Mood and Self-Efficacy: Impact of Joy and Sadness on Perceived Capabilities

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We examined the impact of happy and sad moods on efficacy judgments concerning a variety of activities. The mood was induced by having hypnotized subjects recall and revive their feelings about a romantic success or failure. Changes in efficacy that these memories induced were not restricted to the romantic domain but were also seen on interpersonal, athletic, and other activities remote from romance. The results suggested that emotional states have widespread impact on judgments by making mood-congruent thoughts more available. Implications for self-efficacy theory and practical applications are discussed.

Do people feel more competent when they are happy than when they are sad? Certainly when we consider our own experience, we would answer affirmatively. When we are sufficiently elated, we feel able to achieve our highest ambitions. On the other hand, when we are feeling low, failure seems inevitable.

Clinical observations also support an effect of moods on perceived capabilities. People in a manic phase often have inflated estimations of their own abilities and attempt to live out their grandiose delusions. Depressed people...
are notorious for their self-critical, negative opinions of themselves (Beck, 1967, 1976). Research on generalized self-appraisals is consistent with these introspections and clinical evidence. When people are sad, they have lower self-esteem than when they feel happy (Amrhein, Salovey, & Rosenhan, 1982; Kazdin & Bryan, 1971; Underwood, Froming, & Moore, 1980). However, global self-appraisals have little correspondence with behavior (Bandura, 1977), so that these influences have little practical utility.

In contrast, judgments of self-efficacy regarding specific activities (Bandura, 1977) generally predict those specific performances accurately (Bandura, 1977; Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980; Bandura & Cervone, in press; Bandura & Schunk, 1981). Often self-efficacy judgments predict achievement even more closely than does past performance of the activity (Bandura et al., 1980; Bandura & Schunk, 1981; Williams, Dooseman, & Kleifield, 1983). Self-efficacy judgments achieve their significance because people who have high self-efficacy about an activity are more likely to enter situations where the activity may occur and they will attempt more difficult variations of the task (Bandura, 1981). They also persist in their attempts for longer periods and expend more effort (Bandura & Schunk, 1981; Brown & Inouye, 1978; Collins, 1981; Schunk, 1981). Furthermore, emotional arousal that might interfere with performance is much less when efficacy is high than when it is low (Bandura, Reese, & Adams, 1982). Thus, effects of moods on self-efficacy may have substantial practical importance.

Emotional arousal has always had a significant place in self-efficacy theory, although in early discussions it was described simply as one more source of information about performance (Bandura, 1977, p. 198). For example, assessment of your anxiety when contemplating a dinner speech provides some information about how well you will perform it. But we will argue for a much greater role for emotion in efficacy judgments. We hypothesize that emotions act like a filter through which people view efficacy information, determining which items of information become available and salient, and which frameworks people use to interpret and evaluate these selected data.

Support for our stronger claim comes from considering the nature of efficacy information in light of current knowledge about the impact of emotions on memory (see Bower, 1981). Performances on most activities show significant variability over time. Making foul shots in basketball, for example, is dependent not only on skill but on attention, luck, and effort invested on a particular occasion. Beyond the inherently probabilistic nature of the process, outcomes may vary due to systematic factors such as task demands and situational constraints that fluctuate over time. For instance, assertive behavior may be more difficult with some people or issues than with others, and the presence of observers may also affect performance. Since both per-
formances and task demands vary over time, it is not always easy for us to discriminate factors that led to our success or failure, and determine whether they apply to the current situations. It may also be difficult to tell whether patterns of successes and failures reflect real change or just high variability.

Judgments that rely on inconsistent memories are vulnerable to influences from mood-dependent recall. Experiences when people are happy or sad are more accessible later when they are feeling the same way (Bower, Monteiro, & Gilligan, 1978; Bower, 1981; Henry, Wingartner, & Murphy, 1973; Lishman, 1972; Lloyd & Lishman, 1975; Teasdale & Fogarty, 1979). Recall of successes and failures exhibit this selectivity since they often give rise to strong emotions, and thereby become associated with them. Thus, people are more likely to recall successful performances when they are happy, and failures when they feel sad. People are also likely to interpret their recalled performances as being evaluatively consistent with their mood (e.g., Lewinsohn, Mischel, Chaplin, & Barton, 1980).

Although these conjectures are plausible, there is very little direct evidence of mood influencing self-efficacy judgments. An early study by Masters and Furman (1966) examined the issues but with negative results. In that experiment, they induced moods by asking preschool children to concentrate on happy, neutral, or sad thoughts for 30 sec. Despite the greater optimism of happy children in predicting fortunate events, there were no differences in their expectations of success in working on a set of mazes or a “matching” task (not described in the article). However, this finding is open to several interpretations. One possibility, for example, is that the children’s lack of experience with these tasks left little ambiguous margin within which mood effects could be demonstrated. Furthermore, the sad mood had little impact on any measure in this experiment; since no check on either mood manipulation was reported, the validity of the negative mood can be questioned.

Another experiment that relates to the hypothesis was conducted by J. Wright and Mischel (1982), who induced contrasting emotional states by asking college students to recall experiences and replay them in imagination. Subjects then performed a complex perceptual task (verifying whether two geometric figures were equivalent under rotation). They received bogus feedback indicating that they had performed either very well or very poorly. When subjects were in a negative or neutral mood, failure feedback caused them to adopt very low efficacy expectations; when subjects were in a positive or neutral mood, success feedback led to high self-efficacy. In these cases, subjects predicted future performance that closely approximated the past performance feedback they had received. However, when the mood and the performance feedback did not match, distorted expectations occurred: Happy subjects who failed overestimated their future performance, whereas sad subjects who succeeded greatly underestimated the probability of their future
success. Corresponding distortions occurred for recall of the number of past successes, suggesting that this memory bias might have produced the difference in efficacy judgments.

In the Wright and Mischel (1982) experiment, it is difficult to disentangle the contributions of cognitive versus emotional factors to their subjects' judgments. Feedback about one's success or failure at a task can modify one's emotional state as well as provide "cognitive information" about one's capability at that specific task. Perhaps one's prevailing mood alters the interpretation of the success or failure feedback as it occurs, thereby influencing one's efficacy expectations about future performances. One way to separate the emotional versus cognitive factors would be to induce a mood by using a success or failure from one domain of activities and then test efficacy judgments for other activities that are similar or dissimilar to the one that induced the mood. Specific information provided by a performance success or failure is logically irrelevant to judgments about other performances that are unrelated in content or in component skills. After some successes or failures (which presumably have little emotional impact), people do adjust their estimates normatively. Such outcome experiences have greatest impact on ratings of capability on the same task, an intermediate influence on similar activities, and a negligible effect on more remote tasks (Jessor, 1951). In contrast to this restricted range, emotions typically have a widespread, far-ranging impact on cognitive processes (see Gilligan & Bower, 1985; Johnson & Tversky, 1983). According to a mood-dependent theory of memory (Bower, 1981), emotions aroused by a recalled success or failure could bias retrieval of successes and failures across a variety of different domains. This emotion theory therefore predicts that people will be globally overconfident of their capability when they feel happy and globally underconfident when they feel sad. So, if a success or failure affects efficacy judgments of even remote activities, this would more likely reflect one's emotional response to the success or failure rather than a reaction to the "evidence" they provide.

Our experiment therefore examines the impact of emotions on self-efficacy by assessing the extent to which recall of a highly emotional success or failure in romance generalizes to efficacy regarding a wide range of other activities. Subjects were asked to place themselves successively into a happy, sad, or neutral mood by vividly recalling one of their most successful or unsuccessful romantic encounters, or an emotionally neutral event. Then, while experiencing the suggested mood, they rated their self-efficacy on a variety of activities, from other romantic encounters to more general social skills, and activities that were even more remote from romance such as athletics, physical endurance, boldness in dangerous situations, and so on. After each set of ratings, their mood was removed and they proceeded to imagine a con-
trasting situation. This cycle continued until they had experienced and rated their efficacy in all three moods. In order to circumvent a "demand compliance" interpretation of the results (see Orne, 1962), we misinformed subjects about the purpose of the experiment, telling them that we were testing the influence of hypnosis on handwriting.

Subjects were in a hypnotic trance during the entire procedure, so that they could vividly reconstruct the recalled situations and accompanying emotions that were essential to the experiment, and continue to experience them during the rating tasks. Hypnosis was also used to shift between the subjects' moods as well as to normalize their mood before they left the experiment.

**METHOD**

*Subjects*

Sixteen Stanford students (9 male and 7 female) were recruited from a pool of subjects who had scored between 9 and 12 on the Harvard Group Scale of Hypnotic Susceptibility, Form A (Shor & Orne, 1962).

*Procedure*

Subjects were assigned randomly to an order of the three moods and efficacy-rating questionnaires, with the restriction that two subjects would be allocated to each order and that each questionnaire would be completed by equal numbers of happy, sad, and neutral subjects. Subjects were run singly or in pairs, sitting in a comfortable armchair in a darkened room. We told them that we were interested in how different hypnotic moods influence expressive styles of handwriting and that we would be asking them for several spontaneous samples of their handwriting while under hypnosis. They were also told that an effective way to stimulate spontaneous samples was to use a questionnaire that we had developed for other purposes. Subjects were requested to answer an item on the questionnaire and then write comments about it, letting their thoughts (and handwriting) flow freely. The experimenter then gave them two demonstration items, emphasizing the importance of the handwriting sample. After this, they were hypnotized using a standard eye-closure induction (see Weitzenhoffer & Hilgard, 1962). Since they had been selected for their hypnotic susceptibility, all subjects rapidly entered a deep trance. They were told that they would be able to speak or write while remaining deeply hypnotized.
After the induction, subjects were asked to enter specific mood states by imagining at different times three situations that would put them in a happy, sad, or neutral mood. For the happy mood they were to remember a time when they had a warm, loving romance with a member of the opposite sex, perhaps a specific date or event. They were feeling happy, lighthearted, and wonderful. Everything had gone as they had hoped. They had communicated well, they were successful; they felt good, their faces were smiling and their hearts content. In order to induce the sad mood, subjects were asked to remember an occasion when they had attempted a romantic approach to a member of the opposite sex and had failed completely and been rejected. They had been brash, inept, and awkward, and had messed up badly. They were asked to adopt a sad posture with slumping body and long face, to be on the verge of tears, depressed, and slowed down. For both the happy and sad moods, subjects were asked to intensify their feelings until they reached a 7 on a 10-point scale (where 1 was mildly happy/sad and 10 was extremely elated/depressed). A neutral mood was achieved by having subjects imagine that they were sitting on a sofa at home reading a textbook. They were instructed to feel neutral, although mildly interested, while focusing on the textbook they were reading.

After subjects indicated that they were imagining the situation and had reached the requested mood intensity, they were asked to let the imagined situation fade into the background but to sustain the feeling at the same intensity for the next 10 min. It was further suggested that each time they turned a page on the questionnaire they would be reminded of their mood state. At this point they were handed an efficacy questionnaire and began filling it out, with reminders to "let their handwriting flow" with their thoughts. To encourage the cover story, while subjects were writing on the questionnaire, the experimenter ostentatiously compared previous samples of their handwriting and pretended to score their graphological features.

**Efficacy Measure.** Forty-five items assessing perceived self-efficacy on a range of activities were selected from an original pool of 83 items. These items had been given to a prior group of 10 male and 9 female undergraduates from a campus dormitory. The final efficacy measures were also checked by testing a further 12 students from an introductory psychology class. Three parallel forms of the questionnaire were constructed, each with 15 different items; correlations between total scores on these parallel forms ranged from .84 to .88. Five items on each measure assessed efficacy about romantic situations, five asked about situations involving social skills and assertiveness, and five were about academic, athletic, and other physical activities. Reliabilities of these by alpha coefficient ranged from .74 to .91.

Examples of items are shown in Table I. For each item, subjects answered the question "Can you do this now?" by writing a number of 0 (certain can't do it) to 100 (certain can do it). They were told to think of this
### Table 1. Sample Items from Efficacy Questionnaire

<table>
<thead>
<tr>
<th>Romantic</th>
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<tbody>
<tr>
<td>Enjoy yourself very much on 8 out of 10 first dates</td>
</tr>
<tr>
<td>Tell your boyfriend/girlfriend you still want to see him/her but want to date other people</td>
</tr>
<tr>
<td>Maintain a close platonic relationship with someone who wants a sexual one.</td>
</tr>
<tr>
<td>Talk for 3 hours with someone you're very attracted to but don't know well and share the conversation about equally.</td>
</tr>
<tr>
<td>Tell your boyfriend/girlfriend that he/she has bad breath.</td>
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</tbody>
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<tr>
<th>Social skills/assertion</th>
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<tbody>
<tr>
<td>Speak before a large lecture class in soliciting support for a campus project.</td>
</tr>
<tr>
<td>Insist on seeing the manager of a shop, restaurant, or repair center if the staff are uncooperative.</td>
</tr>
<tr>
<td>Go for a job interview with senior executives and field their questions without making major mistakes.</td>
</tr>
<tr>
<td>Be an effective peer counselor at The Bridge (a campus counseling center).</td>
</tr>
<tr>
<td>Attend a party where there will be no one you know.</td>
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<th>Athletic and other activities</th>
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<tbody>
<tr>
<td>Make 40% of 100 basketball free throws.</td>
</tr>
<tr>
<td>Do 6 chin-ups (at 1 every 6 seconds) on an elevated bar right now.</td>
</tr>
<tr>
<td>Live alone in an urban slum.</td>
</tr>
<tr>
<td>Lose 6 pounds in 2 weeks and retain the loss for 6 months.</td>
</tr>
<tr>
<td>Pick up a &quot;friendly&quot; black snake and let it crawl over your chest and arms.</td>
</tr>
</tbody>
</table>

number as a likelihood estimate. After giving their numerical estimate, they wrote a brief comment or explanation of their estimate, allegedly to provide a sample of their handwriting.

As expected, the Romance and Social Skills scales were moderately correlated across subjects, $r = .60, p < .02$, but correlations between either Romance or Social Skills and the Other Activities (intellectual, courageous, athletic) were low (Romance/Other = .31, $p < .20$; Social Skills/Other = .41, $p < .10$). This pattern demonstrates that our assumption about the items was correct: Although efficacy in romantic activities was moderately related to social skills, it was not strongly related to a heterogenous group of more remote activities. The weak correlations that do exist here may reflect a real relation in college settings; i.e., athletes and physically courageous students may as a result be more popular or more successful romantically. Nonetheless, if moods induced by a romantic experience affected the remote "Other" group of items, it would not simply be through a perceived similarity in the activities or required skills.

After subjects had filled out their efficacy questionnaire, their current emotional state was terminated, with special attention given to complete removal of the sad mood. Then the next mood was induced and another, independent, efficacy questionnaire was administered. At the end of the experiment, the mood of the subjects was normalized and their hypnosis lifted. They then answered a graded series of five questions about the pur-
pose of the experiment. The questions were presented on separate sheets of paper, and subjects wrote their responses. The questions were as follows:

1. What do you believe was the purpose of this experiment?
2. Why do you think we were inducing emotional states in you?
3. Did you deliberately alter the kind of comments or ratings you gave depending on your emotional state? If so, how?
4. I tell you now that we were in fact really interested in whether you thought you could do the activities in the questionnaire. Can you guess what our hypothesis was about?
5. We were really interested in whether people's judgments of what things they can do and the goals they set themselves change across moods: whether they expect they could do better when they were happy and worse when they were sad. Tell us honestly whether you are genuinely surprised by this statement, or sort of suspected it all along.

For the last question, subjects circled a number on a rating scale from 1 (had absolutely no suspicion this was the case) to 10 (confidently suspected just this all along) to indicate their degree of awareness during the experiment that we had been testing mood effects on the self-efficacy judgments.

Subjects were classed as “aware” if they described some approximation of the true purpose to the first two questions and if they rated their suspicion of the true purpose as more than “slight” (i.e., more than 5 on the 10-point scale). After answering these questions, subjects were thoroughly debriefed, paid $5, and thanked for their participation.

RESULTS

Manipulation Checks

Having been chosen for their susceptibility to hypnosis, subjects readily went into a deep hypnotic trance and experienced the suggested moods. The experiment did not proceed to the next step until each subject indicated that the suggested mood had reached 7 on a 10-point scale. Also, all subjects reported at debriefing that they had experienced intense joy and sadness in response to the suggestions.

The content of the “handwriting samples” suggested that subjects imagined the tasks vividly and freely expressed their thoughts. For example, in response to the item “Could you tell your girlfriend that your relationship is over?” one subject wrote, “I think I will because it is over—no pretending.” “I can't blow it now,” said another about an evening with a girl he wanted to impress.
Examining the awareness questions, 12 of the 16 original subjects did not guess the purpose of the experiment, despite probing questions. In their answer to the first question about the experiment, 3 of the 4 aware subjects mentioned its true purpose as a possibility. The fourth confided after the final question that, although he had believed the experiment's cover story, he thought the ratings were a measure of his mood. Two of the 4 aware subjects spontaneously said that their suspicions began when they noticed that their ratings were changing under different moods. None of the subjects said that they had made a calculated decision to change their ratings once their suspicions began.

In the following data analysis, we will follow the conservative tactic of first examining the efficacy data excluding the aware subjects (leaving 6 males and 6 females); then we will compare the data of the aware and unaware subjects to note any possible differences correlated with awareness.

**Self-Efficacy**

Average efficacy ratings across the 15 items for each mood are shown in Figure 1. On the scale from 0 (can't do it) to 100 (certain can do it), subjects gave an average judgment of 46.3 when they were sad, 57.0 when they were in a neutral mood, and 64.3 when they felt happy.

In order to make a formal analysis of these data, each subject's item scores were standardized. The scores pooled for this standardization included those from all subjects who answered each item regardless of their mood, together with those from the 12 introductory psychology students who had completed the final efficacy measure to check on its characteristics. These 12 students presumably had a neutral mood on average. The mean stan-

![Fig. 1. Efficacy scores averaged across items for judges who were happy, neutral, or sad.](image-url)
standardized scores for the three mood conditions are shown in Table II. Analysis of the within-subjects design was accomplished by testing whether certain contrast scores differed significantly from zero. To test whether average efficacy increased as subjects' mood increased from sad through neutral to happy, each subject's score under these moods was multiplied by a linear contrast (i.e., with weights of −1, 0, and 1, respectively). This test confirmed that self-efficacy was higher under more positive moods ($t(11) = 3.65, p < .005$).

Three data patterns could create this result: Sadness might be reducing efficacy below the neutral level, happiness might be inflating efficacy above neutral, or a combination of the two might produce the significant effect. Two additional contrasts were computed to select among these possibilities: One compared efficacy under sad and neutral moods, the other under happy and neutral moods. Results indicated that sadness did reduce efficacy significantly below the neutral level ($t(11) = 2.56, p < .025$), whereas the increase from neutral to happy mood was only marginally significant ($t(11) = 1.55, p < .10$).

### Awareness Effects?

Having shown large, significant effects of mood on efficacy judgments for unaware subjects, we next compared their results with those of the four subjects classified as “aware” by our end-of-session questionnaire. Although these small-sample comparisons have relatively low statistical power, they nonetheless strongly suggest that the results were substantially the same for

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### Table II. Changes in Strength of Self-Efficacy Under Happy and Sad Moods

<table>
<thead>
<tr>
<th>Mood</th>
<th>Romance</th>
<th>Social skills</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happiness</td>
<td>.100</td>
<td>-.032</td>
<td>.187</td>
<td>.085</td>
</tr>
<tr>
<td>Neutral</td>
<td>-.184</td>
<td>-.102</td>
<td>-.139</td>
<td>-.142</td>
</tr>
<tr>
<td>Sadness</td>
<td>-.624</td>
<td>-.428</td>
<td>-.539</td>
<td>-.530</td>
</tr>
</tbody>
</table>

$t$ values for tests of contrasts:

- Happy > neutral: $1.21$, $2.7$, $2.56$ (a), $1.55$ (b)
- Neutral > sad: $2.29$ (a), $2.06$ (c), $1.63$ (b), $2.56$ (d)
- Happy > neutral > sad: $2.37$ (a), $1.81$ (c), $4.28$ (c), $3.65$ (e)

*aContrasts were applied to the data of each subject. The null hypothesis was that the means of these scores did not exceed zero. One-tailed probabilities (with 11 degrees of freedom).

$^a p < .10$.

$^b p < .05$.

$^c p < .025$.

$^d p < .005$. 
aware as for unaware subjects. Average standardized self-efficacy scores for aware and unaware subjects were .115 and .085, respectively, following the happiness induction, were −.153 and −.142 for the neutral mood, and were −.859 and −.530 following the sadness induction. These changes in efficacy under different moods were not significantly greater for aware than for unaware subjects (comparison of difference scores between the two groups of subjects gave Neutral minus Sad, t(14) = .098, n.s.; Happy minus Neutral, t(14) = .13, n.s.; Happy minus Sad, t(14) = 1.12, n.s.). The fact that aware and unaware subjects show similar influences of mood on their efficacy expectations renders implausible the hypothesis that the results reflect primarily (or only) the subject's compliance with the experimenter's unconscious demand.

**Generalization Across Domains**

Differences across emotions were also computed for each subscale of the efficacy questionnaire. Results of these contrasts for Romantic, Social, and Other subscales are shown in Table II and are consistent with those observed for the overall efficacy measure. Comparisons across subscales in Table II can reveal the widespread nature of the overall differences in self-efficacy. If experimental manipulations (of a reimagined success or failure) changed efficacy because of their cognitive evidential value, their impact should have been limited to activities that were similar to the recalled romantic situations. Our impression was that the effect of mood generalized across content domains. To check this impression of widespread generalization, we applied contrasts to each subject's standardized scores on Romantic, Social, and Other items. They essentially do a piecewise comparison of the slopes of the line connecting the sad-to-neutral-to-happy conditions across the three content domains. A test of the contrast between the Romantic and the Other domains was not significant (t(11) = −.01, n.s.). Comparing the Romance versus Social domains, which might appear to differ most in Table II, the size of the mood effects on efficacy is still not reliable (t(11) = .99). Apparently, we may conclude that the impact of moods on efficacy is general and equally large across domains. Remembering a romantic success or failure triggered a corresponding change in self-efficacy, regardless of whether the activity being assessed was related to the general area of romance.

**DISCUSSION**

Inducing a happy or sad mood through recollecting a romantic success or failure greatly influenced our subjects' perceived efficacy not only for a
wide range of specific romantic activities but equally strongly for a range of specific interpersonal skills and physical-athletic competencies. The surprising outcome is the global generalization of the mood effects across different domains of competence. This contrasts with a normative procedure that would prescribe actuarial adjustment of likelihoods only for activities highly similar to the one made salient through imagination (Jessor, 1951).

Our results are consistent with those of Johnson and Tversky (1983), who found that people who read a dramatic story about a victim of homicide (or leukemia) increased their later likelihood estimates not only for all varieties of crimes (or diseases) but also for all varieties of negative life events like bankruptcy, car accidents, terrorist acts, etc. Our results are also consistent with those of W. H. Wright and Bower (1981), who found that a happy mood increased people's likelihood estimates of future positive events and decreased their estimated likelihoods of future negative events, whereas a sad mood produced the reverse distortions.

This global impact of moods is consistent with present theorizing about cognitive effects of moods (Bower, 1981; Clark & Isen, 1982; Gilligan & Bower, 1985). The efficacy changes under different moods can be explained using the associative network theory of memory and emotion (Bower, 1981; Clark & Isen, 1982). Memories of events or opinions are represented as a configured network of associated ideas; the emotion prevailing at the time an event occurred also becomes connected with that associative complex. Regarding any specific competence (e.g., interpersonal gracefulness), we imagine that adults have stored a vast, heterogeneous array of relevant experiences—past social encounters, diverse opinions about themselves, etc. Each episode, opinion, and fragment of belief about a given type of activity exists in memory connected to the predominant emotion one felt upon first experiencing that episode or opinion. This heterogeneous array of memories constitutes the "data" upon which interpretive processes operate. In particular, this data base can provide evidence for almost any self-efficacy judgment, provided memory makes available a supportive (biased) subset of the material at the moment the judgment is made. Earlier, Bower (1981) reported mood-dependent memory in that people in a given mood could best retrieve memories stored earlier while in that same mood. Applied to the present case, mood-dependent memory suggests that the emotion one feels at the time of a judgment will activate those memories and opinions that are congruent with that emotion. This activation causes those ideas to become available in short-term memory, thus to bias judgment.

The theoretical situation is schematized in Figure 2, which shows a collection of self-referent memories one might have about his or her competence in the domains of romance and sports. We might think of each collection of cognitive units as though it were an urn full of marbles from which a
Fig. 2. Hypothetical diagram of collections of memories about one's competence in romantic and sports domains. Specific success (SEs) and failure experiences (FEs) are shown, associated to the happy or sad emotion nodes.

A handful is sampled (retrieved) to constitute a snap judgment about one's efficacy. For illustration, a few memories of success experiences for each task domain (denoted SE) are indicated, associated to a happy emotion node (aroused during that SE), as are a few memories of failure experiences (FEs) associated to a sad emotion node. When people are happy, activation spreads out from the "happy" node in memory. If the people are then asked about their competence in sports, those memories associated with the happy emotion will receive greater activation than will the others within the set, and so the success experiences (or more positive opinions) will be weighted more heavily in a snap judgment of one's efficacy in sports. Alternatively, we can say that happy memories ("marbles") become more likely to be sampled and thus influence judgment. Conversely, if people are sad when asked for their estimates, those memories associated with unhappy experiences in the task domain will receive greater activation, and so they will be remembered selectively. This selective memory process would bias efficacy judgments because the more readily people can generate facts and opinions from memory that support a specific belief, the more they believe in its truth and the greater is its subjective likelihood (see the "availability heuristic" of Tversky & Kahnemann, 1973).

There is some evidence that selective recall is an important factor in the observed results. Wright and Mischel (1982) observed that changes in self-efficacy judgments under positive and negative moods were paralleled by biased recall of the performance feedback that subjects had received. In
their study, all subjects recalled the feedback in the same emotional state as they were in during learning. The present study suggests that just a manipulation of mood at recall might be sufficient to produce the effect.

The network theory does not claim that mood can totally transform a "mouse into a lion" or vice versa; rather, temporary moods can operate only within the limits of the person's "data base" of relevant domain experiences. Individuals will clearly differ in their level of competencies, and this will be partly reflected in the content of their memories. Mood effects should modify one's judgments only within the range of his or her relevant experiences. For instance, although world-class runners will have much higher (and more accurate) estimates of their time to run a mile than will the casual Sunday jogger, each individual will be familiar with a more or less articulated distribution of instances of his or her self-defined better or worse performances. Whatever one's average level of aspiration, experiencing a performance better or worse than one's expectation will cause those episodes to be stored in association with positive or negative feelings, respectively. Thus, we would expect a negative (sad) mood to make available memories of one's poorer performances, lowering one's estimated efficacy, although for an "expert" that lowered estimate would probably still exceed the average for nonexperts.

**Alternative Interpretations**

We can think of three basic challenges to the mood network interpretation of the results. One challenge would assert that the results are not due to the subject's moods but to the cognitive priming into availability of thoughts related to the specific success or failure experience used to induce the mood. This priming idea has been proposed by Gregory, Cialdini, and Carpenter (1982) to explain why imagining oneself involved in some activity increases one's later estimates of the normative probability of that event. One can readily accept this idea of imaginative rehearsal of an activity enhancing the later availability of that scene. However, this mechanism cannot be used to explain the widespread generalization of effects across domains such as we have found. Gregory et al. might counterargue that a success experience in one domain primes into availability success experiences in any other domain. However, that suggestion is nearly equivalent to the claim that experiences creating a happy (or sad) mood will prime one another. Since the emotion network theory with spreading activation provides a simple explanation for such cross-domain "priming," it is to be preferred.

A second challenge to the mood network interpretation of the results is the claim that network theories predict a gradient rather than complete generalization of efficacy changes across different content domains (John-
son & Tversky, 1983). But whether the absence of a local effect (or generalization gradient) poses a problem for the associative network theory depends on how the “target versus input” events being compared are represented in memory and how their similarity is to be computed. The input event in our cases is an instance of the person interacting successfully or unsuccessfully with a potential romantic partner. But the recalled success or failure may be so specific that it provides little overlap with other romantic activities. For example, recall of a successful pickup at a singles bar may have little to do with one’s ability to express one’s feelings honestly to a loved one of long standing. The events to be rated (see Table I) differ greatly in setting, participants, their ages, actions, time, and so on. If similarity were to be computed simply in terms of common settings or participants, then nearly all the target events would have exceedingly low similarity to the single romantic episode used to induce the mood. In such circumstances of low “cognitive overlap,” it is plausible that spreading activation from the moods becomes the greatest determinant of overall generalization.

A third challenge to a mood-selective memory interpretation of our results is the hypothesis that one’s mood simply influences the calibration or anchoring of the likelihood rating scale itself (see Cervone & Peake, 1983; Tversky & Kahnemann, 1974). One form of this hypothesis would assume that by some means happiness causes people to use high numbers and sadness causes them to use low numbers on the rating scale. An argument against this interpretation is the finding by Wright and Bower (1981) that the direction of shifts in rated likelihoods of future events (caused by happy or sad moods) varied according to whether the event was affectively positive or negative. Although sad subjects gave lower likelihood estimates for future positive events, they gave higher estimates for future negative events; happy subjects showed just the opposite changes. Such mood-by-event interactions in ratings cannot be produced by assuming that mood causes a simple preference for high or low numbers. We conclude that our results cannot be interpreted in terms of simple shifts in the way happy or sad subjects use the likelihood rating scale.

Implications of the Mood-Efficacy Link

An expanded role for emotional states in determining self-efficacy judgments invests social learning theory with greater predictive power and widens its potential scope of application. Across a range of situations where skills are being acquired, increased efficacy when the person was in a positive mood would be likely to accelerate acquisition of new skills by promoting engagement in learning activities and investment of effort and persistence in practice (Bandura, 1981; Brown & Inouye, 1978; Collins, 1981; Schunk, 1981).
Also, performance feedback assumes added significance in the context of mood effects on efficacy. If information about performance is inconsistent and given only rarely, then we may expect relatively larger effects of mood upon subjective estimates of competence at that skill.

The influence of moods on self-efficacy is relevant to the widespread and debilitating problems of depression. The lowering of self-efficacy in a depressed mood is likely to depress mood even further, especially if in addition one’s performance standards remain unrealistically high (cf. Kanfer & Zeiss, 1983; Loeb, Beck, & Diggory, 1971). When people cling to unattainable performance standards, they seem unable to develop the proximal goals that might have led them to ultimate achievement of the goal (Bandura & Schunk, 1981). Depressed people may withdraw from challenging activities, expending less effort and persisting for shorter durations on tasks they attempt (see Bandura, 1981; Lewinsohn, 1975, 1982). As a result, the objective frequency of failure rises whereas successes become less frequent, thus initiating a further downward spiral of efficacy and depression (see Lewinsohn, 1982).

Studies on “learned helplessness” (Klein & Seligman, 1976; Miller & Seligman, 1975, 1976; Miller, Seligman, & Kurlander, 1975), usually interpreted in terms of outcome noncontingencies (Seligman, 1975), may perhaps be viewed as laboratory analogues of this downward spiral (cf. Abramson, Garber, & Seligman, 1980; Abramson, Seligman, & Teasdale, 1978). Significantly, failure in a laboratory task does not produce the combination of “giving up” and becoming sad unless one’s efficacy is affected (Bandura, 1978; Davis & Yates, 1982; Klein, Fencil-Morse, & Seligman, 1976; Roth & Kubal, 1975).

If depression is maintained and deepened by a reciprocal influence between efficacy and emotions, an improvement in either might trigger a reverse spiral of improving mood and efficacy. Viewing depression within this theoretical framework might help clarify its cyclic process and suggest ways to conceptualize and improve therapeutic interventions.

REFERENCES


