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Affect, Accessibility of Material in Memory, and Behavior:
A Cognitive Loop?

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Two studies investigated the effect of good mood on cognitive processes. In the first study, conducted in a shopping mall, a positive feeling state was induced by giving subjects a free gift, and good mood, thus induced, was found to improve subjects' evaluations of the performance and service records of products they owned. In the second study, in which affect was induced by having subjects win or lose a computer game in a laboratory setting, subjects who had won the game were found to be better able to recall positive material in memory. The results of the two studies are discussed in terms of the effect that feelings have on accessibility of cognitions. In addition, the nature of affect and the relationship between good mood and behavior (such as helping) are discussed in terms of this proposed cognitive process.

Recent work on the relationship between good mood and helping has begun to focus on the nature of that relationship—on why and

by what process being in a good mood should lead one to do kind things for others (Isen, Clark, & Schwartz, 1976; Levin & Isen, 1975; Isen, Note 1). In this context, it has been proposed that the relationship between feeling good and helping is cognitively mediated, mediated by mood-dependent changes in the information accessible to a person who is feeling good (Isen, Note 1).

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In accord with the cognitive social-learning approach, which stresses the role of expectation in governing behavior (Mischel,

1973), several authors have suggested that helping is the result of a decision-making process in which the person considers the cost-reward matrix associated with helping or not helping in the particular case at hand (Latané & Darley, 1970; Piliavin, Rodin, & Piliavin, 1969). It has subsequently been proposed that mood plays a role in this process by affecting the person's perception or weighting of those costs and rewards (Levin & Isen, 1975; Isen, Note 1). There are several ways in which this might occur. One, for example, is as follows: When a person is confronted with a situation in which he or she can help, presumably, cognitions concerning both the advantages and disadvantages of helping are available in memory from past experience in similar situations. These advantages and disadvantages, however, may not all be equally accessible or retrievable to the person at the moment, and thus, they may not all come to mind. What we are suggesting is that mood plays a role in what comes to mind.

The Accessibility and "Cognitive Loop" Hypotheses

We propose that a person in a good mood is more likely to retrieve positive than negative material from memory and that this improved access to positive material affects the decision-making process with regard to behavior (especially behavior such as helping). Thus, we are suggesting that thoughts associated with or responsible for the good mood or mood-inducing event may serve to cue other positive material in memory in much the same way that a category name has been found to cue material of that category that was previously learned (Tulving & Pearlstone, 1966). In one study, Tulving & Pearlstone found that subjects could recall more words (for example, "engineer," "lawyer") from a list of learned words when presented with the name of the category (for example, "professions") appropriate to those words, than when not given this cue. The authors interpreted this finding as evidence for the difference between availability of material in memory storage and accessibility of that same material under particular conditions of recall. Their study illustrates the way in which a

single cue during recall can affect the amount and content of the material recalled, and they point out that more powerful cues might produce an even greater facilitation of recall (Tulving & Pearlstone, 1966, p. 389). Good mood, we suggest, at least in certain contexts, serves as such a cue, facilitating the recall of positive material, thereby affecting one's estimate or expectation with regard to the behavior under consideration, and thus influencing the decision-making process with regard to a behavior such as helping.

One might say, then, that a person who is in a good mood may tend to be in a cognitive "loop" that is characterized by accessibility of positive thoughts, memories, and associations. We speak of a loop because the positive material that is accessed may, in turn, tend to keep the person thinking about positive things. Good mood, pleasant material from memory, and positive activities such as helping may tend to make each other more likely. The mood may cue positive thoughts; these may provide access to still other positive material in memory and may contribute to the maintenance of the mood state; and the consideration of a positively toned activity may itself contribute to the process.¹ If the behavior is performed and reacted to as expected, of course, this would provide still another source of continued good feeling, another component to the positive loop.

Evidence of the Positive Cognitive Loop

If positive material is thus more salient when one is in a good mood and influences the person's decision-making process, we should find evidence of such a cognitive change in other opinions, expectations and actions that persons express when they are in a good mood. Not only might they be more helpful than at another time, but they should also, as the saying goes, see the brighter side of things; they should be generally more optimistic, and they should act accordingly.

¹ The type of behavior under consideration by the elated person, as well as the extent of the person's experience with such behavior, may serve as moderators of the relationship between mood and behavior. Negative activities, for example, may not be made more likely by good mood.

There is evidence that, in fact, persons in a good mood do tend to see the brighter side of things and respond more positively than others to a variety of stimuli. Work by several authors indicates that persons who succeed tend to expect future success and to reward themselves more generously than do others (e.g., Feather, 1966; Mischel, Coates, & Raskoff, 1968). Children who are induced to feel happy also have been found to report an expectation of other kinds of positive events, such as free gifts (Masters & Furman, 1976). Postman and Brown (1952) found lower tachistoscopic thresholds for success-related words following success (and for failure-related words following failure), and a recent study has reported that relative to others, successful subjects tend to look at positive, rather than negative, self-relevant information (Mischel, Ebbesen, & Zeiss, 1973). Success and other experiences that might make one feel happy have been found to have interpersonal effects as well. As mentioned earlier, those who have been exposed to any of a wide variety of good-mood-inducing experiences are more likely to help others (Aderman, 1972; Aderman & Berkowitz, 1970; Isen, 1970; Isen et al., 1976; Isen & Levin, 1972; Moore, Underwood, & Rosenhan, 1973), and, as might be expected from this good mood-helping relationship, such subjects also report greater liking for a stranger (Clore, 1975; Clore & Byrne, 1974; Gouaux, 1971; Veitch & Griffitt, 1976). Finally, a paper currently in preparation provides some additional details about the effect of mood on ratings. It reports that ratings of positive, negative, and ambiguous slides can be affected by procedures designed to induce mood, but that at the same time, subjects retain the ability to differentiate between the slide types (Isen & Shalke, Note 2). Subjects noticed the details of the slides and responded appropriately, even though their mood states tended to affect their general level of rating.

Thus, there is evidence that a person who has reason to be in a good mood, although he or she does not distort material grossly, does tend to estimate situations more positively than at another time, and to behave accordingly. Generally, theoretical models proposed

to account for this relationship between positive affect and evaluations have stressed the reinforcement or reward value of the affect-inducing event and the extension of this reinforcement value to surrounding stimuli (e.g., Byrne & Clore, 1970; Lott & Lott, 1974; Masters & Furman, 1976). These same data, however, are also compatible with the accessibility and cognitive loop hypotheses that we are suggesting, but several other aspects of our formulation need to be tested. The studies presented in this paper attempt to examine the most basic of the many questions that remain about the cognitive processes involved in the effects of mood state on judgment and behavior.

The Present Studies

Specifically, we begin by asking whether judgments made about familiar items, from memory, will be affected by feeling state, as has been found for those made about unfamiliar items with which the person is confronted. This is crucial for the accessibility interpretation of such improved judgments. Second, if good mood is serving as a cue by which positive material in memory is accessed, as proposed, then we should find that memory for positive material is enhanced when the person "feels good," and in Study 2 we ask this question directly. We leave to future papers specification of the types of behavior, including the types of helping, that might be more likely when one is in a good mood.

Study 1

In the first study, conducted at a shopping mall, subjects were unaware that they were participating in an experiment but believed that they were part of a "consumer opinion survey." The study examined their judgments of the performance and service records of their automobiles and television sets, as a function of a positive mood-inducing event.

Method

Subjects

Men and women who were walking alone in a suburban mall between 6:30 and 9:30 p.m. week-

Table 1
Mean Product Ratings by Subjects in Each Condition and Proportion of Persons in Each Condition Who Agreed to Participate When Approached (Study 1)

Measure	Received gift	Did not receive gift
Mean	6.01	5.13
Proportion Percentage	25/31 81	29/43 67

nights, or between 10:00 a.m. and 3:00 p.m. weekdays, served as subjects in this experiment. All passersby who approached the confederate when the experimenter was free became subjects in this study.

Procedure

Subjects were randomly assigned to one of two conditions by a female confederate who then handed out notepads (to females) or nail clippers (to males) to those subjects assigned to the experimental group.² The confederate posed as a representative of the company that made the notepad or nail clipper and explained that the sample was free and was meant to introduce the subject to the company's product. Both objects, priced at 29 cents in a nearby store, were small enough to fit easily into a pocket or handbag. Subjects in the control condition were not approached by the confederate.

When a subject (experimental or control) had passed the confederate, the latter turned around and thus signaled to a coordinator, standing, about 50 yards (46 m) away, with a female experimenter who was waiting to approach subjects with a "consumer survey" questionnaire. The coordinator stood facing the confederate, while the experimenter stood with her back to the action, so that she would not know a subject's condition when later interacting with him or her. At the confederate's signal, the coordinator described the subject to the experimenter, whereupon the experimenter, not knowing whether the person had received a free gift or not, approached the designated subject. She introduced herself, explained that she was taking a consumer opinion survey, and asked whether the subject would be willing to answer a few questions. If a subject agreed to participate, the experimenter presented the questionnaire orally, asking subjects the make, model, year, and age of their automobiles (if any) and then their television sets (if any). The final two questions with regard to each possession were requests to rate, on a scale of 1 (low) to 7 (high), the present performance of the item and its overall service record. The dependent measure, then, for each subject was his/her average score on these four questions.

Two potential subjects were eliminated from the study because they refused the free sample; one was

eliminated because she was carrying her notepad in plain view of the experimenter when the experimenter approached her with the survey; and two (one in each condition) were not approached by the experimenter because the coordinator saw that they had interacted with someone after leaving/passing the confederate.

Results

Table 1 presents the mean product performance and service record ratings by condition, along with the proportions of subjects agreeing to participate in the survey. A two-way analysis of variance of the rating data revealed a significant effect of condition, $F(1, 50) = 8.22$, $p = .006$, but no effect due to sex, $F(1, 50) < 1$, $p > .1$, nor to the interaction between sex and condition, $F(1, 50) = 2.51$, $p > .1$. Subjects who had received a free gift gave higher ratings of the performance and service records of products they owned than did subjects who had not received a free gift.

A chi-square analysis of the proportion of subjects agreeing to participate indicated that despite a tendency for experimental subjects to be more likely to participate, these percentages were not significantly different in the two conditions, $\chi^2(1) = 1.59$, $p > .1$. Thus, there is no indication that the rating data were influenced by self-selected participation on the part of the subjects.

Discussion

The experimental conditions did not differ significantly in number of subjects agreeing to participate. This may seem surprising if one views the inquiry about the consumer survey as a request for help and therefore the subject's agreement to participate as a helping response. On the other hand, we did not expect the experimental manipulation to affect subjects' willingness to take part in the survey, because of the circumstances of the request and because of the nature of the task:

² A pilot study in which notepads were distributed to both men and women in the experimental condition had revealed that although notepads appeared to be effective in inducing good mood among women, they did not seem to be effective among male subjects.

Subjects were directly approached and, in a face-to-face encounter, asked to participate in a task that seemed harmless, interesting, and even beneficial to the subjects themselves, who were consumers. Under these circumstances of relatively high motivation to participate and low reason to refuse participation, we expected any effect of the free gift to be obscured by a high overall rate of participation. (And, in fact, the rate of 67% in the control group is higher than that usually observed when control subjects are given the opportunity to help an experimenter in similar field settings.)

The results of the study indicate that in a field setting, as has been found in laboratory settings, subjects who have reason to be in good moods make more positive judgments than do members of a control group. Moreover, this effect holds despite the fact that the items are rated from memory and are very familiar to the subjects. Thus, we have evidence that as predicted by our hypothesis, persons who are likely to be feeling good have a more positive outlook—they do seem to “see the brighter side of things,” and evaluations made from memory reflect this positive bias. Moreover, this optimism seems to affect subjects’ decision-making processes, at least as these are reflected in their evaluations of their consumer goods for purposes of consumer action.

Thus, in conjunction with the diverse literature indicating a positive inclination following procedures designed to induce good feeling, we have demonstrated that persons who have undergone such procedures are likely to interpret situations more positively than they would at other times and to act accordingly. Our formulation goes on to suggest that this process, as well as other mood-related behavior such as the observed relationship between good mood and helping, is a by-product of an increased accessibility for positive material during the good-mood state. Study 2 examines this question directly, measuring the accessibility of various types of material as a function of the subject’s exposure to the mood-related events of victory and defeat.

Study 2

Method

Subjects

Subjects were 47 male and female students in an introductory psychology class.

Stimuli

Eighteen words of equal frequency of usage were selected from a list of 555 personality trait words that have been rated for likeableness by Anderson (1968); 6 words were selected from among the 100 most-liked words; 6 from among the 100 least-liked words; and 6 from among words ranked between 227 and 327. In addition, 18 neutral, nontrait words were selected from a list of moderate frequency words compiled by Battig and Montague (1969). These 36 words were then recorded on a cassette tape to be played to subjects. The order of presentation of the words was as follows: 6 of the nontrait words taken from Battig and Montague (1969) were placed at the beginning of the list, and 6 at the end of the list. The order of the remaining 24 words was counterbalanced, between positions 7 and 30, in the 36-word list.

Procedure

Subjects were seated at a teletype and were read the following instructions by a male experimenter:

There are several components to this learning study. The first thing I would like you to do is to play a computer game called “Star Trek.” You, in the Starship “Enterprise,” will be in a battle with a Klingon Battle Cruiser. You have six moves that you can make: (1) fire forward phasers, (2) fire rear phasers, (3) fire forward photon torpedoes, (4) fire rear photon torpedoes, (5) decrease range, (6) increase range.

You move by pressing the appropriate number of the teletype and then pushing “return.” The computer will then tell you the results of your move and what the Klingon did. Then it will give you the next situation.

The experimenter then started the game and advised the subject on the first move:

The way you tell whether to use your forward or rear weapons is by the vector heading given to you by the computer. If it is 0–90 degrees, then you want to use your forward weapons. If it is 90.1–180 degrees, then you want to use the rear. Phasers can only be used at a range of 0–300,000 km; photon torpedoes can only be used between 200,000–600,000 km. The computer gives you the vector heading and range prior to each move. The only time it is to your advantage to increase or

Table 2
Mean Number of Words of Each Type Recalled in Each Condition (Study 2)

Word type	Success at Time 2			Failure at Time 2		
	Success at Time 1	Failure at Time 1	Combined	Success at Time 1	Failure at Time 1	Combined
Pleasant	1.57	1.36	1.46	.87	.50	.68
Neutral	.61	.36	.50	.44	.29	.37
Unpleasant	1.07	.79	.93	.78	1.00	.89
Nontrait	1.00	.93	.96	.89	1.19	1.05

decrease the range is (1) if your phasers are destroyed and you have to increase the range to use your photon torpedoes, or (2) if the Klingon is beyond 600,000 km, you must move closer to him to order attack.

All of the information concerning appropriate moves in various situations was summarized on a sheet above the teletype, so that subjects would not need further aid from the experimenter.

The outcome of each move was determined by the experimenter, using a table of random numbers to determine success or failure. At the end of the game, a message of "Congratulations: Klingon vessel destroyed" was typed back to the subject if five or more hits were made on the Klingon vessel. If the Enterprise was hit five times, however, the message "Enterprise destroyed" was returned.

After the subject had completed his/her game and had received feedback as to victory or defeat, the experimenter asked the subject to listen to the 36-word tape (described above) and to try to remember as many words as possible. Following this, subjects again played "Star Trek" and either won or lost the game. They were then asked to recall the words which they had learned after the first game and were given 5 minutes to write down as many words as they could remember.

Thus, the study was composed of four groups of randomly assigned subjects: those who succeeded twice, those who failed twice, those who succeeded first but later failed, and those who failed first but succeeded on their second game. Learning of the word list occurred after the first game; recall of the list was solicited after the second game. Thus, assuming that outcome in the game was related to subjects' moods, we could see the relative importance (for memory for various types of words) of mood at time of encoding, of mood at time of retrieval, and of the congruency of encoding and retrieval moods (the "state-dependent learning"³ paradigm).

Results and Discussion

Table 2 presents the mean number of words of each type recalled in each condition. A 3-way mixed analysis of variance (Victory or

Defeat at Time 1 \times Victory or Defeat at Time 2 \times Word Type) revealed that while recall did not appear to be affected by outcome at time of learning, $F(1, 44) = .49$, $p > .51$, it did seem to be affected by victory or defeat at time of recall, $F(1, 44) = 3.78$, $p < .055$. There was no significant interaction between outcome at Time 1 and outcome at Time 2. (Such interaction would have been in keeping with a state-dependent learning hypothesis.) In addition, there was a significant effect of word type, $F(3, 176) = 159.85$, $p < .0001$, and a significant interaction between word type and mood at time of recall, $F(3, 176) = 3.58$, $p < .008$. Subjects who had experienced a positive outcome at the time of recall recalled significantly more positive words.

These findings can be interpreted to indicate that recall seems to be affected by good-mood state at the time of recall. Specifically, those subjects who had been victorious recalled more positive words, but not more of the other words, than subjects who had been defeated. These findings fit our accessibility hypothesis in two ways. First, since there was no recall difference due to the outcome of the first game, when words were learned, but a significant difference attributable to the outcome of the second game, we can say that

³ The "state-dependent-learning" effect refers to the tendency for material learned when a subject is in a specific state (say, mania or alcoholic intoxication) to be better recalled when he or she is again in that state than at another time (Henry, Weingartner, & Murphy, 1973; Weingartner & Faillace, 1971). This effect would be compatible with, though not necessarily implied by, Tulving and Thomson's (1973) encoding specificity hypothesis as well.

the recall difference seems to be a function of the retrieval process, rather than of factors associated with initial attention or learning. Differences in recall did not appear related to victory or defeat at the time that the list was learned. Second, since victorious subjects differed from defeated subjects only in memory for positive words, it is reasonable to suggest that the difference is attributable to increased accessibility for positive material when in a good mood.

It should be noted that our data do not support a similar interpretation of the effect of negative mood on negative material in memory. Negative mood is probably a more complex event than positive mood, however, and an expectation of symmetry between the two may be unwarranted. We will have more to say on this below. It is worth pointing out here, however, that Study 2 did not contain a control group that neither succeeded nor failed at time of list learning and list recall.

We did not observe a state-dependent learning effect: Victory or defeat at time of list learning did not seem to interact with outcome of the game at time of recall to produce better memory when conditions were congruent. Apparently, the material to be learned was encoded according to its mood-related semantic content but was not affected by the mood state likely to have been experienced by a subject at time of encoding. Thus, the good-mood state at time of recall was able to cue the positive material regardless of the mood condition that had prevailed during its encoding. This may have been the result of our instructions to the subjects. Subjects in this study had been instructed to remember as many of the words as possible, and it has been noted that subjects in such learning experiments most often utilize the semantic meaning of the words in developing strategies of memorization (Tulving & Thomson, 1973). Thus, in this instance, the subject's mood state at the time of encoding may not have contributed as much as did the semantic meaning of the words to the overall way in which the stimulus words were experienced and therefore encoded. This would explain why good-mood-related words could then be cued by a good-mood state at the time of retrieval, independent of the subject's mood at

the time of encoding. It also suggests that before drawing any conclusions with regard to mood-state-dependent learning on the basis of Study 2, an experiment tailored specifically to that issue should be undertaken.

General Discussion

The results of these studies indicate that people who have been exposed to procedures designed to induce a good mood are more generally positive than control subjects, even in a realistic situation where their judgments of specific, familiar items are called for. In addition, there is evidence that exposure to such procedures results in improved recall of positive material, while not affecting recall of other material. We interpret these findings as evidence for the accessibility hypothesis, proposing that mood state serves as a cue by which positive material in memory is accessed and that this material then plays a role in influencing the person's decision-making process and, ultimately, behavior.

The Positive Loop and the Processing of Negative Stimuli

Let us consider, for a moment, what happens when a person in a good mood is confronted with a negative stimulus. We already know that he or she will be primed for positive material and reactions, but that this process is limited (Isen & Shalke, Note 2). Thus, we would expect that neither extremely negative stimuli nor potentially harmful behavior would be distorted into positives. This, then, helps us to understand why people's moods do change. We would expect that focusing on clearly negative stimuli would result, not in distortion of the negative situation, but in mood change. The negative stimulus event, we would hypothesize, would access negative cognitions incompatible with the positive ones associated with good mood, and thus would result in the termination of the mood.

Thinking about incompatible material, which involves shifting focus, is probably cognitively more difficult than processing information that is compatible with the existing cognitions or mood state (Naus, 1974), and for this reason, we would expect that only the

most urgent incompatible stimuli would be attended to. Nonessential incompatible stimuli, we suggest, might be set aside for the moment. Thus, we would expect that if a person in a good mood were given the opportunity to think about material that was clearly incompatible with his or her good-mood state, the person might be less likely to do so than would one in whom good mood (the positive cognitive loop) had not been induced. The result of a recent study by Mischel et al. (1973), where subjects who had succeeded chose to look at (think about) positive material about themselves, lends itself to this interpretation, as well as to the reasonable mood-maintenance interpretation suggested by those authors and others (Masters & Furman, 1976; Isen, Note 1).

A more recent study by Mischel, Ebbesen, and Zeiss (1976) is also compatible with both the mood-maintenance interpretation and the information-processing hypothesis outlined above. That study found that persons who had been exposed to positive-expectation-inducing feedback were less able to recognize information about their negative qualities than about their positive qualities in a test of memory. Although the study found no effect on positive material, this should not be interpreted as evidence contradicting our accessibility hypothesis, since Mischel et al. used a recognition test of memory, rather than a free-recall test. The accessibility hypothesis suggests that good mood serves as a retrieval in an otherwise free-recall situation; for this reason, it cannot be tested in the context of a recognition test of memory where the recognition test itself provides subjects with the cues necessary to retrieve material stored in memory.

In explaining their finding of apparent reduced memory for negative material among good-mood subjects, Mischel et al. (1976) suggested that these subjects may have spent less time and effort learning and rehearsing the negative self-relevant information. This interpretation seems especially likely, since subjects in that study were not asked to memorize the material and were presented with the negative (incompatible) material while they might still have been rehearsing or enjoying their positive-expectation-induc-

ing communication. (It has been suggested that the first few minutes following induction of a good mood may be used by subjects to rehearse or think about the mood-inducing event (Isen et al., 1976).) This observation would imply that a slight change in the situation, such as a change in timing, or the provision of an incentive for studying and learning the negative self-relevant material, might result in success subjects attending to the negative material and being able to remember it. Thus, it is interesting that in our Study 2, where subjects were asked to try to remember as many of the words as possible, successful subjects were not found to differ from others in memory for negative items. Such an effect of incentive, for example, would certainly lend support to the contention of Mischel et al. (1976) that failure to remember the negative material was not due to any irrepressible unconscious defense mechanism but rather to a subject's decision, under a particular set of circumstances, to attend to or rehearse certain material in preference to other material.

The Positive Loop and Behavior

In summary, we are suggesting that within limits, persons in a good mood will tend to think about positive events or cognitions and that their thoughts, feelings, or estimates about these cognitions will tend to be more positive than they might be at another time. Behavior, too, is proposed as a component of this cognitive loop. Certain behavior will become more likely when one is feeling good, and it, in turn, will affect (through both its associations and its consequences) the person's mood state and cognitive processes.

As has been found for evaluation of stimuli, however, potentially negative or harmful behavior should not be grossly misperceived: Those behaviors that are compatible (i.e., have positive cognitions available) with a good-mood state should be more likely when one is in a good mood than they might be at another time, and those behaviors that endanger the mood state or that require thinking about material incompatible with the positive cognitions of the good-mood state should be *less* likely than at another time.

Helping, because it usually has positive elements associated with it, should become more likely during good mood; murder, except in unusual cases, should not. Even for helping, moreover, this should be true only if the helping can be associated with positive (mood-congruent) events. Not *all* kinds of helping should be more likely when one is in a good mood (if a helpful act were clearly portrayed as involving the performance of an unpleasant task or as incompatible with the good mood that had been induced, we would expect that it would be avoided by good-mood subjects). There is some support for this suggestion in the results of a study by Isen and Levin (1972), in which, relative to a control group, good-mood subjects were found to be more willing to help, but *less* willing to annoy, another college student. Thus, in summary, we have evidence that within limits, being in a good mood affects the material that people remember and their evaluation of their present experiences. We know that it affects their willingness to help others, and although the link remains to be established, this behavioral effect may be mediated by the cognitive changes observed here.

Feeling States as Cognitive Categories

The process described and proposed in this paper to understand the effects of mood on judgment and behavior is based on principles of information processing, and it also suggests something more general about the way in which information is processed. Our results indicate that mood state may serve as an effective retrieval cue. Given that the effectiveness of a retrieval cue may depend on the way in which the material was originally encoded, as suggested by the encoding specificity hypothesis (Tulving & Thomson, 1973), the fact that mood can serve as an effective retrieval cue implies that the affect generated by, denoted by, or otherwise associated with a cognitive element may be one of the factors that influence the way in which it is encoded and stored in memory. This, of course, would not preclude cognitions being stored and accessible according to other appropriate characteristics as well (their being cross-filed, so to speak). But it does accord with the

contextualist position, expressed by Jenkins (1974), that people respond to or remember the quality of what they have experienced, rather than the individual stimuli. This suggests that memory for events and stimuli may be affected by stimulus characteristics and aspects of the learning and remembering situations that are not usually considered in studies of cognitive processes.

Negative Moods

It should be noted that although our cognitive formulation theoretically might apply to both positive and negative mood states, we have focused only on positive mood. Even where we have discussed the presentation of negative stimuli to persons who were feeling good or the hypothetical consideration of negatively toned behavior by persons in good moods, we have considered these only up to the point at which we think they would result in mood change. We have not spoken about the cognitive activities of persons in bad moods, and some consideration of this topic would be appropriate.

We would expect that persons who have been defeated, who have failed, or who are sad might indeed have more ready access to negative material in memory, just as those who are happy are proposed to have better access to positive. And there is some evidence for this suggestion. Postman and Brown (1952), for example, found *not only* lower tachistoscopic thresholds for success-related words among those who had succeeded, but also lower tachistoscopic thresholds for failure-related material among those who had failed. Likewise, in a slide-rating task described earlier (Isen & Shalke, Note 2), failure was observed to reduce subjects' estimates of the pleasantness of slides, just as good fortune was seen to raise them.

On the other hand, the data of Study 2 do not support such a hypothesis with regard to defeat and negative material in memory, and many other studies seem to suggest that success and failure, good and bad mood, are not symmetrical in their effects. Mischel et al. (1976) make the point that it has repeatedly been found that success increases a person's inclination toward the positive, relative to a

control group, while failure seems to have no effect. Mischel et al. (1968), for example, found that successful subjects were more generous with themselves than were control subjects but that failures were not less self-generous; Masters and Furman (1976) found that positive affect induced expectation of future positive events but that negative affect did not generate the opposite; Isen (1970) found that successful subjects were more helpful than controls but that failure subjects did not differ from the control group; and Siegman (in press) has noted similar findings in several studies in the area of interpersonal attraction. Thus, although negative affective states may generate cognitive processes parallel to those generated by positive affect, these states or cognitions do not appear to have the corresponding effects on behavior.

One interpretation of this incongruity is that while a negatively oriented cognitive process parallel to the one proposed for positive states may be induced by the negative state, the "negative cognitive loop" that it would create if left unchecked would serve to maintain the negative mood state. Maintenance of a negative mood state is probably not a goal of most people. Thus, although the unhappy person may find negative thoughts accessible and positive cognitions more alien at the moment, such a person may also be likely to try to counter this process and change his or her situation. Just as people are proposed to try to maintain their good-mood states, it is reasonable to suppose that they may try to break a negative mood loop and improve their spirits. In fact, Cialdini, Darby, and Vincent (1973) suggest just this to explain their finding that persons in bad moods sometimes help more than control subjects. If helping is part of a positive loop, generating positive associations and expectations (as we propose), then doing something helpful might indeed be a good way to raise one's own spirits. The cognitive or behavioral activities that a person chooses for improving mood and his or her degree of success at mood improvement probably depend on several factors having to do with the particulars of the situation and the person's own history of dealing with such problems. But in any case, we are suggesting that two factors may

operate to account for the behavior of persons who are feeling bad: Such persons may, in fact, have more easy access to negative material in memory, just as good-mood subjects have greater access to positive, but they may actively try to counter this tendency, while the latter have no reason to do so.

An alternative interpretation of the apparent asymmetry between positive and negative moods is based on the suggestion that the two states in fact may not be symmetrical—that the cognitive material supporting the two types of states may differ in some important way. That is, there might be a larger or more delineated or better interconnected network of positive than negative associations, such that access to the positive material may be more likely to have behavioral implications than access to the negative network. It is also interesting to note that persons may differ in the extent to which such a distinction is true for them.

These cognitive processes may not only influence social interaction, as described in this paper, but they may apply as well to clinical phenomena. Several authors and practitioners have adopted a cognitive approach to clinical problems such as depression, pointing out, as we would agree, that moods are not wholly affective but that they are associated with cognitions and behaviors (Beck, 1967; Becker, 1977; Kelly, 1955; Seligman, 1975). These authors stress the role that beliefs, attitudes, and other cognitions can play in the development of depression, and some suggest direct intervention in the cognitive process of evaluation and interpretation, which, they propose, results in the depressed mood (Beck, 1967; 1976). Our data may shed additional light on the cognitive implications of mood states, once generated. The oft-noted clinical observation that depressed patients do not seem to see positive aspects of even normally positive situations may reflect, in fact, the positive material's relative inaccessibility under those conditions of recall (namely, depression). This interpretation suggests that one important aspect of therapist intervention in the cognitive process may be to cue the positive material that the depressed person has difficulty in recalling. In addition, it points to the circular nature of the "mood

loop" and implies that direct intervention in the mood state itself might facilitate any other attempted intervention, such as that via the supporting cognitions. One final point to be made is that, as suggested above, individuals may differ with regard to these cognitive processes. They may vary in the extent to which they use affect to categorize material, and there may be individual differences in positive or negative networks. Thus, exploration of a depressed individual's cognitive network or cognitive habits might be useful to the therapist in these endeavors. Likewise, a consideration of the situations in which certain kinds of affect-related processes are generated might be helpful.

Affect and Cognition

The results of our studies indicate that what we commonly call *mood* and most often think of as an emotional state has a cognitive dimension and may even be more appropriately conceptualized as a cognitive state. In addition to having previously observed a relationship between good mood and behavior (specifically, helping), we have now observed a relationship between good mood and positive interpretation of stimuli, between good mood and satisfaction with possessions, and between good mood and memory for positive material. One may conceptualize all of this, as suggested in the introduction, as a relationship between good mood and behavior that is mediated by cognitive processes or changes. On the other hand, one should consider the possibility that mood itself consists in, or is a product of, those very cognitive changes. That is, a positive event may cue other positive material in memory, and this may establish both the cognitive loop that we have proposed as the mediator *and* the phenomenologically experienced emotional state of feeling good. Work by Schachter and Singer (1962) introduced the general idea, more than a decade ago, that the mood experienced may be determined by the label applied to it or the label most appropriate in the situation; and many studies have followed this lead. Still, more work is needed to provide a thorough understanding of the relationship between mood and cognition, and we hope

that the growing interaction between the sub-fields of psychology involved in these issues (cognitive, social, and clinical psychology in particular) will continue. On the basis of our studies, we cannot say whether mood can be identified separately from cognitive processes nor, if so, which precedes the other; what we can say, however, is that the processes are not independent of each other—that what is experienced as emotion and what is seen as cognition are, if not identities, very much related and interactive.

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