

Mood and Memory: A Reconsideration

Philip R. Costanzo

Lynn Hasher

*Department of Psychology, Duke University
Durham, NC 27706*

In this article, we raise a number of concerns about the relationship between mood and memory. The first is with the directionality of this relationship. In contrast with many other approaches, including those reviewed by Ellis and Ashbrook (1987), we argue for affect as a secondary manifestation of an underlying cognitive operation. More specifically, we propose that in the domain of personally relevant memory, mood, or affect is triggered by the access of significant cognitive content. This preliminary formulation implies that efforts to explore mood-memory relations via content-free manipulation of mood states may be less than optimal in the case of personally relevant memory. Since such memories are likely to be well organized and well rehearsed, their recall is unlikely to be affected by irrelevant, episodic moods. On the other hand, retrieval of personally meaningful memories induces potent mood states in the individual which are likely to have an impact on subsequent memorial tasks. The implications of this proposal for experimental method, data collection, and current theory are each discussed. Other issues discussed include current methodology and the difficulties we foresee in collaborative research among clinical, social, and cognitive psychologists.

The Ellis and Ashbrook review of the theoretical and empirical relationships between mood and memory is an informative exposition of a range of phenomena at the interface of cognition and affect. Such phenomena have recently captivated sizable contingents of both cognitive and clinical researchers. Not surprisingly, this interface has a longer contemporary history among clinicians interested in affective disorders and social psychologists interested in social cognition, than it does among cognitive researchers (see Higgins & Bargh, 1987; Johnson & Magaro, 1986, respectively).

The proposition that emotions, arousal, mood, and affective states should have decided effects on basic processes of perception, thought, and

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behavior has a rich history in psychological research. Unfortunately, forays into the specifics of such relationships have typically followed a temporal course from unabashed enthusiasm to methodological and theoretical confusion. Such a transition has been evident in diverse areas of work ranging from the "new look" in perception (e.g., Bruner & Postman, 1947; Klein, 1970) to social psychological studies of cognitive-affective consistency in attitude structure and change (e.g., Aronson, 1969) to the study of arousal-performance relationships in learning and achievement (see Humphreys and Revelle, 1984). Based on the incongruities and inconsistencies in the current mood-memory research literature that Ellis and Ashbrook have so aptly pointed to, we fear a reemergence of confusion over the form, substance, and scope of affect-cognition relationships as they bear on issues related to memory.

In this paper we raise some issues from which we hope will emerge a direction of theory and research that will enrich the study of the relationships between affect and memory. While we focus on ideas raised in the Ellis and Ashbrook review, we range beyond for illustrative purposes. We begin with a consideration of the conceptual status of "mood" in mood-memory research.

Directionality

It is evident from the Ellis and Ashbrook review as well as from other recent summaries of mood-memory relationships (e.g., Johnson & Magaro, 1986) that a unidirectional relationship between affective and cognitive systems is typically assumed. As in much of the historical research on affect-cognition relationships, affective processes are viewed as interrupting, interfering with, or directing cognitive processes.

This is true whether one employs a schematic, semantic network, or resource allocation perspective as a theoretical base. In all such formulations, cognitive and memorial processes are construed as dependent or outcome variables, while affective processes are typically manipulated or assessed as independent or moderator variables. Although this directional portrayal is both plausible and facilitative of research applications, it is unlikely to provide a complete understanding of affective-cognitive interrelationships. Indeed, based on clinical observation and theory as well as on work in social cognition (see, for example, Higgins & King, 1981; Ingram, Smith, & Brehm, 1983; Kuiper & Derry, 1982), there is good reason to think of affect as a secondary manifestation of an underlying cognitive process. This is particularly true in the case of depression. For example, Beck's (1967) model of depression represents affect as the consequence of the biased information processing that issues from the

conjunction of chronic conceptual schemes with contemporary interpretive processes.

Personal Relevance and Affect

The anchoring of affect in underlying cognitive schemes is not only relevant to clinical depression but is also likely to characterize the relationship between personal memories and mood. Because there are important differences among individuals in what they value, negative mood states such as sadness and anger might not be elicited equally by all cues. For example, some people might be strongly susceptible to the onset of a negative mood when thinking about events in achievement-related domains while being not particularly susceptible to a negative mood when thinking about social relationship issues. For others, the effects will be reversed. In that light, it is reasonable to presume that what thoughts or memories subjects retrieve and what mood they experience will depend upon the personal importance and conceptual biases attached to a particular memory or thought, or to its domain (e.g., social vs. achievement; see e.g., Derry & Kuiper, 1981; Fitzgerald, Slade, & Lawrence, 1987; Kuiper & MacDonald, 1983). The elicitation of particular memories is likely to affect performance on subsequent memory tasks, based on the degree to which the new items are relevant to the domain of memory that was initially sampled. The personal memory itself because of its valent characteristics would induce a mood state which would constitute a prime for subsequent retrieval activities. Thus, the argument here is that content-free mood induction may not be an effective prime for personal memories because access to such memories may be more likely to be guided by categories or domains of cognitive content than by generalized mood states.

From this perspective, we can examine the boundary conditions argument offered by Ellis and Ashbrook to explain data showing that the effects of mood on memory are more pronounced on novel, unstructured, and "personally irrelevant" task materials than they are on personal memories and more highly and meaningfully structured materials. It may well be that personal memories are impervious to episodic manipulations of mood. However, if such is the case, it would hardly seem fruitful to link mood-memory relationships with the cognitive consequences of life-condition affects like depression. An alternative explanation to Ellis and Ashbrook "boundary condition" argument is that affective intrusions on personal memories are not simple consequences of episodically induced mood states but are complex consequences of the self-produced affective arousal that accompanies an individual's access to meaningful personal memories. In short, with personal memories, cognitive content and cate-

gory domains may be a better prime to affect arousal than content-free mood induction. The absence of this kind of guiding perspective in much contemporary research on mood-memory relationships is symptomatic of a widespread reliance on the unidirectional affect-to-cognition hypothesis.

If, as we have suggested, conceptual schemes or domains are natural primes for affect, and if the importance of such schemes varies between subjects, then one critical step in mood-memory studies would be the assessment of such dimensions and the subsequent use of individual, personally relevant domains. Therefore a potentially useful paradigm for examining mood-memory relationships would include an initial stage in which subjects would be queried about the relative subjective importance of various issues, beliefs and categories of behavior. For example, in our own current research, we are employing a variant of Rokeach's (1974) values inventory for this purpose. Through the use of a combined ranking and rating procedure, subjects evaluate the personal importance and affective significance of 18 bi-polar value categories. These include such dimensions as independence-dependence, honesty-dishonesty, cheerfulness-glumness, ambition-lack of ambition, etc. From these comparative category ratings, we then select value categories of high and low personal importance for each subject. In a second phase, subjects would be instructed to recall positive or negative personal memories in one or another of the assessed domains, where importance to the subject is now known. For example, a subject might be asked to recall memories related to independence or ambition, etc. In a final critical recall phase, subjects would be given materials which vary in their relevance to the personal memory domain accessed in the "initial" phase. The operation of biases which are dependent upon preassessed importance could then be explored in the subjects' pattern of recall. In work done within this framework, personal importance has been shown to effect both the structure of personal recall and memory for the frequency of occurrence of items varying in personal importance (see Fraenkel, 1988).

The above-described paradigm also enables one to assess the potentially perseverative nature of category access. From the perspective of Bower's (1981) theoretical approach, such a procedure provides the opportunity for a finely tuned assessment of the conjunction between cognition and emotion. Presumably, a cognition-emotion node should be an associative structure in which elements of meaning are conjoined with elements of affect. Rather than simply construing a "frustration" node, for example, it seems more fruitful to conceive of an "ambition-frustration" node as distinct from a "relationship-frustration" node. For different subjects, these different conjunctive nodes will possess distinct arousal

properties, depending in part on the personal importance placed on the different domains. Accordingly, the impact of these distinct frustration nodes on memory processes should also be different.

Likewise, from a resource allocation perspective (Ellis & Ashbrook, in press; Hasher & Zacks, 1979), it would seem appropriate to test the enhanced allocation of attention to a particular high arousal domain as well as the depletion of attention to neutral domains. If attention is indeed allocated to affect, it should also be allocated to tasks and stimuli that are congruent with that affect even when such tasks and stimuli are difficult and complex. The notion that affective arousal "uses up" attention is perhaps overly strong. It may be more appropriate to propose that affective arousal contributes to the deployment of attention—particularly when such arousal is linked to distinctive domains of meaning. For example, it is not simply the case that depressively aroused individuals do poorly on memory tasks, but that they tend to overrepresent information congruent with their cognitive biases relative to controls (Bradley & Matthews, 1983; Gotlib, 1981; Nelson & Craighead, 1977).

In summary, the study of mood-memory relationships and the theories on which much of the current work is based require attention to the conceptual relationships between affect and cognition. Episodic moods may indeed influence relatively unrelated processes of memory in reliable ways. However, for meaningful personal memories, access to important cognitive structures may constitute a major prime for affective arousal and thus a primary source of recall or recognition biases.

Below, we consider two additional issues discussed in the Ellis and Ashbrook review: (a) methodology and (b) the collaboration of experimental, social, and clinical psychologists in the study of mood-memory.

Methodological Considerations

In this section we follow Ellis and Ashbrook's partitioning of methodological issues into three topics: subject characteristics, emotional-state characteristics, and task characteristics.

(1) *Subject characteristics*: We agree that population and gender variables are important individual differences. However, they are also exceedingly broad, and bear only an indirect relationship to theoretical perspectives relating affect to memory. Gender is only a marker or demographic variable and as such its relationship to affective, cognitive, and behavioral phenomena must be viewed as being mediated by underlying differences between males and females in elements of response style, social history, values, thought content, arousability, and the like. Thus, although differential familiarity with experimental material may account for gender differences, it is important to directly manipulate familiarity by

using variables such as expert-novice distinctions. Moreover, it is important to consider a range of other variables that might be indexed by such gender differences. For example, to the extent that males and females differ in the felt importance of different categories of personal action, memory patterns in these different category domains are likely to vary. It is this class of individual difference variables rather than gender per se which we see as being most useful to the development of models of mood-memory relationships. The existence of such differences could be routinely measured in the "preassessment" phase of the kinds of experiments we suggested earlier.

(2) *Emotional-state characteristics.* As noted previously, the assessment of emotion-state characteristics needs to be tied to personally meaningful domains. This is the case whether one induces mood or measures existing differences in episodic or chronic mood. If a primary consequence of mood arousal on memory is to promote selective processing (and this is an implication of both schematic and resource allocation theories), then the cognitive categories underlying emotional arousal merit consideration in any mood induction. One route to experimental induction of mood would then involve the elicitation of affectively relevant cognitions in subjects. The advantage of this approach is that it would simultaneously serve as an affect activator and as a pointer to the kinds of variations in experimental materials that should be employed in examining the differential effects of arousal. Precedents for such an approach may be seen in the use of primes to differentially important or schematized cognitive structures (again see Higgins & Bargh, 1987).

(3) *Task-characteristics.* The task characteristics reviewed by Ellis and Ashbrook are important ones for investigators exploring the relationship between mood and memory that turn on effort and related variables like familiarity and task difficulty. We also believe it is important to select task materials that bear a meaningful relationship to preassessed cognitive domains of individual subjects. Because previous studies have not done this, conclusions regarding the impact of mood on memory for complex, meaningful, well-organized materials are probably premature. It is conceivable, for example, that content-free mood arousal has one impact upon the processing of materials, while content-specific mood arousal (like that induced by personally relevant primes of "important" cognitive domains) might result in selective enhancements and decrements in memory performance depending upon the content of the task materials.

In summary, we have suggested one broad dimension that requires consideration in the subsequent development of our understanding of mood-memory relationships. The relevance of the content-specific mood induction and of task materials to subject cognitive structure and biases

should be clearly incorporated into future experiments estimating affect-memory relations. The methodological innovations required to bring about such an incorporation might take us beyond the "boundaries" aptly discerned by Ellis and Ashbrook.

The Collaboration of Fields in Mood-Memory Research

We end this commentary with a consideration of the importance of promoting inquiry into mood-memory relationships which incorporates the perspectives of several subdisciplines in psychology. We agree with Ellis and Ashbrook that both the excitement and challenge of the complex problems associated with this domain of research are likely to be well served through collaborative theoretical and empirical efforts amongst cognitive, social, and clinical psychologists. In order for such a collaborative venture to be productive, it is important to recognize the diversity of purposes and perspectives that would be brought together in such a collaborative pursuit. It is most frequently the case that clinical researchers of affect and memory are intent on solving the daunting problems associated with affective disorders like depression and mania (cf. Johnson & Magaro, 1986). Social psychologists on the other hand are most involved in understanding the implications of the cognition-affect conjunction as it relates to social knowledge functions and their application to social interaction and adaptation. Cognitive psychologists, for their part, are typically involved in understanding the common properties of thought and cognitive processes as they transcend or mediate differences between individuals and social context. Integrating these interests is no mean task, since what is "effect" for the clinician or social psychologist may be "error" for the cognitive psychologist.

To set aside the narrower beliefs of investigators with different training and values will not be easy. At the least, investigators will need to acknowledge the significance of three fundamental observations. First, individual differences in cognition-affect relationships are bounded by the shared and natural functioning of cognitive systems. Second, variations in social contextual phenomena such as beliefs and social schema are relative to baselines of both reasoning and affective processes. Third, the discovery of general principles describing the relationships between affect and cognition may be best understood by cataloguing the individual differences and social schema that mediate such principles.

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