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SHORT NOTE

MOOD-CONGRUENT MEMORY IN NORMAL COLLEGE STUDENTS: COMMENT ON HASHER, ROSE, ZACKS, SANFT, AND DOREN

Rudi PEETERS & Géry d'YDEWALLE

University of Leuven/Louvain
Department of Psychology

Hasher, Rose, Zacks, Sanft, and Doren (1985) report an experiment in which subjects had to learn emotionally positive, negative and neutral items. Subjects' mood (either depressed or non-depressed) was not found to facilitate the learning of mood-congruent information. In this comment, we offer an alternative explanation for the negative results obtained, by suggesting that the manipulation of the affective nature of the learning material was overridden by a context factor, i.e. subjects' mood at encoding and retrieval, which was essentially the same on both occasions. When one considers this aspect of the procedure used, the findings are perfectly compatible with the larger body of evidence demonstrating mood-dependent memory. Our discussion rests heavily upon the notions of "episodic" and "semantic" memory (Tulving, 1983).

Research on mood and memory has centered around the notions of mood state-dependent recall, mood-congruent learning, and mood-congruent retrieval. Mood state-dependent recall refers to the fact that material learned or encoded within a particular emotional context can be more readily retrieved from memory upon reinstatement of the same mood than in any other mood. In mood-congruent learning, material that somehow fits in with the subjects' current emotional state is learned better. This becomes apparent from recall performance, which is tested later on while subjects are in a neutral mood. In mood-congruent retrieval, subjects reproduce more memories which are consistent in content with their current mood state than memories which are not (without mood at encoding being taken into account). So, in mood-congruent memory (by this term we refer to both mood-congruent learning and mood-congruent retrieval), the affective content of the learning material or memories is taken into account as being either congruent or incongruent with the subjects' mood state. In mood-state dependent recall, the congruence or incongruence involves the subjects' mood state at two occasions (while encoding and while retrieving the memory information), while the affective nature of the information is completely irrelevant.

For several years, the findings of mood-state dependency and mood-congruity have been considered as fairly well established (see, e.g., Blaney, 1986; Bower, 1981, 1983). However, recent investigations have thrown considerable doubt upon the generality, if not the true existence, of these phenomena (e.g., Bower & Mayer, 1985; Hasher, Rose, Zacks, Sanft & Doren, 1985; Wetzler, 1985).

Hasher et al. (1985, Experiment 1) had their subjects read stories in which a single protagonist experienced some "good", "bad", and "neutral" events, and subsequently compared their recall of those different events. No attempt was made to induce experimentally the subjects' mood: Only by means of self-report mood measurements were subjects assigned to depressed versus non-depressed mood groups. According to schema theory, which specifies how new information is acquired and incorporated into the memory system and will be retrieved later on, Hasher et al. (1985) expected for both of their groups recall of mood-congruent events to be better than recall of mood-incongruent events. This prediction was not confirmed: Both groups recalled nearly the same amounts of mood-congruent and mood-incongruent events. The authors conclude that "the results are not easily handled by a conceptualization of depression, (that is) tied to schema theory ..." (Hasher et al., 1985, p. 104).

While these results may seem surprising, they can be accounted for by various factors, some of which have been pointed out by Ellis (1985), Isen (1985), and Mayer and Bower (1985). The explanations provided typically pertain to the use of experimental induction procedures versus reliance on naturally occurring differences in mood, the degree of severity of the depressed moods induced, the degree of difficulty of the memory task involved, and so forth. Our aim is to argue that the negative findings of Hasher et al. (1985) can also be explained without introducing any such factors.

While Hasher et al. (1985) view their experiment as a test of mood-congruent learning, their design also involves mood-state dependency, which could play an equally or even more important role than mood-congruent learning, thereby rendering the results obtained perfectly plausible. By adopting mood-state dependency instead of mood-congruent learning as the frame of reference, the importance of episodic rather than semantic memory variables is stressed. Therefore, we will briefly reconsider the Hasher et al. (1985, Experiment 1) study in terms of an episodic memory experiment.

When subjects are to recall the content of a previously learned story,

they have to rely on what has been termed "episodic memory" (Tulving, 1972, 1983): They retrieve information concerning some specified event that happened to them in a particular place at a particular time. The Hasher et al. (1985) experiment can be considered an instance of an episodic memory task: Subjects are to recall the elements of a story that was presented to them in the laboratory during the first part of the experiment. As we have indicated elsewhere (Peeters, 1986), access of such episodic memories seems to be controlled by mood factors to a considerably greater extent than access of semantic memories. The argument can be summarized as follows. As one of their defining features, episodic memories have a direct reference to some circumscribed event that took place in one's personal past. While experiencing this event, the person found himself in one mood or another. The latter can be either congruent or not with the emotional state the subject is in when recalling the event later on. Mood at retrieval can be considered as reinstating the context in which the original learning took place, thereby facilitating the retrieval of *any* information learned within that context. As semantic memories do not bear any direct reference to one or another unique (emotional) context, the logic of context reinstatement does not apply to them.

From a purely episodic point of view, the nature of the information learned within a given (emotional) context is not relevant. However, in the Hasher et al. (1985) experiment, the information to be learned consists of elements reflecting various emotional qualities. This can be considered a semantic factor: It is clearly non-episodic (the "good" and the "bad" story elements do not bear any direct reference to discrete episodes in the subjects' lives differing in emotional context), and emotional content is implied by the meaning of the story elements.

Our analysis of the Hasher et al. (1985) procedure has revealed two factors operating during the encoding stage of the experiment: Subjects' mood state, which is not explicitly recognized as a potentially important determinant of recall by the experimenters, and story content, which is manipulated deliberately. We think the possible importance of the latter or "semantic" factor may have been overridden by the former or "episodic" factor. The impact of the episodic factor has been documented by various experimenters independently (e.g., Bower, 1981, 1983; Bower, Gilligan & Monteiro, 1981; Bower, Monteiro & Gilligan, 1978; Ellis, Thomas, McFarland & Lane, 1985; Madigan & Bollenbach, 1982, Experiment 1; Leight & Ellis, 1981; Natale & Hantas, 1982; Schare, Lisman & Spear, 1984; Teasdale & Fogarty, 1979; Teasdale,

Taylor & Fogarty, 1980), while the evidence linking mood and semantic factors is at least much weaker and less conclusive (see Peeters, 1986). Therefore, we stress the importance of subjects' mood at encoding as a factor controlling recall during the second part of the experiment.

Since no attempt was made to change subjects' mood from the learning stage to the retrieval stage of the experiment, we assume that all (or at least most) of the subjects were in essentially the same mood on both occasions. Therefore, the cueing function of mood at retrieval as to the story learned holds for all subjects across all of the experimental conditions. Regardless of the manipulation of the emotional quality of the story elements to be retrieved, subjects in all conditions were provided a powerful retrieval cue consisting of their own mood which was exactly the same as the mood they were in while encoding the information to be remembered. Therefore, from our point of view, one would not expect any difference between the conditions in subjects' memory performance.

Yet, one result of the Hasher et al. (1985) experiment might seem incompatible with our post hoc explanation. After they read the story, subjects were tested for recall either immediately or after some period of time, the delay being either 15 minutes or 48 hours. We argued that most of the subjects were in the same mood during both the encoding and retrieval stages. While we see little reason to doubt this for the immediate and 15 minute delayed recall conditions, the assumption is less likely to be met in the 48 hour delayed recall condition. Only for the latter condition, Hasher et al. (1985) reassessed subject's mood at retrieval, once again using mood questionnaires. As it turned out, some of the formerly "depressed" subjects were labelled "non-depressed" this time, and some of the formerly "non-depressed" subjects were labelled "depressed". By incorporating mood reassessment in the procedure for the 48 hour delayed recall condition, Hasher et al. (1985) implicitly admit that mood stability or variability from the encoding to the retrieval stage of the experiment might be an important factor. In fact, they checked whether the subjects whose mood had changed within the retention period produced another pattern of memory performance than those who were in the same mood twice. As no such differences were found, data from mood-stable and mood-variable subjects were pooled. The finding that spontaneous within-subjects mood changes occurring between encoding and recall of the story failed to have any differential impact upon recall performance does not invalidate our argument, however. Memory performance in the 48 hour delayed recall condition may have been

affected by a large number of non-experimental influences, all of which can be assumed to prevent any mood-related effect from manifesting itself in the recall data, such as forgetting, rehearsal, and many other processes. In contrast to the immediate recall and 15 minute delayed recall conditions, experimental control is very limited in the 48 hour delayed recall condition, thereby rendering this part of the results less exclusively traceable to any interpretation.

We do not consider the Hasher et al. (1985, Experiment 1) study as a sound test of mood-congruent learning, since no measures were taken to ensure that subjects' recall was measured in a neutral mood. Therefore, the results can be explained in terms of mood-state dependency as well.

We suggest it might be interesting to orthogonally manipulate (1) the affective quality implied by the story content, (2) the mood subjects are in while encoding the story, and (3) the mood subjects are in while retrieving it. This would constitute an informative way of contrasting "episodic" and "semantic" mood-dependent effects on memory recall.

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Tiensestraat 102
3000 Leuven

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