was more complex. Finally, Siemer and Reisenzein (1992) found that mood effects on judgments of life satisfaction were more pronounced when subjects were under time pressure, or worked on a secondary task, while forming the judgment. In other words, subjects' use of their feelings as a basis of judgment increased as attentional resources decreased.

In combination, the above findings suggest that the use of one's feelings as a basis of judgment reflects a simplifying heuristic strategy. Mood effects on evaluative judgment that are mediated by mood congruent recall, on the other hand, may be expected only if subjects engage in a more effortful piecemeal strategy (see Forgas, 1992). However, in the absence of (mis)attribution manipulations that discredit the informational value of subjects' current feelings, it is difficult to determine whether the use of feelings as information or mood congruent recall drives an observed impact of moods on evaluative judgments. At the present stage of research, we can only conclude that moods may influence evaluative judgments either directly, by serving as a basis of judgment, or indirectly, by influencing what comes to mind (Clore, 1992). However, given the robustness of mood effects on evaluative judgments on the one hand, and the fragility of mood congruent recall on the other hand, the former seems more likely than the latter.

Affective States and Spontaneous Processing Strategies

Although most of the empirical work reviewed above has explicitly

addressed the impact of affect on memory or judgment, many of the obtained findings may be conceptualized as reflecting influences of affective states on individuals' spontaneous adoption of a heuristic or systematic strategy of information processing. Whereas this proposal seems uncontroversial, there is little agreement as to which affective state may be associated with which type of processing strategy, let alone any consensus about underlying mechanisms. Affect induced differences in processing strategy have been attributed to differences in attentional resources, differences in the accessibility of procedural knowledge, and differences in motivation, or some combination of these factors. In the present section, we review key proposals and resultant predictions before we turn to relevant research. As will become evident, there are findings that support as well as contradict each of the key proposals, and the specific impact of affect cannot be predicted without considering the specific processing requirements presented by the specific task for which mood effects are being examined.

Theoretical Approaches

Affective States and Attentional Resources

Ellis and Ashbrook (1988) proposed that because dysphoric affective states elicit intrusive thoughts, they limit attentional resources. Consistent with this model, research reviewed above indicates limited elaboration and organization of new information under dysphoric moods. The model predicts that dysphoric individuals may use less information in forming judgments and may prefer simple over complex

judgmental procedures. The derivative model proposed by Hertel and colleagues (e.g., Hertel & Hardin, 1990) suggests that depressed mood leads to only a deficit in initiative, which is expected to be reflected in poorer performance on tasks that require the generation of complex hypotheses or of organizational schemes; deficits for depression are not expected for well-structured tasks.

Other researchers have argued that elated affective states can limit attentional resources (Isen, 1987; Mackie & Worth, 1989). Isen, for example, hypothesized that positive material in memory "is more extensive and at the same time better integrated, so that positive affect is able to cue a wide range of thoughts" (Isen, 1987, p. 217). If so, the material brought to mind by positive affect could limit the resources available for task performance.

The Tuning Function of Affective States:

Feelings as Information

As discussed earlier, different situations elicit different affective reactions. Extending Schwarz and Clore's (1988) feelings-as-information model, Schwarz (1990; Schwarz & Bless, 1991) suggested that this relationship is bi-directional, as has long been argued by emotion theorists who assume that "emotions exist for the sake of signaling states of the world that have to be responded to, or that no longer need response and action" (Frijda, 1988, p. 354). Thus, while different situational appraisals elicit different emotions, the experience of a certain emotion also informs the individual about the nature of the current psychological situation.

Positive affective states inform individuals that their situation is safe and does not threaten current goals; positive outcomes are not lacking, and there is no threat of negative outcomes. In contrast, negative affective states inform individuals that the current situation is problematic; positive outcomes are lacking or negative outcomes threaten.

The model further assumes that people are motivated to obtain positive and avoid negative outcomes. Accordingly, negative emotions inform individuals that action need be taken. Effective action, however, requires understanding, and attempts at change are likely to be facilitated by a systematic, detail-oriented, resource-dependent processing style. Attention may be directed to acts at a lower level of abstraction (Wegner & Vallacher, 1986). Moreover, individuals may be unlikely to take risks in a situation perceived as problematic; simple heuristics and novel solutions may be avoided. In contrast, positive affective states inform individuals of a benign situation, and they may consequently not readily invest attentional resources unless it is required in the pursuit of current goals. In pursuing these goals, the individual may take risks, given that the situation is considered safe. Hence, simplifying heuristics may be favored, novel procedures and possibilities may be explored, and unusual, creative associations may be elaborated (see Schwarz, 1990, for a more detailed discussion, and Fiedler, 1988; Kuhl, 1983, for related hypotheses). The assumed impact of affective states on individuals' spontaneously adopted processing style may be overridden by currently active processing goals (e.g., Bless, Bohner,

Schwarz, & Strack, 1990; Bless, Mackie, & Schwarz, 1992). This flexibility, however, should be more likely under elated than under depressed moods, because paying less systematic attention to a possibly problematic environment may not be adaptive.

In addition to these motivational assumptions, the model posits that negative affective states may increase the accessibility of procedural knowledge that has shown itself effective for dealing with similar affect-related situations in the past, thereby facilitating the required action signaled by the affective state. Activated procedural knowledge would involve a range of cognitive and behavioral components that are oriented to situational requirements, as reflected in the observation that different emotions are associated with different states of action readiness that are evident in physiological changes (e.g., Lacey & Lacey, 1970; Obrist, 1981) and overt behavior (e.g., Ekman, 1982; Izard, 1977), as well as in introspective reports (e.g., Davitz, 1969; Frijda, 1986, 1987). Whereas the activated procedural knowledge is presumably tuned to meet the situational action requirements signalled by the affective state, the primed procedure may be applied to unrelated tasks that the individual works on while in the respective state, provided that the procedure is applicable (Higgins, 1989). In contrast, positive emotions, having in the past been elicited in situations that did not call for particular action, may not prime any specific procedure, thereby contributing to a higher cognitive flexibility under elated affect.

Whereas the assumption that certain affective states may prime procedural knowledge is admittedly speculative and difficult to test empirically, the hypothesized motivational implications of affective states have received qualified support. Martin, Ward, Ach F, and Wyer (1993) induced happy or sad moods and assessed the time subjects spent studying behavioral descriptions to form judgments (Experiment 1) or the number of examples generated on a creativity task (Experiment 2). On the basis that feelings may serve informative functions, they assumed that subjects may consult their current feelings in deciding how much effort to invest in the task. To explore this possibility, Martin et al. varied the decision rule offered to subjects. Some subjects were told to stop when they no longer enjoyed the task, whereas others were told to stop when they felt they had enough information to form a judgment, or had generated enough examples. Under "enjoyment" instructions, subjects invested more effort when they felt good rather than bad, suggesting that they interpreted their positive or negative feelings as indicating that they were, or were not, enjoying the task. Conversely, under "task" instructions, subjects invested more effort when they felt bad rather than good. In this case, positive feelings were apparently interpreted as an indication of satisfactory performance, which allowed termination, whereas negative feelings indicated dissatisfactory performance, thus motivating subjects to continue on the task. These findings indicate that the motivational effects of affective states are mediated by their informational implications. They also

demonstrate that the impact of these states depends on the specific decision rule that underlies subjects' motivation to engage in behavior. In Martin et al.'s study, the decision rules were provided by the experimenter. Without experimenter intervention, which rule is adopted may itself be influenced by affective states. If negative feelings signal a problematic situation, depressed individuals may generally adopt a performance-related decision rule, rather than an enjoyment rule. If so, they should invest substantial effort, much as did the negative mood subjects under "task" instructions in Martin et al.'s study. If positive feelings signal no particular requirements, elated individuals may adopt either enjoyment or performance rules, again suggesting greater cognitive flexibility under elated mood.

In summary, the core assumption is that thought processes are tuned to meet the requirements signalled by one's affective state. Negative affective states are likely to foster the use of detail-oriented systematic processing strategies, whereas positive affective states are likely to foster the use of more simplifying heuristic processing strategies, for the reasons outlined above. An increased use of simplifying heuristic strategies under elated affect has also been proposed by Isen and colleagues (Isen, Means, Patrick, & Nowicki, 1982; see Isen, 1987, for a review). However, their analysis has not traced the hypothesized effects to the informational functions of affective states, nor have they addressed the impact of negative moods. As noted earlier, Isen argued that positive material is extensive and well interconnected in memory, giving individuals in elated moods access to a

wide variety of material, with a possible consequence that "this larger amount of material in mind might also result in a defocusing of attention" (Isen, 1987, p. 237). Moreover, Isen suggested that positive affect may promote reliance on intuitive decision strategies and judgmental heuristics. These hypotheses can be subsumed under the cognitive tuning model, which has the advantage of providing a coherent conceptualization of the impact of positive as well as negative affective states that is compatible with a long history of psychological theorizing on the signaling functions of emotions (see Frijda, 1986, 1988).

The Impact of Loss of Control

Control motivation is relevant to the issue of affect induced differences in information processing. Temporary exposure to uncontrollable events has been shown to elicit increased attributional activity, more careful and deliberate processing of available information, and increased information search (e.g., Pittman & D'Agostino, 1985, 1989; Pittman & Pittman, 1980). In line with helplessness formulations of depression (Seligman, 1975), Weary and her colleagues (see Weary, Marsh, Gleicher, & Edwards, in press, for a review) proposed that depression is characterized by uncertainty about one's ability to understand, predict, and control one's social environment and to produce desired outcomes. At least at mild and moderate levels of depression, this uncertainty is supposed to give rise to control motivation, leading to the adoption of an accuracy goal, which in turn results in a systematic style of information processing that can be characterized as highly resource-dependent, vigilant, and complex, with

more extensive processing of and search for relevant information.

Although focusing on chronic depression rather than on the effects of transient moods, the Weary et al. model is compatible with the assumption that temporary negative moods signal a problematic environment. From the latter perspective, information conveyed by transient negative moods may also give rise to control motivation. Finally, both models predict less systematic information processing under severe chronic depression, although for different reasons. According to Weary et al., severely depressed individuals have expectations of extreme uncontrollability, which undermine the elicitation of control motivation. From the feelings-as-information perspective, it is noteworthy that phenomenological studies of severe depression indicate that the experience of "sadness" or of "being in a bad mood" is typically not part of the melancholic state of severe depression (see Tolle, 1982, p. 232 ff. for a review). Hence, the information conveyed by chronic melancholy may differ from that conveyed by milder dysphoric states.

Empirical Findings

Numerous empirical findings can be accounted for by the resource and process assumptions discussed above. As will soon become evident, however, many reliably observed effects are compatible with more than one set of assumptions. Moreover, direct evidence for underlying processes is typically missing, rendering theoretical implications difficult to draw.

Focus of Attention

A large body of literature indicates a narrowed focus of attention under negative affect, although this narrowing of attention has typically been observed for information related to the affect inducing event (see Broadbent, 1971; Bruner, Matter, & Papanek, 1955; Easterbrook, 1959; Eysenck, 1976). Moreover, Wegner and Vallacher (1986) observed that as compared to successes, failures to obtain a desired outcome, which are often associated with negative affective reactions, are more likely to foster attention to details of one's action strategy.

Depressed affective states may also promote greater attention to details that are unrelated to the affect inducing event. For example, using Newton's (1983) unitization task, Lassiter and Koenig (1991) observed that naturally depressed individuals unitized behavioral sequences at a finer rate than non-depressed individuals, in particular when the target's behavior conveyed positive affect. Moreover, studies of affective influences on persuasion (e.g., Bless, Bohner, Schwarz, & Strack, 1990; Bless, Mackie, & Schwarz, 1992) and stereotyping (e.g., Edwards & Weary, 1991), which we shall review in more detail below, consistently indicate that depressed affect is associated with more attention to details of the presented arguments or the described behaviors of the target person. In sum, research on focus of attention is consistent with the cognitive tuning and control motivation models.

Degree of Elaboration of Presented Information

To date, affective influences on the elaboration of information have been most systematically explored in the

domain of persuasion, in part because the cognitive dynamics underlying the processing of persuasive communications are well understood (see Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). In general, a message that presents strong arguments is more persuasive than a message that presents weak arguments -- provided recipients are motivated and able to process the content of the message. If recipients do not engage in elaborative processing of message content, the advantage of strong over weak arguments is eliminated.

A consistent finding is that individuals in an elated mood are less likely to engage in systematic message elaboration than individuals in a non-manipulated neutral or in a depressed mood (e.g., Bless et al., 1990; Bless et al., 1992; Bohner, Crow, Erb, & Schwarz, 1992; Mackie & Worth, 1989; Worth & Mackie, 1987; see Schwarz, Bless, & Bohner, 1991, for a review). Specifically, elated individuals are moderately persuaded by strong as well as weak arguments, indicating that they did not engage in systematic message elaboration. In contrast, individuals in a depressed mood are strongly persuaded by strong arguments, but not by weak arguments, indicating that they engaged in systematic message elaboration. These differences in message elaboration are also reflected in cognitive response data. Whereas depressed recipients report more disagreeing thoughts in response to weak, and more agreeing thoughts in response to strong messages, elated recipients' cognitive responses show no differences as a function of message strength.

The cognitive tuning model proposes that positive mood leads people to

favor a heuristic processing style, yet that this style can be overridden by current processing goals. Addressing this, Bless et al. (1990, Experiment 1) explicitly instructed some of their subjects to pay attention to message quality. Under this instruction, elated subjects differentiated between strong and weak arguments, suggesting that elated individuals have sufficient attentional resources to engage in systematic message processing. In contrast, Mackie and Worth (1989) have argued that the reduced elaboration of persuasive messages under positive mood is due to reduced resources. Some of their subjects were told that they may take all the time they wanted to read, repeatedly if they wished, the persuasive message. Under this condition, elated subjects differentiated between strong and weak arguments. For Mackie and Worth, this demonstrated that increased processing time can compensate for reduced resources under elated mood. It is conceivable, however, that informing subjects that they may take their time and may reread the message, may convey to them that a carefully considered response to the message is asked for. If so, Mackie and Worth's findings would parallel the impact of processing instructions obtained in the Bless et al. (1990) study. On the other hand, Bless et al.'s instruction to pay attention to message quality may have provided subjects a more focused task and may hence have reduced resource demands, rendering their findings compatible with a reduced resources account. To distinguish between these two accounts, future research will need to manipulate subjects' processing capacity or processing goals in ways that are not open to reinterpretation in

terms of the respective other concept. In any case, elated subjects' ability to process message content on instruction suggests to us that any constraints on processing capacity under elated moods are not severe. Consistent with this view, elated subjects do not show less recall of presented arguments than depressed subjects (Bless et al., 1990), in contrast to what a reduced resources account might predict.

In sum, the persuasion findings are most consistent with the cognitive tuning and control motivation accounts. Whether some of the findings for positive mood can be attributed to reduced resources remains unclear. Finally, the findings for negative mood are clearly incompatible with a reduced resources account.

Amount of Presented Information Used

Affective influences on the amount of information used have been addressed in interpersonal judgment and impression formation, decision making, and problem solving. In the domain of interpersonal judgment, induced positive mood has been associated with reliance on the sole item of category membership, whereas induced depressed mood has been associated with reliance on a wider range of individuating information (e.g., Bless, 1992; Bodenhausen, 1993; Edwards and Weary, 1991). Assuming that reliance on category membership information reflects a heuristic use of stereotypes that simplifies the judgment process (Bodenhausen, 1993; Fiske & Neuberg, 1990), these findings are consistent with the cognitive tuning model. Similarly, Sinclair (1988) observed that subjects in an elated mood made less use of detailed performance information, and showed

more halo effects and lower accuracy in a performance appraisal task than subjects in a depressed mood, with neutral mood subjects falling in between. Moreover, subjects in an induced elated mood showed more primacy effects in impression formation than subjects in a depressed mood (Sinclair & Mark, 1990). These patterns of results are generally consistent with the cognitive tuning model. Resource restriction assumptions, on the other hand, can only account for the findings obtained under positive mood, but not under negative mood.

In contrast, there is some evidence of decreased information use under chronic depressed affect in the domain of decision making. For example, Conway and Giannopoulos (1992) observed that chronically depressed individuals used a smaller amount of available, relevant information in a complex decision making task. Depressed subjects used fewer of the dimensions of information that were available for the evaluation of part-time jobs. This effect was not due to depressed subjects systematically ignoring certain dimensions, suggesting that their affective state did not induce a particular focus but simply limited the amount of information considered. In addition, depressed subjects did not simplify the information they used, nor did they combine the information they used in a more simple manner than non-depressed subjects, revealing a degree of specificity in their limited information use that is not readily accountable in terms of motivational deficits. Other research on chronic depression and problem solving also suggests that depressed individuals make less use of available information;

for example, they maintain faulty hypotheses in the face of feedback that indicates a revision is in order (Dobson & Dobson, 1981; Silberman et al., 1983).

In sum, the available findings indicate increased information use under depressed affect in the domain of social judgment, but decreased information use on non-social tasks. Although the latter finding is restricted to naturally depressed subjects, research by Weary and colleagues (in press), reviewed below, suggests that the temporary versus chronic nature of depressed affect is not the crucial variable that drives the emerging differences. Rather, the observed effects may be domain specific, an issue to which we return below.

Amount and Diagnosticity of Information Searched For

Research that addressed chronically depressed subjects' search for social information consistently observed increased information search under mild to moderate depression (see Weary et al., in press, for a review). For example, Hildebrandt-Saints and Weary (1989) observed that non-depressed individuals sought more, and more diagnostic, information about a target person when they expected to interact with that person than when they did not. In contrast, depressed individuals generally sought more, and more diagnostic, information about the target than non-depressed individuals, independent of whether future interaction was expected. This pattern of findings is consistent with control motivation and cognitive tuning accounts, but not with the view that negative affect is associated with reduced resources. On the other hand,

the results were obtained for items selected from a provided list, and one might argue that limited information use for negative affect may be more apparent on tasks that require subjects to generate possible topics or issues that need be addressed by social interactants.

Attributional Complexity

In correlational work, Marsh and Weary (1989) observed that mild and moderate chronic depression are associated with higher attributional complexity, as assessed by the Attributional Complexity Scale (Fletcher, Danilovics, Fernandez, Peterson, & Reeder, 1986). Extending this research, Conway et al. (1993) reported correlational evidence that depressed individuals' higher attributional complexity scores are due to their tendency to engage in attempts at self-understanding. Some experimental findings also suggest increased attributional complexity under negative affect. McCaul (1983) observed that mildly depressed subjects were less likely than non-depressed subjects to infer a corresponding attitude from the content of an essay that was written for money, thus revealing greater sensitivity to situational constraint. In contrast, Sullivan and Conway (1989) obtained evidence for increased dispositional inferences under induced depressed moods. In their studies, subjects were asked to write several causes for each behavior described to them. In this case, subjects in a depressed mood generated more correspondent dispositional attributions than subjects in a neutral mood; such attributions require little information and few resources. Finally, Bohnet, Marz, Bless, Schwarz, and Strack (1992)

observed that induced elated moods consistently increased dispositional inferences about a target person shown on a videotape, whereas induced depressed moods did so on some but not all of the assessed judgments. As these mixed findings indicate, strong conclusions concerning the impact of affective states on attributional complexity cannot be drawn at this time.

A more reliable finding is that depressed individuals make internal attributions for their own successes and failures, whereas non-depressed individuals show a self-serving attributional pattern (see Sweeney, Anderson, & Bailey, 1986, for a review). This evenhandedness under depression remains poorly understood, however. These findings may either reflect differences in self-schemata, an issue not addressed by any of the assumptions discussed here, or limited attentional resources associated with negative mood. Perhaps depressed individuals make more internal attributions because these attributions require fewer resources than attributions involving a consideration of situational factors.

Categorization Breadth

Initial studies on emotion and categorization breadth were conducted by Isen and her colleagues. For example, Isen and Daubman (1984) found that happy subjects categorized information more broadly than neutral mood control subjects. Happy subjects created fewer and more inclusive categories on a category creation task, were more likely to include nonprototypical exemplars in a given category (e.g., "cane" in the category "clothing"), and rated nonprototypical

exemplars as being more prototypical. These findings were taken to reflect that positive affect either a) promotes heuristic use, b) draws attention to affective aspects of material that are not typically seen as affective in nature, thus creating otherwise unnoticed shared features, or c) brings a more diverse range of material to mind.

These findings have been replicated and extended in work by Murray, Sujan, Hirt, and Sujan (1990). They observed that elated subjects categorized more broadly than neutral subjects when they were not provided with an explicit categorization goal, whereas depressed subjects formed narrower categories in this condition. In addition, the Murray et al. (1990, Experiment 1) data indicate that explicit processing instructions influenced the performance of happy, but not of sad subjects. Specifically, subjects were asked to categorize a number of television programs, focusing on either similarities or differences among the various programs. As expected, happy subjects formed more distinct categories when asked to focus on differences rather than on similarities. Moreover, happy subjects' performance under similarity instructions did not differ from their spontaneous performance, suggesting that they used similar strategies under both conditions. In contrast, sad subjects spontaneously formed more distinct categories than happy subjects under no instruction conditions, as noted above, and their performance was not influenced by either difference or similarity instructions. This asymmetry in responsiveness to externally provided processing goals has been replicated by Sinclair, Mark, and Weisbrod (reported in Sinclair & Mark,

1992), using a somewhat different categorization task.

These various findings are compatible with the cognitive tuning model that posits a preference for more heuristic processing in positive mood, but one that can be overridden by specific task demands. Negative mood is shown to be associated with a more rigid preference for more systematic, detail-oriented processing. These findings cannot be interpreted in a straightforward manner in terms of reduced resources for either positive or negative mood, as the relation of breadth of categorization to availability of attentional resources is unclear. In any case, the findings do not suggest similarly reduced resources for both positive and negative mood, as the effects of these mood states on categorization differ.

Heuristic Use

To our knowledge, only one study has directly addressed the question of increased heuristic use under positive mood. This work concerned reliance on Tversky and Kahneman's (1973) availability heuristic. In a pioneering experiment, Isen et al. (1982) observed that subjects in an induced happy mood were more likely to rely on the ease with which exemplars came to mind in making frequency judgments than subjects in a neutral mood. This increased use of the availability heuristic may reflect that positive affect promotes heuristic use, or reduces attentional resources, thus forcing subjects to rely on a simpler judgmental strategy.

Creative Problem Solving

The available findings indicate better performance on creative problem

solving tasks for people in a positive mood. For example, Isen and colleagues observed that happy subjects were more likely to solve Duncker's (1945) candle task and provided more unusual associations on the Remote Associations Test (see Isen, 1987; Isen, Daubman, & Nowicki, 1987; Isen, Johnson, Mertz, & Robinson, 1985). Similarly, Murray et al. (1990) observed that happy subjects listed more unique features of TV programs than subjects in a neutral mood. In other research, subjects induced to experience positive affect performed better on the Means-Ends Problem Solving Test (Platt & Spivack, 1975) than neutral mood control subjects (Mitchell & Madigan, 1984); this test calls for the generation of means by which certain specified endings can be achieved in unstructured, ambiguous situations.

The available research is generally consistent with the cognitive tuning model that predicts a greater readiness to explore novel and unusual solutions under positive mood. In addition, many creativity tasks are of a rather playful nature and may lend themselves to the adoption of an "enjoyment" rule whereby people continue to work on a task as long as they enjoy it (cf. Martin et al., 1993). Hence, individuals in a good mood may work longer on a task because their positive feelings suggest continued enjoyment, whereas individuals in a negative mood may terminate a task, as they interpret a lack of enjoyment. The findings on creative problem solving are not consistent with a resource constraint model.

Logical Problem Solving

A consistent finding is that negative affect facilitates performance on tasks

that require the detection of covariation (see Alloy, 1988, for a review). In general, nondysphoric subjects are likely to overestimate the degree of contingency between their actions and their outcomes, whereas subjects experiencing induced or chronic negative affect are not as prone to exhibit this "illusion of control" (e.g., Alloy & Abramson, 1979). Furthermore, the illusion of control typically observed under neutral mood increases under good mood (Alloy, Abramson, & Viscusi, 1981). These findings are consistent with the cognitive tuning model. Depressed affective states may tune cognitive processes in a way that facilitates covariation detection. Reliance on heuristics under positive affect, on the other hand, should impair covariation detection. Furthermore, the informational implications of negative affect in regard to the nature of the current situation may already convey a certain lack of control, in contrast to the implications of positive affect.

Depressed individuals' more accurate covariation judgments can also be accounted for in terms of limited attentional resources, however. It seems that illusion of control is mediated by the generation and faulty, subjective verification of complex hypotheses concerning patterns of responses and outcomes (Alloy & Abramson, 1979, Study 2). In this case, dysphoric individuals' more realistic estimates of control may be due to their limited resources interfering with the generation of complex hypotheses. Indeed, dysphoric subjects provided with complex hypotheses exhibit the same illusion of control as nondysphoric subjects (Abramson, Alloy, & Rosoff,

1981). Although the latter finding may simply indicate that subjects may be led astray by an experimenter's provision of misleading information (see Bless, Strack, & Schwarz, in press, for a more general discussion), the possibility that the generation of complex hypotheses is important deserves further exploration.

Findings for positive and negative mood are less consistent for other logical problem solving tasks. Positive mood has been shown to be associated with improved performance for a number of tasks. Young children induced to a positive mood performed better than neutral affect control subjects on discrimination problems that required the identification of which stimulus in a set of three is correct; subjects were repeatedly presented in varying order the set of stimuli and were asked to indicate which is correct, and were given feedback on their responses (Masters, Barden, & Ford, 1979). Positive mood induction has also been shown to improve performance on mathematical problem solving tasks (Kirschenbaum, Tomarken, & Humphrey, 1985).

For negative affect, increased as well as decreased performance has been reported. For example, Fiedler and Fladung (1986, reported in Fiedler, 1988) observed that subjects in an induced bad mood produced fewer logical inconsistencies in a multi-attribute decision task than subjects in a good mood. Specifically, the latter were twice as likely to violate transitivity of preference than the former, by producing inconsistent triads of the form $A > B$, and $B > C$, but $A < C$. Other studies, however, indicated poorer performance for subjects in a negative mood. In the

research conducted with children by Masters et al. (1979) described above, induced negative mood led to poorer performance on discrimination problems. Logical problem solving research with depressed subjects selected on the basis of self-report measures, peer nomination (for children), or clinical criteria also revealed performance deficits for negative affect (Dobson et al., 1981; Perkins et al., 1988; Silberman et al., 1983).

In fact, such mixed findings are to be expected in the problem solving domain because none of the processes hypothesized will necessarily result in improved performance. For example, the cognitive tuning and control motivation models generally predict increased systematic processing under negative affect. However, systematic processing may not result in improved performance if subjects do not have access to appropriate algorithms. Similarly, any priming of procedural knowledge under negative affect should only facilitate performance to the extent that it is applicable to the current task; if inapplicable, the primed procedure may actually interfere with performance. Similarly, positive affect may either facilitate or interfere with logical problem solving, depending on whether spontaneously adopted heuristics are applicable to the current task. Furthermore, such heuristics may be discarded in the face of task demands or instructions, rendering it difficult to make strong predictions concerning the effects of positive mood. Finally, if we assume that logical problem solving tasks lend themselves more easily to a task-oriented decision rule (i.e., that focuses on task persistence until performance is

satisfactory), Martin et al.'s (1993) results suggest that individuals will invest more effort under negative rather than positive affect. Whether such effort would lead to improved performance would again depend on the algorithms required and employed.

Conclusions

The findings for positive affect reviewed above seem generally consistent with the assumption of the cognitive tuning model that positive affect promotes the spontaneous adoption of less detail-oriented heuristic processing strategies (Fiedler, 1988; Kuhl, 1983; Schwarz, 1990). The findings do not suggest that positive affect is associated with severe constraints on attentional resources, as elated subjects seem quite able to engage in resource-dependent, systematic processing if called upon to do so by task demands or explicit instruction. Elated subjects seem to exhibit a degree of flexibility in their processing style that is relatively absent for depressed subjects.

The findings for negative affect, however, are quite inconsistent. On the one hand, being in a negative mood has been found to increase elaboration of the content of persuasive messages, the use of individuating information in studies of stereotyping, and the accuracy of person perception. However, temporary as well as chronic negative affect has also been found to facilitate as well as to impair attributional complexity, logical problem solving, and information use. Whereas some of these findings suggest that negative affect promotes the spontaneous adoption of a resource-dependent, detail-oriented and systematic style of information

processing (see Fiedler, 1988; Kuhl, 1983; Schwarz, 1990), other findings support the view that attentional resources are constrained under negative affect (see Ellis & Ashbrook, 1988).

Theoretical Gaps, Ignored Contingencies, and Issues for Future Research

Attentional Resources

The key assumption of attentional resource models holds that affective states may limit available attentional resources due to intruding thoughts. Whereas such intrusions have been documented for negative affect, as discussed above, it seems implausible that every induction of negative affect in the laboratory or negative experience in daily life should result in intrusive thoughts. Suppose, for example, that negative affect is induced by sad memories of an event long passed or by failure on some experimental task which the subject may never again have to face. In these cases, intrusions may be minimal and subjects may be more than willing to focus on some other task to put the unpleasant experience behind. On the other hand, if the memory bears on current concerns, or if subjects may be able to make up for the failure by repeating the task later on, rumination about the negative experience seems more likely. In fact, recent theorizing about the nature of ruminative thought (see Martin & Tesser, 1989) may help to specify the conditions under which diverse mood inductions may or may not be likely to elicit intruding thoughts. From this perspective, it is not surprising that restrictions in attentional resources have been most consistently documented for chronically depressed

individuals, who are presumably dealing with negative current concerns. Clearly, evidence about the emergence of intruding thoughts during task performance would be helpful, although such evidence is admittedly difficult to obtain.

There is some evidence that people in a positive mood may suffer more intrusions of positive material than people in a negative mood (Howell & Conway, 1992). This is consistent with the view that positive affect may bring a large amount of material to mind (see Isen, 1987), yet it is unclear if the sheer accessibility of positive material is intrusive and reduces attentional resources in a way that seems plausible for negative material, which may elicit rumination and may be generally more difficult to suppress (Howell & Conway, 1992; Wenzlaff et al., 1989). In fact, it has been suggested that positive affect may be associated with increased attentional resources, in light of the beneficial effects of positive mood inductions on subjects' performance on logical and creative problem solving tasks (Sullivan & Conway, 1989).

The amount of attentional resources invested in and required of a particular task can depend on various factors. For example, if subjects are more highly motivated, perhaps due to an emphasis on accountability or responsibility (cf. Kunda, 1990), they may invest more attentional resources. Increased motivation could presumably also lead a person to adopt compensatory strategies if limited resources seem to hinder performance. In addition, the degree to which subjects are provided either structure for a task or information that limits the need to generate hypotheses, may render less

apparent the effects of any reduction in attentional resources (cf. Ellis, 1990, 1991).

More generally, it is often difficult to specify how much attentional resources a task actually requires, or how resource constraints would affect performance. For example, as we noted above, it is unclear how breadth of categorization relates to available attentional resources. Does broader categorization require more attentional resources as it involves the integration of diverse material, or less attentional resources because of less attention to detail? The answer is unclear. In fact, the attentional resource requirements of a task may depend on the strategy chosen. For example, assume that an apparent insufficiency in attentional resources prompts a person to rely on some heuristic. If the heuristic is applicable, this could result in improved performance; if the heuristic is inapplicable, performance would be impaired, but not directly due to reduced resources. Even in the absence of possible differences in heuristic use, the relation of attentional resources to performance is not always straightforward. Reduced resources may hinder performance in many cases, whereas in others, increased investment of attentional resources leads to poorer performance (see Tetlock & Boettger, 1989). In sum, drawing strong performance predictions for a task from resource limitation assumptions requires extensive knowledge concerning the processes that subjects might invoke, the resource requirements of such processes, and the relation of these processes to level of performance. These are conditions that cannot be met in a wide range of information processing domains.

Finally, it often remains most difficult to disentangle reduced attentional resources from limited motivation (cf. Hertel & Hardin, 1990).

Cognitive Tuning

Ambiguities also arise with regard to the cognitive tuning model that assumes that different affective states signal different psychological situations, which may in turn influence individuals' motivation to engage in effortful systematic processing as well as the accessibility of procedural knowledge (Schwarz, 1990). On the one hand, the basic assumption that affective states serve informative functions is consistent with a history of psychological theorizing about emotions and is supported by research on affective influences on evaluative judgments (as reviewed above). On the other hand, the impact of affective states on processing preference seems conditional. In general, the model predicts that, *ceteris paribus*, negative affect is more likely than positive affect to instigate resource-dependent, systematic processing, reflecting that the former signals a problematic situation which requires action whereas the latter does not. However, depending on the affect inducing event, individuals in a negative affective state may focus on dealing with the source of their unpleasant affect rather than engaging in systematic processing of information on an unrelated task. Moreover, individuals in a positive affective state may also engage in resource-dependent, systematic processing if required by current goals. Finally, as observed by Martin et al. (1993), the impact of affective states on persistence may depend on the specific decision rule adopted, which may be affected by the nature of the task, by

instructions provided by the experimenter, as well as by the affective state itself. As a result of these contingencies, one cannot expect that particular affective states will have the same type of impact on performance across mood manipulations and tasks.

Moreover, whether increased effort results in improved performance depends on the person being able to use appropriate algorithms. For example, subjects in a bad mood may be willing to invest more effort. But this should only result in superior performance if the relevant procedure for solving the task is available to them in the first place. Hence, facilitatory effects should be limited to tasks for which subjects know the appropriate algorithm. On the other hand, inhibiting effects due to a lack of effort should be quite general, given that knowing the relevant algorithm does not facilitate performance if it is not applied. If so, it is not surprising that the cognitive tuning model is most consistently supported by research into affective influences on persuasion, stereotyping, and person perception. These content domains require the application of procedures with which subjects are well familiar, and may hence be most likely to show improved performance under negative and impaired performance under positive affect. In contrast, many logical problem solving tasks require the application of less familiar procedures, which may not be readily available. As a result, expending more effort under negative affect is unlikely to improve performance, whereas expending little effort under positive affect is likely to impair performance even for subjects who may know the appropriate

algorithm. An additional factor that need be taken into account is that increased effort may for certain tasks actually be associated with poorer performance, as Tetlock and Boetger (1989) demonstrated with regard to Nisbett, Zukier, and Lemley's (1981) "dilution effect."

Finally, we know little about the specific nature of procedural knowledge that may be primed by different affective states. Moreover, direct evidence bearing on this assumption of the model is missing, although it is generally consistent with research that indicates that different emotions are associated with different states of action readiness (see Frijda, 1986, 1987; Tooby & Cosmides, 1990). As many emotion theorists assume, emotions have evolved over the course of human evolution as adaptive mechanisms that respond to key features of recurrent situations. If one of their adaptive effects is that they increase the likelihood that we use strategies that are adequate for handling these situations by eliciting the appropriate action readiness, their effects may actually be quite specific. Suppose for example, that a depressed mood indicates an absence of positive outcomes. If so, understanding the covariation of actions and outcomes would seem to be an important prerequisite for handling the respective situation. Hence, it would be quite adaptive if a depressed affective state increased the accessibility of procedures that facilitate covariation detection. And the empirical findings consistently suggest that this is the case. It is less clear, on the other hand, that modus ponem or other rules of logical inference would help us much in that situation. And indeed, studies

that explored mood effects on the application of logical rules did not find consistent facilitatory effects of depressed affect. Again, it is perhaps not surprising that the more reliable effects have been obtained in the domain of persuasion and person perception. Monitoring what others want us to do, or determining what kind of person the other is, bears on the outcomes that may be expected and may hence be very adaptive responses to any situation that is characterized as "problematic". If this analysis is correct, appropriate predictions of the type of performance that will be facilitated or inhibited by a specific affective state demand careful analyses of the information processing requirements that were associated with different adaptation problems in ancestral environments to which emotions developed as adaptive responses (see Tooby & Cosmides, 1990). Presumably, the procedures that were helpful in meeting these requirements will be the ones that are primed by the respective affective state. If so, we may have much to learn from evolutionary analyses of emotions and the appraisal patterns that underlie them.

On the methodological side, this implies that researchers need to pay more attention to the specific nature of the affective experience they induce in their subjects by a given mood manipulation. We certainly will have to go beyond the "positive"/"negative" dichotomy that characterizes most work in this area, although we acknowledge that inducing specific, distinct moods is a difficult task (e.g., Polivy, 1981). At a more general level, these concerns bear on a key issue in recent discussions of evolutionary cognitive

psychology (e.g., Cosmides & Tooby, 1989; Tooby & Cosmides, 1989). Whereas cognitive psychologists have typically assumed that humans use a limited set of general reasoning mechanisms which can be applied to a large variety of problems, evolutionary psychology has maintained that human reasoning is probably not characterized by the application of a few "general purpose tools". Rather, we seem to use a large variety of specialized tools appropriate for different tasks (see Cosmides & Tooby, 1989; Smith, Langston, & Nisbett, 1992, for detailed discussions). If so, disentangling the effects of affect on cognitive processes will be all the more challenging.

SUMMARY

We have reviewed current psychological theory and research on several topics, including the nature of emotion, the cognitive causes of specific emotions, and the cognitive consequences of mood and emotion. Moods and emotions were distinguished and the basic emotions concept was considered. Emotion was viewed as a multi-faceted phenomenon for which no single aspect appears to be a sufficient condition. The roles of feelings and cognitive appraisals as necessary conditions within certain views was discussed.

In the cognitive causes section, the role of virtual cognitive structures such as goals and standards in the appraisal process was considered. Eight current theories were reviewed, all of which focus on the cognitive eliciting conditions for specific emotions. These included theories advanced by Ortony, Clore, and Collins; Roseman; Smith and Ellsworth; Scherer; Frijda; Shaver and Schwartz; Weiner; and Higgins.

They were considered using the Ortony et al. account as a basis of comparison. Criteria for evaluation of theories was suggested, including: how theories handled positive emotions, how they distinguished emotions from emotion words, the degree to which they lent themselves to empirical test, how their proposed cognitive structure was linked to behavior, and the degree to which they had been formalized into quantitative, symbolic, or computational forms.

The cognitive consequences section covered theory and research in three related literatures focusing mainly on mood. These included, mood and memory, mood and evaluative judgments, and mood and spontaneous processing strategies. Theoretical accounts of mood and memory phenomena included models based on resource allocation and on associative networks. Research was reviewed suggesting that negative affective states may reduce attentional resources for some material, and that mood-congruent memory is a rather fragile phenomenon.

A more robust phenomenon is the effect of mood on evaluative judgment. The primary explanations for this effect include models based on mood congruent recall and on the informational value of affective feelings. Research was reviewed supporting hypotheses that moods may influence judgment directly, by serving as a basis for judgment, and indirectly, by influencing what comes to mind.

Finally, recent research on the effects of mood on processing strategies was reviewed. The primary explanations considered include the limited cognitive resource model and a version

of the feeling-as-information model. The latter assumes that one's thought processes become tuned to meet the requirements signalled by affective states. The research indicates that positive affect is associated with more spontaneous and heuristic informational processing strategies, but

evidence on the processing consequences of negative affect is less consistent. Gaps between the assumptions made by the major explanations and evidence relevant to the hypothesized intervening processes was discussed.

References

- Abelson, R. P. (1983). Whatever became of consistency theory? *Personality and Social Psychology Bulletin*, 9, 37-54.
- Abramson, L. Y., Alloy, L. B., & Rosoff, R. (1981). Depression and the generation of complex hypotheses in the judgment of contingency. *Behaviour Research and Therapy*, 19, 35-45.
- Adelmann, P. K., & Zajonc, R. B. (1989). Facial efference and the experience of emotion. *Annual Review of Psychology*, 40, 249-280.
- Ahadi, S. (1993). Self-guides and the big five. Unpublished manuscript. University of Oregon, Eugene.
- Alloy, L. B. (1988). *Cognitive processes in depression*. New York: Guilford.
- Alloy, L. B., & Abramson, L. Y. (1979). Judgment of contingency in depressed and non-depressed students: Sadder but wiser? *Journal of Experimental Psychology: General*, 108, 441-485.
- Alloy, L. B., Abramson, L. Y., & Viscusi, D. (1981). Induced mood and the illusion of control. *Journal of Personality and Social Psychology*, 41, 1129-1140.
- Anderson, J. R. (1983). *The architecture of cognition*. Cambridge, Ma: Harvard University Press.
- Anderson, J. R., & Bower, G. H. (1973). *Human associative memory*. Washington, DC: Winston.
- Arnold, M. B. (1960). *Emotion and personality*. New York: Columbia University Press.
- Averill, J. R. (1980). A constructivist view of emotions. In R. Plutchik & H. Kellerman (Eds.), *Emotions: Theory, research, and experience* (Vol. 1, pp. 305-339). New York: Academic Press.
- Bard, P. A. (1928). A diencephalic mechanism for the expression of rage with special reference to the sympathetic nervous system. *American Journal of Physiology*, 84, 490-515.
- Bartlett, J. C., Burlison, G., & Santrock, J. W. (1982). Emotional mood and memory in young children. *Journal of Experimental Child Psychology*, 34, 59-76.
- Bartlett, J. C., & Santrock, J. W. (1979). Affect dependent episodic memory in young children. *Child Development*, 50, 513-518.
- Batson, C. D., Shaw, L. L., & Oleson, K. C. (1992). Differentiating affect, mood, and emotion. In M. S. Clark (Ed.), *Review of Personality and Social Psychology*, (Vol. 11, pp. 294-326). Beverly Hills, CA: Sage.
- Berkowitz, L. (in press). Towards a general theory of anger and emotional aggression: Implications of the cognitive-neoassociationistic perspective for the analysis of anger and other emotions. In T. K. Srull & R. S. Wyer (Eds.), *Advances in social*

- cognition, (Vol. 5). Hillsdale, N. J.: Lawrence Erlbaum Associates.
- Bersheid, E. (1982). Attraction and emotion in interpersonal relations. In M. S. Clark & S. T. Fiske (Eds.), *Affect and cognition* (pp. 37-54). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin*, 99, 229-246.
- Bless, H. (1992, September). Stimmungseinflüsse und die Nutzung kognitiver Repräsentationen in der sozialen Urteilsbildung [Mood effects on the use of cognitive representations]. Paper presented at the convention of the Deutsche Gesellschaft für Psychologie, Trier, Germany.
- Bless, H., Bohner, G., Schwarz, N., & Strack, F. (1990). Mood and persuasion: A cognitive response analysis. *Personality and Social Psychology Bulletin*, 16, 331-345.
- Bless, H., Mackie, D. M., & Schwarz, N. (in press). Mood effects on encoding and judgmental processes in persuasion. *Journal of Personality and Social Psychology*.
- Bless, H., Strack, F., & Schwarz, N. (1993). The informative functions of research procedures: Bias and the logic of conversation. *European Journal of Social Psychology*, 23, 149-165.
- Bodenhausen, G. V. (1993). Emotions, arousal, and stereotypic judgments: A heuristic model of affect and stereotyping. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 13-37). San Diego: Academic Press.
- Bohner, G., Bless, H., Schwarz, N., & Strack, F. (1988). What triggers causal attributions? The impact of valence and subjective probability. *European Journal of Social Psychology*, 18, 335-345.
- Bohner, G., Crow, K., Erb, H. P., & Schwarz, N. (1992). Affect and persuasion: Mood effects on the processing of message content and context cues and on subsequent behavior. *European Journal of Social Psychology*, 22, 511-530.
- Bohner, G., Marz, P., Bless, H., Schwarz, N., & Strack, F. (1992). Zum Einfluss von Stimmungen auf Attributionsprozesse in der Personenwahrnehmung [Mood effects in person perception]. *Zeitschrift für Sozialpsychologie*, 23, 194-205.
- Bollnow, O. F. (1956). *Das Wesen der Stimmungen* [The nature of moods]. Frankfurt: Klostermann.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, 36, 129 - 148.
- Bower, G. H. (1983). Affect and cognition. *Transactions of the Royal Philosophical Society of London, Series B*, 302, 387-402.
- Bower, G. H. (1991). Mood congruity of social judgments. In J. P. Forgas (Ed.), *Emotion and social judgments* (pp. 31-53). Oxford, England: Pergamon.
- Bower, G. H., & Cohen, P. R. (1982). Emotional influences in memory and thinking: Data and theory. In M. S. Clark & S. T. Fiske (Eds.), *Affect and cognition* (pp. 291-332). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bower, G. H., Gilligan, S. G., & Monteiro, K. P. (1981). Selectivity of learning caused by affective states. *Journal of Experimental Psychology: General*, 110, 451-473.

- Bower, G. H., & Mayer, J. D. (1985). Failure to replicate mood congruent retrieval. *Bulletin of the Psychonomic Society*, 23, 39-42.
- Bower, G. H., Monteiro, K. P., & Gilligan, S. G. (1978). Emotional mood as a context of learning and recall. *Journal of Verbal Learning and Verbal Behavior*, 17, 573-585.
- Broadbent, D. E. (1971). *Decision and stress*. London: Academic Press.
- Bruner, J. S., Matter, J., & Papanek, M. L. (1955). Breadth of learning as a function of drive-level and maintenance. *Psychological Review*, 62, 1-10.
- Caccioppo, J. T., Bush, L. K., & Tassinari, L. G. (1992). Microexpressive facial actions as a function of affective stimuli: Replication and extension. *Personality and Social Psychology Bulletin*, 18, 515-526.
- Campos, J. J., & Barrett, K. C. (1984). Toward an understanding of emotions and their development. In C. E. Izard, J. Kagan, & R. B. Zajonc (Eds.), *Emotions, cognition, and behavior* (pp.229-263). New York: Cambridge University Press.
- Carson, T. P., & Adams, H. E. (1980). Activity valence as a function of mood change. *Journal of Abnormal Psychology*, 89, 368-377.
- Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: a control-process view. *Psychological Review*, 97, 19-35.
- Cattell, R. B. (1946). *The description and measurement of personality*. New York: Harcourt Brace Jovanovich.
- Clark, D. M., & Teasdale, J. D. (1982). Diurnal variation in clinical depression and accessibility of memories of positive and negative experiences. *Journal of Abnormal Psychology*, 91, 87-95.
- Clark, L. F., & Collins, J. E. (in press). Remembering old flames: How the past affects assessments of the present. *Personality and Social Psychology Bulletin*.
- Clark, L. F., Collins, J. E., & Henry, S. M. (in press). Biasing effects of retrospective reports on current self-assessments. In N. Schwarz & S. Sudman (Eds.), *Autobiographical memory and the validity of retrospective reports*. New York: Springer Verlag.
- Clore, G. L. (1985, August). The cognitive consequences of emotions and feelings. Paper presented at the meetings of the American Psychological Association, Los Angeles.
- Clore, G. L. (1992). Cognitive phenomenology: Feelings and the construction of judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgment* (pp. 133-164). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Clore, G.L., & Byrne, D. (1974). A reinforcement affect model of attraction. In T.L. Huston (Ed.), *Foundations of interpersonal attraction* (pp. 173-170). New York: Academic Press.
- Clore, G. L., & Ortony, A. (1988). Semantics of the affective lexicon. In V. Hamilton, G. Bower, & N. Frijda (Eds.), *Cognitive science perspectives on emotion and motivation* (pp. 367-398). Amsterdam: Martinus Nijhoff.
- Clore, G. L., & Ortony, A. (1991). What more is there to emotion concepts than prototypes. *Journal of Personality and Social Psychology*, 60, 48-50.

- Clare, G. L., Ortony, A., & Brand, S. (in preparation). The joy of victory and the agony of defeat: The emotions of sports fans. Champaign, IL: University of Illinois.
- Clare, G. L., Ortony, A., Dienes, B., & Fujita, F. (1993). Where does anger dwell? In T. K. Srull & R. S. Wyer (Eds.), *Advances in social cognition* (Vol. 5, pp. 57-87). Hillsdale, N. J.: Lawrence Erlbaum Associates.
- Clare, G. L., Ortony, A., & Foss, M. (1987). The psychological foundations of the affective lexicon. *Journal of Personality and Social Psychology*, 53, 751-766.
- Clare, G. L., & Parrott, W. G. (1991). Moods and their vicissitudes: Thoughts and feelings as information. In J. Forgas (Ed.), *Emotion and social judgment* (pp. 107-123). Oxford: Pergamon.
- Clare, G. L., & Parrott, W. G. (in press). Cognitive feelings and metacognitive judgments. *European Journal of Social Psychology*.
- Conway, M., & Giannopoulos, C. (1992). Dysphoria and decision making: Limited information use in the evaluation of multiattribute targets. Manuscript under review.
- Conway, M., Giannopoulos, C., Csank, P., & Mendelson, M. (1993). Dysphoria and specificity in self-focused attention. *Personality and Social Psychology Bulletin*, 19, 265-268.
- Cosmides, L., & Tooby, J. (1989). Evolutionary psychology and the generation of culture, Part II. *Ethology and Sociobiology*, 10, 51-97.
- Cramer, P. (1968). *Word association*. New York: Academic Press.
- Darwin, C. (1872). *The expression of the emotions in man and animals*. London: J. Murray.
- Davitz, J. R. (1969). *The language of emotion*. New York: Academic Press.
- De Rivera, J. (1977). A structural theory of the emotions [Monograph]. *Psychological Issues*, 10, 227-275.
- Derry, P. A., & Kuiper, N. A. (1981). Schematic processing and self-reference in clinical depression. *Journal of Abnormal Psychology*, 90, 286-297.
- Diener, C. I., & Dweck, C. S. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy, and achievement cognitions following failure. *Journal of Personality and Social Psychology*, 36, 451-462.
- Dobson, D. J. G., & Dobson, K. S. (1981). Problem-solving strategies in depressed and nondepressed students. *Cognitive Therapy and Research*, 5, 237-249.
- Dunker, K. (1945). On problem-solving. *Psychological Monographs*, 58, Whole # 5.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich.
- Easterbrook, J. A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological Review*, 66, 183-201.
- Edwards, J. A., & Weary, G. (1991). Depression and the impression formation continuum: Piecemeal processing despite the availability of

- category information. Manuscript under review.
- Eich, J. E. (1980). The cue-dependent nature of state-dependent retrieval. *Memory and Cognition*, 8, 157-173.
- Ekman, P. (1982). *Emotion in the human face*. New York: Cambridge University Press.
- Ekman, P. (1992). Are there basic emotions? *Psychological Review*, 99, 550-553.
- Ekman, P. (1992, August). Role of facial expression in the experience of emotion. Paper presented at the American Psychological Association, Washington D.C.
- Ekman, P., & Friesen, W. V. (1975). *Unmasking the face: A guide to recognizing emotions from facial clues*. Englewood Cliffs, NJ: Prentice-Hall.
- Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). *Emotion in the human face*. New York: Pergamon.
- Ekman, P., Friesen, W. V., & Ellsworth, P. (1982). What emotion categories or dimensions can observers judge from facial behavior? In P. Ekman (Ed.), *Emotion in the human face* (pp. 39-55). New York: Cambridge University Press.
- Ekman, P., Levenson, R. W., & Friesen, W. V. (1983). Autonomic nervous system activity distinguishes among emotions. *Science*, 221, 1208-1210.
- Ellis, H. C. (1990). Depressive deficits in memory: Processing initiative and resource allocation. *Journal of Experimental Psychology: General*, 119, 606-626.
- Ellis, H. C. (1991). Focused attention and depressive deficits in memory. *Journal of Experimental Psychology: General*, 120, 310-312.
- Ellis, H. C., & Ashbrook, P. W. (1988). Resource allocation model of the effects of depressed mood states on memory. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 25-43). Toronto: C.J. Hogrefe.
- Ellis, H. C., & Ashbrook, P. W. (1989). The "state" of mood and memory research: A selective review. *Journal of Social Behavior and Personality*, 4, 1-21.
- Ellis, H. C., Thomas, R. L., McFarland, A. D., & Lane, J. W. (1985). Emotional mood states and retrieval in episodic memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 11, 363-370.
- Ellis, H. C., Thomas, R. L., & Rodriguez, I. A. (1984). Emotional mood states and memory: Elaborative encoding, semantic processing, and cognitive effort. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 10, 470-482.
- Ellsworth, P. C., & Smith, C. A. (1988). Shades of joy: Patterns of appraisal differentiating pleasant emotions. *Cognition and Emotion*, 2, 301-331.
- Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology*, 54, 1040-1048.
- Ewert, O. (1983). Ergebnisse und Probleme der Emotionsforschung [Findings and problems of emotion research]. In H. Thomae (Ed.), *Theorien und Formen der Motivation. Enzyklopadie der Psychologie*, (Vol. 1). Göttingen: Hogrefe.

- Eysenck, M.W. (1976). Arousal, learning, and memory. *Psychological Bulletin*, 83, 389-404.
- Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General*, 113, 464-486
- Fiedler, K. (1988). Emotional mood, cognitive style, and behavior regulation. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 100-119). Toronto: Hogrefe International.
- Fiedler, K. (1991). On the task, the measure, and the mood in research on affect and social cognition. In J. Forgas (Ed.), *Emotion and social judgment* (pp. 83-104). Oxford: Pergamon.
- Fiedler, K., Pampe, H., & Scherf, U. (1986). Mood and memory for tightly organized social information. *European Journal of Social Psychology*, 16, 149-164.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 23, pp. 1-74). San Diego, CA: Academic Press.
- Fletcher, G. J. D., Danilovics, P., Fernandez, G., Peterson, D., & Reeder, G. D. (1986). Attributional complexity: An individual difference measure. *Journal of Personality and Social Psychology*, 56, 757-764.
- Forgas, J. P. (1992). Affect in social judgments and decisions: A multi-process model. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 25, pp. 227-275). San Diego: Academic Press.
- Forgas, J. P. (in press). Affective influences on the perception of atypical people. *Journal of Personality and Social Psychology*.
- Forgas, J. P., & Bower, G. H. (1987). Mood effects on person perception judgments. *Journal of Personality and Social Psychology*, 53, 53-60.
- Forgas, J. P., & Bower, G. H. (1988). Affect in social and personal judgments. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 183-207). Toronto: Hogrefe International.
- Frijda, N. H. (1986). *The emotions*. New York: Cambridge University Press.
- Frijda, N. H. (1987). Emotions, cognitive structure, and action tendency. *Cognition and Emotion*, 1, 235-258.
- Frijda, N. H. (1988). The laws of emotion. *American Psychologist*, 43, 349-358.
- Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). The relationships between emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57, 212-228.
- Frijda, N., Ortony, A., Sonnemans, J., & Clore, G. (1992). The complexity of intensity: issues concerning the structure of emotion intensity. In M. S. Clark (Ed.) *Review of Personality and Social Psychology*, Vol. 11 (pp. 60-89). Beverly Hills, CA: Sage.
- Gallagher, D., & Clore, G. L. (1985, May). Effects of fear and anger on judgments of risk and blame. Paper presented at the meetings of the Midwestern Psychological Association, Chicago.
- Gilligan, S. G., & Bower, G. H. (1984). Cognitive consequences of emotional arousal. In C. Izard, J. Kagen, & R. Zajonc (Eds.), *Emotions, cognition, and behavior* (pp. 547-588). Cambridge, England: Cambridge University Press.

- Godden, D. R., & Baddeley, A. D. (1975). Context dependent memory in two natural environments: On land and under water. *British Journal of Psychology*, 66, 325-331.
- Gray, J. A. (1982). *The neuropsychology of anxiety*. Oxford: Oxford University Press.
- Hasher, L., Rose, K. C., Zacks, R. T., Sanft, H., & Doren, B. (1985). Mood, recall, and selectivity in normal college students. *Journal of Experimental Psychology: General*, 114, 104-118.
- Hasher, L., & Zacks, R.T. (1979). Automatic and effortful processes in memory. *Journal of Experimental Psychology: General*, 108, 356-388.
- Hastie, R., & Park, B. (1986). The relationship between memory and judgment depends on whether the judgment task is memory-based or on-line. *Psychological Review*, 93, 258-268.
- Heider, F. (1958) *The psychology of interpersonal relations*. New York: Wiley.
- Hertel, P. T., & Hardin, T. S. (1990). Remembering with and without awareness in a depressed mood: Evidence of deficits in initiative. *Journal of Experimental Psychology: General*, 119, 45-59.
- Hertel, P. T., & Rude, S. S. (1991). Depressive deficits in memory: Focusing attention improves subsequent recall. *Journal of Experimental Psychology: General*, 120, 301-309.
- Higgins, E. T. (1987). Self-discrepancy theory: A theory relating self and affect. *Psychological Review*, 94, 319-340.
- Higgins, E. T. (1989a). Knowledge accessibility and activation: Subjectivity and suffering from unconscious sources. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp.75-123). New York: Guilford Press.
- Higgins, E. T. (1989b). Self-discrepancy theory: What patterns of self-beliefs cause people to suffer. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*, (Vol. 2, pp. 93-136). New York: Academic Press.
- Higgins, E. T. (1990). Personality, social psychology, and person-situation relations: Standards and knowledge activation as a common language. In L. A. Pervin, (Ed.), *Handbook of Personality: Theory and research* (pp. 301-338). New York: Guilford.
- Higgins, E. T., & Bargh, J. A. (1987). Social cognition and social perception. *Annual Review of Psychology*, 38, 369-425.
- Higgins, E. T., Bond, R. N., Klein, R., & Strauman, T. J. (1986). Self-discrepancies and emotional vulnerability: How magnitude, accessibility, and type of discrepancy influence affect. *Journal of Personality and Social Psychology*, 51, 5-15.
- Higgins, E. T., Klein, R., & Strauman, T. J. (1985). Self-concept discrepancy theory: A psychological model for distinguishing among different aspects of depression and anxiety. *Social Cognition*, 3, 51-76.
- Hildebrand-Saints, L., & Weary, G. (1989). Depression and social information gathering. *Personality and Social Psychology Bulletin*, 15, 150-160.
- Howell, A., & Conway, M. (1992). Mood and the suppression of positive and

- negative self-referent thoughts. *Cognitive Therapy and Research*, 16, 1-21.
- Ingram, R. E. (1990). Self-focused attention in clinical disorders: Review and a conceptual model. *Psychological Bulletin*, 107, 156-176.
- Isen, A. M. (1984). Toward understanding the role of affect in cognition. In R. S. Wyer, Jr. & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 3, pp. 179-236). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Isen, A. M. (1987). Positive affect, cognitive processes, and social behavior. In L. Berkowitz (Ed.), *Advances in experimental social Psychology*. (Vol. 20; pp. 203-253). New York: Academic Press.
- Isen, A. M., & Daubman, K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology*, 47, 1206-1217.
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, 52, 1122-1131.
- Isen, A. M., Johnson, M., Mertz, E., & Robinson, G. (1985). Positive affect and the uniqueness of word association. *Journal of Personality and Social Psychology*, 48, 1413-1426.
- Isen, A. M., Means, B., Patrick, R., & Nowicki, G. (1982). Some factors influencing decision making strategy and risk-taking. In M. S. Clark & S.T. Fiske (Eds.), *Affect and cognition: The 17th Annual Carnegie Mellon Symposium on Cognition* (pp. 243-261). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Isen, A. M., Shalcker, T. E., Clark, M. S., & Karp, L. (1978). Affect, accessibility of material in memory, and behavior: A cognitive loop? *Journal of Personality and Social Psychology*, 36, 1-12.
- Izard, C. E. (1971). *The face of emotion*. New York: Appleton-Century-Crofts.
- Izard, C. E. (1977). *Human emotions*. New York: Plenum.
- Izard, C. E. (1992). Basic emotions, relations among emotions, and emotion-cognition relations. *Psychological Review*, 99, 561-565.
- Jacobsen, E. (1957). Normal and pathological moods: Their nature and function. In R. S. Eisler, A. F. Freud, H. Hartman, & E. Kris (Eds.), *The psychoanalytic study of the child* (pp. 73-113). New York: International University Press.
- James, W. (1884). What is an emotion? *Mind*, 9, 188-205.
- James, W. (1890). *Principles of psychology*. New York: Holt.
- Johnson, E., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of Personality and Social Psychology*, 45, 20-31.
- Kagan, J. (1984). The idea of emotion in human development. In C. E. Izard, J. Kagan, & R. B. Zajonc (Eds.), *Emotions, cognition, and behavior* (pp. 38-72). New York: Cambridge University Press.
- Kahneman, D., & Tversky, A. (1982). The simulation heuristic. In D. Kahneman, P. Slovic, & A. Tversky, (Eds.), *Judgment under uncertainty: Heuristics and biases*. New York: Cambridge University Press.
- Kelley, H. H. (1972). *Causal schemata and the attribution process*. Morristown, NJ: General Learning Press.

- Keltner, D., Ellsworth, P., & Edwards, K. (1993). Beyond simple pessimism: Effects of sadness and anger on social perception. *Journal of Personality and Social Psychology*, 64, 740-752.
- Keltner, D., Locke, K. D., & Audrain, P. C. (1993). The influence of attributions on the relevance of negative feelings to satisfaction. *Personality and Social Psychology Bulletin*, 19, 21-30.
- Kirschenbaum, D. S., Tomarken, A. J., & Humphrey, L. L. (1985). Affect and adult self-regulation. *Journal of Personality and Social Psychology*, 48, 509-523.
- Kuhl, J. (1983). Emotion, Kognition und Motivation, II [Emotion, cognition, and motivation]. *Sprache und Kognition*, 4, 228-253.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480-498.
- Lacey, J. I., & Lacey, B. C. (1970). Some autonomic nervous system relationships. In P. Black (Ed.), *Physiological correlates of emotion* (pp. 205-227). New York: Academic Press.
- Laird, J. D., Wagener, J., Halal, M., & Szegda, M. (1982). Remembering what you feel: Effects of emotion on memory. *Journal of Personality and Social Psychology*, 42, 646-657.
- Lang, P. J. (1988). What are the data of emotion? In V. Hamilton, G. Bower, & N. Frijda (Eds.), *Cognitive science perspectives on emotion and motivation* (pp. 367-398). Amsterdam: Martinus Nijhoff.
- Lassiter, G. D., & Koenig. (1991). Depression and the unitization of behavior. Manuscript under review.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S., Kanner, A. D., & Folkman, S. (1980). Emotions: A cognitive-phenomenological analysis. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research, and experience: Vol. 1. Theories of emotion*(pp. 189-217). New York: Academic Press.
- Leight, K. A., & Ellis, H. C. (1981). Emotional mood states, strategies, and state-dependency in memory. *Journal of Verbal Learning and Verbal Behavior*, 20, 251-266.
- Levenson, R. W., Ekman, P., Heider, K., & Friesen, W. V. (in press). Emotion and autonomic nervous system activity in an Indonesian culture. *Journal of Personality and Social Psychology*.
- Leventhal, H. (1982). The integration of emotion and cognition: A view from the perceptual-motor theory of emotion. In M. S. Clark & S. T. Fiske (Eds.), *Affect and Cognition* (pp. 121-156.) Hillsdale, NJ: Earlbaum.
- Levine, S., Wyer, R. S., & Schwarz, N. (in press). Are you what you feel? The affective and cognitive determinants of self-esteem. *European Journal of Social Psychology*.
- Liu, J. H., Karasawa, K., & Weiner, B. (1992). Inferences about the causes of positive and negative emotions. *Personality and Social Psychology Bulletin*, 18, 603-615.
- Lutz, C., & White, G. M. (1986). The anthropology of emotions. *Annual Review of Anthropology*. 15, 405-436.
- Mackie, D. M., & Worth, L. T. (1989). Processing deficits and the mediation of positive affect in persuasion.

- Journal of Personality and Social Psychology, 57, 27-40.
- Madigan, R. J., & Bollenbach, A. K. (1982). Effects of induced mood on retrieval of personal episodic and semantic memories. *Psychological Reports*, 50, 147-158.
- Mandler, G. (1975). *Mind and emotion*. New York: Wiley.
- Mandler, G. (1984). *Mind and body*. New York: Norton.
- Mandler, J. M. (1984). *Stories, scripts, and scenes: Aspects of schema theory*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Manstead, A. S. R., & Tetlock, P. E. (1989). Cognitive appraisals and emotional experience: Further evidence. *Cognition and Emotion*, 3, 225-240.
- Marsh, K. L., & Weary, G. (1989). Depression and attributional complexity. *Personality and Social Psychology Bulletin*, 15, 325-336.
- Marshall-Garcia, K. A., & Beck, R. C. (1985). Mood and recognition memory: A comparison of two procedures. *Bulletin of the Psychonomic Society*, 23, 450-452.
- Martin, L. L., Harlow, T. F., & Strack, F. (1992). The role of bodily sensations in the evaluation of social events. *Personality and Social Psychology Bulletin*, 18, 412-419.
- Martin, L. L., & Tesser, A. (1989). Toward a motivational and structural theory of ruminative thought. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 306-326). New York: Guilford Press.
- Martin, L. L., Ward, D. W., Ach F, J. W., & Wyer, R. S. (1993). Mood as input: People have to interpret the motivational implications of their moods. *Journal of Personality and Social Psychology*, 64, 317-326.
- Masters, J. C., Barden, R. C., & Ford, M. E. (1979). Affective states, expressive behavior, and learning in children. *Journal of Personality and Social Psychology*, 37, 380-390.
- Mathews, A., & Bradley, B. (1983). Mood and the self-reference bias in recall. *Behavior Research and Therapy*, 21, 233-239.
- Matlin, M. W., & Stang, D. (1979). *The Pollyanna Principle: Selectivity in language, memory, and thought*. Cambridge, MA: Shenkman.
- Mauro, R., Sato, K., & Tucker, J. (1992). The role of appraisal in human emotions: A cross-cultural study. *Journal of Personality and Social Psychology*, 62, 301-317.
- Mayer, J. D., Gaschke, Y. N., Braverman, D. L., & Evans, T. W. (1992). Mood-congruent recall is a general effect. *Journal of Personality and Social Psychology*, 63, 119-132.
- McCaul, K. D. (1983). Observer attributions of depressed subjects. *Personality and Social Psychology Bulletin*, 9, 74-82.
- McDougall, W. (1926). *An introduction to social psychology*. Boston: Luce.
- Mecklenbr € ker, S., & Hager, W. (1984). Effects of mood on memory: Experimental tests of a mood-state-dependent retrieval hypothesis and of a mood-congruity hypothesis. *Psychological Research*, 46, 335-376.
- Mees, U. (1985). What do we mean when we speak of feelings? On the psychological texture of words denoting emotions. *Sprache und Kognition*, 4, 2-20.

- Mees, U. (1990). The criteria and intensity indicators of emotions. Unpublished manuscript, Universitat Oldenburg, Germany.
- Mischel, W., Ebbesen, E., & Zeiss, A. (1973). Selective attention to the self: Situational and dispositional determinants. *Journal of Personality and Social Psychology*, 27, 204-218.
- Mitchell, J. E., & Madigan, R. J. (1984). The effects of induced elation and depression on interpersonal problem solving. *Cognitive Therapy and Research*, 8, 277-285.
- Morgan, R. L., & Heise, D. (1988). The structure of emotions. *Social Science Quarterly*, 51, 19-31.
- Morris, W. N. (1989). *Mood: The frame of mind*. New York: Springer Verlag.
- Morris, W. N. (1992). A functional analysis of the role of mood in affective systems. *Review of Personality and Social Psychology* (Vol. 11, pp. 256-293). Beverly Hills, CA: Sage.
- Morris, W. N., & Reilly, N. P. (1987). Toward the self-regulation of mood: Theory and research. *Motivation and Emotion*, 11, 215-249.
- Murphy, S. T., & Zajonc, R. B. (1993). Affect, cognition, and awareness: Priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology*, 64, 723-739.
- Murray, N., Sujan, H., Hirt, E. R., & Sujan, M. (1990). The influence of mood on categorization: A cognitive flexibility interpretation. *Journal of Personality and Social Psychology*, 59, 411-425.
- Natale, M., & Hantas, M. (1982). Effect of temporary mood states on selective memory about the self. *Journal of Personality and Social Psychology*, 42, 927-934.
- Newman, L. S., Higgins, E. T., & Vookles, J. (1992). Self-guide strength and emotional vulnerability: Birth order as a moderator of self-affect relations. *Personality and Social Psychology Bulletin*, 18, 402-411.
- Newtson, D. (1973). Attribution and the unit of perception of ongoing behavior. *Journal of Personality and Social Psychology*, 28, 28-38.
- Niewenhuyse, B., Offenber, L., & Frijda, N. H. (1987). Subjective emotion and reported body experience. *Motivation and Emotion*, 11, 169-182.
- Nisbett, R. E., Zukier, H., & Lemley, R. H. (1981). The dilution effect. *Cognitive Psychology*, 13, 248-277.
- Nowlis, V., & Nowlis, H. H. (1956). The description and analysis of mood. *Annals of the New York Academy of Sciences*, 65, 345-355.
- Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theory of the emotions. *Cognition and Emotion*, 1, 29-50.
- Obrist, P. A. (1981). *Cardiovascular psychophysiology*. New York: Plenum.
- Ortony, A. (1990, August). The cognition-emotion connection. Paper presented at the American Psychological Association, Boston.
- Ortony, A., & Clore, G. L. (1989). Emotion, mood, and conscious awareness. *Cognition and Emotion*, 3, 125-137.
- Ortony, A., Clore, G. L., & Collins A. (1988). *The cognitive structure of emotions*. New York: Cambridge University Press.

- Ortony, A., Clore, G. L., & Foss, M. (1987). The referential structure of the affective lexicon. *Cognitive Science*, 11, 361-384.
- Ortony, A., & Turner, T. J. (1990). What's basic about basic emotions? *Psychological Review*, 97, 315-331.
- Pankseep, J. (1992). A critical role for "affective neuroscience" in resolving what is basic about basic emotions. *Psychological Review*, 99, 554-560.
- Parkinson, B., & Manstead, A. S. R. (1992). Appraisal as a cause of emotion. In M. S. Clark (Ed.) *Review of personality and social psychology* (Vol. 11, pp. 122-149). Beverly Hills, CA: Sage.
- Parrott, W. G. (1988). The role of cognition in emotional experience. In W. J. Baker, L. P. Mos, H. V. Rappard, & H. J. Stam (Eds.), *Recent trends in theoretical psychology* (pp. 327-337). New York: Springer-Verlag.
- Parrott, W. G., & Sabini, J. (1990). Mood and memory under natural conditions: Evidence for mood incongruent recall. *Journal of Personality and Social Psychology*, 59, 321-336.
- Perkins, S. C., Meyers, A. W., & Cohen, R. (1988). Problem-solving ability and response to feedback in peer-nominated mildly depressed children. *Cognitive Therapy and Research*, 12, 89-102.
- Petty, R. E., & Cacioppo, J. T. (1986). Communication and persuasion: Central and peripheral routes to attitude change. New York: Springer-Verlag.
- Pfeifer, R. (1988). Artificial intelligence models of emotion. In V. Hamilton, G. Bower, & N. Frijda (Eds.) *Cognitive science perspectives on emotion and motivation* (pp. 287-320). Amsterdam: Martinus Nijhoff.
- Pittman, N. L., & Pittman, T. S. (1980). Deprivation of control and the attribution process. *Journal of Personality and Social Psychology*, 39, 377-389.
- Pittman, T. S., & D'Agostino, P. R. (1985). Motivation and attribution: The effects of control deprivation on subsequent information processing. In J. H. Harvey & G. Weary (Eds.), *Attribution: Basic and applied issues* (pp. 117-142). San Diego, CA: Academic Press.
- Pittman, T. S., & D'Agostino, P. R. (1989). Motivation and cognition: Control deprivation and the nature of subsequent information processing. *Journal of Experimental Social Psychology*, 25, 465-480.
- Platt, J. J., & Spivack, G. (1975). *Manual for the means-ends problem solving procedure*. Philadelphia: Hahnemann Community Mental Health/Mental Retardation Center, Department of Medical Health Sciences, Hahnemann Medical College and Hospital.
- Plutchik, R. (1980). A general psychoevolutionary theory of emotion. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research, and experience: Vol. 1. Theories of emotion* (pp. 3-31). New York: Academic Press.
- Polivy, J. (1981). On the induction of emotion in the laboratory: Discrete moods or multiple affect states. *Journal of Personality and Social Psychology*, 41, 803-817.
- Potts, R., Camp, C., & Coyne, C. (1989). The relationship between naturally occurring dysphoric moods, elaborative encoding, and recall performance. *Cognition and Emotion*, 3, 197-205.

- Roseman, I. J. (1984). Cognitive determinants of emotion: A structural theory. In P. Shaver (Ed.), *Review of personality and social psychology: Vol. 5. Emotions, relationships, and health* (pp. 11-36). Beverly Hills, CA: Sage.
- Roseman, I. J. (1991). Appraisal determinants of discrete emotions. *Cognition and Emotion*, 5, 161-200.
- Roseman, I. J., Antoniou, A. A., & Jose, P. E. (1992). Appraisal determinants of emotions: Revising current theories. Unpublished manuscript. University of California, Los Angeles.
- Roseman, I. J., Spindel, M. S., & Jose, P. E. (1990). Appraisals of emotion-eliciting events: Testing a theory of discrete emotions. *Journal of Personality and Social Psychology*, 59, 899-915.
- Roy-Byrne, P. P., Weingartner, H., Bierer, L. M., Thompson, K., & Post, R. M. (1986). Effortful and automatic processes in depression. *Archives of General Psychiatry*, 43, 265-267.
- Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review*, 94, 23-41.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, 39, 1161-1178.
- Russell, J. A. (1991). In defense of a prototype approach to emotion concepts. *Journal of Personality and Social Psychology*, 60, 37-47.
- Salovey, P., & Singer, J. A. (1985, August). The effects of mood on the recall of childhood and recent autobiographical memories. Paper presented at annual convention of the American Psychological Association, Los Angeles, CA.
- Schachter, S., & Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 69, 379-399.
- Schank, R. C., & Abelson, R. (1977). *Scripts, plans, goals, and understanding*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Schare, M. L., Lisman, S. A., & Spear, N. E. (1984). The effects of mood variation on state-dependent retention. *Cognitive Therapy and Research*, 8, 387-408.
- Scherer, K. R. (1984). On the nature and function of emotion: A component process approach. In K. R. Scherer & P. Ekman (Eds.), *Approaches to emotion* (pp. 293-317). Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Scherer, K. R. (1986). Vocal affect expression: A review and model for future research. *Psychological Bulletin*, 99, 143-165.
- Scherer, K. R. (1988). Criteria for emotion-antecedent appraisal: A review. In V. Hamilton, G. Bower, & N. Frijda (Eds.) *Cognitive science perspectives on emotion and motivation* (pp. 89-126). Amsterdam: Martinus Nijhoff.
- Schwarz, N. (1987). *Stimmung als Information: Untersuchungen zum Einfluß von Stimmungen auf die Bewertung des eigenen Lebens [Mood as information]*. Heidelberg, Germany: Springer Verlag.
- Schwarz, N. (1990). Feelings as information: Informational and motivational functions of affective states. In E.T. Higgins & R. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 527-561). New York: Guilford.
- Schwarz, N., & Bless, B. (1991). Happy and mindless, but sad and smart? The impact of affective states on analytic

- reasoning. In J. Forgas (Ed.), *Emotion and social judgment* (pp. 55-71). Oxford: Pergamon.
- Schwarz, N., Bless, H., & Bohner, G. (1991). Mood and persuasion: Affective states influence the processing of persuasive communications. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 161-199). San Diego, CA: Academic Press.
- Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology*, 61, 195-202.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513-523.
- Schwarz, N., & Clore, G. L. (1988). How do I feel about it? Informative functions of affective states. In K. Fiedler & J. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 44-62). Toronto: Hogrefe International.
- Schwarz, N., Servay, W., & Kumpf, M. (1985). Attribution of arousal as a mediator of the effectiveness of fear-arousing communications. *Journal of Applied Social Psychology*, 15, 74-78.
- Schwarz, N., & Strack, F. (1991). Evaluating one's life: A judgment model of subjective well-being. In F. Strack, M. Argyle, & N. Schwarz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 27-47). Oxford: Pergamon.
- Schwarz, N., Strack, F., Kommer, D., & Wagner, D. (1987). Soccer, rooms and the quality of your life: Mood effects on judgments of satisfaction with life in general and with specific life-domains. *European Journal of Social Psychology*, 17, 69-79.
- Seligman, M. E. P. (1975). *Helplessness: On depression, development, and death*. San Francisco, CA: Freeman.
- Seligman, M. E. P., Abramson, L. Y., Semmel, A., & Von Baeyer, C. (1979). Depressive attributional style. *Journal of Abnormal Psychology*, 88, 242-247.
- Seligman, M. E. P., Maier, S. F., & Solomon, R. L. (1971). Unpredictable and uncontrollable aversive events. In F. R. Brush (Ed.), *Aversive conditioning and learning* (pp. 347-400). New York: Academic Press.
- Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, 52, 1-11.
- Shaver, P., Wu, S., & Schwartz, J. C. (1992). Cross-cultural similarities and differences in emotion and its representation: A prototype approach. In M. S. Clark (Ed.) *Review of personality and social psychology* (Vol. 11, pp. 175-212). Beverly Hills, CA: Sage.
- Shields, S. A. (1984). Distinguishing between emotion and nonemotion: Judgments about experience. *Motivation and Emotion*, 8, 355-369.
- Siemer, M., & Reisenzein, R. (1992). Effects of mood on evaluative judgments: Influence of reduced processing capacity and mood salience. Manuscript under review.
- Silberman, E. K., Weingartner, H., & Post, R. M. (1983). Thinking disorder in

- depression. *Archives of General Psychiatry*, 40, 775-780.
- Simon, H. (1967). Motivational and emotional controls of cognition. *Psychological Review*, 74, 29-39.
- Sinclair, R. C. (1988). Mood, categorization breadth, and performance appraisal: The effects of order of information acquisition and affective state on halo, accuracy, information retrieval, and evaluations. *Organizational Behavior and Human Decision Processes*, 42, 22-46.
- Sinclair, R. C., & Mark, M. M. (1992). The influence of mood state on judgment and action: Effects on persuasion, categorization, social justice, person perception, and judgmental accuracy. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgment* (pp. 165-193). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Singer, J. A., & Salovey, P. (1988). Mood and memory: Evaluating the network theory of affect. *Clinical Psychology Review*, 8, 211-251.
- Smedslund, J. (in press). The pseudo empirical in psychology and the case for psychologic. *Psychological Inquiry*.
- Smith, C. A. (1989). Dimensions of appraisal and physiological response in emotion. *Journal of Personality and Social Psychology*, 56, 339-353.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal. *Journal of Personality and Social Psychology*, 48, 813-838.
- Smith, C. A., & Ellsworth, P. C. (1987). Patterns of appraisal and emotion related to taking an exam. *Journal of Personality and Social Psychology*, 52, 475-488.
- Smith, E. E., Langston, C., & Nisbett, R. (1992). Rules and reasoning. Unpublished manuscript, University of Michigan, Ann Arbor.
- Snyder, M., & White, P. (1982). Moods and memories: Elation, depression, and remembering the events of one's life. *Journal of Personality*, 50, 139-167.
- Spies, K., & Hesse, F. W. (1986). Interaktion von Emotion und Kognition [Interaction of emotion and cognition]. *Psychologische Rundschau*, 37, 75-90.
- Srull, T. K. (1983). Affect and memory: The impact of affective reactions in advertising on the representation of product information in memory. In R. Bagozzi & A. Tybout (Eds.), *Advances in consumer research* (Vol. 10). Ann Arbor, MI: Association for Consumer Research.
- Srull, T. K. (1984). The effects of subjective affective states on memory and judgment. In T. Kinnear (Ed.), *Advances in consumer research* (Vol. 11; pp. 530-533). Provo, UT: Association for Consumer Research.
- Stein, B. S., & Bransford, J. D. (1979). Constraints on effective elaboration: Effects of precision and subject generation. *Journal of Verbal Learning and Verbal Behavior*, 18, 769-777.
- Strack, F. (1992). The different routes to social judgments: Experiential versus informational strategies. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments* (pp. 249-276). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A non-obtrusive test of the facial feedback hypothesis.

- Journal of Personality and Social Psychology, 53, 768-777.
- Strack, F., Schwarz, N., & Gschneidinger, E. (1985). Happiness and reminiscing: The role of time perspective, mood, and mode of thinking. *Journal of Personality and Social Psychology*, 49, 1460-1469.
- Strauman, T. J. (1989). Self discrepancies in clinical depression and social phobia: Cognitive structures that underlie emotional disorders. *Journal of Abnormal Psychology*, 98, 14-2.
- Strauman, T. J., & Higgins, E. T. (1987). Automatic activation of self-discrepancies and emotional syndromes: When cognitive structure influence affect. *Journal of Personality and Social Psychology*, 53, 1004-1014.
- Strauman, T. J., & Higgins, E. T. (1988). Self-discrepancies as predictors of vulnerability to distinct syndromes of chronic emotional distress. *Journal of Personality*, 56, 685-707.
- Strongman, K. T. (1987). *The psychology of emotion*. New York: Wiley.
- Sullivan, M. J. L., & Conway, M. (1989). Negative affect leads to low-effort cognition: Attributional processing for observed social behavior. *Social Cognition*, 7, 315-337.
- Sweeney, P. D., Anderson, K., & Bailey, S. (1986). Attributional style in depression: A meta-analytic review. *Journal of Personality and Social Psychology*, 50, 974-991.
- Teasdale, J. D., & Russell, M. (1983). Differential effects of induced mood on the recall of positive, negative, and neutral words. *British Journal of Clinical Psychology*, 22, 163-171.
- Teasdale, J. D., & Taylor, R. (1981). Induced mood and accessibility of memories: An effect of mood state or induction procedure? *British Journal of Clinical Psychology*, 20, 39-48.
- Teasdale, J. D., Taylor, R., & Fogarty, S. J. (1980). Effects of induced elation-depression on the accessibility of memories of happy and unhappy experiences. *Behavior Research and Therapy*, 18, 339-346.
- Tesser, A. (1990). Smith and Ellsworth's appraisal model of emotion: A replication, extension, and test. *Personality and Social Psychology Bulletin*, 16, 210-223.
- Tetlock, P. E., & Boettger, R. (1989). Accountability: A social magnifier of the dilution effect. *Journal of Personality and Social Psychology*, 57, 388-398.
- Tomkins, S. S. (1984). Affect theory. In K. R. Scherer & P. Ekman (Eds.), *Approaches to emotion* (pp. 163-195). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Trope, R. (1982). *Psychiatrie [Psychiatry]* (6th ed.). Heidelberg, Germany: Springer Verlag.
- Tooby, J., & Cosmides, L. (1989). Evolutionary psychology and the generation of culture, Part I. *Ethology and Sociobiology*, 10, 29-49.
- Tooby, J., & Cosmides, L. (1990). The past explains the present. Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, 11, 375-424.
- Tulving, E. (1983). *Elements of episodic memory*. Oxford, England: Oxford University Press.
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging

- frequency and probability. *Cognitive Psychology*, 5, 207-232.
- Wallbott, H. G., & Scherer, K. R. (1988). How universal and specific is emotional experience? Evidence from 27 countries and five continents. In K. R. Scherer (Ed.), *Facets of emotion* (pp. 31-56). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Watson, J. B. (1930). *Behaviorism*. Chicago: University of Chicago Press.
- Watts, F. N., & Cooper, Z. (1989). The effects of depression on structural aspects of the recall of prose. *Journal of Abnormal Psychology*, 98, 150-153.
- Weary, G., Marsh, K. L., Gleicher, F., & Edwards, J. A. (in press). Social-cognitive consequences of depression. In G. Weary, F. Gleicher, & K. L. Marsh (Eds.), *Control motivation and social cognition*. New York: Springer Verlag.
- Wegner, D. M., & Vallacher, R. R. (1986). Action identification. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 1, pp. 550-582). New York: Guilford Press.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, 92, 548-573.
- Weiner, B., & Graham, S. (1984). An attributional approach to emotional development. In C. Izard, J. Kagan, & R. Zajonc (Eds.), *Emotion, cognition, and behavior* (pp. 167-191). New York: Cambridge University Press.
- Weiner, B., Graham, S., & Chandler, C. C. (1982). Pity, anger, and guilt: An attributional analysis. *Personality and Social Psychology Bulletin*, 8, 226-232.
- Weingartner, H., Miller, H., & Murphy, D. L. (1977). Mood- state dependent retrieval of verbal associations. *Journal of Abnormal Psychology*, 86, 276-284.
- Wenzlaff, R. M., Wegner, D. M., & Roper, D. (1988). Depression and mental control: The resurgence of unwanted negative thoughts. *Journal of Personality and Social Psychology*, 55, 882-892.
- Wetzler, S. (1985). Mood state-dependent retrieval: A failure to replicate. *Psychological Reports*, 56, 759-765.
- Wood, J. V., Saltzberg, J. A., & Goldsamt, L. A. (1990). Does affect induce self-focused attention? *Journal of Personality and Social Psychology*, 58, 899-908.
- Worth, L. T., & Mackie, D. M. (1987). Cognitive mediation of positive mood in persuasion. *Social Cognition*, 5, 76-94.
- Wundt, W. (1897). *Outlines of psychology*. (C.H. Judd, Trans.). Leipzig: William Englemann.
- Wyer, R. S., & Carlston, D. (1979). *Social cognition, inference, and attribution*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Wyer, R. S., & Srull, T. K. (1989). *Memory and cognition in its social context*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Zajonc, R. B. (1980). Feeling and thinking. Preferences need no inferences. *American Psychologist*, 35, 151-175.
- Zillman, D. (1978). Attribution and misattribution of excitatory reactions. In J. H. Harvey, W. I. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research* (Vol. 2, pp. 335-368). Hillsdale, NJ: Lawrence Erlbaum Associates.

Zillman, D., Johnson, R. C., & Day, K. D. (1972). Attribution of apparent arousal and proficiency of recovery from sympathetic activation affecting excitation transfer to aggressive behavior. *Journal of Experimental Social Psychology*, 10, 503-515.

(Figure Legends)

Figure 1. The Cognitive Structure of Emotions. Cognitive factors that differentiate three kinds of affective reactions into 22 emotion types.

(Ortony, Clore, & Collins, 1988).

Figure 2. Roseman's (1992) Revised Emotion Theory

(from Roseman, Antoniou, & Jose, 1992)

Figure 3. Roseman's (1992) Revised Emotion Theory Represented as a Hierarchy

Figure 4. In situations varying in Ought vs Ideal Consistency, Higgins predicts Dejection vs Agitation. When considered as Standard vs Goal Consistency, Ortony, Clore, & Collins predict Pride, Gratification, Happy, Happy/Shame, Shame, Self-Anger, Sad, Pride/Sad.