

Depression, Self-Focused Attention, and the Negative Memory Bias

Tom Pyszczynski, James C. Hamilton, and Fred H. Herring
University of Colorado at Colorado Springs

Jeff Greenberg
University of Arizona

On the basis of self-regulatory perseveration theory, we hypothesized that the negative memory bias commonly found among depressed people is mediated by excess levels of self-focused attention and thus can be reduced by preventing depressed people from focusing on themselves. In Experiment 1, nondepressed and subclinically depressed college students were induced to focus either on themselves or externally and then to recall 10 events that had happened to themselves during the previous 2 weeks. Consistent with our hypotheses, events recalled by depressed Ss were more negative than events recalled by nondepressed Ss under conditions of self-focus but not under conditions of external focus. We conducted Experiment 2 to determine whether this effect was specific to self-referent events or generalizable to events that happened to other people. Experiment 2's findings replicated the previous findings for self-referent events but showed a different pattern for recall of events that happened to others, suggesting that self-focus reduces the negative memory bias among depressed individuals by deactivating their self-schemas. Theoretical and practical implications of these findings are discussed.

Over the past 10-15 years, there has been a virtual explosion of research demonstrating various cognitive differences between depressed and nondepressed people (for a general review, see Coyne & Gotlib, 1983). In spite of this high level of interest, there has been little empirical research focused on determining what mediates these differences or uncovering conditions under which depressed people do and do not differ from nondepressed people. Recently, several theorists and researchers have suggested that self-focused attention may play a central role in mediating a wide variety of depression-related characteristics (e.g., Lewinsohn, Hoberman, Teri, & Hautzinger, 1985; Pyszczynski & Greenberg, 1987a, 1987b; Smith & Greenberg, 1981; Strack, Blaney, Ganellen, & Coyne, 1985). The purpose of the research reported in this article was to investigate the possibility that the negative memory bias typically found among depressed people is mediated by excess levels of self-focused attention and can be reduced by distracting depressed people from focusing on themselves.

Depression and the Negative Memory Bias

In a recent review, Blaney (1986) concluded that depressed individuals are biased toward recalling less positive and more negative information than their nondepressed counterparts. This negative memory bias emerges in studies of recall for actual life events (e.g., Clark & Teasdale, 1982; Diener, Larsen, & Emmons, 1984), positive and negative feedback given on tasks performed in the laboratory (e.g., DeMonbreun & Craighead,

1977; Nelson & Craighead, 1977), and affectively toned material presented in the laboratory (e.g., Finkel, Glass, & Merluzzi, 1982; Ingram, Smith, & Brehm, 1983). The bias in recall of actual life events emerges even when the actual frequency of positive and negative events is controlled (Clark & Teasdale, 1982; Diener et al., 1984). Furthermore, the negative memory bias among depressed individuals emerges regardless of whether classification on the depression variable is based on clinical interviews or scores on depression screening instruments such as the Beck Depression Inventory (Beck, 1967).

These findings of a negative memory bias among depressed individuals are often taken as evidence of the operation of a depressive self-schema (cf. Beck, 1967; Kuiper, Derry, & MacDonald, 1982). To the extent that one's self-schema guides the retrieval of information from long-term memory (cf. Markus, 1977; Rogers, 1981), a negative memory bias among depressed people suggests that their self-schemata are more negative than those of nondepressed people. Consistent with this reasoning, in studies of incidental recall for words presented in the laboratory, the negative memory bias among depressed subjects emerges only under conditions likely to activate subjects' self-schemata. For example, Kuiper and Derry (1982) asked subjects to make a variety of judgments about a series of adjectives and found that depressed subjects were biased toward recall of depression-related words only when they had previously judged whether the words were self-descriptive. Similar results have been reported by Bradley and Mathews (1983). Unfortunately, there is as yet no evidence that links a depressive self-schema to negative bias in the retrieval of actual life events. One purpose of the present research was to provide such evidence. More important, the present studies investigated the possibility that the negative memory bias can be reduced in depressed subjects by using procedures aimed at deactivating their depressive self-schemata.

Correspondence concerning this article should be addressed to Tom Pyszczynski, Department of Psychology, University of Colorado, Colorado Springs, Colorado 80933-7150.

Self-Focused Attention, Self-Regulation, and Depression

Pyszczynski and Greenberg (1987a, 1987b) have recently proposed a *self-regulatory perseveration* theory that attempts to integrate the roles played by a variety of cognitive and motivational processes in reactive depression. According to the theory, depression results from a person's inability to exit a self-regulatory cycle (cf. Carver & Scheier, 1981) after the loss of a central source of self-worth. As a result of this inability to withdraw from the self-regulatory cycle, the person's attention is focused primarily on the self, the discrepancy between current and desired states, and his or her inability to reduce this discrepancy. This excess self-focus then produces various affective, cognitive, and behavioral consequences commonly associated with depression (e.g., negative affect, self-blame, low self-esteem, performance deficits).

Consistent with the theory, correlational studies of both subclinically depressed college students and depressed psychiatric inpatients have shown that depressed people do indeed typically engage in higher levels of self-focus than do nondepressed people (e.g., Ingram, Lumry, Cruet, & Sieber, 1987; Ingram & Smith, 1984; Smith & Greenberg, 1981; Smith, Ingram, & Roth, 1985). It also appears that depressed people respond to performance outcomes with a unique *depressive self-focusing style*, in which they engage in higher levels of self-focus after failure than after success (Greenberg & Pyszczynski, 1986; Pyszczynski & Greenberg, 1985, 1986); nondepressed people, on the other hand, generally exhibit the opposite pattern (e.g., Gibbons & Wicklund, 1976).

Research with samples not selected for depression suggests that depressive self-focusing tendencies are likely to produce a variety of deleterious cognitive effects, similar to those found among depressed people. Most relevant for present purposes are studies suggesting that focusing attention on the self activates or primes one's self-schema and thus increases the influence of one's self-schema on various cognitive processes (cf. Carver & Scheier, 1981; Hull & Levy, 1979). More specifically, research has shown that self-focus leads to increased interference on a Stroop Color-Word Interference Test task for self-relevant words but not for self-irrelevant words (Geller & Shaver, 1976), to more extensive self-descriptions (Turner, 1978a), to faster reaction times when judging the self-descriptiveness of trait adjectives (Turner, 1978b), and to enhanced incidental recall of words previously rated for self-descriptiveness (Hull & Levy, 1979, Study 1). To the extent that depressed people's self-schemata are more negative than those of nondepressed people (cf. Beck, 1967; Kuiper et al., 1982; Kuiper, MacDonald, & Derry, 1983), it follows that frequent self-schema activation resulting from chronic self-focus would increase the negativity of their thoughts, perceptions, and memories.

Consistent with this reasoning, Pyszczynski, Holt, and Greenberg (1987) have shown that distracting depressed people from self-focus greatly decreases their pessimism for future life events. In an initial study, they demonstrated that depressed people are indeed more pessimistic concerning their own futures than are nondepressed people. In a second study in which attentional focus was manipulated, depressed subjects exhibited a virtually identical pattern of expectancies under condi-

tions of self-focus but little evidence of depressive pessimism under conditions of external focus. These findings suggest that depressive pessimism is maintained by the frequent activation of a negative self-schema engendered by chronically high levels of self-focused attention. Inducing external focus among the depressed subjects in this study essentially deactivated their negative self-schemata and thus reduced their pessimism concerning their futures.

Experiment 1

If distracting depressed people from self-focus does indeed deactivate their negative self-schemata, it follows that such a procedure would be useful in reducing other self-schema-driven cognitive characteristics of depression, such as the negative memory bias. The purpose of Experiment 1 was to assess this possibility. Depressed and nondepressed subjects were induced to focus either internally or externally and then asked to recall 10 events that had happened to themselves during the previous 2 weeks. We predicted that, under conditions of self-focus, the events recalled by depressed subjects would be more negative than those recalled by nondepressed subjects. We further predicted that under conditions of external focus, this difference in negativity of recall would be reduced or eliminated.

Method

Subjects. Subjects were 85 women and 44 men who received extra credit in their psychology courses in exchange for their participation. Subjects were divided into depressed and nondepressed groups on the basis of their scores on the Beck Depression Inventory (BDI; Beck, 1967), which was administered during the experimental session. Subjects with scores of 9 and above were classified as depressed; subjects with scores of 4 and below were classified as nondepressed.¹ The final sample on which data analyses were conducted consisted of the 47 women and 24 men whose BDI scores met these criteria. Mean BDI scores were 12.96 for depressed subjects and 2.18 for nondepressed subjects.

Procedure. Subjects participated in the study in groups of up to 26 people. They were told that the study was concerned with assessing personality through the use of writing samples and that as part of the study they would be asked to write a brief story. They were then given a booklet that included, in order, the BDI, the story-writing task, and a life-events recall questionnaire. To preserve their anonymity, subjects were

¹ Although there has been some controversy concerning the use of the BDI, Beck, Steer, and Garbin (1988) have recently reviewed a large number of studies that demonstrate the reliability and validity of this measure, and Hill, Kemp-Wheeler, and Jones (1986) have recently provided evidence of discriminant validity in college student samples. Beck et al. (1988) reported that the BDI has now been used in more than 1,000 different studies. Although Beck recommended a cutpoint of 10 for mild to moderate depression, we chose a cutpoint of 9 because of a shortage of subjects with higher scores and because 9 has been commonly used in other recent research with college student samples, including our own (e.g., Alloy & Abramson, 1982; Crocker, Alloy, & Tabachnik Kayne, 1988; Nelson & Craighead, 1977; Pyszczynski & Greenberg, 1985). We reanalyzed the data from both studies using 10 as the cutpoint for inclusion in the depression category, and the results were unaltered.

Table 1
Positivity of Remembered Events as a Function of Depression and Attentional Focus: Experiment 1

Subject classification	Attentional focus	
	Self-focus	External focus
Depressed		
<i>M</i>	0.07	2.82
<i>SD</i>	2.71	2.46
<i>n</i>	15	17
Nondepressed		
<i>M</i>	4.50	3.76
<i>SD</i>	2.41	2.68
<i>n</i>	18	21

Note. Means in the table are for the positivity of recall index (number of positive incidents recalled minus number of negative incidents recalled).

instructed not to identify themselves anywhere on their booklets. As mentioned, we used BDI scores to classify subjects as depressed or nondepressed.

In fact, the story-writing task was used to manipulate subjects' attentional focus, a procedure developed and validated by Fenigstein and Levine (1984). Subjects were provided with a list of 20 words and instructed to write a short story using as many of the words as possible. In the self-focus condition, subjects were instructed to write a story about themselves; in the external focus condition, subjects were instructed to write a story about George Washington. In the self-focus condition, the list contained words such as *I, mirror, alone, and me*; in the external focus condition, the list contained words such as *he, picture, together, and him*. This manipulation has been used successfully to manipulate self-focused attention in studies by Fenigstein and Levine (1984), Greenberg et al. (1988), and Pyszczynski et al. (1987); in addition, Hamilton and Whigham (1988) have recently shown that the effects of this manipulation parallel those of private self-consciousness.

Subjects then read instructions that asked them to remember and list 10 events that had happened to them during the previous 2 weeks. No time limit was placed on this recall task. On finishing this task, subjects placed their booklets on a large stack of similar booklets at the front of the room and were then thoroughly debriefed.

The recalled events were later coded as positive, neutral, or negative in affective tone by a rater who was blind to experimental condition and subject classification. To assess the reliability of these ratings, events from 25 subjects were coded by a second rater, thus yielding a sample of 250 events. Interrater agreement was deemed acceptable ($r = .803$). Thus, we used the ratings by the original rater in all subsequent data analyses.

Results and Discussion

We computed an overall index of positivity of recall by subtracting the number of negative events recalled from the number of positive events recalled.² A 2×2 (Depression \times Attentional Focus) unweighted means analysis of variance (ANOVA) was performed on this index.³ Consistent with previous research, we found a main effect of depression, $F(1, 67) = 19.14$, $p < .001$. Events recalled by depressed subjects were generally less positive than events recalled by nondepressed subjects ($M_s = 1.50$ and 4.13 , respectively). Consistent with predictions, we also found a Depression \times Attentional Focus interaction, $F(1, 67) = 8.10$, $p < .01$. Relevant means are given in Table 1.

Planned pairwise comparisons revealed that although depressed subjects' recall was less positive than that of nondepressed subjects under conditions of self-focus, $t(30) = 4.94$, $p < .01$, no difference between depressed and nondepressed subjects emerged under conditions of external focus, $t(36) = 1.12$, *ns*. Looked at differently, depressed subjects' recall was more positive when externally focused than when self-focused, $t(26) = 3.03$, $p < .01$. Although nondepressed subjects were somewhat more positive in their recall when self-focused than when externally focused, this difference did not approach statistical significance ($t < 1$).

Inspection of Table 1 reveals that both depressed and nondepressed subjects generally recalled more positive than negative events. The one exception to this pattern was the depressed self-focus cell, in which recall of positive and negative events was roughly equal. Thus, our depressed subjects exhibited a negative memory bias only relative to the robust tendency toward recall of positive events exhibited by nondepressed subjects.

These findings are consistent with our hypothesis that excess levels of self-focus mediate the negative memory bias typically found among depressed people. Previous research indicates that depressed people generally engage in higher levels of self-focus than do nondepressed people (e.g., Ingram et al., 1987; Smith & Greenberg, 1981) and are generally prone to a negative memory bias (Blaney, 1986). The findings of Experiment 1 suggest that this negative memory bias occurs only when depressed people are self-focused. Thus, it appears that the high level of self-focus commonly found among depressed people mediates the negative memory bias. The findings further suggest that the negative memory bias can be eliminated or at least reduced by encouraging depressed people to focus their attention away from themselves.

Given that attentional focus was manipulated immediately before the recall assessment and after the occurrence of the to-be-recalled events, the possibility that these effects simply reflect differences between depressed and nondepressed people in favorability of life events is ruled out. Although differential life experiences could explain a main effect of depression on autobiographical recall, they cannot explain the interaction obtained in Experiment 1. The fact that depression-related differences in recall were completely eliminated in the external focus condition suggests that the difference obtained in the self-focus condition cannot be attributed solely to differential life experiences.

Similarly, although the present findings in no way rule out the possibility of other types of effects occurring during other stages of processing, the fact that the present effects depended

² Although it might seem interesting to analyze the positive and negative events separately, it would be inappropriate to do so because they are not independent in the present design. Because subjects were required to list 10 events, the number of positive events listed restricted the possible number of negative events that could be listed and vice versa.

³ Preliminary ANOVAs in which subjects' gender was included as a factor were performed for each study. As we found neither significant main effects nor interactions with the other significant effects, gender was not included in subsequent analyses.

on attentional focus immediately before the events were recalled suggests that the locus of the present findings resides somewhere in the retrieval process. This suggestion of a negative retrieval bias on the part of depressed individuals is consistent with Clark and Teasdale's (1982) finding of variation in the negativity of life events recalled by depressed people as a function of diurnal variation in mood.

Given that our dependent measure consisted of subjects' reports of recalled life events, it is important to consider whether a self-presentational explanation could account for the findings. Such an explanation would assume that depressed subjects incorrectly report the life events they recall because of the impact such reports are likely to have on their audience. The fact that recall was assessed under anonymous conditions in large groups undermines the plausibility of such an explanation. Furthermore, previous research has shown that self-focus tends to increase the accuracy of self-reports (e.g., Gibbons, 1983; Pryor, Gibbons, Wicklund, Fazio, & Hood, 1977). Because depression-related differences were found only when subjects were self-focused, a self-presentational explanation would have to argue that self-focus led subjects to report the events they recalled less accurately. Thus, although it is difficult to completely rule out a self-presentational interpretation of effects on any self-report measure, such an explanation does not seem plausible for the present pattern of findings.

The findings of Experiment 1 are generally consistent with the proposition that negative memory bias among depressed individuals results from chronic activation of a predominantly negative depressive self-schema (cf. Kuiper et al., 1982). To the extent that self-focus activates the self-schema (cf. Carver & Scheier, 1981; Hull & Levy, 1979), the present findings can be viewed as suggesting that when the self-schema is deactivated, the negative memory bias commonly associated with depression is eliminated.

Experiment 2

Given the obvious practical significance of a procedure that appears to reduce or eliminate a potentially harmful difference between depressed and nondepressed people, we deemed it important to attempt to replicate the findings of Experiment 1. In addition, the design of Experiment 2 was expanded to establish more clearly the role of self-schema deactivation in reducing the depressive negative memory bias. Depressed and nondepressed college students were again induced to focus either internally or externally. They were then asked to recall 10 events that had happened during the previous 2 weeks. Half of the subjects were asked to recall events that had happened to themselves and half were asked to recall events that had happened to other people. If the reduced negative memory bias is mediated by deactivation of subjects' self-schemata, the effect of attentional focus should be restricted to recall of events that happened to subjects themselves.

Method

Subjects. From an initial sample of 185 female and 64 male undergraduates (who participated in exchange for extra credit in their psy-

Table 2

Positivity of Remembered Events as a Function of Depression, Attentional Focus, and Recall Target: Experiment 2

Subject classification	Recall target			
	Self		Other	
	Self-focus	External focus	Self-focus	External focus
Depressed				
<i>M</i>	3.24	5.10	2.73	1.56
<i>SD</i>	3.46	3.92	3.22	3.76
<i>n</i>	17	20	15	18
Nondepressed				
<i>M</i>	5.00	4.83	3.14	3.54
<i>SD</i>	2.54	2.73	3.02	2.79
<i>n</i>	31	54	29	26

Note. Means in the table are for the positivity of recall index.

chology classes), we selected 148 women and 62 men who met our criteria (the same as Experiment 1) for classification as either depressed or nondepressed. Mean BDI scores were 13.61 for subjects classified as depressed and 1.57 for subjects classified as nondepressed.

Procedure. The procedure was identical to that used in Experiment 1, with the following exceptions. First, rather than having all subjects recall events that happened to themselves, the target for the recall task was manipulated between subjects. Subjects were randomly assigned to recall 10 events that had occurred in the previous 2 weeks either to themselves or to other persons they knew. After listing the events, subjects were asked to go back over them and, on the basis of their own feelings, rate them as generally positive, negative, or neutral in affective tone. Thus, in Experiment 2 affective ratings of events were based on subjects' own judgments, rather than on ratings made by an outsider. We made this change because we reasoned that the affective significance of recalled events to the individual recalling them is theoretically and practically more important than the apparent affective tone perceived by an outsider. Furthermore, a different means of scoring affective tone would enhance the generality of the effects. As in Experiment 1, we constructed an overall index of positivity of recall by subtracting the number of negative events recalled from the number of positive events recalled.

Results

A $2 \times 2 \times 2$ (Depression \times Attentional Focus \times Recall Target) unweighted means ANOVA was performed on the positivity of recall index. We found main effects of depression and recall target, $F(1, 202) = 4.51, p < .05$, and $F(1, 202) = 15.49, p < .001$, respectively. Depressed subjects' recall was generally less positive than nondepressed subjects' recall ($M_s = 3.16$ and 4.13 , respectively), and events recalled that happened to the subjects themselves were generally more positive than events recalled that happened to other people ($M_s = 4.54$ and 2.74 , respectively).

More important, we also found a Depression \times Attentional Focus \times Recall Target interaction, $F(1, 202) = 3.89, p < .05$. Relevant means are given in Table 2. Planned pairwise comparisons revealed that, as in Experiment 1, depressed subjects' recall of events that happened to themselves was less positive than

nondepressed subjects' recall of such events under conditions of self-focus but not under conditions of external focus, $t(46) = 1.90, p < .05$, and $t(72) = .33, ns$, respectively. The pattern of recall for events happening to other people was substantially different. Under conditions of self-focus, positivity of recall for others did not differ between depressed and nondepressed subjects, $t(42) = .41, ns$; however, under conditions of external focus, depressed subjects' recall for events that happened to others was less positive than that of nondepressed subjects, $t(42) = 2.11, p < .05$.

Looked at differently, self-focus led depressed subjects to recall less positive information about themselves, $t(35) = 1.84, p < .05$, but had no effect on recall of information about others, $t(31) = 1.10, p > .10$. The positivity of nondepressed subjects' recall for events was not affected by attentional focus ($ts < 1$).

Although our attentional focus manipulation had virtually identical effects across the two studies, a comparison of Tables 1 and 2 reveals that the self-referent life events recalled by depressed subjects were generally more favorable in Study 2 than in Study 1. Given that the two studies were conducted at different points in time, it seems likely that this difference was produced by variation in the actual favorability of events that subjects experienced. Regardless of what is responsible for this discrepancy, however, the strong convergence across the two studies in the effects of the attentional focus manipulation suggests that this difference in the recall favorability base rate in no way moderates the effects of our independent variables.

General Discussion

In our two experiments, we attempted to reverse the negative memory bias of depressed subjects by inducing them to focus their attention away from themselves. In both experiments, the depressive negative memory bias was clearly replicated among self-focused subjects; self-referent life events recalled by depressed subjects were more negative than those recalled by nondepressed subjects. However, among externally focused subjects, no depression-related differences in the favorability of self-referent recall were found. In other words, the pervasive tendency for self-referent life events recalled by depressed people to be more negative than those recalled by nondepressed people was eliminated when their attention was focused away from themselves.

These findings are generally consistent with previous research indicating that pessimistic expectancies for the future can be reduced in depressed individuals by inducing them to focus externally (Pyszczynski et al., 1987) and that depressed people's attributions can be made to resemble those of nondepressed people by reversing their depressive self-focusing style (Greenberg et al., 1988). More generally, these findings are consistent with the self-regulatory perseveration theory of depression. According to self-regulatory perseveration theory, many of the cognitive, affective, and behavioral characteristics of depression result from the high levels of self-focus inherent in the individual's inability to exit a self-regulatory cycle after the loss of a central source of self-esteem.

From the perspective of cognitive theories of depression (e.g., Beck, 1967; Kuiper et al., 1982), depressive pessimism and the

negative memory bias reflect the general influence of a negative self-schema. To the extent that one's self-schema guides the processing of self-referent information, and given that depressed subjects' self-schemata are relatively negative in content, deactivation of depressed subjects' self-schemata would be expected to reduce the negativity of both the information they recall about themselves and their expectancies for the future. The fact that a negative memory bias was found only among depressed subjects who were both self-focused and asked to recall self-referent events is consistent with this self-schema deactivation interpretation.

Self-regulatory perseveration theory posits that disrupting depressed individuals' self-preoccupation should reduce various characteristics of depression, but does not specify the exact mechanism through which this is accomplished. Although a schema deactivation interpretation is consistent with the data, an alternative explanation is also possible.

Research has shown that people are especially prone to recall information that is congruent with their mood at the time of recall (for a review, see Blaney, 1986). Happy people tend to recall pleasant events and sad people tend to recall unpleasant events. Presumably, the individual's current affective state increases the accessibility of similarly toned information in memory (cf. Anderson, 1982; Bower, 1981). Scheier and Carver's (1977) finding that self-focus heightens emotional experiences suggests that inducing external focus in people who are chronically self-focused (as depressed people have been shown to be) should reduce the intensity of their emotions. A reduction in negative affect could then lead to a general reduction in the accessibility of negative information. Thus, the elimination of the negative memory bias among externally focused depressed subjects could be attributed to reductions in their depressed mood brought about by a reduction in self-focus. The basic difference between the two interpretations centers on exactly *how* attentional focus mediates the recall of life events. Does the decrease in negative memory bias brought on by external focus occur because external focus deactivates depressed subjects' self-schemata or because it decreases the intensity of their negative affect?

The findings of Experiment 2, that the negative memory bias occurred only among depressed subjects who were both self-focused and asked to recall self-referent events, are clearly consistent with a schema deactivation interpretation. A mood congruence explanation would be somewhat more complicated. A simple associative network model of such effects (e.g., Anderson, 1982; Bower, 1981) would predict that affect should enhance the accessibility of any affectively congruent information, regardless of its self-relevance. The results of Experiment 2 are clearly inconsistent with such a model.

However, Blaney's (1986) review of the affect and memory literature suggests an alternative model, whereby mood congruence effects occur only for self-referent information. Using an incidental recall paradigm, Kuiper and Derry (1982) have shown that depressed subjects preferentially recall depression-related words only if they have previously rated those words for extent of self-reference. Although these findings were initially interpreted as evidence for a depressive self-schema, they can also be viewed as suggesting that mood congruence effects occur

only for self-referent information. Depressed affect may have enhanced the accessibility of negative depression-related concepts. Consistent with this interpretation, Clark and Teasdale (1985) have shown that experimentally induced mood enhances recall of affectively congruent personal descriptors but not of affectively congruent abstract nouns. Presumably, personal descriptors are more personally relevant to subjects and thus more likely to activate their evaluative construct systems. If mood congruence effects are limited to self-referent information, then such an explanation could account for our findings.

In summary, although we believe that a schema deactivation model provides a somewhat more parsimonious account of our findings, a mood congruence interpretation is also possible. However, the finding that mood congruence effects are limited to recall for self-referent information reduces the question to one of whether self-focus directly affects self-referent processing or whether it does so via changes in affect. Given that there is clear evidence that self-focus influences both affective state and self-schema accessibility, it may be that both mechanisms are operative.

Experiment 2 also revealed that under conditions of external focus, events that happened to others recalled by depressed subjects were less positive than those recalled by nondepressed subjects. What accounts for this finding? Markus and Smith (1981) have suggested that one's self-schema plays a central role in the processing of information about others. From this perspective, a depressive self-schema could quite plausibly bias one to recall particularly positive information about others and to think of others in a particularly positive light. If disrupting depressed people's excess levels of self-focus deactivates their self-schemata, it follows that their memories and thoughts regarding others would become less positive. Although admittedly post hoc in nature, this explanation for our other-referent recall finding is consistent with Pyszczynski et al.'s (1987) finding that externally focused depressed subjects rated positive events as less likely to happen to others than did self-focused depressed subjects. It appears, then, that among depressed people, self-focus is associated with negative memories and expectancies for oneself and positive memories and expectancies for others.

The present findings, along with those from previous research, suggest that reducing self-focus may be useful in eliminating the negative information processing biases that enable depression to perpetuate itself. Although it is unrealistic to suggest that writing brief stories about historical figures is a viable long-term cure for clinical depression, it is interesting to speculate that techniques that decrease self-focus over longer periods might help alleviate some of the self-perpetuating characteristics of depression. By reducing pessimism (Pyszczynski et al., 1987), negative memory bias (the present findings), and self-blame (Greenberg et al., 1988), temporary disruptions in depressive information processing resulting from extended periods of external focus could facilitate a return to constructive, goal-directed activity. Consequent increases in successful attainment of goals may then improve self-esteem, increase self-efficacy, and encourage nondepressed patterns of thinking and behavior.

Of course, given that the subjects in the present study were mildly to moderately depressed college students, generaliza-

tions to more severely depressed clinical populations would be premature. Nonetheless, Ingram et al. (1987) have recently demonstrated elevated levels of self-focus in a sample of depressed psychiatric inpatients. The accumulating evidence that self-focused attention mediates depressive behavior among mildly depressed people suggests the need for research on the role of self-focus in clinical depression.

References

- Alloy, L. B., & Abramson, L. Y. (1982). Learned helplessness, depression, and the illusion of control. *Journal of Personality and Social Psychology*, *42*, 1114-1126.
- Anderson, J. R. (1982). *The architecture of cognition*. Cambridge, MA: Harvard University Press.
- Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Hoeber.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, *8*, 77-100.
- Blaney, P. H. (1986). Affect and memory: A review. *Psychological Bulletin*, *99*, 229-246.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, *36*, 129-148.
- Bradley, B., & Mathews, A. (1983). Negative self-schemata in clinical depression. *British Journal of Clinical Psychology*, *22*, 173-181.
- Carver, C., & Scheier, M. (1981). *Attention and self-regulation*. New York: Springer-Verlag.
- Clark, D. M., & Teasdale, J. D. (1982). Diurnal variation in clinical depression and accessibility of memories of positive and negative experiences. *Journal of Abnormal Psychology*, *91*, 87-95.
- Clark, D. M., & Teasdale, J. D. (1985). Constraints on the effects of mood on memory. *Journal of Personality and Social Psychology*, *48*, 1595-1608.
- Coyne, J. C., & Gotlib, I. H. (1983). The role of cognition in depression: A critical appraisal. *Psychological Bulletin*, *94*, 472-505.
- Crocker, J., Alloy, L. B., & Tabachnik Kayne, N. (1988). Attributional style, depression, and perceptions of consensus for events. *Journal of Personality and Social Psychology*, *54*, 840-846.
- DeMonbreun, B. G., & Craighead, W. E. (1977). Distortion of perception and recall of positive and neutral feedback in depression. *Cognitive Therapy and Research*, *1*, 311-329.
- Diener, E., Larsen, R. J., & Emmons, R. A. (1984, August). *Bias in mood recall in happy and unhappy persons*. Paper presented at the 92nd annual convention of the American Psychological Association, Toronto, Ontario, Canada.
- Fenigstein, A., & Levine, M. P. (1984). Self-attention, concept activation and the causal self. *Journal of Experimental Social Psychology*, *20*, 231-245.
- Finkel, C. B., Glass, C. R., & Merluzzi, T. V. (1982). Differential discrimination of self-referent statements by depressives and nondepressives. *Cognitive Therapy and Research*, *6*, 173-183.
- Geller, V., & Shaver, P. (1976). Cognitive consequences of self-awareness. *Journal of Experimental Social Psychology*, *12*, 99-108.
- Gibbons, F. X. (1983). Self-focused attention and self-report validity: The "veridicality" hypothesis. *Journal of Personality*, *51*, 517-542.
- Gibbons, F. X., & Wicklund, R. (1976). Selective exposure to self. *Journal of Research in Personality*, *10*, 98-106.
- Greenberg, J., & Pyszczynski, T. (1986). Persistent high self-focus after failure and low self-focus after success: The depressive self-focusing style. *Journal of Personality and Social Psychology*, *50*, 1039-1044.
- Greenberg, J., Pyszczynski, T., Kelly, C., Burling, J., Byler, E., & Tibbs,

- K. (1988). *Depression, self-focus, and the self-serving attributional bias*. Unpublished manuscript, University of Arizona, Tucson.
- Hamilton, J. H., & Whigham, S. K. (1988). *Self-focused attention and memory: Encoding specificity versus self-schema activation*. Unpublished manuscript, University of Colorado, Colorado Springs, CO.
- Hill, A. B., Kemp-Wheeler, S. M., & Jones, S. A. (1986). What does the Beck Depression Inventory measure in students? *Personality and Individual Differences, 7*, 39-47.
- Hull, J. G., & Levy, A. S. (1979). The organizational functioning of the self: An alternative to the Duval and Wicklund model of self-awareness. *Journal of Personality and Social Psychology, 37*, 756-768.
- Ingram, R. E., Lumry, A. B., Cruet, D., & Sieber, W. (1987). Attentional processes in depressive disorders. *Cognitive Therapy and Research, 11*, 351-360.
- Ingram, R. E., & Smith, T. S. (1984). Depression and internal versus external locus of attention. *Cognitive Therapy and Research, 8*, 139-152.
- Ingram, R. E., Smith, T. S., & Brehm, S. S. (1983). Depression and information processing: Self-schemata and the encoding of self-referent information. *Journal of Personality & Social Psychology, 45*, 412-420.
- Kuiper, N. A., & Derry, P. A. (1982). Depressed and nondepressed content self-reference in mild depressives. *Journal of Personality, 50*, 67-79.
- Kuiper, N. A., Derry, P. A., & MacDonald, M. R. (1982). Self-reference and person perception in depression: A social cognition perspective. In G. Weary & H. Mirels (Eds.), *Integrations of social and clinical psychology* (pp. 79-103). New York: Oxford University Press.
- Kuiper, N. A., MacDonald, M. R., & Derry, P. A. (1983). Parameters of a depressive self-schema. In J. Suls & A. G. Greenwald (Eds.), *Psychological perspectives on the self*. (Vol. 2, pp. 191-218). Hillsdale, NJ: Erlbaum.
- Lewinsohn, P. M., Hoberman, H., Teri, L., & Hautzinger, M. (1985). An integrative theory of depression. In S. Reiss & R. Bootzin (Eds.), *Theoretical issues in behavior therapy* (pp. 331-359). New York: Academic Press.
- Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*, 63-78.
- Markus, H., & Smith, J. (1981). The influence of self-schemata on the perception of others. In N. Cantor & J. Kihlstrom (Eds.), *Personality, cognition, and social interaction* (pp. 233-262). Hillsdale, NJ: Erlbaum.
- Nelson, R. E., & Craighead, W. E. (1977). Selective recall of positive and negative feedback, self-control behavior and depression. *Journal of Abnormal Psychology, 86*, 379-388.
- Pryor, J. B., Gibbons, F. X., Wicklund, R. A., Fazio, R., & Hood, R. (1977). Self-focused attention and self-report validity. *Journal of Personality, 5*, 513-527.
- Pyszczynski, T., & Greenberg, J. (1985). Depression and preference for self-focusing stimuli following success and failure. *Journal of Personality and Social Psychology, 49*, 1066-1075.
- Pyszczynski, T., & Greenberg, J. (1986). Evidence for a depressive self-focusing style. *Journal of Research in Personality, 20*, 95-106.
- Pyszczynski, T., & Greenberg, J. (1987a). Self-regulatory perseveration and the depressive self-focusing style: A self-awareness theory of reactive depression. *Psychological Bulletin, 102*, 1-17.
- Pyszczynski, T., & Greenberg, J. (1987b). Depression, self-focused attention, and self-regulatory perseveration. In C. R. Snyder & C. E. Ford (Eds.), *Coping with negative life events: Clinical and social psychological perspectives* (pp. 105-129). New York: Plenum Press.
- Pyszczynski, T., Holt, K., & Greenberg, J. (1987). Depression, self-focused attention, and expectancies for future positive and negative events for self and others. *Journal of Personality and Social Psychology, 52*, 994-1001.
- Rogers, T. B. (1981). A model of the self as an aspect of human information-processing. In N. Cantor & J. Kihlstrom (Eds.), *Personality, cognition, and social interaction* (pp. 193-214). Hillsdale, NJ: Erlbaum.
- Scheier, M. F., & Carver, C. S. (1977). Self-focused attention and the experience of emotion: Attraction, repulsion, elation, and depression. *Journal of Personality and Social Psychology, 35*, 625-636.
- Smith, T. W., & Greenberg, J. (1981). Depression and self-focused attention. *Motivation and Emotion, 5*, 323-331.
- Smith, T. W., Ingram, R. E., & Roth, D. L. (1985). Self-focused attention and depression: Self-evaluation, affect, and life stress. *Motivation and Emotion, 9*, 381-390.
- Strack, S., Blaney, P. H., Ganellen, R. J., & Coyne, J. C. (1985). Pessimistic self-preoccupation, performance deficits, and depression. *Journal of Personality and Social Psychology, 49*, 1076-1085.
- Turner, R. G. (1978a). Effects of differential request procedures and self-consciousness on trait attributions. *Journal of Research in Personality, 12*, 431-438.
- Turner, R. G. (1978b). Self-consciousness and speed of processing of self-relevant information. *Personality and Social Psychology Bulletin, 4*, 456-460.

Received February 3, 1988

Revision received November 14, 1988

Accepted January 30, 1989 ■