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Norbert Schwarz

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Zentrum für Umfragen, Methoden und
Analysen e.V. (ZUMA)
Postfach 12 21 55

D-6800 Mannheim 1

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CHAPTER 15

Feelings as Information

Informational and Motivational Functions of Affective States

NORBERT SCHWARZ
Zentrum für Umfragen, Methoden und Analysen, ZUMA
and University of Heidelberg

A key element in many theories of emotion is the often implicit assumption 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). Surprisingly, this assumption has received little attention in psychological theorizing about the interplay of affect and cognition. Rather, recent research on emotional influences on cognitive processes has focused primarily on the impact of emotions on the valence of material that is recalled from memory (see Blaney, 1986, and Isen, 1984b, for reviews). Accordingly, studies on the impact of emotional states on reasoning and judgment have been characterized by attempts to trace the observed effects to selective recall.

In contrast to this research tradition, the present chapter focuses on the informative functions of affective states; it is based on the assumption that affective states inform us about the nature of the situation in which they are experienced. The first part of this chapter reviews research on the impact of affective states on evaluative judgments, presenting evidence that is difficult to reconcile with the assumption that emotional influences on social judgment are mediated by selective recall from memory. Rather, the presented research suggests that individuals frequently use their affective state at the time of judgment as a piece of information that may bear on the judgmental task, according to a "How do I feel about it?" heuristic (Schwarz & Clore, 1988). The second part of the chapter extends the informative-functions assumption to research on affective influences on decision making and problem solving, suggesting that affective states may influence the choice of processing strategies. Specifically, it is argued that negative affective states, which inform the organism that its current situation is problematic, foster the use of effortful, detail-oriented, analytical processing strategies, whereas positive affective states foster the use of less effortful heuristic strategies.

HOW DO I FEEL ABOUT IT?: AFFECTIVE STATES AND EVALUATIVE JUDGMENTS

That our moods may strongly influence how we see the world is a familiar experience to most persons. Not surprisingly, it has been confirmed in a large number of experimental studies. Individuals' affective states have been shown to influence a wide range of evaluative judgments, ranging from satisfaction with consumer goods (Isen, Shalker, Clark, & Karp, 1978) and the evaluation of other persons (Clore, Schwarz, & Kirsch, 1983), selected activities (Carson & Adams, 1980), or past life events (Clark & Teasdale, 1982) to reports of happiness and satisfaction with one's life as a whole (Schwarz & Clore, 1983).

Findings of this type have usually been attributed to the impact of affective states on the recall of valenced material from memory. Specifically, memory research has demonstrated that positively valenced material is more accessible in memory when individuals are in positive rather than in negative moods, whereas negatively valenced material is more accessible when they are in negative rather than positive moods (e.g., Bower, 1981; Isen et al., 1978). Thus, a person who is asked to evaluate a specific target while in a good mood is likely to recall the positive aspects of the target before the negative ones. Because individuals rarely retrieve all the information that is potentially relevant, but rather truncate the search process as soon as enough information has come to mind for them to form a judgment (see Bodenhausen & Wyer, 1987, and Wyer, 1980, for reviews), mood-congruent recall results in a selective data base. Subsequent evaluations, based on the recalled information, are therefore bound to be more positive under more positive moods, because positive information about the target is overrepresented in recall. In addition, the ease with which that information came to mind may lend it additional weight (Tversky & Kahneman, 1974). These assumptions predict mood-congruent judgments to the extent that the judgment is based on material recalled from memory.

The same assumptions can be used to account for differences in the evaluation of people, events, and objects that are new in one's experience, because mood congruency of recall should also influence the accessibility of relevant interpretive concepts. New information, however, is encoded in terms of the most accessible applicable concepts, as has been found in a variety of studies (e.g., Higgins, Rholes, & Jones, 1977; see Higgins, 1989, for a review). Accordingly, the mood-induced differential accessibility of concepts should result in mood-congruent encodings of new information, at least if the newly acquired information is sufficiently ambiguous to allow for different interpretations. Therefore, the target stimulus will be considered more favorably under positive than under negative moods. Finally, the increased accessibility of mood-congruent material in memory may lead to mood-congruent associations that may further influence the evaluation of the target (e.g., Clark & Wadell, 1983).

Although the described logic of mood-congruent recall seems to provide a plausible account for mood-induced differences in evaluative judgments, the accumulating empirical evidence challenges some of the assumptions entailed in

this position. On the one hand, 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). Most importantly, mood-congruent recall is most likely to be obtained for self-referenced material, 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 is difficult to find when material is presented in narrative form, such that positive and negative elements are interconnected (Hasher, Rose, Zacks, Sanft, & Doren, 1985; Mecklenbräuker & Hager, 1984) or otherwise well organized (Fiedler, Pampe, & Scherf, 1986). In addition, facilitated recall of *mood-incongruent* material has been observed in some studies (e.g., Laird, Wagener, Halal, & Szegda, 1982; Srull, 1983)—a finding that has been attributed to cue overload (Watkins, 1979): In the absence of additional recall cues, mood states may result in a diffused retrieval of mood-congruent information, rendering mood-incongruent material more distinct. Finally, numerous alternative explanations have been suggested to account for the effects of mood congruency, and a good many inconsistent findings have been reported (see Blaney, 1986, for a review). On the other hand, mood effects on evaluative judgments are rather robust and have frequently shown a pattern that is inconsistent with predictions generated by models of mood-congruent recall.

An alternative account of mood effects on evaluative judgments, one that provides a better fit with the available data, has been suggested by Schwarz and Clore (Schwarz, 1987, 1988; Schwarz & Clore, 1983, 1988). This account was stimulated by previous discussions by Wyer and Carlston (1979) and research on the misattribution of arousal (see Zanna & Cooper, 1976; Zillman, 1978). It focuses on the informative function of affective states in controlled inference processes, rather than on the automatic process of mood-congruent retrieval.

Specifically, it is suggested that individuals may use their perceived affective reactions as relevant information when making evaluative judgments. In fact, some evaluative judgments refer, by definition, to one's affective reaction to the stimulus. For example, when asked how "likeable" Mary is, individuals may interpret this question to refer to their feelings toward Mary. If so, they may not engage in detailed analyses of Mary's behaviors and traits, but may assess their own feelings toward Mary and use them as a basis for judgment. Other evaluative judgments may not refer directly to one's feelings about the target, but may pose a task that is very 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 therefore ask themselves, "How do I feel about it?" (Schwarz & Clore, 1988). In doing so, they may mistake feelings due to a pre-existing state as a reaction to the target stimulus, and this may result 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 are mediated by selective recall of mood-

congruent information. The first, and most important, prediction is that the impact of affective states on evaluative judgments is a function of their perceived informational value. If individuals attribute their current feelings to a source that is irrelevant to the evaluation of the target stimulus, the informational value of their affective state for evaluating the target should be discredited. If so, they should consider their feelings uninformative, and the feelings should not influence their judgments about the target. According to models of mood-congruent recall, on the other hand, the impact of affective states should depend only on the evaluative information retrieved from memory, rather than on information provided by the affective state itself. Therefore, models of mood-congruent retrieval predict that manipulations of the informational value of the affective state itself will not influence its impact on evaluative judgments.

A second prediction holds that the impact of affective states on evaluative judgments should be independent of the event that induced the affective state in the first place, unless this event discredits the informational value of one's feelings for the judgment at hand, as discussed above. In contrast, the mood-congruent recall hypothesis predicts that the more other conditions facilitate selective recall of relevant information, the more pronounced mood effects on evaluative judgments should be. Thus, mood effects should be more pronounced when potentially biasing material is activated *both* by the mood one is in and the event that elicited this mood in the first place. 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 negative information about diseases would be activated by both the content of one's thoughts and one's depressed mood. According to the informative-functions hypothesis, however, the nonemotional content of the mood-inducing stimulus should be irrelevant unless it influences the apparent informational value of the accompanying feelings. Mood effects on evaluative judgments should therefore generalize over a wide range of judgments, independently of whether the thought content associated with that mood does or does not bear on the judgment.

Finally, models of mood-congruent recall hold that mood effects on evaluative judgments should be more pronounced when the mood at the time of judgment matches the mood one was in when one originally acquired the relevant information. This prediction derives from the finding that recall is facilitated by matching mood states at the time of encoding and at the time of retrieval, according to the principles of state-dependent learning (Bower, 1981). By contrast, the hypothesis that affective states serve informative functions does not make this prediction. If individuals consult their feelings as a source of information, the effects of the mood should occur at the time of judgment, irrespective of the mood at the time of encoding.

The available empirical evidence favors the informative-functions hypothesis over the mood-congruent recall hypothesis with regard to all three predictions, as reviewed below.

The Informational Value of Moods and the Implications of Memories: (Mis)Attribution Studies

If individuals use their affective state at the time of judgment as information, the impact of feelings on judgments should depend on their perceived informational value. Feelings that are attributed to a source that is irrelevant to the judgment at hand should not be considered informative; they should therefore be disregarded and should have no effect.

The evidence bearing most clearly on this hypothesis comes from research on the impact of moods on judgments of subjective well-being—that is, judgments of happiness and satisfaction with one's life as a whole (see Schwarz, 1987, and Schwarz & Strack, in press, for detailed discussions). In general, respondents report being happier and more satisfied with their life as a whole when they are in an elated rather than in a depressed mood. For example, subjects who found a dime on a copy machine (Schwarz, 1983), or who were interviewed on sunny days (Schwarz & Clore, 1983, Experiment 2), reported higher well-being than subjects who did not find a dime or subjects who were interviewed on rainy days.

Different theoretical models may account for these findings. From the perspective of mood-congruent recall, subjects in good moods may have recalled more positive information about their lives, as has been reported by Bower and Gilligan (cited in Bower, 1981; see also Clark & Teasdale, 1982; Diener, Larson, & Emmons, 1984). If so, the more positive evaluations may have resulted from selective recall of more positive memories. Alternatively, subjects may have used their feelings at the time of judgment as heuristically relevant information. Facing the complex task of evaluating one's "life as a whole," for which too many facts are potentially relevant and for which judgmental criteria are ill defined, one may simply consider the target ("life as a whole") for a moment, using any affective reactions that result as a guide to an evaluation. When one is using feelings as information in this way, however, it is not generally possible to separate the feelings due to the object of judgment from those due to one's background mood state. Accordingly, feelings that were elicited by the experimental manipulations may be interpreted by subjects to reflect their reactions to the target, resulting in mood-congruent judgments that were *not* mediated by mood-congruent recall.

To test these alternative hypotheses, the perceived informational value of subjects' affective state was manipulated in various studies (Schwarz & Clore, 1983; Schwarz, Servay, & Kumpf, 1985). For example, in the weather study mentioned above (Schwarz & Clore, 1983, Experiment 2), some subjects were induced to attribute their current moods to a transient external source that was irrelevant to the evaluation of their lives. This was accomplished by directing their attention to the weather. In one condition, the interviewers—who collected the data on the telephone—pretended to call from out of town and asked at the beginning of the conversation, "By the way, how's the weather down there?" The idea was that in the process of answering the question (e.g., "It's terrible" or "It's very pleasant"), respondents would link their momentary feelings to the

weather, with the result that they would not later see their feelings as a reaction to the process of considering the quality of their lives.

As predicted by the feelings-as-information hypothesis, subjects who were called on rainy days and were induced to attribute their bad mood to the weather reported being as happy and satisfied with their lives as subjects who were called on sunny days. When the weather was not mentioned, however, lower global well-being was reported on rainy than on sunny days. In other words, subjects who felt bad but attributed their momentary feelings to a transient, irrelevant source—namely, the weather—discounted their current affective state in evaluating the quality of their lives as a whole. Subjects who were called on sunny days and who were in a good mood, on the other hand, were not influenced by the situational explanation offered to them. This asymmetry is presumably due to the fact that positive affective states require less explanation than negative ones, as I elaborate in more detail in the second part of this chapter. If no explanation for one's positive feelings is sought to begin with, however, directing subjects' attention to a plausible source of their good mood is unlikely to show any effect.

With regard to the competing theoretical models, the discounting effect (Kelley, 1972) observed under bad-mood conditions clearly supports the hypothesis that affective states may serve informative functions: Facing the complex task of evaluating his or her life as a whole, a person may use whatever feelings are encountered at the time of judgment as an indication of his or her reaction to the question. This should not happen, however, when the informational value of the momentary feelings is called into question. Accordingly, a measure of subjects' current mood, administered at the end of the interview, was more strongly correlated with reported well-being when the weather was *not* mentioned than when it was mentioned. The valence and intensity of subjects' current mood itself, however, was not affected by directing subjects' attention to the weather; this suggests that the attributional manipulation did not influence respondents' current mood itself, but only their inferences based on it.

These findings are incompatible with predictions that can be derived from models of mood-congruent recall. According to these models, subjects who were interviewed on sunny days should have recalled more positive aspects of their lives than subjects who were interviewed on rainy days. Note, however, that attributing one's current feelings to the weather should not affect the evaluative implications of the recalled information. Rather, it should only limit the range of issues about which the feelings seem informative. Accordingly, models of mood-congruent recall would predict a main effect of subjects' affective state, rather than the observed interaction of subjects' mood and the source to which it was attributed. Therefore, the obtained findings render it unlikely that the impact of mood on reported well-being was mediated by selective recall of mood-congruent information, as retrieved models of affect and cognition would suggest.

This point is further supported by a study in which moods were induced by having each subject vividly recall and describe either a positive or a negative life event (Schwarz & Clore, 1983, Experiment 1). Generally, subjects who had to describe negative life events reported lower happiness and satisfaction with their

lives as a whole than subjects who described positive events. Again, however, this difference was washed out when subjects who described negative events had a chance to misattribute the resulting negative mood to a transient external source—namely, features of the soundproof experimental room they were in. Under that condition, they reported being as satisfied as subjects who had not described negative events. This finding suggests that subjects did not base their evaluations of their lives on a review of life events, despite the fact that the mood manipulation had rendered a negative event highly salient. Rather, the effect seems to have depended on the informational implications of subjects' current affective states. In line with this assumption, a measure of subjects' current mood was again more strongly correlated with measures of general life satisfaction when their attention was not directed to the experimental room as a possible source of their current feelings than when it was.

In summary, these studies suggest that individuals evaluate their global well-being on the basis of their mood at the time of judgment, unless the informational value of their current feelings for that purpose has been called into question. That the impact of mood did depend on its perceived informational value, as is reflected in the observed discounting effects, is incompatible with models of mood-congruent recall, which hold that the judgment is a function of the evaluative implications of the recalled (mood-congruent) information. The implications of any memories that may have come to mind, however, should not have been affected by the source to which subjects attributed their current feelings. Obviously, this does not imply that mood-congruent recall may not have occurred. Given that recall data were not assessed, this issue cannot be addressed. The pattern of results renders it unlikely, however, that subjects used whatever they may have recalled as a basis of judgment; this parallels other research that suggests a relative independence of memory and judgment (cf. Fiske, Kenny, & Taylor, 1982; Hastie & Park, 1986). This issue is addressed in more detail in a subsequent section of this chapter.

Mood and Thought Content: Generalizing Affective Influences

According to models of mood-congruent recall, mood is just one of a multitude of variables that affects which information is retrieved, and the key variable in mood effects on judgment is the *content* of the retrieved information. Accordingly, mood effects on evaluative judgments should be most pronounced when the mood is induced by thoughts that are relevant to the judgment, because both the content of the mood induction and the mood itself should contribute to an increased accessibility of relevant material in memory. Several studies, however, have failed to confirm this prediction.

For example, in a study by Johnson and Tversky (1983), subjects read reports of negative events (e.g., descriptions of a case of cancer), which presumably induced a depressed and slightly anxious mood. Subsequently, they evaluated a large number of risks as more threatening than did subjects in a good mood. The impact of subjects' mood, however, was independent of the object of judgment or

the content by which it was induced. Reading about cancer, for example, had equally strong effects on judgments of the risk of cancer and on judgments of the risk of accidents and divorce. This generalization of effects over dissimilar content domains is incompatible with existing models of mood-congruent recall, but does conform well with predictions derived from the feelings-as-information hypothesis.

According to this hypothesis, individuals who face the difficult task of evaluating unknown risks may cope with the judgmental task by consulting their current feelings. 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 elated mood. Note that this assumption predicts that the impact of the affective state should be the same for all judgments to which the state is relevant, regardless of the content by which the mood was induced. Mood effects should only be absent when subjects attribute their feelings to the story they read, which discredits the feelings' general informational value, as discussed in the context of the misattribution studies reported earlier.

Similar content-free generalizations of mood effects were observed in a study (Clore et al., 1983) that induced positive or negative moods through guided fantasies either about a pleasant or an unpleasant date (an interpersonal theme) or about a pleasant or an unpleasant vacation (a noninterpersonal theme). Subsequently, subjects read ambiguous passages either about another person (interpersonal theme) or about a vacation (noninterpersonal theme), modeled after materials used by Higgins et al. (1977). It was hypothesized that if mood states increase the accessibility of mood-congruent concepts, ambiguously described stimuli should be encoded in more positive terms in good moods than in bad moods. Moreover, it was thought that this effect should be more pronounced when the nonemotional cognitive content of the mood-inducing fantasy was relevant to the ambiguous description than when it was not. Accordingly, models of mood-congruent encoding and recall would predict additive effects of the quality of the mood and the thematic similarity of the fantasy and the ambiguous passage.

Such additive effects, however, were not obtained. Rather, subjects evaluated both the person and the vacation resort more positively when they were in a good rather than a bad mood, regardless of the content of the fantasy through which their mood was induced. Thus, their evaluations reflected only their mood at the time of judgment, as predicted by the hypothesis that feelings serve informative functions.

Mood at Encoding and Mood at Judgment: What's Crucial?

Following the rules of state-dependent learning, mood-congruent recall has been found to be most pronounced when the mood at encoding matches the mood at retrieval (Bower, 1981). If mood effects on evaluative judgments are mediated by

mood-congruent recall, they should show the same pattern. If evaluative judgments are based on the implications of the mood state itself, however, rather than on the implications of any information that may be recalled from memory, mood effects on judgment should only be a function of the mood at the time of judgment, and the encoding mood should prove largely irrelevant.

In a study that addressed this issue (Clore, Parrott, & Wilkin, 1989; Schwarz & Clore, 1986), positive or negative moods were induced through vivid recall of a positive or a negative life event under hypnosis. Subsequently, subjects read an ambiguous person description and reported, in a forced-choice format, which traits of four pairs of traits best characterized the stimulus person. Not surprisingly, subjects in a negative mood chose more negative traits than subjects in a positive mood.

Following this first judgment, subjects were again hypnotized and put into a good or bad mood through the recall of another life event; this resulted in a design that crossed mood at the time of encoding (and first judgment) with mood at the time of retrieval (and second judgment). After completion of the second mood induction, subjects reported how well each of the traits presented earlier described the stimulus person.

According to models of mood-congruent recall, the information that subjects retrieve from memory should reflect their mood at the time of encoding. This should have been particularly likely in the present study, because subjects had already provided a first judgment at the time of encoding. Moreover, selective recall should be enhanced if the retrieval mood matches the encoding mood. In contrast to these predictions, however, the second judgment showed no impact of encoding mood whatsoever. Rather, it reflected only subjects' mood at the time of the second judgment, with subjects in a good mood evaluating the target person more positively than subjects in a bad mood. Thus, both judgments at Time 1 and judgments at Time 2 were solely a function of the mood the subjects were in at the time the respective judgments were made.

In combination with the previous findings, these results suggest that subjects did not engage in a detailed analysis of the evaluative implications of each piece of information presented about the target. Rather, they simplified the judgmental task by consulting their current feelings to determine whether the target person was likeable or not. Consistent with this conclusion, Fiedler et al. (1986) found pronounced effects of mood on judgments of liking, without any evidence for mood-congruent retrieval of information about the stimulus person, in their recall data.

Global Moods and Specific Emotions: Some Important Differences

Although the studies reviewed above demonstrate that global mood states serve informative functions, it is assumed that the same logic holds for specific emotions. However, some important qualifications may apply, as is suggested by a consideration of the characteristics of global moods and specific emotions.

The Informational Value of Moods and Emotions

A central characteristic of mood states is their diffuse and unfocused quality (cf. Clore, 1985; Ewert, 1983), which sets them apart from specific emotions. In contrast to moods, emotions are specific reactions to particular events. Most importantly, they have an identifiable cause, a sharp rise time, and a relatively short duration. Moods, on the other hand, may result from a series of mildly pleasant or unpleasant events, none of which needs to be sufficiently intense to produce an emotion by itself, but which collectively leave one in a generalized positive or negative feeling state. Moods, therefore, do not always have easily identifiable causes. They may come about gradually, and they tend to last longer than emotions. Moreover, a mood may develop as the residue of a specific emotion, once the emotion's intensity dissipates and its cause is no longer in the focus of 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. These characteristics are reflected in our use of language that implies specific references for emotions, but not for global moods. Thus, we say that we are afraid "of" something and angry "about" something, but that we are "in" a happy or sad mood.

It is this undifferentiated and unfocused nature of mood states that renders them informative for a wide variety of different judgments. In fact, when subjects are induced to attribute their moods to specific causes—as in the weather experiment, described above (Schwarz & Clore, 1983)—the impact of mood 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 (Clore, 1985). 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 nicely supported by a study by Keltner and Audrain (1988, Experiment 2). Following our research (Schwarz & Clore, 1983), these authors induced a sad mood by having subjects vividly recall a negative life event. Subsequently, some subjects were asked to describe "what emotions" they currently felt, whereas others indicated where and when the negative event had taken place. Compared to the latter group, those subjects who had to label 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 a related study (Keltner & Audrain, 1988, Experiment 1), describing one's current emotions was at least as effective in reducing the impact of a sadness-inducing hypothetical event as was 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 rendering the feelings uninformative for subsequent evaluative judgments that did not pertain to these specific causes.

A particularly interesting implication of this analysis is 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). This possibility awaits further research. 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.

Misattributing Fear

That specific emotions do affect judgments to which they are relevant has, in fact, received empirical support. For example, in a study on the misattribution of fear (Schwarz et al., 1985), heavy smokers were exposed to a fear-arousing movie that vividly portrayed the negative side effects of smoking. Relative to a control group that was not exposed to the movie, subjects who saw the movie reported a stronger intention to cut down on the number of cigarettes they smoked. This intention was less pronounced, however, when subjects could misattribute their affective reactions to a placebo pill that was said to have arousing side effects. Subjects who were informed that the pill had tranquilizing side effects, on the other hand, reported a stronger intention to reduce smoking than subjects who did not expect side effects of the pill. In addition, daily self-reports of the number of cigarettes smoked over a 2-week period following the experiment still showed a significant impact of the misattribution manipulation.

These discounting and augmentation effects (see Kelley, 1972) suggest that subjects used their affective reactions to the movie as a basis for evaluating the described risk, resulting in the perception of the highest risk when they experienced arousal "despite" being tranquilized, and in the perception of the lowest risk when they could attribute their arousal to the pill.

Note, however, that the induced fear was relevant to the judgmental task—namely, evaluating the risks involved in heavy smoking. That is, fear is an affective reaction that carries with it information about the degree of perceived risk (Ortony, Clore, & Collins, 1988). Accordingly, judgments of risk should be influenced when made in the presence of fearful feelings, as the study of smokers indicated. For other judgments, however, feelings of fear may not be considered informative.

This assumption is supported by research on the differential impact of fear and anger (Gallagher & Clore, 1985). Whereas fear carries information about risk, anger involves in part disapproving of someone else's blameworthy action (Ortony et al., 1988). In line with this reasoning, Gallagher and Clore (1985) found that hypnotically induced feelings of fear affected judgments of risk but not of blame, whereas feelings of anger affected judgments of blame but not of risk. Thus, the induced emotions influenced evaluative judgments relevant to that specific emotion, but not evaluative judgments in domains relevant to a different emotion.

In combination, the findings reviewed in this section suggest that the impact of specific emotions is more limited than the impact of global moods. First,

emotions usually have a clear referent, thus rendering them uninformative for judgments that do not pertain to this referent, as is suggested by the Keltner and Audrain (1988) findings. Second, specific emotions provide specific types of information (e.g., information bearing on risk or blameworthiness), thus rendering them uninformative for judgments that pertain to a different dimension. If a specific emotion is used as the basis for judgment, however, its impact follows the logic of discounting and augmentation, as has been shown for global moods.

When Are Judgments Based on One's Affective State Rather than on Other Information?

Now that considerable evidence has been reviewed for the informative functions of affective states, this question arises: Under which conditions are individuals' likely to use the information that their feelings provide? That is, when do individuals follow a "How do I feel about it?" heuristic, and when are they likely to engage in more effortful, retrieval-based strategies?

That individuals base evaluative judgments on the information provided by their feelings seems particularly likely under the following four conditions: (1) when the judgment at hand is affective in nature (e.g., liking for another person); (2) when little other information is available; (3) when the judgment is overly complex, and cumbersome to make on the basis of a piecemeal information-processing strategy; and (4) when time constraints or competing task demands limit the cognitive capacity that may be devoted to forming a judgment. Whereas the first two variables pertain to the availability of competing information, the latter two pertain to processing load. Each of these aspects is discussed in turn before their implications for retrieval-based models of judgment are assessed.

Availability of Competing Information

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 (cf. Clore & Byrne, 1974; Zajonc, 1980). Moreover, one's feelings are sometimes the only source of information that may be available to assist in forming a particular judgment. Suppose, for example, that subjects in an experiment are asked to evaluate whether an unknown Chinese ideograph means something good or something bad. Given the absence of any useful knowledge about the ideograph, subjects may be likely to turn to their affective response, asking themselves, "How do I feel about it?" If they encounter positive feelings, they may conclude that the ideograph may mean something positive, unless they have reason to doubt the informational value of their feelings.

In line with this reasoning, Zajonc (1989) found that subjects attributed a more positive meaning to Chinese ideographs when the ideographs were preceded by smiling rather than by frowning faces, which presumably elicited positive or negative affective reactions. However, this effect was only obtained when subjects' exposure to the smiling or frowning faces was subliminal, thus ensuring

that subjects were unaware of the source of their affective reaction. Under supraliminal exposure conditions, subjects apparently attributed their affective reaction correctly to the facial stimuli, thus rendering it uninformative for evaluating the Chinese ideographs. This finding clearly coincides with other research reviewed in the present chapter, in illustrating that judgments may be based on individuals' affective states rather than on any specific features of the to-be-evaluated stimulus. This finding does *not* imply, however, that "preferences need no inferences," as the subtitle of Zajonc's (1980) paper suggested. As the preceding sections of this chapter have indicated, consulting one's affective state and determining its informational value for the judgment at hand are highly inferential strategies, which may result in augmentation and discounting effects as described by the most "reasoned" models in social-cognitive research, although these inferential steps may not necessarily be accessible to introspection (see Nisbett & Wilson, 1987).

In summary, one's apparent affective reaction to the object of judgment may be the most relevant information in making certain judgments, either because the judgment refers to one's feelings or because one's feelings are the only information available.

The latter argument also suggests that the impact of individuals' affective state decreases as the accessibility of competing information increases. The available evidence is in line with this assumption. For example, Srull (1983, 1984) reported that subjects' mood influenced their evaluations of unfamiliar, but not of familiar products. Moreover, the impact of the information provided by one's mood may be a function of the relative salience of one's mood and of competing information. Accordingly, we (Strack, Schwarz, & Gschneidinger, 1985, Experiments 2 and 3) observed that subjects who provided short, nonemotional 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. This pattern of findings has been replicated in the area of relationship satisfaction (Collins & Clark, 1989). In combination, these findings suggest that other sources of information may be ignored in the presence of a salient mood state.

Processing Load

Although the discussion above suggests that individuals may consult their feelings because of a lack of other relevant information, they may also do so because too much information is available. In that case, asking oneself how one feels about the object of judgment may provide an efficient heuristic that greatly simplifies the judgmental task and limits the demands on cognitive capacity.

In line with this assumption, we (Schwarz, Strack, Kommer, & Wagner, 1987, Experiment 1) found pronounced mood effects (as a function of the outcome of games of the West German national soccer team) on judgments of general life satisfaction, but not on judgments of satisfaction with specific life

domains, such as one's income. This is presumably due to the facts 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 (cf. Schwarz & Strack, in press). Thus, the more complex the judgmental task was, the more likely subjects were to rely on their feelings at the time of judgment.

In a related study, inducing a good or bad mood by testing subjects in a pleasant or an unpleasant room (Schwarz et al., 1987, Experiment 2) resulted in mood effects on judgments of general life satisfaction, but in contrast effects on judgments of housing satisfaction. This suggests that subjects evaluated their lives as a whole on the basis of their mood (resulting in *lower* life satisfaction in the unpleasant than in the pleasant room), but evaluated their housing satisfaction on the basis of salient comparison information provided by the room (resulting in *higher* housing satisfaction in the unpleasant than in the pleasant room). Again, this finding indicates that reliance on one's affective state may increase with increasing complexity of the task.

In addition, the notion that using one's feelings as information may simplify complex judgments according to a "How do I feel about it?" heuristic predicts that the less relevant a judgment is, the fewer consequences it has, and the higher the time pressure under which it is made, the more pronounced mood effects should be (cf. Kruglanski, 1980). Similarly, competing processing demands, which limit the available cognitive capacity, should increase reliance on this heuristic, as has been shown with regard to the use of other heuristics (see Sherman & Corty, 1984). These implications await further research.

On the Relationship of Recall and Judgment

As emphasized previously, the findings reviewed in the present chapter are incompatible with models that assume that mood effects on evaluative judgments are mediated by mood-congruent memory (e.g., Bower, 1981; Clark & Isen, 1982; Isen, 1984b). The results of the reported misattribution experiments cannot be accounted for by these models, and the impact of moods on evaluative judgments has been shown to be unaffected by variables that are likely to affect selective recall. As noted before, however, this does not necesssarily imply that models of mood-congruent recall are inadequate as models of *recall.* Rather, these findings simply suggest that evaluative judgments may frequently not be based on recalled information (see Schwarz, 1987, for a more detailed discussion).

As many authors have noted, the relationship between evaluative judgments and the recall of information upon which these judgments are presumably based is frequently weak (e.g., Anderson & Hubert, 1963; Bargh & Thein, 1985; Carlston & Skowronski, 1986; Dreben, Fiske, & Hastie, 1979; Lingle & Ostrom, 1979). This is usually interpreted to indicate that subjects are recalling a judgment that was made "on-line"—that is, at the time the relevant information was received, rather than at the time they are asked to report the judgment to the researcher (cf. Hastie & Park, 1986; Lichtenstein & Srull, 1985). Accordingly, the

currently recalled behaviors may not be the ones that served as a basis of judgment in the first place, and this may result in weak relationships between both measures.

The present findings suggest, however, that the distinction between "on-line" and "retrieval-based" judgments is not exhaustive. Rather, there is a third type of judgment, which is based neither on on-line processing of features of the target nor on any retrieved features of the target. Specifically, evaluative judgments may be based on potentially unrelated information (such as one's own affective state) that is considered heuristically relevant. These "heuristic-based" judgments are likely to reduce the relationship between recall and evaluation even more than "on-line" judgments, given that their informational basis may potentially be ***completely unrelated*** to features of the object of judgment, as one might expect in the case of the weather (Schwarz & Clore, 1983), dime (Schwarz, 1983), or soccer (Schwarz et al., 1987) experiments discussed earlier.

Judgments as Recall Cues?

Finally, it is worth noting that a reversal of the generally assumed influence of affective states on the retrieval of valenced information is conceivable. As a considerable body of social cognition research indicates (see Martin & Clark, in press, for a review), individuals may use previously formed judgments as a basis for subsequent ones, independently of the information on which the judgment was originally based (e.g., Carlston, 1980; Lingle & Ostrom, 1979). More importantly, they may also use a judgment as a retrieval cue for reconstructing the information that presumably provided the basis of judgment in the first place, as was recently demonstrated by Higgins and colleagues (Higgins & Lurie, 1983; Higgins & Stangor, 1988).

Applied to the present reasoning, this raises the possibility that individuals' affective state may influence their evaluative judgments, which in turn may serve as mood-congruent retrieval cues, resulting in mood-congruent recall. To use one of Bower's (1981) examples, individuals who are asked to recall events from their kindergarten days may first ask themselves, "Well, kindergarten days. What were they like?" In doing so, they may form a global evaluation that is based on their current mood, as described above. Facing the task to report specific episodes, they may then use this global evaluation as a retrieval cue to guide the recall of specific information, resulting in an increased recall—or reconstruction—of mood-congruent information.

One important implication of this reasoning is that mood effects on recall should only be obtained under conditions that give rise to mood effects on evaluative judgments in the first place. Accordingly, misattribution manipulations of the type we used (Schwarz & Clore, 1983) should eliminate the impact of moods on the recall of mood-congruent information from memory. Although experimental tests of this possibility are not yet available, it is conceivable that variations in the perceived informational value of one's mood may underlie the inconsistent findings in the literature on mood-congruent memory.

Conclusions

In summary, the research reviewed in the first part of this chapter has demonstrated that affective states may serve informative functions, and that individuals may form evaluative judgments on the basis of their feelings. In doing so, however, they may misread feelings that were elicited by other causes as affective reactions to the object of judgment, resulting in more positive evaluations in the presence of positive rather than negative feelings. The assumption that feelings serve as information implies that the information that is provided by them is processed in the same way as any other piece of information is. In line with this assumption, the reviewed research indicates that the information provided by one's feelings is only used in making evaluative judgments if it is relevant to the judgment at hand, and if its informational value is not discredited. Accordingly, mood effects were not obtained when respondents were induced to attribute their current mood to a transient, external source, thus calling its diagnosticity into question (e.g., Schwarz & Clore, 1983; Schwarz et al., 1985). Moreover, moods have been found to influence a wide variety of evaluative judgments (e.g., Johnson & Tversky, 1983), whereas the information provided by specific emotions appears to be more specific, thus limiting the range of judgments likely to be influenced (e.g., Gallagher & Clore, 1985; Keltner & Audrain, 1988). In addition, the impact of affective states has been found to decrease as the salience (Collins & Clark, 1989; Strack et al., 1985) or amount (Schwarz et al., 1987; Srull, 1983, 1984) of other information relevant to the judgment at hand increases.

Although these findings have repeatedly been contrasted to predictions derived from mood-congruent recall models, it is also important to highlight their relationship to other, more closely related approaches. Most obviously, the present approach builds, both theoretically and experimentally, on previous misattribution research. Some of this research addressed the influence of perceived context on the interpretation of physical arousal (Schachter & Singer, 1962), whereas other research explored the impact of physical arousal on attitudinal judgments (e.g., Zanna & Cooper, 1974). In general, the latter research indicated that physical arousal will only influence judgments if the object of judgment is seen as the source of arousal. Although the original accounts for this finding were couched in somewhat different terms—they were related either to a dissonance framework (see Zanna & Cooper, 1976, for a review) or to an excitation transfer framework (see Zillman, 1978, for a review)—they indicate that perceived physical arousal will only influence evaluative judgments if its informational value for the respective judgment is not discredited.

The "feelings-as-information" approach presented in the present chapter is clearly compatible with these previous lines of research and extends this work in several ways. Most importantly, the work by Zanna, Cooper, and colleagues, as well as that by Zillman and colleagues, was primarily concerned with the subjective experience of arousal (often in the context of dissonance motivation), rather than the implications of the valence of the experienced state (but see Higgins, Rhodewalt, & Zanna, 1979, for an exception). Although the research procedures

were tailored to discredit the implications of arousal states, the informational value of these states was not explicitly elaborated. Accordingly, this line of research did not invite differentiations between moods and emotions, explorations of the specific informational value of different affective states, or their linkage to information processing in general. This difference in focus reflects general differences in the theoretical orientation of social psychology in the early 1970s and the mid-1980s (see Markus & Zajonc, 1985). This becomes particularly apparent in the second part of this chapter, which addresses the impact of affective states on strategies of information processing.

AFFECTIVE STATES AND THE CHOICE OF PROCESSING STRATEGIES

So far, the discussion of the informative functions of affective states has focused on the impact of feelings on evaluative judgments. However, the informational value of one's affective state may be more fundamental than the preceding discussion of evaluative judgments may suggest. As many authors have pointed out (e.g., Arnold, 1960; Frijda, 1988; Higgins, 1987; Oatley & Johnson-Laird, 1987; Ortony et al., 1988), different affective states are closely linked to different psychological situations. In Nico Frijda's words (1988, p. 349), "emotions arise in response to the meaning structures of given situations, [and] different emotions arise in response to different meaning structures." In general, "events that satisfy the individual's goals, or promise to do so, yield positive emotions; events that harm or threaten the individual's concerns lead to negative emotions" (p. 349).

If we extend these arguments, it seems plausible to assume that the relationship between emotions and the "meaning structures" that constitute a "psychological situation" (Higgins, 1987) is bidirectional: Different psychological situations result in different emotions, but the presence of a certain emotion also informs the individual about the nature of his or her current psychological situation. At a general level, one may assume that a positive affective state informs the individual that the world is a safe place, one that does not threaten the person's current goals. That is, positive feelings tell the person that the current situation is characterized neither by a lack of positive outcomes nor by a threat of negative outcomes. Negative affective states, on the other hand, inform the individual that the current situation is problematic, and that it is characterized either by a lack of positive outcomes or by a threat of negative outcomes—a distinction that is elaborated on below. If this is so, one's affective state can serve as a simple but highly salient indicator of the nature of the situation one is in.

To the extent that individuals are motivated to obtain positive outcomes and to avoid negative ones, negative emotions do therefore inform the individual that some action needs to be taken. Positive emotions, on the other hand, may not signal a particular action requirement. Indeed, empirical evidence indicates that different emotions are associated with different states of action readiness; these 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). This evidence supports the assumption 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).

The remainder of this chapter relates these considerations to a variety of differences in information processing that have been observed under the influence of positive and negative affective states. However, the reader should be forewarned: Although the evidence bearing on the informational value of affective states for evaluative judgments is fairly persuasive, the following discussion of differences in processing strategy goes far beyond any data given.

Affect, Motivation, and Information Processing

The significance of the above-described considerations for information processing derives from the assumption that different psychological situations, reflected in different affect states, require different information-processing strategies.

If positive affective states inform the individual that his or her personal world is currently a safe and satisfactory place, the individual may see little need to engage in cognitive effort, ***unless*** this is required by other currently active goals. In pursuing these goals, the individual may also be willing to take some risk, given that the general situation is considered safe. Thus, simple heuristics may be preferred to more effortful, detail-oriented judgmental strategies; new procedures and possibilities may be explored; and unusual, creative associations may be elaborated. Accordingly, the thought processes of individuals in a positive affective state may be characterized by what Fiedler (1988), borrowing a term from George Kelly (1955), has called "loosening."

By contrast, if negative affective states inform the individual about a lack of positive outcomes or a threat of negative outcomes, the individual may be motivated to change his or her current situation. Attempts to change the situation, however, initially require a careful assessment of the features of the current situation, an analysis of their causal links, detailed explorations of possible mechanisms of change, and anticipation of the potential outcomes of any action that might be initiated. Moreover, individuals may be unlikely to take risks in a situation that is already considered problematic, and may therefore avoid simple heuristics as well as novel solutions. Accordingly, their thought processes may be characterized by what Fiedler (1988) has termed "tightening"; again, the term is borrowed from Kelly (1955).

In summary, these considerations suggest that individuals' thought processes are tuned to meet the requirements of the psychological situation that is reflected in their feelings. Conceptually related to this argument, Heckhausen, Gollwitzer, and their collaborators (see Gollwitzer, Chapter 2, this volume, for a review) have shown that different motivational states, conceptualized in the context of a comprehensive action theory, elicit different "mind-sets" that are tuned to the requirements of the respective state. This tuning assumption has interesting

implications for individuals' thoughts about the affect-eliciting situation, as well as for their performance on unrelated tasks. For the sake of simplicity, the following discussion of these implications focuses on the contributions of affective states; the impact of third variables, such as higher-order goals, is addressed in a later section.

Affective States and Event-Related Thoughts

Focus of Attention

As a first hypothesis, it follows that individuals in a negative affective state should be more likely to focus their attention on features of the situation that elicited their feelings. In fact, a large body of literature indicates a narrowing of attentional focus under negative affect (see Broadbent, 1971; Bruner, Matter, & Papanek, 1955; Easterbrook, 1959; Eysenck, 1976). As a recent example, Wegner and Vallacher (1986) observed that failures to obtain a desired outcome are more likely to elicit attention to details of one's action strategy than are successful actions.

In addition, one may expect individuals in a situation that elicits negative affect to be less likely to encode incidental information, and less likely to get distracted by other tasks. Consistent with this assumption, Fuhrman and Ostrom (1989) observed that subjects in a person memory experiment paid more attention to information that elicited a pronounced negative reaction, and presumably spent more time thinking about it, as had previously been observed by Fiske (1980) for negative person information in general. As a consequence, Fuhrman and Ostrom's subjects had excellent memory for the affect-eliciting information as well as related items, but missed subsequently presented information that was unrelated to the affect-eliciting items.

Finally, negative affect may also be accompanied by an increased readiness to engage in effortful strategies to obtain information that is relevant to the situation at hand. Although the available empirical evidence that bears on these hypotheses is scarce, the hypotheses are clearly testable.

Causal Reasoning

In addition, one may assume that individuals in a negative affective state are more likely to engage in causal reasoning about the affect-eliciting event than are individuals in a positive affective state. Such an asymmetry has repeatedly been observed in the attribution literature. Specifically, it has been found that negative events, which elicit negative feelings, are more likely to trigger causal explanations than are positive events (e.g., Abele, 1985; Schwarz, 1987; Weiner, 1985b; Wong & Weiner, 1980). In line with this assumption, the misattribution experiments reviewed above (Schwarz & Clore, 1983) revealed that subjects who were in a bad mood were more likely to search for a situational explanation of their mood than subjects in a good mood were; this resulted in the observed asymmetric impact of positive and negative moods on evaluative judgments.

In a related study (Schwarz, 1987, Experiment 9), college students who were asked to describe a positive or a negative life event were more likely to provide unelicited causal explanations for negative (38%) than for positive (18%) events. Moreover, if a causal explanation was offered, it was provided earlier in the description if the event was negative (specifically, after 10.2 words) than if the event was positive (after 41.0 words); this suggests that causal explanations are more accessible in the cognitive representation of negative rather than positive events.

However, findings of this type are difficult to interpret because of a natural confound of valence and expectancy: As many attribution theorists have noted, unpleasant events are seen as less likely than pleasant ones in everyday life. Accordingly, the subjective probability of the event and its hedonic quality are naturally confounded. The unexpectedness of an event, however, has been found to trigger causal explanations in its own right (see Hastie, 1984, for a review). To isolate the contribution of both variables, we (Bohner, Bless, Schwarz, & Strack, 1988) conducted a laboratory experiment that provided independent manipulations of the subjective probability of an event and its hedonic valence. Specifically, the subjects received either success or failure feedback about their performance on an ostensible "professional skills test." In addition, the subjective probability of success was varied by informing subjects that either 23% or 77% of a comparable student population had met the criterion. Following success or failure feedback, subjects were asked to write down everything that came to mind, and finally provided a direct rating of the intensity with which they tried to explain their test result.

These manipulations produced pronounced main effects of the valence of the outcome: As predicted by the current analysis, the number of possible reasons that subjects spontaneously reported for the outcome was greater after negative than after positive feedback, *regardless* of the outcome's a priori probability. In addition, subjects reported a higher intensity of causal reasoning after negative than after positive feedback. Additional correlational analyses indicated that the number of causal explanations reported, as well as the intensity ratings, increased with increasing negativity of subjects' current affective state.

In summary, these findings indicate that subjects were more likely to explain a negative event, which elicited negative feelings, than to explain a positive event, which elicited positive feelings. Given that the probability of the outcome was held constant, these findings demonstrate that the valence of the event, and its accompanying affective reaction, constitute a determinant of the degree of causal reasoning in their own right.

At a more general level, Holyoak and Nisbett (1988, p. 61) have observed that "people make inferences only when there is some triggering condition. An event or relationship must be problematic, unexpected, or at least interesting, before people begin to make inferences." The present argument holds that experiencing negative feelings may be one of the conditions informing individuals that an event or relationship is "problematic," and may thus serve as a triggering condition.

Generalization to Other Tasks

So far, the reviewed evidence has pertained to subjects' reasoning about the situation that elicited the affective state to begin with. Although this is interesting in its own right, it also raises the more intriguing possibility that the impact of affective states may generalize to other tasks that individuals work on while in that state. Why might such a generalization occur?

On the one hand, the discussion above suggests that different affective states may elicit different motivations (see Schaller & Cialdini, Chapter 8, this volume, for a related discussion). Most importantly, individuals in a negative state, for whom the situation is already defined as problematic, may be more motivated to avoid (additional) negative outcomes and less willing to engage in "risky" strategies than individuals in a positive affective state, for whom the current situation is defined as safe. In fact, individuals in an elated mood have been found to be more optimistic about future events than individuals in a depressed mood (e.g., Forgas & Moylan, 1987; Johnson & Tversky, 1983; Masters & Furman, 1976), to (erroneously) perceive more control over their current environment (e.g., Alloy & Abramson, 1979; Alloy, Abramson, & Viscusi, 1981), and to be more willing to take moderate risks (e.g., Isen, Means, Patrick, & Nowicky, 1982).

In addition to changes in individuals' motivational state, affective states may influence the cognitive accessibility of procedural knowledge in memory. If one assumes that analytic reasoning is helpful in handling negative situations, it should be highly adaptive if the negative affective states accompanying these situations increase the cognitive accessibility of relevant procedural knowledge. This should increase the speed with which adequate procedures can be applied to the negative situation. Moreover, it should decrease response competition between various applicable procedures, thus reducing the likelihood that other potentially applicable but less effective procedures will be selected.

However, any mechanism increasing the accessibility of analytic procedures to facilitate their application to the affect-eliciting situation may also increase the accessibility of the same procedures per se, resulting in a higher likelihood that they will be applied to *any* task to which they are applicable (see Higgins, 1989, for a review of research on accessibility effects). Accordingly, subjects in a bad mood should be more likely to apply analytic processing strategies to cognitive tasks that they work on while in that mood than subjects in an elated mood should be. Evidence from diverse areas of research is compatible with these assumptions.

Information Seeking

If being in a bad mood informs individuals that their current situation is problematic, it may increase their willingness to engage in effortful information seeking, and it may tune their attention to more diagnostic information. The current evidence bearing on this assumption is limited to depressed individuals, who are chronically in a bad mood. For example, in a study on social information gathering, Hildebrand-Saints and Weary (1989) observed that mildly depressed college students asked more highly diagnostic questions of their interaction

partners than nondepressed college students did. Moreover, they did so independently of whether they expected having to answer subsequent questions about their interaction partner or not, whereas nondepressed subjects only asked highly diagnostic questions if that seemed useful for a later task. The authors assume that "this heightened information seeking and utilization are motivated by depressives' attempts to reduce the uncertainty and lack of control which accompanies their depression" (Marsh & Weary, 1989, p. 326). According to the present argument, simply being in a negative affective state may elicit the same motivation, regardless of individuals' chronic depressive state, although data bearing on this hypothesis are not yet available.

Focus of Attention and the Encoding and Organization of Information

With regard to the finding that negative events elicit a narrower focus of attention, the generalization hypothesis would predict that information that is encoded while the person is in a bad mood will be categorized more narrowly and stored in smaller chunks than information that is encoded while the person is in a good mood. Several studies bear on this prediction. For example, Leight and Ellis (1981) found that a depressed mood inhibited chunking, resulting in decreased recall of nonsense words. Conversely, Isen, Daubman, and Gorgoglione (1987) reported increased chunking and increased recall performance under positive mood.

As Isen (1984a, p. 535) observed, "positive affect results in an organization of cognitive material, such that either more or broader, more integrated, categories" are used. For example, items that are not generally considered good exemplars of a category (e.g., "cane" as a member of the category "clothing") were more likely to be assigned to that category by subjects in an elated mood than by subjects in a nonmanipulated mood (Isen & Daubman, 1984). Similarly, subjects in an elated mood were found to sort stimuli into fewer groupings, again suggesting the use of broader categories (Isen & Daubman, 1984). Related research by Sinclair (1988), conducted in a performance appraisal paradigm, confirmed that subjects in an elated mood used broader categories than subjects in a neutral mood, and indicated that subjects in a depressed mood categorized different performance behaviors most narrowly. Moreover, this narrow categorization elicited by a negative mood resulted in more accurate performance appraisals and less evidence for halo effects.

A particularly interesting example of encoding differences was reported by Fiedler et al. (1986), who crossed elated and depressed moods with memory and impression formation instructions in a person memory experiment. Although impression formation instructions usually result in increased recall, due to the organization format of the resulting representation (cf. Hamilton, Katz, & Leirer, 1980), Fiedler et al. observed an interaction of instructions and mood state: "Recall performance was superior when positive mood was combined with impression formation instructions, and when negative mood was combined with memory instructions" (Fiedler, 1988, p. 105). Presumably, the narrower focus of

attention under negative mood, resulting in narrower categorizations, inhibited the organization of the material under impression formation instructions, but facilitated the effortful learning of the material under explicit memory instructions.

Analytic Reasoning

The propensity of negative affective states to elicit a higher degree of causal, analytic reasoning has repeatedly been observed to generalize to unrelated tasks that individuals work on while in a negative mood. For example, individuals in experimentally induced bad moods (e.g., Schwarz, Kommer, & Lessle, 1988), as well as subjects in naturally depressed moods (e.g., Alloy & Abramson, 1979) were found to provide more accurate contingency assessments than individuals in elated moods—a finding that has become known as "depressive realism" (see Ruehlman, West, & Pasahow, 1985, for a review). Although this finding is usually attributed to the impact of chronically or temporarily accessible depressive schemata, the finding that depressed moods facilitate covariation detection under conditions that are neither self-referential nor control-related suggests that it may be mediated by processing style rather than by the impact of depressive schemata.

For example, Sinclair (1987, Experiment 2) had subjects estimate correlation coefficients from scatterplots presented to them. He found that subjects in a depressed mood provided the most accurate estimates and subjects in an elated mood the least accurate ones, with subjects in a nonmanipulated mood falling in between. He concluded that "elated subjects are taking less care, processing more heuristically, [and] making more errors" (p. 16). Subjects in a depressed mood, on the other hand, "may process in a more algorithmic manner, leading to narrower categorization, weighing of more information, and less error in judgment" (p. 18). Consistent with this assumption, he found in a related study (Sinclair, 1988) that subjects in a depressed mood considered more information in making performance appraisals than did subjects in an elated mood, with subjects in a nonmanipulated mood again falling in between. Moreover, the performance appraisals provided by depressed subjects corresponded more closely to the number of positive or negative behaviors presented than did the performance appraisals provided by elated subjects; this suggested that elated subjects may "form sweeping global impressions," whereas depressed subjects may "assess more facts and make more discrete judgments" (p. 39).

In line with the assumption of more analytic and algorithmic processing under the influence of depressed moods, Fiedler and Fladung (1986; cited in Fiedler, 1988) observed that subjects in an induced bad mood produced fewer logical inconsistencies in a multiattribute decision task than subjects in a good mood. Specifically, the good-mood subjects, by producing inconsistent triads of the form "$A > B$ and $B > C$, but $A < C$," were twice as likely to violate the transitivity of preference as the bad-mood subjects were.

Moreover, in the domain of persuasion research, individuals in depressed moods were shown to pay more attention to the quality of persuasive arguments. Specifically, they were influenced by strong but not by weak arguments. Individu-

als in a good mood, on the other hand, were equally persuaded by strong and by weak arguments, and cognitive response measures indicated that they were less likely to elaborate the quality of the arguments (Bless, Bohner, Schwarz, & Strack, in press; Worth & Mackie, 1987). In fact, subjects in a good mood only paid attention to the quality of the arguments when they were explicitly instructed to do so, whereas individuals in a bad mood did so spontaneously (Bless et al., in press, Experiment 1). Accordingly, introducing a distractor task inhibited message elaboration under bad-mood conditions, but not under good-mood conditions; this suggested that subjects in a good mood did not engage in extensive message elaboration to begin with (Bless et al., in press, Experiment 2).

Closely related to these findings, research on the impact of affective states on helping behavior (see Schaller & Cialdini, Chapter 8, this volume, for a review) suggests that individuals in a depressed mood base their helping decisions on a careful consideration of the involved costs and benefits. By contrast, subjects in an elated mood seem to take a less considered approach to helping, and have been shown to be relatively unaffected by perceived costs and benefits (e.g., Manucia, Baumann, & Cialdini, 1984; Weyent, 1978).

In combination, this diverse set of findings (see Fiedler, 1988, for additional examples) strongly suggests that being in a depressed mood increases, and being in an elated mood decreases, the likelihood of a more analytic, careful, and deliberate processing of the available information.

Creativity

So far, it seems that the hypothesis that negative affective states increase the cognitive accessibility of analytical reasoning procedures, as well as individuals' motivation to engage in these effortful procedures, can well account for increased analytic reasoning under negative affect. But how about the other side of the coin? It has also been observed that individuals in a good mood are more creative than individuals in a bad mood. For example, they were found to be better at solving Dunker's candle problem and to generate more unusual associations (see Isen, 1987, for a review).

If positive affective states inform individuals that no particular action is required by the current situation, they may be unlikely to activate any specific procedure. Accordingly, no response hierarchy that is tuned to the current situation may be elicited, and different procedures may be equally accessible. If so, individuals in a good mood may be more likely to access a diverse range of procedures, and to apply them in combination, than individuals in a bad mood may be. Moreover, if elated moods are associated with a wider focus of attention than negative moods, individuals in an elated mood may also draw upon a wider range of semantic and episodic knowledge. The combination and application of diverse strategies and heterogeneous knowledge bases, however, is exactly what is usually considered to be at the heart of creative problem solving (cf. Martindale, 1981; Mednick, 1962). In addition to these automatic influences of knowledge accessibility, persons in a good mood may be less likely to consciously constrain themselves, because their affective state informs them that their current environ-

ment is safe, and thus allows them to take the risk that is associated with novel solutions.

Individuals in a bad mood, on the other hand, may be more constrained in both respects. At the level of access to diverse procedural, semantic, and episodic knowledge, the problem-oriented set that is presumably activated by being in a bad mood may inhibit the accessibility of other bodies of knowledge (see Higgins & King, 1981, for a general discussion of temporary and chronic accessibility). At the motivational level, being in a bad mood may also reduce individuals' willingness to engage in risky novel solutions, in a situation that is already defined as problematic. Thus, mood-induced differences in creativity may also be plausibly accounted for in the current framework.

When Are Tuning Effects to Be Observed?

Do the arguments above imply that one should *always* find improved analytic performance when individuals are in a bad mood, and impaired analytic performance when they are in a good mood? Day-to-day experience suggests otherwise, rendering it necessary to consider conditions that seem incompatible with the predictions offered above. Regarding improved analytic performance in a bad mood, the two exceptions that seem most likely to come to mind pertain (1) to interference effects of negative affect and (2) to the apathy inherent in severe depression. In addition, exceptions to most hypotheses can be readily constructed by referring to the impact of other currently active goals that may interfere with the hypothesized processes. Each of these possibilities is considered in turn.

Processing Capacity

To the extent that handling the affect-eliciting situation binds a considerable degree of subjects' cognitive capacity, performance on unrelated tasks is likely to be inhibited. Given that negative situations need more attention than positive ones, this has been most clearly demonstrated for negative affect (see Easterbrook, 1959; Lazarus, 1966). Note, however, that this condition may be unlikely to be met in experimental studies, in which affective states are typically induced by vivid imagery of fictitious events, feedback on already completed tasks that may not be repeated, and similar procedures that foreclose real opportunities to change the negative situation eliciting one's feelings. Studies that vary the functionality of thoughts about the mood-inducing event are therefore obviously needed, but are not yet available. Most importantly, the impact of affective states on performance on unrelated tasks needs to be compared under conditions that do and do not allow subjects to change the affect-eliciting situation.

Similarly, some situations may require that individuals control their affective state itself, or at least their social display of their affective experiences. Again, this task may bind considerable cognitive capacity, resulting in impaired cognitive performance on *other* tasks. Unfortunately, experimental studies on the impact of affect control on performance on unrelated tasks are not available. However, regarding individuals' thoughts about the negative event itself, the available

evidence suggests that an analytic reasoning style may not only serve to explain the event, but may also reduce its emotional impact. As different lines of research have demonstrated (see Schwarz, 1987, for a more detailed discussion), the emotional experience is less intense if individuals' processing style is characterized by a preponderance of analytic thoughts rather than vivid images (e.g., Leyens, Cisneros, & Hossey, 1976; Spiesman, Lazarus, Mordkoff, & Davidson, 1964; Strack et al., 1985). Accordingly, attempts to analyze one's feelings are likely to reduce their intensity, as James (1890/1950, p. 451) noted.

The Apathy Inherent in Severe Depression

Regarding cognitive performance under severe clinical depression, clinical experience as well as the literature on depressive realism (see Ruehlman et al., 1985) suggest that severe depression, in contrast to being in a "depressed mood," is ***unlikely*** to improve analytic performance. It is interesting to note, however, that phenomenological studies of the subjective experience of severe depression (see Tölle, 1982, p. 232 ff., for a review) indicate that the experience of "sadness" or of "being in a bad mood" is *not* part of the melancholic state that characterizes severe depression. As Lehmann (1985) noted, "persons who are deeply depressed cannot feel the sadness they used to be capable of feeling. . . . Although feeling an intolerable oppression, these persons tend to be incapable of normal grief or of feeling normal concern" (pp. 792–793). It is thus conceivable that the subjective experiences accompanying severe depression are different in nature from the "normal" negative affective states considered in the present chapter. Moreover, these experiences are likely to endure over very long periods of time with limited variation, and may therefore lose whatever informational value they may have had at their onset.

Finally, it is important to note that working on a task is a necessary prerequisite for any differences in performance to be manifested. If the individual does not engage in the task to begin with, as is likely to be the case under severe depression, any increased accessibility of adequate procedural knowledge, for example, will be of little value.

Currently Active Goals

However, aside from the specific issues raised above, it is obviously possible to construct plausible exceptions for most of the hypotheses offered. For example, an author who is trying to meet the deadline for a chapter revision may attempt to remain in an analytic processing mode, despite being in a good mood as a result of other events. It seems, however, that these counterexamples usually pertain to the potential impact of current goals that an individual may pursue. It is therefore important to acknowledge that other currently active goals or task requirements may override the impact of affective states. Of course, this possibility is highly compatible with the functionality assumption that underlies the present line of argument. Note, however, that one should expect an asymmetric impact of positive and negative states in this regard. If positive feelings inform the individual that no action is needed, overriding this message because of other action

requirements poses no problem. By contrast, if negative feelings inform the individual about current problems, ignoring this message would not be adaptive. Accordingly, one may expect that the impact of negative feelings on processing style will be more immune to the influence of other variables than the impact of positive feelings. Again, this implication remains to be tested.

Moreover, the short-term and long-term effects of positive and negative experiences need to be distinguished to avoid misleading conclusions. The arguments presented earlier suggest, for example, that a success that is accompanied by feeling good may decrease analytic processing while the person is in an elated mood, but this argument certainly does not imply that the person may not engage in analytic efforts to obtain additional successes. It seems likely, however, that these efforts will be invested after the most intense positive feelings dissipate, or that these feelings will be experienced as less intense once the individual engages in new efforts.

Specific Emotions and the Cognitive Asymmetry of Approach and Avoidance Situations

So far, the discussion has focused on the consequences of global "positive" or "negative" affective states. However, the present approach easily lends itself to the analysis of specific emotions; it suggests that a particular emotion's cognitive effects can be predicted on the basis of an analysis of the meaning structure that underlies the emotion (see Ortony et al., 1988; Stein & Levine, 1987), and the action requirements that are associated with it.

A particularly interesting possibility is suggested by Higgins's (1987) distinction between "agitated" and "dejected" negative emotions. According to his analysis, agitated negative states, such as fear, threat, anger, or edginess, result from a threat of negative outcomes. In contrast, dejected negative states, such as sadness or disappointment, result from a lack of positive outcomes. Accordingly, agitated states should be associated with a motivation to *avoid* negative outcomes, whereas dejected states should be associated with a motivation to *approach* positive outcomes.

Approach and avoidance situations, however, are characterized by a basic asymmetry in the amount of analytic reasoning that they require. When we want to obtain a certain positive outcome, it is usually sufficient to determine *one* of the many possible ways of obtaining the desired outcome. Knowing one way that is accessible to us guarantees that we will obtain the positive outcome, regardless of whether other ways do or do not exist. When we want to avoid a certain outcome, on the other hand, we need to determine *all* possible causal links that may produce this outcome in order to avoid it. Being aware of just one process that may bring about the negative outcome, and being able to block it, do not eliminate the threat as long as other processes may produce the same negative event. Thus, we need to determine *all* processes that may generate the negative outcome, and for all of them we need to find appropriate ways to block or to escape their impact. Accordingly, approach and avoidance situations show a natural asymmetry in the

degree of analytic reasoning that they require (see Lewicka, 1986, for a related argument).

If so, it is conceivable that agitated negative affective states, which are usually associated with an avoidance motivation, are more likely to trigger an elaborate analytic processing style than are dejected negative affective states, which are usually associated with approach motivations; this may particularly be the case when avoidance in the form of leaving the field is impossible and an immediate response is not required. Moreover, one may assume that agitated negative states focus individuals' attention on information that is relevant to an avoidance motivation—namely, information that pertains to blocking or escaping a negative outcome—whereas dejected negative states focus their attention on information that is relevant to an approach motivation. Unfortunately, the experience of agitated and dejected states has been shown to be an interaction effect of situational and individual variables (cf. Higgins, 1987), and studies tailored to provide sensitive tests of the present hypotheses within this framework are not yet available.

Conclusions

In summary, the considerations offered in the second part of this chapter, and the limited evidence that bears on them, suggest that individuals' affective state may influence their style of information processing (for related claims, see Fiedler, 1988; Isen, 1987; Kuhl, 1983). These influences may be conceptualized by considering the informative functions of affective states and their implications for individuals' inferences about the nature of their psychological situation (Frijda, 1988; Higgins, 1987). If negative emotions inform the individual about a threat of negative or a lack of positive outcomes, they may activate the procedural knowledge that is relevant to handling these problematic situations. This procedural knowledge may therefore be more accessible in memory, increasing the likelihood that the respective procedures will be applied to other tasks to which they are applicable while the individual is in a negative affective state. Moreover, individuals in a negative state may appreciate opportunities to distract themselves from this state if the event that elicited it cannot be changed, as is typical of the experimental manipulations used in affect and cognition research, and they may be motivated to avoid risky novel solutions in a situation that is already characterized as problematic. As a result, one finds that individuals are more likely to use effortful, detail-oriented, analytical processing strategies spontaneously when they are put in a bad rather than in a good mood, but that their reasoning is characterized by a lower degree of originality, creativity, and playfulness.

Positive affective states, on the other hand, inform the individual that his or her current environment is a safe place. Accordingly, individuals in a good mood may be more likely to take risks and to use simple heuristics in information processing. Moreover, they may have better access to a variety of different procedural knowledge, given that no specific procedure is activated to cope with the current situation. In combination, this may facilitate that higher creativity that has been observed under elated-mood conditions, but may inhibit the spontaneous

use of effortful, analytic processing strategies, unless those are required by other active goals.

Unfortunately, the currently available evidence that bears on these speculations is limited. Moreover, alternative accounts cannot be ruled out on the basis of the available data. But it is encouraging to note that the assumption that affective states may serve informative functions does provide a plausible and comprehensive framework for the conceptualization of affective influences on information processing.

Most importantly, the present review suggests that the informative-functions approach combines a number of advantages that may recommend it as a heuristically fruitful framework for future research. First, the basic assumption that affective states may serve informative functions is clearly in line with a long tradition of theorizing about the nature of emotions (see Frijda, 1986, 1987, for reviews). Second, the present approach invites an explicit consideration of what specific information may be provided by different moods and emotions. One may expect that current explorations of the conditions giving rise to different emotions (e.g., Higgins, 1987; Oatley & Johnson-Laird, 1987; Ortony et al., 1988; Scherer, 1984; Weiner, 1985a), as well as research on people's knowledge about their emotions (e.g., Stein & Levine, 1987), will result in a more precise understanding of emotions' respective informational value. Moreover, these links may foster a more fruitful exchange between basic emotion research and social-cognitive research than has been true for approaches that make less contact with mainstream theorizing in the emotions domain. Finally, the informative-functions approach potentially offers a parsimonious and unifying explanation not only for the impact of moods and emotions on various aspects of processing style, but also for their impact on evaluative judgments—two areas of research that have so far been treated as separate.

Accordingly, research into the interplay of affect and cognition may profit from a serious consideration of the informational implications of our feelings. Although the basic assumption is all but new, its potential has not yet been fully exploited.

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