DOCUMENT RESUME

ED 222 809 CG 016 275

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TITLE The Effects of Temporary Mood States on Views of the World and the Future.
PUB DATE Apr 82
NOTE 14p.; Paper presented at the Annual Meeting of the Western Psychological Association (62nd, Sacramento, CA, April 7-11, 1982).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Affective Objectives; *Attribution Theory; *Cognitive Processes; College Students; Comparative Analysis; *Depression (Psychology); Higher Education; Negative Attitudes; *Social Cognition
IDENTIFIERS *Moods; *Reciprocity

ABSTRACT

The cognitive theory of depression advanced by Beck proposes that a negative view of the self, the world and the future is a condition that is responsible for depression. Recent data, however, have suggested that the relationship between cognition and affect is a reciprocal one in which each influences the other. Temporary mood states were induced in college students (N=60) to determine the extent to which moods alter cognitions about the world and the future. Subjects were randomly assigned to either an elated, depressed or neutral mood induction procedure and completed the Multiple Affect Adjective Checklist after mood induction. The number of rigid and pessimistic statements about human conduct that subjects agreed with differed significantly across the three groups. However, only the difference between the elated and depressed groups reached significance among the individual comparisons. The results support the conclusion that general views of the world are under partial mood control. (Author/JAC)

THE EFFECTS OF TEMPORARY MOOD STATES ON VIEWS OF THE WORLD AND THE FUTURE

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The cognitive theory of depression proposed by Beck and his co-workers (Kovacs and Beck, 1979) has been one of the most significant advances in this difficult area over the last decade. According to this view, the cognitive functioning of depressed persons is characterized by views of the self, the world and the future which are systematically and negatively distorted. It is further argued that the reasoning process of depressed persons employs faulty assumptions and contains errors in inference. Cognitive therapies for depression based on this model have produced encouraging results (Rush, Beck, Kovacs & Hollon, 1977).

Recent data, however, have suggested that the relationship between cognition and mood is a reciprocal one in which each is capable of influencing the other. For example, several studies have been shown that mood changes the memory retrieval process in a manner that facilitates the recall of memories congruent with the mood (Bower, 1981, Isen, Shalker, Clark & Karp, 1978; Madigan & Bollenbach, 1982). Mood also appears to alter interpretations of social situations (Madigan & Bollenbach, Note 1). It has been proposed that mood changes are associated with subtle but important changes in cognitive processes (Isen, et. al., 1978; Izard, 1977).

In the present study, we used mood as an independent variable and studied its effects on several cognitive processes. We induced temporary mood states in college students and asked them to agree or disagree with several general assumptions about the world and human conduct. An example of the general assumptions about the world we asked subjects to agree with is "unhappiness is caused by outside circumstances and the individual has no control over it". Subjects responded to 11 such statements derived from the work of Ellis by Newmark and Ziff (1977). Subjects also estimated their grade point average for the current semester, a prediction about an important future event. This experiment is relevant to cognitive theories because it examines the possibility that important classes of cognitions may be partially determined by temporary affective states.

Let me discuss the mood induction procedure that subjects experienced before performing the cognitive tasks. We used a procedure derived from the work of Velten (1968) in which subjects read a series of statements designed to induce either an elated or a neutral or a depressed mood. Frost, Graf and Becker (1979) have analyzed the Velten statements and pointed out that his induction technique contains two types of statements. Some are primarily somatic suggestions which focus on the person reading the cards such as "I feel a sense of power and vigor" and others are primarily abstract cognitions like "things are getting better and better". Their experiment showed that the somatic statements were more potent mood inducers than the general cognitive statements. In our experiment, it was important that the

mood induction procedure not contain general cognitive suggestions which might confound the cognitive tasks we asked subjects to perform. We used mood induction procedures containing somatic statements based on the work of Frost, Graf and Becker to induce the mood for subjects in the elated or the depressed mood state conditions. Subjects in the neutral mood condition read the neutral mood statements developed by Velten, which are essentially statements of trivia such as "Utah is the beehive state". Velten showed that reading a collection of such statements had no effect on mood.

One more methodological issue must be addressed before describing the final design of the experiment. Mood experiments may be susceptible to demand artifacts in that subjects may see through the experiment and inadvertently give the experimenter results they think are appropriate (Orne, 1962). We attempted to control for demand effects in two ways. First, we deceived the subjects about the hypotheses under test, and secondly, we assessed subjects' perceptions of the experiment at its conclusion.

We disguised the experiment by attempting to convince subjects that the main dependent variable was the effect of mood on the interpretation of a social situation - a TAT stimulus picture (Murray, 1943). It was explained to subjects that they would experience a mood induction procedure and then would interpret an ambiguous picture on the TAT card. Prior to doing this task, subjects were asked to give some background information on themselves which included a Belief Survey containing the 11 irrational statements and a request to estimate their GPA for the present

semester. It was our hope that subjects would accept on the TAT-mood relationship as the purpose of the experiment and dismiss the relevance of the other cognitive tasks to the independent variable.

To summarize the design: Sixty beginning psychology students were recruited. The description Ss received about the experiment emphasized the interpretation of an ambiguous picture under induced mood as the focus of the study. Subjects were randomly assigned to elated, neutral or depressed induction procedures which used somatic suggestions to induce the mood. After the mood induction, subjects completed the Multiple Affect Adjective Checklist as a check on the manipulation of the independent variable. Then subjects provided some background information on themselves which included the 11 irrational beliefs and an estimate of their expected GPA. Subjects were asked to describe "what is happening in this picture." Subjects also completed a post experiment questionnaire to assess their perception of the experiment.

Results

Table 1 shows the principle findings. First note that the MAACL-D scores show that the mood induction procedure was successful in producing large and significant changes in self reported mood.

The next line gives the mean number of irrational beliefs affirmed by subjects in the three groups. The overall F was significant and a Student Neuman-Keuls analysis showed that the depressed group was significantly different from either the elated

or the neutral groups. The elated-neutral difference was not significant.

Grade estimates are on the next line, and there are only small differences between the groups, although they are in the predicted direction.

Subjects also rated their TAT stories on a scale from -5 (very unpleasant) to +5 (very pleasant). The ratings subjects gave to their stories differed significantly for the three groups. Once again the depressed subjects were significantly different from either the elated or the neutral subjects although the elated-neutral differences are not significant. We have transcribed the TAT stories and plan to have them independently rated, but these data are not presently available.

Not all subjects were deceived by the experiment. The post experiment questionnaire presented subjects with 10 plausible hypotheses about the experiment and asked them to check any that occurred to them during the experiment. Subjects responded to this offer enthusiastically, with several checking as many as 7 of the 10 hypotheses. Page (1973) has argued that this sort of approach is necessary to detect Ss who may have been only dimly aware of what was going on. We have completed a demand analysis for the two dependent variables which were significant in the analysis above.

In the first demand analysis in Table 2, subjects who checked a hypothesis involving the irrational beliefs as the dependent variable are separated from those who did not. The differences

between these two groups of subjects are small and not significant.

The next set of data compares those subjects who believed the experiment involved the TAT with those who did not. We were surprised that not all subjects saw the relationship between the TAT-task and the mood conditions. Our transparent task was apparently not transparent to about 40% of the subjects. Here again are only small and insignificant differences between those subjects who were aware and those who were not. It is our conclusion that demand effects are not a major source of error in this experiment.

We believe that our experiment shows that moods induced by somatic suggestions can affect certain classes of abstract cognitions. We did not observe a difference in predictions of future GPA's, although there were some difficulties with this measurement. One half of the subjects were run at the end of the semester when grades may have been fairly well determined. If we had it to do over, we would try to run all subjects very early in the semester.

The findings from the irrational statements and the self-rating of TAT stories are consistent with previous work, which has shown that mood inductions produce cognitive effects in normal persons that are similar to those observed in clinical depression. For example, mood manipulations produce changes in the kinds of items recalled from memory and these changes are similar to some of the differences in memory function seen between depressed and non-depressed persons (Madigan & Bollenbach, 1982).

Also Natale (1978) has found that normal subjects experiencing induced elated and depressed moods show differences in perceived locus of control, an effect similar to the difference between normal persons and depressed patients.

Our study incorporates some methodological improvements in the form of the content of the suggestions in the mood induction procedure and in analyzing the data for possible demand effects. We have been able to show that mood effects extend to a class of very general cognitions about the world and the human condition. The general finding is similar, however, to others that show that mood may affect cognitive processes in a manner similar to the way that cognitive processes affect mood.

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Table 1

The Effects of Induced Moods

on the Dependent Variables

Measure	Induced Mood			
	Elated	Neutral	Depressed	
MAACL-D	6.55	14.50	18.90	$p < .01$
Ellis Irrational Beliefs	1.60	2.00	3.05	$p < .05$
Grade Estimates	2.99	2.92	2.90	NS
Story Ratings	3.20	2.40	.85	$p < .01$

Table 2

An Analysis of Demand Effects for Dependent Variables that Differed Between Experimental Groups

	Induced Mood								
	Elated			Neutral			Depressed		
	Mean	S	n	Mean	S	n	Mean	S	n
Irrational Beliefs									
Aware Ss	1.75	1.49	8	1.67	1.53	3	3.50	1.73	4
Unaware Ss	1.50	1.38	12	2.06	1.52	17	2.94	1.73	16
Story Self Ratings									
Aware Ss	3.17	1.53	12	2.00	2.86	13	.85	3.18	13
Unaware Ss	3.25	2.38	8	3.14	2.54	7	.86	3.44	7