Selectivity of Learning Caused by Affective States

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SUMMARY

We investigated how emotional states influence learning and memory. Specifically, we asked whether people's remembering of a text varies with their emotional mood at the time they read or recall a text. A theoretical framework is proposed that represents an emotion as a unit within a semantic network that encodes memories. It also assumes that by spreading activation, a dominant emotion will enhance the availability of emotion-congruent interpretations and the salience of congruent stimulus materials for learning. To collect relevant observations, powerful moods were induced by posthypnotic suggestions. Experiment 1 found that happy or sad readers identified with, and recalled more facts about, a character who is in the same mood as they are. In Experiment 2, this selective recall by character could not be produced by inducing the mood at recall after subjects had read the story in a neutral mood. In Experiment 3, subjects read a text wherein one character described many unrelated happy and sad incidents from his life. Readers were made to feel happy or sad while reading and, independently, while recalling this text. Mood during reading caused selective learning of mood-congruent incidents, but mood during recall had little effect. Experiment 4 replicated with this one-character narrative the finding that inducing the mood during recall only produced no selective recall of its happy versus sad incidents. Experiment 5 pitted the happy--sad nature of the incidents against the mood of the character narrating them. Readers learned more mood-congruent than mood-incongruent incidents, but did not learn more about the mood-congruent character. Thus, rather than identifying exclusively with the same-mood character, subjects selectively learned whatever affective material was congruent with their emotional state. The mood-congruity effect is consistent with the network theory of emotion and memory. Several more specific hypotheses were proposed. One is that mood-congruent material is more memorable because it elevates the intensity of the subject's feelings, whereas mood-incongruent material diminishes mood intensity. A second is that subjects focus on mood-congruent material in order to explain and justify their hypnotically instructed emotion. But further results did not support this attribution hypothesis. A third hypothesis is that mood-congruent material may be more likely to remind the reader of a similar experience, and this promotes learning.
How does emotion influence human learning and remembering? Do the emotions facilitate or hinder learning? Are there learning differences among materials that are relevant versus irrelevant to the subject's emotional state? When people are in a specific emotional state, are they especially sensitized to, or primed in readiness for, stimulus material relevant to their feelings? If people show selective remembering of emotion-relevant material, is this effect located at "input" (learning), at "output" (test performance), or both?

The experiments reported here attempt to answer these questions. They are part of a research program investigating emotional influences on diverse cognitive processes that was reviewed in a previous article (Bower, 1981). A theoretical framework was also advanced to rationalize the findings. That framework will now be reviewed as background to the current studies.

The theory supposes that memory can be modeled by an associative network of semantic concepts or schemas that are used to describe events. An event is represented in memory by a cluster of propositions (output by a perceptual analyzer); these propositions are recorded in memory by establishing new associative connections among instances of the concepts used in the description of the event. Such semantic network theories of long-term memory have been introduced by Collins and Quillian (1972), Anderson and Bower (1973), Kintsch (1974), Rumelhart, Lindsay, and Norman (1972), Collins and Loftus (1975), Anderson (1976), and others. In such theories, the basic unit of thought is a single proposition or a propositional compound (e.g., p causes q); the basic process of thought is activation of a proposition and its concepts. The contents of consciousness are the sensations, concepts, and propositions whose current activation levels exceed some threshold. The activation presumably spreads from one concept to another, or from one proposition to another, according to their associative linkages. An analogy is an electrical network with electrons (activation) flowing along links between terminal junctions (concept nodes).

To relate this framework to emotion, the theory supposes that each distinct emotion such as joy, depression, or fear has a specific node or unit in memory that collects together many other aspects of the emotion that are connected to it by associative pointers. . . . Figure 1 shows a schematic for a small fragment of the many connections to a given emotional node—say sadness for Emotion 3. Collected around this emotion node are its associated autonomic reactions, standard role and expressive behaviors (that is, the way we display sadness) and descriptions of standard evocative situations which when appraised lead to sadness. Also included are the verbal labels commonly assigned to this emotion such as sadness, depression, and the blues. Some of these various linkages are innate, while others are learned and elaborated throughout acculturation. (Bower, 1981, p. 135)

Of particular relevance to memory studies is the assumption that each emotion node is linked into memorized descriptions of life events during which that emotion was aroused. Thus, the grief one feels at a parent's funeral becomes associated with an internal description of events at that funeral. These emotion nodes can be activated by various stimuli—for example, by physiological or symbolic ones. When activated above a threshold, the emotion node transmits excitation to those nodes that generate the emotional response pattern. Activation also spreads throughout the memory structures.
to which the emotion is connected, creating subthreshold excitation at those event nodes. Thus, if one is feeling sad and is prompted with a weak cue like "parent," the activation from the emotion node may combine with that from the weak cue so as to raise the total activation of a relevant event memory above a threshold of consciousness. Thus, the sad person may become conscious of thinking about the funeral of a parent.

This network view of emotion and memory has several implications. First, it implies a mood-dependent retrieval effect. Because memories become associated with the mood prevailing during learning, their recall is improved by reinstating the same mood during recall testing. Supporting evidence for mood-dependent retrieval was presented in Bower (1981; also Bartlett & Santrock, 1977; Bower, Monteiro, & Gilligan, 1978). Through hypnosis, subjects were induced to feel happy while learning one word list and sad while learning a second list; later, when happy, subjects recalled the happy list better than the sad list; when sad, they recalled the sad list better. The network theory explains this by supposing that the present mood acts like an automatic cue activating the memories associated to it, and these memories are either the same as the targets to be recalled ("same mood" condition) or different from them ("changed mood" condition). Thus, mood-dependent retrieval is hypothesized to result from the memory-search advantage conferred by having an additional relevant cue.

A second implication of the network theory is that emotion should enhance the "salience" of emotional stimuli in the environment that agree with the perceiver's state. Thus, happy people should selectively enhance pleasant events in their environment, whereas sad people should enhance sad events. These enhancement effects should arise for two reasons. First, the active emotion node sends activation to perceptual categories that are linked to it associatively so these percepts are in readiness to be used. Similarly, schemas for interpreting actions or social interactions as pleasant or unpleasant are brought into readiness by a corresponding emotion. These factors then operate like a "cognitive set" to bias the way perceivers interpret social messages they hear.

Second, events that evoke pleasant evaluations will enhance an ongoing positive mood but decrease an ongoing negative mood, and vice versa for unpleasant events. We will suppose that the amount of attention and processing allocated to an incoming event will be greater the greater is the emotional arousal (intensity) coincident with that event. By this hypothesis, pleasant events will receive more processing when people are in a pleasant mood, and unpleasant events will receive more processing when they are in an unpleasant mood. As a result, subjects should learn to a greater degree events that are congruent with their current emotion.

The experiments reported here were carried out to check for this predicted effect on learning of mood-to-material congruity. The moods investigated were happiness and sadness induced by hypnotic suggestions. Our earlier research found hypnosis and post-hypnotic suggestions to be a valuable tool for induction of different emotional states (see Bower, 1981, for a discussion of the advantages and disadvantages of the hypnotic procedures). The experiments manipulate congruity by variations in the narrative material the subject reads. In the initial experiments, the narrative describes two characters, one happy and one sad—their life circumstances, feelings, interactions. The question is whether readers who are happy will identify more with the happy character and learn more about him, and sad readers will identify with and learn more about the sad character. In the later experiments, the narrative describes a series of happy and sad incidents of a single character. The congruity question there is whether readers who are happy learn more about the happy incidents, whereas sad readers learn more about the sad incidents.

The congruity prediction may be contrasted with an alternative hypothesis that supposes that, given a choice, readers will select material whose usual effect is to reduce negative (unpleasant) moods and to maintain or enhance positive (pleasant) moods. We will call this the "Pollyanna" (or "goody-goody") hypothesis. The congru-
ity and Pollyanna hypotheses both predict that happy material will be especially salient for happy readers; however, their predictions for sad readers differ. Sad readers should find sad materials particularly salient, according to the mood-congruity hypothesis; but they should avoid sad materials and emphasize or dwell on happy materials if the Pollyanna hypothesis is correct. The experiments described below investigated these and other hypotheses.

Experiment 1: Character Identification and Memory

We are primarily concerned here with whether, and how, the mood of readers influences their selection of which material in a narrative they find to be "interesting and memorable." Before discussing mood effects, however, let us briefly review as background some of the subjective determinants of interest and memorability of text material.

It is widely supposed that the meaning readers extract from a story varies with their interests, the perspective from which they read it, and the characters with whom they identify (see, e.g., Bower, 1978). Interest value of text elements partly determines what readers select and remember. Interest value in turn is determined by many factors, including basic dramatic themes (conflict, romance, revenge, death), information relevant to the welfare of oneself or loved ones or adversaries, unconventional surprises, and myriad goals idiiosyncratic to the reader (news of sports, gardening, finances). The reader's interests often stem from constant goals—for instance, to invest profitably in the stock market—and information relevant to those goals will be noticed and selected for deeper processing. Interest often leads to expertise (and vice versa); the expert's knowledge of a topic is then triggered by its mention in a text so that the material can be elaborated and embedded into familiar schemata. For such reasons, interest-relevant material would be better remembered.

Readers' perspectives on the material also influence what parts of it they find interesting and memorable. Such a selectivity was demonstrated in an experiment by Pichert and Anderson (1977); they had readers deliberately adopt the perspective of someone reading a passage with certain interests in mind. Specifically, a passage about a boy coming home with a friend and giving the friend a tour of his house was to be read from the perspective either of a prospective burglar of this house or a prospective buyer of it. For subjects reading from the perspective of a burglar, the relevant schema for the situation provides them with a purpose (e.g., to rob without being caught) and a standard plan (e.g., to gain entry, snatch the valuables, and exit unseen), and it identifies information relevant to that plan (e.g., note the location of unlocked doors and portable valuables). Information relevant to this perspective should receive special attention and processing in memory. Similarly, subjects reading from the perspective of the home buyer should be more likely to notice and remember details relevant to the structural quality of the house (e.g., leaky roofs and cracked plaster ceilings). Indeed, this was the case. Pichert and Anderson found that their subjects did recall more information related to their respective points of view.

The perspective phenomenon studied by Pichert and Anderson involved a framework external to the story itself. That is, the burglar and home buyer were not characters in the story. Their perspective-taking instructions were a veiled form of orienting instructions, like those used by Rothkopf (1972) explicitly directing the reader to look for and retain prescribed information. A different aspect of perspective in narrative comprehension, studied by Abelson (1975), Owens, Dafoe, and Bower (Note 1), and Bower (1978), is "character identification." Readers were subtly induced to empathize or identify with one of the characters in a balanced story they read; how that identification affected the readers' interpretation and recall of events was then examined. Owens et al. found, for instance, that memory became distorted in the direction sympathetic to the character with whom the reader identified. Slip-ups and mishaps of this character were attributed to the difficulty of his external conditions. In contrast, the errors of his adversary were attributed to the adversary's incompetence.
Our initial study extends this work on character identification in text comprehension and memory. The question at issue is whether the emotional mood of the reader will affect the story character he or she identifies with and, consequently, affect encoding and recall of the story. Our two hypotheses predict different outcomes for this experiment. The mood-congruity hypothesis supposes that, other things being equal, the reader will identify with the storybook character who is most similar to him or her on important dimensions and that emotional mood will be a salient dimension of similarity. Thus, the happy subject will identify with a happy character, and the sad subject will identify with a sad character. In contrast, the Pollyanna hypothesis supposes that people generally prefer reading and thinking about pleasant, enjoyable events. The preference might be acute for sad readers who may want “cheering up”; hence, they may avoid the bad news in the text in favor of the good news. This view predicts that all readers will identify more with the happy character in a balanced narrative.

After our subjects read the story, they answered some questions to assess which of two characters they had identified with. The subjects returned the next day and while in a neutral (“normal”) mood recalled everything they could about the text they had read the day before. The specific issue is whether subjects recall more facts about a story character having the same mood as they had when they read the story. The following description of methods is slightly complex because subjects were run in two experiments in an interleaved fashion: The story recall experiment is reported here; the word list experiment, which investigated mood-state dependent learning, was reported as Experiment 2 in Bower, Monteiro, and Gilligan (1978). The studies were combined due to a shortage of funds and of highly hypnotizable subjects.

Method

Subjects. The subjects were 16 Stanford undergraduates from the “highly hypnotizable” pool maintained by the Stanford Hypnosis Laboratory. They had been screened as scoring 10–12 (the upper 15% of the college population) on the Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer & Hilgard, 1962), having passed the amnesia test item. Highly hypnotizable subjects were used in order to obtain reliably strong mood states and to increase the likelihood of posthypnotic amnesia for the mood arousal that the subject experienced while reading the story. Most subjects had served in one or more experimental studies of hypnosis (none involving mood states or learning). The subjects were paid upon completion of their second experimental session.

Materials. The story written for these experiments was about 1,000 words long and was divisible into 121 “idea units” (roughly, simple clauses) for scoring purposes. It is reproduced in the Appendix. The story was about two college men, Jack and Andre, as they met for and played a friendly afternoon game of tennis. The story narrates their driving to and arriving at the gym, getting dressed in their tennis clothes, warming up and playing a game of tennis, then showering and getting dressed in their street clothes again. Andre is very happy and is enjoying himself; he and his girlfriend are getting along well and he is anticipating a fabulous concert and dinner date with her that evening. He is in a buoyant unworried mood, is joking, singing, and enjoying the spring sunshine, and he wins the tennis match easily. In contrast, his friend Jack is in a particularly glum and depressed mood on this day. His girlfriend has just jilted him and he broods over that loss. He is also worried over his upcoming exams. Everything goes wrong to depress him: his car needs repairs, his gym locker jams, he breaks a shoelace, feels scorched by the sun, loses at tennis, and feels miserable. Each sentence of the story was written to be clearly about either Andre (54 idea units) or Jack (57) or neither of them (10). In this way, we were able to score each recall unit as being about Andre, Jack, or neither.

Procedure. The subjects were assigned in random alternation to the happy or sad reading conditions and were tested singly. The experiment was described to them vaguely as a study of the influence of mood on expressive style. On Day 1, subjects were hypnotized using a standard relaxation eye-closure induction (see Weitzenhoffer & Hilgard, 1962). Being very susceptible, all subjects rapidly entered a “deep trance” but were able to talk and indicate their depth of hypnosis (1–10 scale). After induction, the experimenter asked the subjects to choose a situation that had made them intensely happy (or sad) or to make up one that would do so. They were to adjust the intensity of the emotional feeling to be intense but not overwhelming or unbearable. After thoroughly familiarizing themselves with their happy or sad mood, subjects were told that after awakening they would re-experience this same emotional feeling (but not the imagined situation) when they began to read a story that the experimenter would hand them. The emotional state was to be maintained steadily as they read the story twice, filled out a questionnaire about it, and then learned a list of 20 words (for an unrelated experiment not reported here). The mood was to be lifted finally and they were to revert to a normal mood when the experimenter pointedly said, “That’s fine. It’s over.” Furthermore, the experimenter told subjects that the posthypnotic cues would trigger the beginning or end of the mood without their being aware.
of the source of their mood. They would remain unaware until the end of the second session when the experimenter said, "Now you can remember everything about this study." At that point, the posthypnotic suggestion was to be cancelled. We did not erase it at the end of the first session because we wished to rearouse the mood during the second session for use with the word list experiment that occurred after the story was recalled.

After receiving the posthypnotic suggestion on Day 1, the experimenter awakened subjects from hypnosis and engaged in light conversation. The mood was reinstated as they were handed the story (the cue) to read through twice at their own pace. When they finished reading and were still in their mood, subjects filled out a five-item questionnaire that asked: "Which character did you identify with? Which character was stressed (emphasized) the most? Who had the most details associated to him? How comprehensible (on a 10-point scale) was the story? Describe any images you may have had as you read."

After completing the questionnaire, the subjects for purposes of the unrelated experiment received two study-free recall cycles with a 20-word list while in the emotional mood. After that they were told, "You're finished. That's fine. It's over." After insuring normalization of their mood, the experimenter sent the subjects home with instructions to return to the same room 24 hours later.

At the beginning of the second session, the subject was hypnotized for the word list experiment and asked to experience either a happy or sad mood (half of each mood group from Day 1); it was also suggested that the subject would feel this emotion later when he or she read recall instructions (for the word list) printed on green paper. The "green paper" cue was particularly stressed, since we wanted to ensure that the subject did not access the experimentally suggested mood (i.e., was in a neutral mood) when he or she recalled the story of this experiment on white paper.

After the mood induction and posthypnotic suggestion, subjects were awakened from trance and then handed the story recall instructions. These were printed on white paper (so presumably no mood was induced). They emphasized recall (in writing) of all story details as completely as possible and as close to the original text as possible. Subjects were allowed as much time as needed for recall. After finishing, subjects were handed a green sheet with instructions to recall the word list for the other experiment. The green paper supposedly reinstated the emotional mood established at the beginning of the second session. When word list recall was finished, the experimenter said, "That's fine. It's over," which was to remove the mood and return the subject to a neutral mood. He next asked subjects to remember their moods during both sessions and to speculate about the aims of the experiment. They were then told, "Now you can remember everything about this experiment," to cancel the amnesia suggestion. Following this, he asked them again about their mood changes during the two sessions and about any hypotheses concerning the aim of the experiment. After ensuring mood normalization, the experimenter thoroughly debriefed, paid, and thanked the subjects for their participation.

Results

Success of hypnotic suggestions. Being highly susceptible, the subjects rapidly went into deep trance and were adept at "getting into" the moods under hypnosis, typically imagining a success or a vacation scene for the happy mood and a personal failure, loss, or funeral scene for the sad mood. Informal questioning indicated that they followed the posthypnotic suggestions exactly, feeling happy or sad on the appropriate occasions. Also, their behavior was appropriate; happy subjects often laughed over the story, sad subjects appeared glum and on the verge of tears as they read the story. When questioned at the end of the second session, most could remember that they had experienced a mood shift while recalling the word list on Day 2, and many recalled feeling in a mood while reading the story on Day 1 and while learning the word list on Day 1. However, when probed about the purpose of the experiment, they either said they had no idea or they reiterated the vague description they had been given when initially contacted.

Questionnaire. The questionnaire asked three questions relevant to which story character the subject identified with: "Who did you mostly identify with? Who was stressed? Who had the most details associated to him?" Twelve of the 16 subjects answered all three questions with the same character; four subjects gave the same character as the answer to two items and replied with the other character to the third question. Assigning these four subjects to identification with the character mentioned in two of the three questions, we find a perfect correlation between mood state and character identified with; all eight happy subjects identified with happy Andre, and all eight sad subjects identified with sad Jack. So our mood manipulation was completely effective in determining the character with whom the subject identified.

The questionnaire also asked for reports of imagery during reading. Five of the 16 subjects wrote no answer to this question. For the remaining 11, an average of 3.5 images were reported in which the character identified with was central, but only .4 im-
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ages in which the other character was central. Nine of the 11 subjects reported more images relevant to the character they had identified with \( (p < .03 \) by a sign test). Thus, we may conclude that in identifying with a character, the reader tends to have imagery about that character and the events in which he participates, according him “center stage.”

**Recall.** The recall protocols were scored for propositions or idea units recalled, and these were classified as facts about happy Andre, sad Jack, or neither character. First, the happy and sad subjects did not differ in the total number of idea units recalled; the recall means were 23.6 for happy and 20.8 for sad subjects, \( t(14) = .56 \). Also, the two groups did not differ in the number of neutral idea units recalled (3.5 for happy vs. 1.0 for sad).

The major difference between the groups was in the proportions of happy versus sad facts recalled. The proportion of sad facts recalled out of happy-plus-sad facts recalled was calculated for each subject and then averaged. This sad proportion averaged 45% for the happy subjects and 80% for the sad subjects. The difference in proportions (arc sine transformation) is statistically reliable, \( t(14) = 3.02, p < .005 \). All eight sad subjects recalled more facts about sad Jack, compared to only three of eight happy subjects. Setting aside one subject who recalled an equal number of facts about the two characters, 12 of the other 15 subjects recalled more facts about the character who felt the same as they did when they read the story. This recall bias is significant by the sign test \( (p < .018) \).

Although the recall advantage for congruent material is consistent, the effect is small, but that is to be expected. The happy and sad statements were integral parts of a story line with much interactive dialogue, so there were strong contextual linkages between the two categories of statements. Thus, recall of a happy fact would very likely cue recall of a sad fact that it was linked to in the story (and vice versa). To the extent these dialogue-determined interconnections were formed and used, the mood-congruity bias in recall was reduced in magnitude.

We wondered why the effect in favor of recalling happy facts by happy subjects was not nearly so pronounced (relative to a 50% baseline) as was recall of sad facts by sad subjects. An answer was forthcoming upon re-examining the story; in retrospect, the story seemed subjectively to be somewhat more about sad Jack than happy Andre. We had another 22 nonhypnotized subjects (an introductory psychology section) read the story and indicate which character, if either, they thought was more prominent or salient. Thirteen (59%) picked sad Jack, seven said emphasis was equal, and two (9%) picked happy Andre. Thus, the story is frequently viewed as being somewhat more about sad Jack, so one would expect a normal-mood control group to recall fewer facts about happy Andre than about sad Jack. In fact, a later control experiment found 60% recall of sad to happy-plus-sad facts for subjects who identified with neither Andre nor Jack. Thus, the 45% sad recall percentage observed for happy subjects in Experiment 1 indicates an effect of mood identification that probably is close in magnitude to that reflected in the 80% sad recall by sad subjects.

**Discussion**

We found that readers identify with the story character who is experiencing a mood similar to the one they are experiencing while they read the story. Thus, mood similarity seems to be a determinant of identification. The character with whom readers identify influences their perception and recall of the story. Readers believe the story was mainly about the character they identified with and believe that more details were given about him; he holds center stage in their dramatic imagery, and more facts about him are recalled later.

The results decisively reject the Pollyanna hypothesis in this application: Readers showed no overall favoritism toward the happy character. Thus, rather than focusing on cheerful aspects of the text, our sad subjects supported the adage “misery likes company.”

The results support the mood-congruity hypothesis that material relevant to the
reader's mood will be especially salient and will receive special attention, processing, and elaboration during encoding into memory. Two separable aspects of this account warrant discussion. First, the effect may or may not be mediated specifically by readers identifying with a specific character as opposed to their emphasizing and making salient specific kinds of affective material. Second, the mood effect is here alleged to occur at the time of encoding (learning), not at the time of recall.

The first issue is whether the mood-congruity effect is mediated specifically by character identification as opposed to special salience of material matching the reader's mood. These two factors are confounded in the Jack–Andre story, since the only happy events are those associated with Andre, and the only sad events are those associated with Jack. Perhaps the reader's selectivity is based on happy versus sad events, rather than happy versus sad characters. This issue was of sufficient interest that Experiments 3 and 4 were undertaken later to examine it.

If the mood effect is based on character identification, then one should be able to produce a similar recall bias in neutral-mood readers by instructing them explicitly to take the point of view of one or the other selected character. A brief attempt in this direction failed completely. A class of 30 Harvard University summer students was given the Andre–Jack story to read; a third were instructed to adopt Jack's point of view, a third to adopt Andre's point of view, and a third received neutral reading instructions. The instructions to the first two groups asked them to "read the story from Andre's (or Jack's) point of view, as though you were in his shoes." The subjects read the story for 5 min. and then recalled it 20 min. later.

The results were quite disappointing. The three groups recalled about the same number of idea units, and their ratios of sad to happy units recalled were similar. The percentages of recalled sad units out of sad-plus-happy units recalled were 54% and 60% for subjects who reported identifying with the happy and the sad character, respectively. The happy recall percentage was 55% for subjects who reported identifying equally with both characters or with neither character. This study revealed to us the ambiguity of our "identification" instructions and questionnaire, since subjects admitted to confusing identification ("Which character did I project myself onto?") with attractiveness ("Who is the more likable character?") and similarity judgments ("Whose personality is more like mine?"). These differing bases for judgment led to there being no systematic influence of our instructions on subjects' reports of "identifying" with the two characters. If the results of this pilot experiment are valid, they suggest that our emotional mood manipulation was far more powerful than explicit instructions in causing readers to identify with a selected character. An alternative interpretation, mentioned previously, is that the recall bias in Experiment 1 may not depend on character identification but on differential salience of pleasant versus unpleasant material for happy versus sad readers. In such a case, one would not expect recall differences when neutral-mood subjects are told to identify with one or another character.

Taking up the second issue, we claim that the mood effect here results from differential learning (input) of happy versus sad material. Could the result instead be an output effect? A plausible alternative is that character focus during reading affects character focus during later remembering. That is, the subject might organize his or her reconstruction of the story around a subjective "main character," and prompt or cue himself or herself to recall facts about that character to the detriment of recalling facts about the other characters. Or perhaps the priority in recall of facts about the central character creates "output interference" for later recall of facts about secondary characters.

The "priority in recall order" explanation can be discarded immediately because in recalling, subjects overwhelmingly followed the narrative order of events. Thus, facts about each character are not recalled en bloc but rather in a sequential mix. This must be so, since an assertion about one character is often linked narratively (and associatively) to an assertion about the other character. Putting aside the output-order explanation, the remaining selective output hypothesis
could be tested either by using recognition memory tests for text sentences (thus minimizing effects due to reconstructive strategies) or by inducing the emotional mood and character identification after the person has read the text (in a neutral state) but before he or she recalls it. Although we find the encoding hypothesis more plausible, the output reconstruction hypothesis is sufficiently plausible that we carried out Experiment 2 to test it.

Experiment 2
The next experiment asked whether inducing the emotional mood only at the time of recall would influence the recall of happy versus sad facts. The reader read the story while in a normal (neutral) mood. Later a mood was induced by hypnosis and the subject recalled the story while in that mood. If an effect of mood on recall is observed, a second issue is whether new memories would become available if the subject's mood were shifted before a second recall. Anderson and Pichert (1978) reported a small increase in recall when the perspective of recallers on a story was shifted before a second recall; the recall increment came primarily from parts of the story relevant to the second perspective. We wondered whether a mood shift from happiness to sadness (or vice versa) between recalls would make mood-congruent memories more recallable. Accordingly, after a first recall in one mood, subjects were shifted to the opposite mood and recalled the narrative a second time.

Method
Subjects. The subjects were 16 adult volunteers from a self-hypnosis training class conducted by the second author. All were mental health professionals (doctors or graduate students in clinical psychology or psychiatry). All were excellent hypnotic subjects.
Procedure. All subjects read the Jack-Andre story during the final morning of a 5-day workshop on self-hypnosis. They were told to read the story (for 6 min.) to be able to answer some questions about it later. Five hours later, half the subjects were placed hypnotically in a happy mood and half in a sad mood using the same procedure as in Experiment 1. They were then given 15 min. to recall the story while in this mood and asked to write down every detail they could remember as close to verbatim as possible. After completing the first recall, the subjects' moods were removed. They were then placed in the mood opposite the one they had first been given and asked to recall the story again, including the old facts they had recalled and any new facts that came to mind. Again subjects had 15 min. to complete the task. While maintaining their second mood, they then filled out a questionnaire containing 14 questions. Two questions asked subjects to rate on a 7-point scale how much they identified with Andre and with Jack while reading the story and at the current time. Completion of the questionnaire ended the experiment.

Results and Discussion
Questionnaire. A first question is whether the subjects' current moods during recall influenced their report of the character with whom they identified. We found no effect of current mood on subjects' retrospective reports of which character they had identified with earlier when they read the story (while in a neutral mood). However, subjects' current moods did influence their reports of which character they were currently identifying with. Subjects who were sad at the time they answered the questionnaire said that at that moment they identified more with sad Jack (5.25 on a 7-point scale) than with happy Andre (2.87), and these ratings differ reliably, t(14) = 3.35, p < .01. Similarly, subjects who were happy said they identified at that moment more with happy Andre (5.37) than with sad Jack (3.37)—a reliable difference, t(14) = 2.75, p < .05. Comparison of subjects' identification ratings for the two characters shows that 13 of the 16 subjects reported identifying more with the character whose mood matched theirs at the time of the rating. This split is significant by a sign test (p < .01). We may conclude that our subjects' moods at the time of recall were effective in causing them to report identifying at that time with the character of the same mood. We next examine whether this character identification or mood during recall had any influence on recall.
Recall. The recalls were scored for the number of idea units each subject recalled associated with happy Andre, sad Jack, or neither or both characters (neutral facts). The group averages of those scores are shown in Table 1. A first observation is that the sad-then-happy subjects were slightly better recallers overall than the happy-then-sad subjects, a difference of no importance. Second, there was no evidence whatsoever for a selective effect of mood on recall of
Table 1
Mean Number of Happy, Sad, Neutral, and Total Idea Units Recalled During the First and Second Recalls by Subjects in Experiment 2

<table>
<thead>
<tr>
<th>Group</th>
<th>First recall</th>
<th>Second recall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sad</td>
<td>Happy</td>
</tr>
<tr>
<td>Happy then sad</td>
<td>13.75</td>
<td>13.75</td>
</tr>
<tr>
<td>Sad then happy</td>
<td>16.50</td>
<td>14.62</td>
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</tbody>
</table>

happy versus sad material. For none of the columns in Table 1 does the difference between the two groups' means even approach significance. Indexing selectivity by the ratio of sad to sad-plus-happy facts recalled, we find that the indices on the first recall are .50 for the happy recallers and .53 for the sad recallers; for the second recall the proportionate sad-fact recall was .54 for the sad recallers and .56 for the happy recallers. None of these proportions differs significantly from the .50 baseline of no bias in recall of facts about the happy versus sad character. Moreover, a change in recall mood caused no reliable shift in the recall ratio for either group. Inspection of Table 1 reveals that more idea units occurred on the second recall than on the first recall, an effect explicable simply by a longer memory-search time. We had wondered whether a mood shift would cause relatively more new facts congruent with that new mood to appear in the second recall, but there was no evidence for a mood-congruent increment: Averaged over the two groups, the mean increment in recall for shifted mood-congruent idea units was 2.37, and for shifted mood-incongruent idea units it was 2.25, an insignificant difference.

Thus, Experiment 2 found no influence of the subjects' current mood on selective recall of happy versus sad material read earlier while in a neutral mood. The current mood definitely influenced the character with whom recallers said they identified at that moment; however, that report of identification was not correlated with the number of facts recalled about the happy or sad character. Further, inspection of the recall protocols revealed no consistent, obvious qualitative differences in the subjective focus or story-telling perspective of sad versus happy subjects. Thus, although recallers may be sympathetic to one character, they nonetheless retell the story substantially in the balanced third-person perspective in which it was written and read.

The conclusion from Experiment 2 is essentially negative; selectivity of recall of material encoded while in a neutral mood could not be induced by manipulating mood (and character identification) at output. This suggests that the recall selectivity obtained in Experiment 1 was an input (encoding) effect, not an output (retrieval) effect. That is, the readers' moods during reading influence selectively the way they process and learn mood-congruent versus incongruent material. Their later differential recall largely reflects differing degrees of learning of the two types of materials.

The null result in Experiment 2 also discredits the idea that our earlier results only reflect the hypnotic demand characteristics of moods for the suggestible subjects. That hypothesis supposes that suggestible subjects should comply with whatever role behavior they believe is being implicitly demanded by the hypnotist. Thus, happy or sad subjects may feel that in concentrating on happy or sad material, respectively, they are following the implicit demands of the situation. But the demand hypothesis expects a strong selective effect of mood on output of happy or unhappy events, and none was forthcoming in Experiment 2 (or later in Experiment 4), thus weakening the demand hypothesis.

Experiment 3

Experiment 1 left us with the question of whether the selective recall effect was specifically due to the reader identifying with the mood-congruent character or focusing on and elaborating statements that were happy or sad. As noted, the two factors are confounded in the Jack-Andre story. Our
next experiment used a narrative about a single character in a neutral mood describing a series of happy incidents and sad incidents from his life. If the selective learning in Experiment 1 had been caused by character identification, then happy and sad readers should not differ in what they recall of this one-character narrative. On the other hand, if the selective learning had been due to more elaborate processing of any mood-congruent material, then happy readers should recall more happy incidents and sad readers more sad incidents.

A second question is whether subjects' moods at the time of recall will have a main effect on recall or will interact with their moods during learning. Although Experiment 2 found no recall difference due to output mood, that experiment confounded character with type of material, and the story was read in a neutral mood. Perhaps output mood affects recall only if the material was acquired in a specific mood. A mood-state-dependent retrieval hypothesis would suggest that recall would be best when the mood during recall matches the subject's mood during original learning. To explore these possibilities, different subjects learned the story in a happy or sad mood, then half of each subgroup was tested for recall while happy and half while sad.

Along with recall, subjects also estimated from memory the relative frequency of sad and happy incidents in the narrative. A hypothesis of Tversky and Kahneman (1973) suggests that relative frequency judgments of alternative events are biased according to the "availability" of those events in memory. This hypothesis expects subjects' estimates of the proportion of happy versus sad incidents in the narrative to follow their proportionate recall of these incidents. Thus, if mood at input or output influences recall of happy versus sad incidents, similar effects should occur for relative frequency estimates of happy versus sad incidents.

Method

Design. The experiment used four groups arranged in a 2 × 2 factorial with input mood (happy or sad) as one factor, and output mood (happy or sad) as a second factor. After reading the story, subjects were tested for recall and gave their estimates of the relative frequency of happy to sad incidents in the story they had read. Subjects also answered a retrospective questionnaire about their subjective moods and experiences while reading or recalling the story.

Subjects. There were 32 subjects, 19 females and 13 males. Sixteen were Stanford undergraduates selected for high scores (10-12) and for passing the amnesia test on the Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer & Hilgard, 1962). The other 16 subjects were selected from a pool of former students in hypnosis workshops conducted by the second author. All were excellent hypnotic subjects who scored in the 10-12 range on the Form C test and showed amnesia. Eight subjects at random were assigned to each of the four experimental groups. All subjects were paid for their participation in the experiment.

Materials. All subjects read a 660-word narrative that described four different age-regression sessions involving a male patient (Paul Smith) undergoing hypnotherapy with a psychiatrist. Except for brief statements giving the setting and the framework of beginning and ending the four therapeutic sessions, the narrative mainly depicted Paul recalling and relating a carefully balanced variety of happy, neutral, and sad incidents from his life. The text is reproduced in the Appendix. It was divided into 78 basic idea units, of which 26 came from descriptions of happy incidents, 26 from sad incidents, and 26 from neutral incidents. Examples of happy items were memories of riding piggyback on his father's back, jokes he had been told, festive family gatherings, good grades in school, winning a football game, and his first true love. Sad memories included the deaths of his grandfather and his dog, being cut from his baseball squad, the breakup of the Beatles music group, and his sister's injuries in an auto accident. Neutral items usually referred to the setting information, the beginning of trance induction or ending trance termination of Paul at each session, and remarks between the doctor and Paul about his progress.

After recalling this narrative, subjects filled out three sections of a questionnaire. One part asked their impression of the narrative, its emotional content, and images they had while reading and while recalling. A second section asked them to estimate how much of the story's emotional content was composed of happy incidents and how much was composed of sad incidents. The final section of the questionnaire probed their memory for any moods they experienced while reading and recalling, fluctuations in mood, and whatever hypotheses they had to explain these moods.

Procedure. Subjects were assigned randomly to the four experimental groups and were run in subgroups of four. After establishing rapport, the experimenter induced a deep trance by the eye-closure method. Subjects were then asked to recall a personal experience that had involved a happy or sad mood (depending on their condition). They were to re-experience that emotional mood. Further, it was suggested that once out of trance, they would fully reexperience this mood state (though not the remembered situation) when they were handed a story to be read. This mood would remain throughout the reading of the story until a cue was given. Amnesia instructions for all hypnotic suggestions were then given, along with posthypnotic cues for trance re-entry ("Okay,
Table 2

Average Number of Idea Units (out of 26) Recalled by Subjects in the Four Groups

<table>
<thead>
<tr>
<th>Mood</th>
<th>Type of fact</th>
<th>Frequency estimate (% sad)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Happy</td>
<td>Sad</td>
</tr>
<tr>
<td>Happy</td>
<td>8.63</td>
<td>6.87</td>
</tr>
<tr>
<td>Happy</td>
<td>7.00</td>
<td>5.75</td>
</tr>
<tr>
<td>Sad</td>
<td>6.75</td>
<td>6.63</td>
</tr>
<tr>
<td>Sad</td>
<td>5.00</td>
<td>9.25</td>
</tr>
</tbody>
</table>

now") and for amnesia removal ("All right, that's all for now"). Subjects were then removed from trance. This entire first portion took about 15 min.

Once out of trance, subjects were handed the Paul Smith narrative and instructed to read it carefully for 5 min. During this reading, the subjects should have felt happy or sad according to their posthypnotic suggestion. After 5 min. they handed back the story sheet.

Next the cue for trance re-entry was given followed by a 10-min. induction. The subjects were then asked to recall a different situation from their past that had made them intensely happy (or sad, depending on their experimental condition). After reviving that emotional feeling, they were told that after awakening from trance they would re-experience this mood (but not the situation) while engaging in recall and while filling out a questionnaire. Furthermore, amnesia for these trance instructions was suggested except for cues for the lifting of the amnesia and for their return to a normal mood. Following these instructions, subjects were taken out of trance. This second trance procedure required about 20 min, so that was the interval between story reading and recall.

Next, each subject received the recall sheet. It instructed subjects to recall everything they could about the story, including all details they could remember no matter how trivial they seemed. They had 10 min. to write their recall. The recall sheets were then collected and the questionnaires were handed out. After completion of the first parts of the questionnaire, the cue for removal of amnesia and mood normalization was given. After recovery of memory for trance events and mood normalization had been carefully insured, the subjects completed the final section of the questionnaire. This asked subjects' impressions of mood fluctuations during reading and recall and asked their hypotheses about these changes. Then subjects were thoroughly debriefed about the experiment and dismissed.

Results

Recall. The recall protocols were scored for idea units recalled; each was classified as a happy, sad, or neutral unit, and new units (recall intrusions) were noted. The group averages for these categories are shown in Table 2.

Several conclusions are warranted by the results in Table 2. First, happy and sad items were recalled better overall than neutral items, but this comparison is not balanced for the type of material (e.g., settings vs. Paul's emotional incidents) and so should be ignored. Second, there is a slight mood-state-dependent retrieval effect; the groups whose recall mood matched their learning mood recalled slightly more in total than the groups whose recall mood mismatched their learning mood. However, this interaction is not reliable with the total recall scores, $F(1, 28) = 2.48, p > .05$. A second test for this Input x Output interaction was carried out on recalls of only the emotional incidents, but that too was not significant. Thus, these data reveal no mood-state-dependent retrieval effect. This failure duplicates that found for one-list recall experiments by Bower, Monteiro, and Gilligan (1978); they observed mood-state retrieval effects only when their subjects were placed in a list-discrimination problem, having learned two confusable lists, each in a different mood.

The conspicuous effect in Table 2 is that preferential recall of happy versus sad incidents differs according to the subject's mood during learning. To reduce intersubject variability in levels of recall, we indexed preferential recall by the ratio of sad items recalled to the sum of happy and sad items recalled. The average ratios across groups were .43 for happy–happy, .44 for happy–sad, .50 for sad–happy, and .66 for sad–sad. An analysis of variance was carried out using arc sine transformations of these ratios. This revealed a significant main effect of the subjects’ mood during reading, with $F(1, 28) = 4.60, p < .05$. However, subjects' mood during recall had no significant effect, nor did the interaction of learning and recall moods. To summarize, happy learners recalled more happy incidents and sad learners...
tended to recall more sad incidents, but the recall mood had no significant effect on preferential recall. The glaring exception to this general "storage" effect was the sad–happy subjects (line 3 in Table 2) who recalled nearly equal numbers of sad and happy incidents. We have no explanation for this exception, although it is in a direction predicted by an output effect working against a storage effect of mood.

Frequency estimates. After recall, subjects estimated from memory the proportions of the narrative sentences that had been about happy incidents, and, separately, about sad incidents. We formed the ratio of sad to happy-plus-sad estimated proportions to obtain a "percent sad" estimate for each subject. The group averages of these ratios are presented in the last column of Table 2. Inspection of these relative frequency estimates suggests an effect due to the subjects' mood at the time they made the estimate (just after recall). Analysis of variance on the arc sine transformations of these percentage estimates revealed a significant effect of mood during testing, with \( F(1, 28) = 16.9, p < .01 \), but no effect of mood during learning or of the interaction between learning and testing mood. Currently happy subjects estimated that the narrative had contained more happy incidents, whereas sad subjects estimated that it had contained more sad incidents. This test effect of mood on frequency estimation contrasts with the storage effect of mood on selective recall.

For three of the groups the estimated percentages of sad to happy-plus-sad incidents were very close to the percentage ratios of recalled sad and happy incidents. Thus, the happy–happy group had a sad recall ratio of 43.6 and an estimated sad percentage of 42.5. The sad–sad group had a sad recall ratio of 66.2 and an estimated sad percentage of 65.9. The sad–happy group estimated a sad percentage of 45.6 and recalled in a sad ratio of 49.5. The closeness of the recall ratios and percentage estimates for these three groups supports the "availability" hypothesis of how people make relative frequency judgments. But the happy–sad group is quite discrepant from this hypothesis; their sad recall ratio was 43.9 compared to an estimated sad percentage of 59.5. These subjects, therefore, were giving estimates of sad-fact proportions considerably higher than the proportion of sad to happy facts they had just been able to recall. In fact, this discrepancy largely accounts for the differing influences of storage versus test mood on selective recall versus frequency estimates. We cannot explain this discrepant result.

Questionnaire. A few interesting findings were provided by the questionnaire. Thirty of the 32 subjects reported that incidents of the narrative often reminded them of certain incidents from their own life. Fifteen of the subjects gave only a general report of reminding, but another 15 reported specific story incidents that had reminded them of events from their life. Of 33 reported specific incidents, 24 (73%) agreed in emotional quality with the reader's mood. For instance, sad readers were more likely to be reminded of an (invariably sad) incident from their life while reading a sad incident about Paul, whereas happy incidents of Paul's life were less likely to remind them of any incident from their life. Happy readers showed the reverse selectivity of reminding. This selective reminding probably covaries with the personal elaboration of mood-congruent material. In the Discussion section we return to the question of whether this selective reminding process might be responsible for the selective learning of mood-congruent material in these experiments.

Finally, 21 subjects reported that their mood fluctuated somewhat during reading and that this was most likely to happen as they read an incident of an emotional quality opposite to the one they were feeling. Thus, happy readers might have found their euphoria subsiding briefly when they read of some sad incident of Paul's life. In retrospect, this effect seems entirely plausible; however, it has implications for the mood-congruity hypothesis that we will note at the end of this article.

Discussion

The major finding of Experiment 3 was that selective learning occurs with respect to mood-congruent incidents. Thus, the selective effect of mood on learning does not
require the reader to identify with a selected character, as appeared to be the case in Experiment 1. Rather, the selective-learning effect of Experiment 1 can now be reinterpreted as showing an effect due to enhanced salience of happy versus sad materials rather than an effect due to identification with the happy versus sad character. Experiment 5 attempts to further separate these two factors.

A second major result is that mood led to selective learning but not selective recall of happy versus sad incidents in the narrative. Happy readers tended to learn more happy than sad incidents; sad readers did the reverse. But mood during recall had no effect on what was recalled. An explanation for the better learning of mood-congruent material was suggested by responses to the questionnaire. Although not designed for this specific purpose, the questionnaire did elicit reports that subjects were frequently reminded of incidents from their past by incidents in Paul's narrative. Incidents that evoked reminiscence usually matched the emotional quality the reader was feeling; that is, sad readers were more likely to be reminded by a sad incident in the narrative, and happy readers by a happy incident. It seems likely that these reminding experiences themselves promote very good learning, perhaps because the remembered event can be used to elaborate and embroider the current input, perhaps because the reminding lends distinctive personal and affective tone to the narrative event. In related work, Bower and Gilligan (1979) reported that brief event or object descriptions (e.g., "a dying dog" "a soft chair") were better recalled later by subjects who were asked whether each description reminded them of a personal experience than by subjects who judged the meaning of each descriptive phrase. Moreover, descriptions that successfully reminded the former subjects of a personal experience were better recalled later than descriptions that did not. Several hypotheses are plausible to explain the reminding effect on memory. Rather than pursuing these here, we will merely observe that such memory enhancement by reminding may underlie the mood-congruity effect we have found for materials. We return to this explanation at the end of this article.

The disturbing element of the reminding explanation is that it assumes that the subjects' mood should facilitate the likelihood that an emotional narrative will remind them of a similar personal incident. But this experiment has shown no selective effect of recall mood on retrieval; that is, sad recallers were not more likely to retrieve sad than happy parts of the narrative. However, the interaction between input mood and output mood was suggestively in the predicted direction, so perhaps one should not reject the selective retrieval hypothesis until more evidence has accumulated.

**Experiment 4**

This experiment was run at the same time as Experiment 3 to search for an influence of recall mood on selective retrieval. Its results are worth reporting briefly to indicate the reliability of our results. The basic question was whether a selective retrieval effect could be demonstrated with the one-character (Paul) narrative used in Experiment 3. Therefore, we essentially replicated Experiment 2 using the Paul narrative. Subjects read the story while in a neutral mood, later recalled it while in a happy or sad mood, then switched moods and recalled it a second time. The issue is whether subjects selectively retrieved more incidents with emotional qualities that agreed with their own while recalling.

**Method**

Sixteen highly hypnotizable subjects from the same sources as the preceding experiments were randomly assigned to one of two recall conditions (happy or sad). All subjects first read the Paul Smith story for 5 min. while awake and in a neutral mood. They were instructed to remember it. They were asked to return later in the day (4-6 hr. later). Upon returning, they were hypnotized, placed into a happy or sad mood (eight subjects per mood), and instructed to maintain this mood later while recalling the previously read story. The subjects were then aroused from trance, given several sheets of paper, and instructed to write a detailed free recall of the Paul Smith story. After 10 min. of this task, subjects were rehypnotized, put into the alternate mood, and told to maintain this second mood while again recalling the story. They were then taken out of trance and given 10 min. to write their second recall of the
Table 3

Number of Idea Units Recalled in Experiment 4 Categorized by Type Of Unit

<table>
<thead>
<tr>
<th>Mood</th>
<th>First recall type of fact</th>
<th>Second recall type of fact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Happy</td>
<td>Sad</td>
</tr>
<tr>
<td>Happy</td>
<td>6.12</td>
<td>6.37</td>
</tr>
<tr>
<td>Sad</td>
<td>6.25</td>
<td>7.50</td>
</tr>
</tbody>
</table>

Paul narrative (while in the second mood). Approximately 20 min. elapsed between the end of the first recall and the beginning of the second. The hypnotic procedures of Experiment 2 were followed closely. The recall protocols were scored as in Experiment 3.

Results

The mood manipulations were effective in that subjects reported feeling happy or sad as instructed and they behaved appropriately. However, their emotional mood during recall had practically no influence on what they recalled. The average recall scores are displayed in Table 3. The mood of the recaller did not significantly affect either total recall or the ratio of happy to sad incidents recalled. Sad incidents were recalled slightly more than happy incidents under all circumstances. Moreover, the shift in mood between the two recalls did not permit subjects to access reliably more facts congruent with the second mood.

These negative results essentially reaffirmed those of Experiment 2 with different learning materials; material read and learned under a neutral mood was not differentially retrievable later according to the mood of the recaller. Perhaps output mood will affect recall only if the subject feels that mood intensely during learning, so that the material is encoded in the context of that emotion. That is, output mood might affect recall only by virtue of mood-state-dependent retrieval.

Experiment 5

Experiment 1 demonstrated that subjects recalled more about a character who was in the same mood as they were. But statements about him described either all pleasant or all unpleasant events and feelings. Experiment 3 found that subjects recalled more events (about a single character) for which the predominant emotion matched the mood of the reader. The mood-congruity effect in Experiment 3 raised the question of whether the result in Experiment 1 resulted from subjects' identifying with a happy (or sad) character or from the fact that all happy (or sad) experiences were associated only with happy Andre (or sad Jack). Conceivably, the enhanced salience of material congruent with the reader's mood suffices to explain the results of Experiment 1, with no need to postulate an additional effect of character identification. Alternatively, if mood promotes the reader's identification with a character, this factor could operate along with the materials-congruency factor to promote better learning of congruent material associated with a same-mood character.

The narrative used in Experiment 5 varied independently the two factors of character identification and mood of the incidents described by the characters. While happy or sad, our subjects read and learned a narrative that described two characters undergoing psychiatric treatment, one character always depressed, the other always euphoric. During the therapeutic interview, each character recounted in mixed order many happy and sad incidents from his life. Subjects later recalled as much of the narrative as they could while they were in a normal, neutral mood.

The hypotheses yield differing predictions for the recall results. The character-identification hypothesis predicts that readers will selectively learn the facts about the character most resembling their mood. Thus, happy readers should remember more about the happy than the sad character, whereas sad readers should show the reverse ordering in recall. The character-identification hypothesis predicts no difference in recall of happy versus sad incidents. On the other
hand, the materials-salience hypothesis supposes that a sad mood should enhance the salience and memorability of any sad incident, and a happy mood should enhance the memorability of any happy incident, regardless of which character recounts the incident. Experiment 5 tested these alternative predictions.

**Method**

**Subjects.** The sixteen subjects, solicited from the same sources as in the previous experiments, were highly hypnotizable (Form C scores of 10–12). A random eight subjects read and learned the narrative while happy, and eight while sad. They were run in groups of four same-mood subjects at one time.

**Materials.** The narrative of about 1,200 words described two men, Mike and Joe, having a final joint psychotherapy meeting with their psychiatrist. He had been engaging them in hypnotic age regression; in this session he asked each patient to share with the other the set of boyhood incidents he had described earlier during age regression. Thus, the narrative consisted of the two patients describing to each other (and the psychiatrist) a series of brief incidents from their lives. Half the incidents described by each character were happy or pleasant, and half were sad or unpleasant. The passage contained 135 idea units (simple clauses). Of these, 15 units were neutral, and 60 were attributed to Mike, and 60 to Joe; half of each character’s 60 units related happy incidents and half related sad incidents.

Before reading the narrative, subjects read one paragraph describing the setting and patients in the narrative. This background mentioned that Mike suffered from long-standing, severe depression, whereas Joe was a happy-go-lucky manic who entered therapy because of his continual euphoria and practical joking were intermingled. Throughout the narrative, Mike was described as a morose, miserable, tearful man who spoke sadly; Joe was described as happy, even giddy, laughing frequently. Nonetheless, each character described equal numbers of happy and sad incidents from his life.

**Procedure.** The subjects were hypnotized in groups of four using the eye-closure method as before. After trance induction, subjects were made happy or sad by the usual procedure. They were to maintain this emotion at level intensity as they read a narrative handed them by the experimenter. They were not given amnesia for this instruction. While in trance and experiencing the instructed mood, each subject received the typed narrative and was told to read it in order to answer some later questions about it. They had 10 min. to read and study the narrative. Then the mood was removed, and subjects engaged in a distracting task (adding columns of numbers) for 10 min. Following this, they were handed several sheets of paper and asked to recall everything they could about the Mike and Joe narrative they had read 20 min. earlier. They were told to recall as many details as they could, as near to the original wording as possible, but to recall the gist of any incidents if they could not recall the original wording. Subjects had unlimited time to write their recall, but all finished within 15 min. After reading the narrative, subjects were asked which character they had identified with and who was the “main character” in the narrative. The recall protocols were scored for basic units (clauses) recalled; these were classified according to the central character (Mike or Joe) who related the event about himself and whether it was a happy or sad incident.

**Results**

The mood manipulation proved effective once again, as indicated by subjects’ reports and observed emotional behaviors while reading. The recall results are displayed in Table 4. This displays the average number of idea units recalled out of 30, classified by the happy and sad incidents of each character. The rows indicate whether subjects were happy or sad while they were reading the narrative. Happy and sad readers did not differ significantly in their overall level of recall, \( F(1, 14) = 2.49, p < .05 \), and the main effects due to type of incident and mood of character were not significant. An obvious effect in Table 4 is that regardless of their mood, readers recalled more sad incidents about the sad character and more happy incidents about the happy character, \( F(1, 14) = 109, p < .01 \). Thus, selective recall of incidents was biased in the direction of the predominant mood of the story character relating them. A second effect is that happy readers recalled more happy than sad incidents, whereas sad readers recalled more sad than happy idea units, \( F(1, 14) = 7.3, p < .05 \). Thus, readers recalled more incidents with emotional quality that matched their own—the mood congruity effect that was predicted. On the other hand, there was not a mood-congruity effect with respect to characters; that is, recall of facts about a given character was not significantly greater for readers whose mood matched that character’s. The test for this interaction between reader’s mood and character’s mood was insignificant. Finally, the triple interaction between type of mood, character, and incident was not significant.

After recalling in a neutral mood, subjects answered the questionnaire asking (on a 7-point scale) how much they had identified with each character when they were reading...
Table 4
Average Number of Idea Units Recalled by Happy and Sad Readers, the Units Classified as Narrated by the Happy or Sad Character and About a Happy or Sad Incident

<table>
<thead>
<tr>
<th>Incidents</th>
<th>Sad character</th>
<th>Happy character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reader mood</td>
<td>Happy</td>
<td>Sad</td>
</tr>
<tr>
<td>Happy</td>
<td>4.87</td>
<td>5.62</td>
</tr>
<tr>
<td>Sad</td>
<td>5.25</td>
<td>9.12</td>
</tr>
</tbody>
</table>

the story. These retrospective reports produced no differences in reported identification of happy and sad readers. In a comparison of the 7-point identification ratings given to the two characters, four of our subjects gave tied ratings, seven said they had identified more with the same-mood character during reading, and five said they had identified more with the opposite-mood character. This split does not differ from chance. Further, the mean identification for the same-mood character was 3.00 (3 means "cannot identify very much with this character") and for the opposite-mood character was 3.12; these means do not differ significantly. According to this retrospective questionnaire, then, the readers' emotional moods were not influencing their identification with one or the other character.

The questionnaire also asked subjects to estimate from memory the percentage of sad incidents among the total incidents described in the narrative by each character. Overall there was a bias to estimate that the sad character related more sad incidents (55%) and the happy character fewer sad incidents (43%). However, these estimates were not influenced by the reader's mood. The estimates closely parallel the fact that readers recalled more sad incidents about the sad character (59%) and fewer sad incidents about the happy character (40%). Hence, these percentage estimates support the memory availability heuristic of subjective frequency.

To summarize, Experiment 5 found that mood selectivity due to happy versus sad incidents was stronger than that due to happy versus sad characters. Sad readers recalled more sad than happy incidents, whereas happy readers recalled more happy than sad incidents. Readers did not recall more overall about the character who matched their mood. There was a "consistency" effect of recalling more incidents consonant with the mood of the character, but this occurred independently of the mood of the reader. Our questionnaire results, if they are to be credited, suggest that identification with a same-mood character is not automatic or guaranteed. Perhaps the conflicting emotions of the incidents being described by each character prevented clear identification; perhaps the narrative dwelt too much on the incidents themselves rather than on the current mood state of the two characters; perhaps asking for the identification reports retrospectively after the mood was lifted caused the failure. The failure of mood-congruent character identification is a discrepancy from Experiment 1 that remains a puzzle to be investigated. A simple inference, and possibly the correct one, is that the reader's mood influences the salience of mood-congruent events but not character identification per se, and that the effect in Experiment 1 was spurious, due to the Andre–Jack story confounding the type of event with the character.

General Discussion

Let us summarize the sequence of questions and findings. First, we asked whether the reader's mood would cause selective learning of a narrative about a happy and sad character interacting. In Experiment 1 readers reported identifying with the character who was in the same mood as they were. Moreover, they remembered more actions of that same-mood character. Whereas Experiment 1 showed a clear effect on learning of mood during reading, Experiment 2
found that mood during recall had no selective influence on recall of the two-character narrative when it had been read in a normal mood. Surprisingly, readers did not intrude or import confabulations congruent with their mood while reconstructing the narrative.

Experiment 3 showed that similar selective recall occurred for happy versus sad incidents about a single character; emotional readers recalled more about those incidents whose emotional quality matched their own. Thus, character identification was not necessary to produce selective learning. There was a slight mood-dependent retrieval effect; recall was somewhat better when mood during recall matched that present during learning. Experiment 4 showed again, with the one-character narrative, that mood during recall (after neutral-mood learning) did not selectively influence the pleasantness of the incidents recalled. Experiment 5 pitted the character identification factor against the happy versus sad quality of the incidents. The narrative presented a happy and a sad character each describing happy and sad incidents. We found that readers tended to recall more about incidents whose emotional quality matched their own (summing over the characters narrating the incident), whereas they did not recall more about the character whose mood matched theirs. Also, regardless of their mood, all subjects recalled more sad incidents about the sad character and more happy incidents about the happy character.

The upshot of these experiments is that mood during reading causes selective learning of mood-congruent material in opposition to mood-incongruent material. The effect of mood during recall is small to nonexistent; if the material was input while the subject was in a neutral mood, then output mood had no influence; if material was learned while in a strong mood, there was a slight tendency for recall to be better when the subjects’ output mood matched their input mood. Earlier experiments by Bower, Monteiro, and Gilligan (1978) found that such mood-state-dependent retrieval effects can be enhanced by having the subject learn several sets of materials under different moods.

Our conclusion about the absence of an effect due to output mood obviously depends on an experimental context in which, despite the mood, subjects were highly motivated to recall everything they could to please the experimenter. Clearly, mood might affect recall in conditions having lower motivation for performance. Thus, in real life the depressed person may not feel motivated to try to recall very much; or the angry person may be so distracted by his or her rage that it interferes with the memory search. Our conditions have avoided these motivational or interference effects due to output mood alone.

Apparently our results are not due to our subjects’ complying with the demand characteristics of the mood manipulations. First, our actual purpose was masked, so few subjects would have thought of the connection of mood with the target behaviors of interest. Second, Experiments 2 and 4 showed no effect of output mood on selective recall of happy versus sad material encoded in a neutral mood; yet a simple compliance hypothesis would have expected an effect in those studies.

We conclude, then, that mood causes selective learning of material congruent with the reader’s mood. Presumably the same outcome would occur with movies or audio-tapes used as the narrative input. The next issue is to explain this enhancement of mood-congruent learning.

The mood-congruity effect is consistent with the general theoretical framework outlined in the introduction. There are several mechanisms available within that framework to explain the mood-congruity effect in selective learning. These prospective mechanisms are emotional intensity, mood attribution, and selective reminding. These may be thought of as specialized mechanisms (consistent with the general theoretical framework) that predict the mood-congruity effect.

The Emotional Intensity Explanation

A first hypothesis to explain the selective learning result relies on the assumption that memory for an event increases with the emotional intensity experienced at the time of that event. This hypothesis has been pro-
posed for experiments by Kanungo and Dutta (1966) and Dutta and Kanungo (1975), which examined people’s memory for materials that evoked emotional reactions of differing intensities (see also Holmes, 1970).

The relevance of the emotional intensity hypothesis to our results was suggested by subjects’ reports of mood fluctuations in Experiment 3. If, for example, subjects were instructed to maintain a steady happy mood, they experienced difficulty doing so when they read a sad incident. The general point is that the experienced intensity of the mood is determined by the material being read as well as by the posthypnotic suggestion. Material that agreed with the reader’s mood maintained or enhanced the intensity of that mood; material that conflicted with the reader’s mood evoked incompatible, opposing tendencies, resulting in diminution of the intensity of the instructed mood.

The intensity hypothesis further asserts that later memory largely reflects the enhanced emotion experienced during encoding of mood-congruent material versus the diminished (or conflicted) emotion felt during encoding of mood-incongruent material. This hypothesis explains our findings, because in our experiments it is plausible to assume that intensity of the felt emotion varied according to the congruence of the material with the subject’s instructed mood. The hypothesis does not say why emotional intensity of an event enhances its memorability; however, an explanation may be based on differential rehearsal, consolidation rate, allocation of processing resources, or semantic elaboration. An interesting question is whether the hypothesis requires that the subject attribute his or her emotional state to the learning material or whether the influence of affect intensity occurs even if the learning material is not viewed as causing the emotion. Dutta and Kanungo (1975) did not address that point.

The data needed to test the emotional intensity hypothesis were not collected in our experiments. One test would simply have our moody subjects rate the intensity of their emotional reactions to the several incidents as they read them; then we would check whether these intensity ratings correlate with later recall of the incidents. An alternate test would use posthypnotic cues to signal subjects to experience different levels of emotional intensity as they are encoding blocks of text or learning materials; then one would check whether later recall reflects this manipulated intensity level during encoding. Research by Blum (1967) suggests this as a useful procedure. We are currently conducting experiments of both kinds to test the emotional intensity hypothesis of memory.

The Mood Attribution Explanation

The second hypothesis is really a refinement of the first one, since it proposes a particular explanation (viz., motivation) of differential processing of congruent versus incongruent material. In Experiments 1 and 3, given our posthypnotic suggestion, our compliant subjects began to feel increasingly sad (or happy) as they read the narrative. But their amnesia for this suggestion may have created a problem—the subjects now have to explain to themselves why they are feeling so sad (or happy). In the absence of a better explanation, suppose that they focus on the narrative itself as the source of their sadness (or happiness). Moreover, suppose they attend selectively to that part of the narrative that would justify the sad (or happy) mood they are feeling. Thus, sad readers would focus on sad material in the text in order to justify their sadness, which would otherwise remain unexplained (and therefore discomforting). Similarly, happy readers would concentrate on happy material to justify their happiness. As a consequence of their selective attention to mood-congruent material, it is learned better.

This hypothesis is intriguing insofar as it links up with theories of self-perception and cognitive determinants of emotional feelings (see Maslach, 1979; Schachter & Singer, 1962). In the Schachter and Singer experiment, for instance, subjects supposedly used the angry behavior of a stooge in response to the frustrations of their common chores to interpret their own unexplained physiological arousal as the emotion of anger. Similarly, our subjects had to explain an inappropriately exaggerated emotional reaction; this hypothesis supposes they solved this problem by attributing the cause of their mood to the mood-congruent material in the
narrative, and concentrated more on it to the
detriment of the incongruent material.

This attribution hypothesis predicts that
no such selective effect of mood would occur
if subjects had an acceptable explanation of
why they were feeling so sad (or happy)
while reading the narrative. Thus, if they
could attribute their mood to a posthypnotic
suggestion or some alternative cause, there
would be no motive for selectively focusing
on the mood-congruent material in the nar-
rative.

We ran two conditions that provided a
partial test of this prediction. First, in Ex-
periment 5 all subjects read the narrative
while hypnotized and while happy or sad,
but no amnesia was suggested. Hence, all
subjects had a ready explanation for their
mood (viz., they had just been told to main-
tain that mood while reading). Since they
should have suffered no attribution problem,
the attribution hypothesis would predict no
selective learning in this case. However, as
Table 4 showed, a substantial selective learn-
ing effect was obtained nonetheless in Ex-
periment 5; readers remembered more mood-
congruent than mood-incongruent incidents.

A brief pilot study tested the attribution
hypothesis directly. Nineteen subjects read
the Jack-Andre story, 12 made happy while
reading by a posthypnotic suggestion and 7
made sad. Within each mood group, about
half the subjects received “source amnesia”
suggestions regarding the cause of the emo-
tion they were to feel while reading. The
remaining subjects were not given amnesia
for the suggestion. They were told to be
aware that their emotion while reading
stemmed from the earlier hypnotic sugges-
tion, not from the material being read. The
experiment replicated the basic result that
subjects who reported identifying with happy
Andre later recalled more facts about him
(57%), and those identifying with sad Jack
later recalled more about him (63%); 79%
of subjects recalled more facts about the
character with whom they identified. How-
ever, this selective effect was not modulated
in any way by the presence or absence of
source amnesia. The selective recall of facts
about the character with whom the reader
identified was of similar magnitude whether
or not the reader could explain the cause of
his or her mood. The percentage of recalled
facts favoring the identified character was
62% for subjects aware of the cause of their
mood and 58% for unaware subjects. These
figures provide no support for the attribution
hypothesis of selective learning of mood-con-
gruent material.

The Selective Reminding Explanation

A third hypothesis to explain the selective
learning results was suggested by subjects’
frequent introspective reports that parts of
the text reminded them of episodes from
their past. This happened particularly with
those narratives (in Experiments 3–5) that
were basically descriptions of the characters’
reminiscences of experiences of growing up.
Although no systematic data were collected
on the issue, the reports revealed a same-
mood bias; sad subjects were more likely to
have a reminding experience triggered by a
sad rather than a happy incident in the nar-
rative, and vice versa for happy subjects.
Suppose that a reminding experience is an
index of effective memory processing of the
input—that is, for reasons of elaboration,
vividness, or whatever, input events that re-
mind us of episodes from our past will be
remembered better (see, e.g., Schank, 1979).
Results of Bower and Gilligan (1979) sup-
port this view; their subjects recalled more
event-descriptive phrases that reminded them
of specific personal events of their lives than
phrases that failed to so remind them. To
complete the derivation from the selective
reminding hypothesis, because the readers’
current mood causes them to have more re-
mining experiences with same-mood inci-
dents, they will recall more same-mood than
opposite-mood materials.

Tests of the selective reminding hypothesis
are underway. One goal is to check the sup-
position that the reader’s current mood
causes him or her to be reminded of past
events more often by same-mood events.
Another is to check whether the past episode
accessed by a sad (or happy) reminding
event in the text is itself sad (or happy). Third,
we shall note whether, as before, text
incidents that lead to reminding experiences
are themselves better recalled. Finally, the
hypothesis predicts that within the subset of
text events that either did or did not remind the moody subject of some personal episode, the effect of mood on recall will be considerably reduced, if not eliminated.¹

We believe the mood intensity and the selective reminding hypotheses are both likely and complementary explanations. Should this be borne out by subsequent tests, there will still be many issues left. For example, in order for the selective reminding hypothesis to explain our data, it must be combined with the assumption of a mood bias in reminding. Since “reminding” is largely a cover term for either recognition or cued recall of a past episodic memory from a current input, the mood-bias feature of the theory amounts to assuming mood-state-dependent retrieval. Fortunately, mood-state-dependent retrieval seems well established in certain conditions (e.g., Bartlett & Santrock, 1977; Bower et al., 1978). Another task is to explain why the intensity of emotion aroused by a given input event increases memory for it. Perhaps intensity operates by controlling allocation of cognitive resources to the input or causing it to be elaborated and rehearsed more. These are topics on the research agenda.

¹ Studies of reminiscence involve several methodological complications. First, “X reminds me of Y” is an ill-defined subjective judgment, since any concepts or events are acceptable substitutes for X and Y, and subjects quickly learn this. Second, reminding is a “reactive” phenomenon; a query about one input sensitizes subjects to later memories. There are several methodological complications. First, “X reminds me of Y” is an emotionally defined subjective judgment, since any concepts or events are acceptable substitutes for X and Y, and subjects quickly learn this. Second, reminding is a “reactive” phenomenon; a query about one input sensitizes subjects to later inputs. Third, with textual descriptions of events as inputs, the onsets of the “functional stimulus” and the “subjective reminiscence response” are ill defined and so latency measures have questionable validity.

Reference Note


References


Appendix

Story 1: Happy Andre and Sad Jack

The following story is about two friends, Andre and Jack. Andre is celebrating his first "anniversary" with Nancy and couldn’t be happier. Jack has just broken up with Lynne and, needless to say, is miserable. "Ya gotta love it!" Andre screamed to Jack over the sound of the car radio.

"Spring and women have got to be the best reasons for getting up in the morning." He thought about the intimate celebration to come later tonight. Dinner and a movie, that’s all they needed.

"Can you believe that Nancy and I have been together a whole year? By the way, Jack, Nancy and I are going to the City on Saturday to the Earth, Wind and Fire concert. It should really be something. Afterwards we’re going to ‘Dance Your Ass Off.’ You should ask Lynne if she wants to go, and we could double. I know where you could get some tickets for the concert."

"Nah," Jack whined as he drove the last miserable block to the gym wondering why he had committed himself to play tennis with Andre. He was really at an all time low. Lynne had finally made it clear that she wasn’t interested in him any more—right before the Bio midterm! Now, he tried to ignore the knocking sound coming from within the engine of his little Triumph warning him that it was due for an expensive trip to the garage. He wished he could just go home, turn on the stereo, lie back and escape. He groaned silently as he spun the car into the parking lot cutting a little too close to a parked car. Squeezing into the only remaining space, he swore under his breath as he made the car buck by absentmindedly letting up on the clutch a split second before turning off the engine. He pulled his racquet out from behind the seat and locked the car. As he reluctantly approached the gym, Jack brooded over his upsetting conversation with Lynne. He was getting terribly depressed.

Andre just caught a glimpse of Nancy as she drove past on Galvez Street. He couldn’t suppress the broad grin and warm glow that came over him as he waved at her. He started towards the gym feeling buoyant and a little giddy. He and Jack hadn’t played tennis in a long time but he anticipated a good match. They usually played a pretty even game and, since neither of them took the competition too seriously, they always enjoyed a strong match. Catching a stray softball, he lofted it back to an energetic little curly-haired boy who was playing catch with his Dad. He watched the two for awhile, getting caught up by the child’s enthusiasm for this simple game with his father.

Jack reached the locker room first and fumbled with the jammed lock. "These lockers must have been installed at the turn of the century by drunken morons," he thought. "If just once this stupid tin can would open on the first try, it would be a miracle." Finally it opened and Jack dragged his tennis gear out. As he yanked on his socks, his thoughts wandered back to this morning’s blow-up with Lynne. He broke a shoelace and swore at it. He had no replacement so he just knotted it at the break. Andre should already be outside warming up. Jack brushed hurriedly past his friends in the doorway and crossed the street to the courts.

Andre was joking with Mike when Jack arrived. Jack muttered a hello to Mike and motioned to Andre. They moved onto the court and warmed up before volleying for the service. Andre won the service and began. The sun was very warm, adding to his slight tan, but there was enough of a cool breeze to keep the temperature pleasant. Andre felt himself loosen and relax as the game continued. This was a perfect way to spend the afternoon. He was glad that Jack had been so willing to play tennis. The games went quickly but that was all right for the first day back on the courts. Surprisingly, Andre had taken five of the six games, but he didn’t think much of it.

Jack dragged himself off the court relieved that it was over. He felt scorched by the sun, sore all over, and out of breath. The humidity had gotten to him. He wished that Andre hadn’t insisted on this foolish game. All the while, he had been distracted by the girl on the next court who looked like his girlfriend. Oh, that’s right, Lynne wasn’t his girlfriend anymore. Maybe he could call her? Or would that be too pushy? Go by her place? No, she had told him to stay away. He couldn’t share this problem with Andre because he’d surely tell Nancy. Maybe he should just wait and see what Lynne would do.

Andre was whistling "Singing in the Rain" and cracking jokes, as usual, when Jack reached the shower room. The soap slipped from Jack’s hand, and Andre laughingly began to sing "Slippery When It’s Wet." What a day! Andre thought of the great evening ahead. No math problems to do...
and a great movie in town, it was perfect. Nancy
was probably already at the apartment preparing
their shrimp creole dinner. He wondered what he
should put into the fruit salad he was going to
make. He'd definitely make fresh whipped cream.
It was going to be a real feast, especially consid-
ering that it was only a Wednesday night. He
turned to Jack, “Sure you don’t want those tick-

cets—great seats?”

“No, I said,” Jack snapped. He dried himself
quickly and whipped the towel around his waist
before storming out of the shower. He had to
see her!

Story 2: Paul Smith

Paul Smith had been seeing a psychiatrist for
several sessions now. They had been making some
progress together, but Paul's ambivalence in cer-
tain areas of his experience still remained prom-
inent. The psychiatrist had suggested hypnotic age
regression sessions as a possible therapeutic mo-
dality for him, so Paul had agreed.

The first trance experience uncovered some in-
teresting childhood experiences. At the age of 4,
Paul remembered the happiness of playing with
his family at home. He recalled the glee and fas-
cination when he rode piggyback on his father's
back, seeing the broad smile glistening on his
mother's face, and the joyous laugh of his father's
voice in the background. He also recalled some
sad experiences at this early age. He recalled the
overwhelming sadness when his dog was run over
by a car; his grief at his grandfather's death; and
the despair of watching a hard-earned quarter slip
through the grating of the sewer. He also recalled
the giggles of his sibling as they lay awake at
night telling jokes, the happiness of his grand-
mother's face at his birthday party, and the de-
light and joy present at holiday family gatherings.

In the second age regression he went back to
his early years in grammar school. He recalled
the sadness in being cut from his baseball team,
and the glumness encountered upon resignedly
realizing the inevitability of a return visit to the
dreaded dentist. He also remembered the joy and
excitement in learning to spell his name properly,
and the jubilation of receiving the top grade in
his class. Additionally recalled was the dismal and
cheerless memory of staying inside on a gloomy,
rainy day, and his crestfallen stature upon re-
ceiving news of his sister's auto accident. The ses-
sion concluded with a termination of the trance,
and a brief discussion of the significance of the
past events to the present situation.

With the arrival of the third hypnosis session,
the psychiatrist informed Paul that he was rela-
tively happy with the therapeutic progress. Paul
in return stated he could feel happy, and that he
could also feel sad. An age regression trance to
adolescent years was then effected. In this trance,
Paul recalled the happiness which enveloped him
when he was blissfully with his first girlfriend; he
also sadly remembered her family moving to an-
other town. He re-experienced the elation in scor-
ing high on his SAT test, and the fantastic joy of
being accepted in college. Other memories in-
cluded the sadness of departing from his high
school friend, and his sorrowful attendance at his
grandmother's funeral. These experiences were
interspersed with others that included a jubilant
back-packing outing in the mountains, a fun-filled
beer party with his close friends, and a despair-
filled evening that resulted from a sorrowful re-
jection by a steady date. After several hours, the
trance session was terminated and Paul left with
a mixture of feelings.

He arrived somewhat depressed for the next
session, but reported he had been generally happy
during the week. After brief casual conversation,
an age regression trance was once again utilized.
The memories recalled in this session involved
Paul's early teenage years. He remembered the
eletion in hearing his first rock and roll album
and the high he felt in going to his first rock con-
cert. He also recalled the despondency experi-
enced in hearing rumors of the breakup of the
Beatles, the despair of not obtaining tickets to a
Rolling Stones concert, and the sadness in dis-
covering a warp in a newly purchased double al-
bum. Other memories quickly flashed through his
awareness: the delight of meeting an old friend,
the jubilation of a last-second victory in a football
game, and the hilarious performance of a stage
comedian in a night club. The thoughts continued
at a quick but natural rate: the flunking of an
important final exam; the grief in his best friend's
voice when he informed Paul of his rejection by
college admissions committees; the remorseful-
ness after losing his allowance; and the over-
whelming sorrow in hearing his mother had de-
veloped cancer. Paul experienced himself as a
passive but involved observer to these fleeting in-
cidents. However, as the session ended, he knew
a shift inside of him had occurred. He walked out
of the office in deep internal processes.

When Paul returned to the office several days
later, he was in the same state as when he left the
last session. They discussed the various outcomes
of the age regression sessions, and decided that
the therapeutic investigation would continue, but
no longer using hypnosis.