

Effects of Ruminative and Distracting Responses to Depressed Mood on Retrieval of Autobiographical Memories

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Four studies explored the effects of self-focused rumination vs. distraction on dysphoric and nondysphoric students' retrieval of autobiographical memories. Dysphorics induced to ruminate subsequently recalled more negatively biased autobiographical memories in free recall (Study 1) and in response to prompts for memories (Study 2) than either dysphorics who first distracted themselves from their mood or nondysphoric controls. In Study 3, dysphoric rumination led students to recall negative events as occurring relatively frequently in their lives and positive events as occurring relatively infrequently. In Study 4, judges scored transcripts of participants' thoughts as expressed aloud while engaging in rumination or distraction. Codings revealed that dysphoric ruminators spontaneously generated memories that were more negative than those of the other three groups. Implications of a ruminative response style for progress in therapy, as well as for enhancing dysphoria and negatively biased cognitive processes, are discussed.

Most, if not all, psychotherapies require clients to explore their autobiographical memories—in the form of either describing problems and experiences from the very recent past (e.g., yesterday) or contemplating events from long ago (e.g., one's childhood). However, if the client suffers from depressed mood, the most common complaint of individuals seeking therapy (Strickland, 1992), and shows a ruminative style of responding to that mood (Nolen-Hoeksema, 1991), he or she may generate a negatively biased set of memories. For example, a woman who engages in self-focused rumination (i.e., repetitively focusing on the meanings and implications of her negative feelings) may identify her presenting problems to the therapist as impending divorce and unemployment, recalling escalating arguments with her husband and reprimands by her boss, when in reality the arguments and the reprimands have been few and far between. This article reports four studies that examined this phenomenon, all of which tested the general hypothesis that rumination in the presence of a depressed mood leads to the retrieval of negatively biased autobiographical memories.

Ruminative responses to depressed mood involve thinking about how sad, apathetic, and tired one feels (e.g., "I just can't get going"), wondering about the causes of one's depressive

symptoms (e.g., "What's wrong with me that I feel this way?"), and worrying about their implications (e.g., "What if I can't muster the energy to go to work tomorrow?"), without doing anything constructive to relieve the symptoms or improve one's mood (Nolen-Hoeksema, 1991). Thus, unlike those who have recently reconceptualized rumination as instrumental (Martin & Tesser, 1996; see also Wyer, 1996), we view ruminative responses to dysphoria as a type of thinking that is generally *not* adaptive. An instrumental and adaptive alternative, by contrast, is using pleasant or neutral distractions to lift one's mood and relieve one's depressive symptoms before engaging in problem solving (Nolen-Hoeksema, 1991). Distracting responses are activities and thoughts that help divert one's attention away from one's depressed mood and its consequences—for example, going for a run, seeing a movie with friends, or concentrating on a hobby or one's work.

Many people believe that when they become depressed or dysphoric, they should try to focus inward and analyze their feelings and their problems to gain self-insight and find solutions. The tendency to engage in rumination in response to a depressed mood appears to be both a relatively common (Rippere, 1977) and stable coping style (Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994). An increasing number of studies, however, suggest that rather than serving as an antidote to depression, self-focusing and rumination actually exacerbate and prolong depressed mood (for reviews, see Carver & Scheier, 1990; Ingram, 1990; Nolen-Hoeksema, 1991; Pyszczynski & Greenberg, 1987). Distraction from one's mood, by contrast, appears to lift dysphoria. In laboratory studies, manipulations of rumination or self-focus increase or maintain depressed mood in dysphoric or clinically depressed participants, whereas manipulations of distraction or external focus significantly relieve depressed mood (Barden, Garber, Leiman, Ford, & Masters, 1985; Fennell & Teasdale, 1984; Gibbons et al., 1985; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoek-

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sema & Morrow, 1993). Longitudinal studies reveal that people who respond to naturally occurring dysphoria (e.g., due to negative or traumatic life events) with a ruminative style report longer and more severe periods of depressed mood than people who use pleasant distractions to manage their moods (Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema et al., 1993; Nolen-Hoeksema, McBride, & Larson, 1997; Nolen-Hoeksema et al., 1994; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990; see also Saltzberg, 1992). For example, recently bereaved individuals with a ruminative coping style were more depressed both shortly after their loss and over the next 6 months than people without a ruminative coping style, even after their initial levels of dysphoria were controlled (Nolen-Hoeksema et al., 1994).

Previously, we have argued that dysphoric rumination exacerbates and prolongs depressed mood in part through its effects on negative thinking and poor problem solving (Lyubomirsky & Nolen-Hoeksema, 1995). A number of studies provide evidence that ruminative responses to depressed mood, relative to distracting ones, lead to pessimistic attributions for hypothetical problems and upsetting experiences (e.g., "I don't seem to succeed in anything I do"); negatively biased and distorted interpretations of hypothetical life events (e.g., "I must be a loser to stay home alone on a Saturday night"); and pessimistic predictions about one's future after college (Lyubomirsky & Nolen-Hoeksema, 1995; see also Pyszczynski, Holt, & Greenberg, 1987), the likelihood of solving one's problems (Lyubomirsky, Caldwell, & Berg, 1997), and the likelihood of engaging in fun activities (Lyubomirsky & Nolen-Hoeksema, 1993). A recent study also suggested that people who respond to depressed mood by ruminating about themselves and their feelings show impaired problem-solving skills (Lyubomirsky & Nolen-Hoeksema, 1995). Dysphoric individuals induced to ruminate generated less effective solutions to hypothetical interpersonal or achievement problems than dysphoric individuals induced to distract (see also Brockner, 1979; Brockner & Hultton, 1978; Strack, Blaney, Ganellen, & Coyne, 1985). In all of these studies, dysphoric participants instructed to distract their attention away from their moods for 8 min were no more pessimistic or impaired in their problem solving than nondysphorics.

Naturalistic, correlational studies further bolster the laboratory evidence. People who are prone to ruminate when dysphoric show more dispositional pessimism and less of a tendency to engage in active problem solving in stressful times (Nolen-Hoeksema & Jackson, 1996; Nolen-Hoeksema et al., 1994). In turn, dispositional pessimism and lack of problem solving partially mediate the relationship between the tendency to ruminate and elevated levels of depressed mood.

How do ruminative responses to depressed mood promote negative thinking and poor problem solving? One critical way may be by enhancing dysphoric individuals' memories of negative events in the past. Indeed, autobiographical memories may be the most essential and basic elements of thinking and problem solving. For example, to reach a pessimistic conclusion (e.g., "My marriage is in trouble") or make a pessimistic attribution (e.g., "... and I'm to blame"), a man might recall recent (if trivial) spats with his spouse and his role in starting them. Or, when pondering what will happen if she stays depressed, a woman might selectively remember occasions on which her symptoms have hampered her work or social life and conclude,

"I'm a failure." Likewise, negatively biased memories may interfere with every stage of the problem-solving process (D'Zurilla & Goldfried, 1971). For example, an individual might perceive a problem (e.g., finding a new job) as overwhelming and uncontrollable, failing to select and implement effective job search strategies (e.g., obtaining a "headhunter," calling contacts), after recalling mediocre job interviews in college or instances of negative feedback received from colleagues. Negatively biased autobiographical memories may thus play an important role in a number of depression-enhancing cognitive processes, including pessimistic predictions and attributions; depressive and distorted interpretations, inferences, and conclusions; and ineffective problem-solving strategies (cf. Beck, Rush, Shaw, & Emery, 1979).

It is important at this point to note the intimate, if dangerous, relationship between rumination, mood, and memory. People typically engage in rumination—that is, try to answer questions about why they are depressed and what will be the consequences—by generating relevant memories from the recent past. However, ruminative responses to depressed mood are likely to draw one's attention to the network of negative memories associated with that mood, making such memories more accessible and likely to be easily retrieved (e.g., Blaney, 1986; Bower, 1981, 1991; Forgas, 1991). Ruminative responses are also self-focused, increasing the availability of negative thoughts and memories about the self (e.g., Duval & Wicklund, 1972; Pyszczynski et al., 1987; Pyszczynski, Hamilton, Herring, & Greenberg, 1989). Numerous studies have provided evidence for the link between negative moods and negative memories. Individuals who are mildly or clinically depressed or in whom a sad mood has been induced have been found to recall a greater number of unhappy life events (Clark & Teasdale, 1982; Natale & Hantas, 1982; Snyder & White, 1982), to recall experiences that are more negative (Clark & Teasdale, 1982; Lewinsohn & Rosenbaum, 1987; Madigan & Bollenbach, 1982), and to recall negative events faster (Lloyd & Lishman, 1975; Rholes, Riskind, & Lane, 1987; Teasdale & Fogarty, 1979; Williams & Scott, 1988) than nondepressed individuals or those in whom a happy or neutral mood has been induced. People who ruminate while in a depressed mood may be especially likely to retrieve or pay attention to these negative memories and to use them in interpreting their current situation. In turn, these negative memories may further exacerbate depressed mood through their effects on negative thinking and poor problem solving (as described above), thus feeding a vicious cycle between rumination, mood, and negative thinking (Teasdale, 1983).

The Present Studies

The primary hypothesis explored in our four studies is that instructions inducing dysphoric individuals to ruminate would lead them to retrieve more negatively biased memories from their past than instructions encouraging distraction. By contrast, rumination and distraction were not expected to influence the valence of memories in the absence of a depressed mood. Consequently, nondysphoric individuals were predicted to generate the least negative memories of all our participants because their mood would not prompt negative memories, because they are likely to have experienced fewer negative events than dysphoric

individuals, and because rumination and distraction do not appear to have differential effects on negative thinking in the absence of depressed mood (Lyubomirsky & Nolen-Hoeksema, 1993, 1995).

Autobiographical memories were elicited through four different paradigms. In Study 1, participants were given 5 min to recall as many events and experiences from their lives as they could. In Study 2, participants were prompted by a computer to recall two specific positive experiences and two negative ones. Study 3 had students recall how frequently they had experienced a *predetermined* set of positive and negative events (e.g., "Your parent(s) shows love"). Finally, Study 4 had participants express their thoughts aloud as they engaged in either rumination or distraction and did not require them to generate memories per se. Two further distinctions among our studies merit attention. First, the autobiographical memories were rated for affective tone by the participants themselves in Study 1 and by neutral independent judges in Studies 2 through 4. Second, the first three studies explored memories that came to students' minds immediately after they ruminated or distracted themselves, whereas Study 4 captured memories as they naturally occurred in the process of rumination and distraction.

Study 1

Method

Overview

Dysphoric and nondysphoric students engaged in either a ruminative or distracting task, then spent 5 min recalling personal memories from their lives. Subsequently, participants rated the memories that they had generated for their hedonic tone. Depressed mood was assessed before and after the response manipulation task.

Participants

Seventy-two introductory psychology students (48 women and 24 men) received course credit for their participation in this study. Potential participants completed the Beck Depression Inventory (BDI; Beck, 1967) as part of a larger packet of unrelated questionnaires administered at the beginning of the quarter. We recruited students with BDI scores above 16 for the moderately dysphoric group and students with BDI scores below 5 for the nondysphoric group. Because the BDI has demonstrated high test-retest stability within 2 weeks among college undergraduates (Pearson's $r = .90$; Lightfoot & Oliver, 1985), we conducted this study within 2 weeks after the 38 dysphoric (24 women and 14 men) and 34 nondysphoric (24 women and 10 men) participants had completed the BDI.

Materials

Mood questionnaires. Following previous recommendations (Kendall, Hollon, Beck, Hammen, & Ingram, 1987), we administered mood questionnaires at the beginning of the experiment as well as immediately following the response task manipulation (i.e., induction of rumination or distraction). Each packet contained a questionnaire that asked participants to rate their present state, including levels of sadness and depression, on Likert-type scales (1 = *not at all*, 9 = *extremely*). Ratings of sadness and depression were averaged to arrive at a single measure of depressed mood at each assessment. We included in the mood questionnaires a number of filler scales (e.g., measuring levels of curiosity, bashfulness, wildness, creativity) to help disguise the study's focus on

mood. Likert-type scales, instead of the BDI, were used to assess mood during the experimental hour because the BDI's obvious focus on depressive symptoms was likely to reveal the study's hypotheses. A number of previous studies have used Likert-type scales as mood measures (e.g., Pittman et al., 1990; Wenzlaff, Wegner, & Klein, 1991; see also Lyubomirsky & Nolen-Hoeksema, 1993, 1995). As evidence for their validity, in all four of the studies reported here, our Likert-type scale measures of mood at the beginning of the experimental hour were found to be highly correlated with participants' preexperimental BDI scores (Pearson's r s ranged from .76 to .86). To further obscure the intent of the study, we included several filler tasks, such as paper-and-pencil inventories about imagining colors and recalling one's dreams, in the packets of mood scales.

Response manipulation tasks. The response manipulation tasks were designed to influence the content of participants' thoughts by requiring them to focus their attention and "think about" a series of 45 items (adapted from Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Nolen-Hoeksema & Morrow, 1993; Morrow & Nolen-Hoeksema, 1990). Following Nolen-Hoeksema's (1991) definition of ruminative responses, the rumination condition instructed students to focus their attention on thoughts that were emotion focused, symptom focused, and self-focused, although they were not told specifically to think about negative emotions or negative personal attributes. For example, participants were asked to think about "your current level of energy," "why your body feels this way," "trying to understand your feelings," "your character and who you strive to be," and "why you turned out this way." In contrast, participants in the distraction condition focused their attention on thoughts that were focused externally and not related to symptoms, emotions, or the self. For example, they were asked to think about "clouds forming in the sky," "the expression on the face of the *Mona Lisa*," and "the shiny surface of a trumpet." The items in the rumination and distraction conditions were rated as equally neutral by nondysphoric judges. In each condition, participants spent exactly 8 min focusing on the items.

Free recall task. Participants were given 5 min to recall and list autobiographical memories from their lives. They were instructed that all events and experiences were acceptable as long as they were definite and specific experiences from memory (either in the recent or distant past) and not merely current thought associations, images, dreams, or plans. No limit was placed on the number of memories recalled.

Memory rating task. After the 5-min period, students were asked to review all of the personal memories that they had previously listed and rate each event or experience on four dimensions: (a) "How positive is this event or experience?" (1 = *not at all positive*, 7 = *very positive*), (b) "How happy do you feel about this event or experience looking back on it now?" (1 = *not at all happy*, 7 = *very happy*), (c) "How negative is this event or experience?" (1 = *not at all negative*, 7 = *very negative*), and (d) "How unhappy do you feel about this event or experience looking back on it now?" (1 = *not at all unhappy*, 7 = *very unhappy*). We averaged the first two ratings to yield an overall index of positivity and averaged the second two ratings to yield an overall index of negativity. Finally, we computed a single composite positivity index by subtracting the negative ratings from the positive ones.

Procedure

All participants were run individually, with the experimenter unaware of participants' dysphoria status and response manipulation condition. We used an elaborate cover story to minimize possible demand characteristics. At the beginning of the experiment, students were told that they would be participating in a series of short, independent studies put together by a number of different researchers investigating "processes of imagination, dreaming, levels of consciousness, and cognition in

general." This cover story was supported by a number of neutral filler tasks, which were included in the questionnaire packets that participants completed throughout the experiment. Half of these filler tasks were distracting (e.g., imagining colors) and half were self-focused (e.g., recalling one's dreams). Participants' responses on a debriefing questionnaire and their comments during oral debriefing indicated that the cover story was successful. No participant guessed the purpose of the study or the link between the response manipulations and the memory tasks.

After describing the cover story, the experimenter gave participants the first packet of questionnaires, which contained baseline measures of depressed mood, and left the laboratory room. After participants were done with the first packet, the experimenter reentered the laboratory room and introduced the response manipulation task. This task was described as an imagination task requiring participants "to focus [their] mind on a series of ideas and thoughts" and to "use [their] ability to visualize and concentrate." Participants were instructed to spend exactly 8 min on this task. As a manipulation check, they were asked in a debriefing questionnaire administered at the end of the study to recall the instructions for this task and to describe exactly what they did during the allotted 8 min. Participants' responses indicated that they correctly understood the instructions and were able to focus on the items as requested (and to do so for the full time period). After the allotted time, the experimenter returned and asked participants to complete the next packet of questionnaires, which contained the second set of mood measures as well as several filler tasks.

During the next phase, the experimenter administered the timed free recall task. Participants were told, "We are interested in the process by which people recall events and experiences from their lives." After the allotted 5-min period, the experimenter returned and instructed students to rate each of their listed memories on hedonic tone.

After completing the memory tasks, participants filled out a final packet of questionnaires, which included several filler measures and a debriefing questionnaire. The experimenter then returned and thoroughly debriefed each participant. The entire study lasted approximately 1 hr.

Results and Discussion

We predicted that relative to the dysphoric participants who distracted themselves or either of the nondysphoric groups, the dysphoric participants who ruminated would recall more negatively biased memories. However, because students in the dysphoric-distracting group were induced to distract for only 8 min, and because they are likely to have had more negative events in their past than the nondysphoric groups, our primary hypothesis led us to expect not that dysphoric distractors' ratings would necessarily be identical to those of the students in the two nondysphoric groups but rather that they would fall somewhere in between those of the dysphoric-ruminative students and the nondysphoric students. Rosenthal and Rosnow (1985; see also Rosnow & Rosenthal, 1989, 1995) argued that the appropriate way to test such focused predictions is by planned contrasts rather than by two-way analyses of variance. Thus, analyses using planned contrasts comparing the dysphoric-ruminative group with the other three groups were performed on all the dependent measures of interest. In addition, separate linear planned contrasts were conducted, testing whether dysphoric ruminators exhibited the most extreme responses, followed by dysphoric distractors, and, finally, by the two nondysphoric groups (contrast weights 2, 1, -1.5, and -1.5, respectively). For similar procedures, see Lyubomirsky and Nolen-Hoeksema (1993, 1995); Lyubomirsky et al. (1997).

Because there were no main effects or interactions with sex, all analyses were conducted by collapsing across sex of students. There were 18 students in the dysphoric-ruminative group, 20 in the dysphoric-distracting group, 17 in the nondysphoric-ruminative group, and 17 in the nondysphoric-distracting group.

Mood Changes

At the beginning of the study, students in the dysphoric group reported greater dysphoria ($M = 3.89, SD = 2.02$) than students in the nondysphoric group ($M = 2.39, SD = 1.77$), $t(66) = 3.28, p < .002$. The results of a pairwise comparison on changes in depressed mood between dysphoric participants in the rumination and the distraction conditions revealed a significant difference between the two groups, showing that dysphorics who were instructed to ruminate became more depressed ($M = 0.86, SD = 2.47$) and dysphorics who were instructed to distract became less depressed ($M = -0.95, SD = 1.72$), $F(1, 65) = 10.82, p < .002$. In contrast, no significant difference was found in changes in depressed mood between nondysphorics who ruminated ($M = 0.44, SD = 0.90$) or distracted ($M = -0.44, SD = 1.20$), $F < 3, ns$. The results of a planned contrast further showed that after the response task manipulation, dysphoric participants who ruminated displayed significantly higher levels of depressed mood than the remaining three groups, $F(1, 68) = 30.93, p < .0001$. Mean levels of depressed mood following the response task manipulation were as follows: dysphoric-ruminative, $M = 5.12, SD = 1.75$; dysphoric-distracting, $M = 2.52, SD = 1.66$; nondysphoric-ruminative, $M = 2.62, SD = 2.35$; and nondysphoric-distracting, $M = 2.00, SD = 1.53$.

Autobiographical Memories

All participants recalled at least eight autobiographical memories, with the numbers of participants recalling more than eight dropping off dramatically for each additional memory. To preserve the highest possible sample size, we analyzed our data using the average of ratings for the first eight memories only. It should be noted, however, that analyses using more than eight memories (e.g., 10, 12, and 14) yielded results very similar to those reported. There was no significant difference in the numbers of memories recalled by our four groups ($F < 1, ns$).

Our primary hypothesis, that dysphoric rumination would lead to the retrieval of negative autobiographical memories, was confirmed. The results of planned contrasts analyzing the positivity and negativity rating composites showed that dysphoric participants who ruminated about themselves and their moods rated their own autobiographical memories as less positive and happy, $F(1, 68) = 12.41, p < .0008$, and more negative and unhappy, $F(1, 68) = 9.91, p < .003$, than did the other three groups. Linear contrasts further revealed that dysphoric ruminators showed the most extreme ratings, followed by dysphoric distractors, and then by the nondysphoric controls, both for positive assessments, $F(1, 68) = 14.76, p < .0003$, and for negative ones, $F(1, 68) = 19.42, p < .0001$. Means for positivity and negativity ratings, respectively, are shown for the four groups at the top of Table 1.

Similar results were obtained with the overall positivity com-

Table 1
Valence of Autobiographical Memories Generated by the Four Groups (Studies 1, 2, and 4)

Rating	Group			
	Dysphoric– ruminative	Dysphoric– distracting	Nondysphoric– ruminative	Nondysphoric– distracting
Free-recall memories (Study 1)				
Positivity ratings				
<i>M</i>	3.79	4.48	5.16	5.18
<i>SD</i>	1.28	1.21	1.01	1.93
Negativity ratings				
<i>M</i>	3.76	3.50	2.33	2.41
<i>SD</i>	1.36	1.25	0.99	1.21
Overall index (positivity minus negativity)				
<i>M</i>	0.03	0.98	2.83	2.77
<i>SD</i>	2.50	2.29	1.83	2.51
Cued memories (Study 2)				
Negativity ratings for unhappy memories				
<i>M</i>	5.92	4.95	4.75	5.12
<i>SD</i>	0.85	0.76	1.14	1.15
Negativity ratings for happy memories				
<i>M</i>	3.79	2.68	2.64	2.15
<i>SD</i>	1.83	1.05	1.16	0.94
Spontaneous memories (Study 4)				
Negativity ratings				
<i>M</i>	4.39	1.51	2.86	2.36
<i>SD</i>	1.79	0.55	1.28	1.30

posite (i.e., positive minus negative ratings). Dysphoric participants in the rumination condition recalled less positive memories overall than did the other three groups, $F(1, 68) = 12.58$, $p < .0007$ (see Table 1). A linear contrast testing whether dysphoric ruminators recalled the least positive memories, followed by dysphoric distractors, and, finally, the two nondysphoric groups, was also significant, $F(1, 68) = 19.22$, $p < .0001$. Means for the positivity composite are displayed in Table 1. It is notable that the spontaneous autobiographical memories generated by dysphoric participants who ruminated were rated almost equally positive and negative, whereas the memories generated by the remaining three groups received much higher positive ratings than negative ones.

Study 2 further explored our primary hypothesis, with two important differences. First, evidence for negatively biased memories in Study 1 was derived from ratings of memories by the participants themselves. This was necessary because the descriptions of these memories were typically brief and ambiguous as to whether they were positive or negative to their author (e.g., “bumped into ex-boyfriend at party”). However, as a result, it is unclear whether self-focused rumination led dysphoric participants to recall more negative events or whether it simply led them to perceive neutral events more negatively as they looked back on them. Perceiving relatively neutral events negatively should still contribute to depressed mood in the dysphoric ruminators. Yet to evaluate further whether dysphoric ruminators actually recall more negative memories, Study 2 used a method that elicited descriptions of memories that were rich enough to permit independent assessment of hedonic tone.

In addition, unlike in Study 1, in Study 2 specific types of memories were elicited: two positive or happy ones and two negative or unhappy ones. We expected that even when specifically asked to retrieve happy and unhappy memories, dysphoric individuals induced to ruminate would recall the most negative (or least positive) experiences and events.

Study 2

Method

Overview

Dysphoric and nondysphoric students were induced to either ruminate about themselves and their feelings or distract themselves by focusing externally. Subsequently, they were prompted to recall two unhappy memories and two happy memories from their lives. Depressed mood was measured before and after the response manipulation task. All tasks were performed on the computer.

Participants

Forty-nine introductory psychology students (34 women and 15 men) participated in this study in exchange for course credit. As in Study 1, potential participants completed the BDI at the beginning of the quarter. Students with BDI scores above 16 were recruited for the moderately dysphoric group, and students with BDI scores below 5 were recruited for the nondysphoric group. Twenty-five dysphoric (18 women and 7 men) and 24 nondysphoric (16 women and 8 men) students participated, all within 2 weeks after completing the BDI.

Cued Memory Task

This task was introduced in the same way as the free recall task (Study 1), except that students were instructed to recall only four memories, one specific memory at a time. Four memory cues were presented in a counterbalanced order, two to recall a "positive or happy event or experience from memory" and two to recall a "negative or unhappy" one. Participants were instructed to click on "begin" as soon as they retrieved the relevant cued memory and then type a description of this memory on the next screen. (Unlimited screen space was provided.) Subsequently, two independent judges, who were unaware of participants' dysphoria status and response manipulation condition, coded the memories on how positive and how negative they were (1 = *not at all*, 4 = *neutral*, 7 = *extremely*).¹ Agreement between judges was adequate: The intraclass correlation coefficients ranged from .78 to .86 for positivity ratings and from .81 to .88 for negativity ratings. We computed a composite negativity score by averaging the negativity rating and the positivity rating (reverse coded) for the two unhappy memories. Similarly, we computed a composite negativity score for the two happy memories.

Procedure

The procedure was identical to that used in Study 1, except that the two mood assessments and the response manipulation task were presented and performed on an Apple computer. In addition, autobiographical memories were elicited by way of a cued memory task rather than a free recall task. At the beginning of the study, participants were instructed in how to use a mouse to move from screen to screen, as well as how to respond to questions by either clicking on the appropriate response (e.g., a number on a Likert-type scale) or typing directly into the computer (e.g., to describe a memory). The instructions for all tasks were given orally as well as via the computer. As in the previous study, participants completed filler paper-and-pencil questionnaires at the beginning and end of the study. A debriefing questionnaire was administered after participants were finished with all tasks.

Results and Discussion

Because there were no main effects or interactions with sex or memory order, we conducted all analyses by collapsing across these two variables. There were 12 participants in the dysphoric-ruminative group, 12 in the dysphoric-distracting group, 12 in the nondysphoric-ruminative group, and 13 in the nondysphoric-distracting group. Statistical analyses followed the procedures used in Study 1.

Mood Changes

As in Study 1, dysphoric participants reported greater depressed mood at the outset of the experiment ($M = 4.18$, $SD = 1.46$) than did nondysphoric participants ($M = 2.04$, $SD = 1.23$), $t(46) = 5.55$, $p < .0001$. The results of a pairwise comparison on changes in depressed mood between dysphoric participants in the rumination and distraction conditions revealed a significant difference between the two groups, indicating that dysphorics who were induced to ruminate became more depressed ($M = 0.42$, $SD = 1.30$), and dysphorics who were induced to distract became less depressed ($M = -0.54$, $SD = 1.20$), $F(1, 45) = 5.47$, $p < .03$. In contrast, no significant difference was found in changes in depressed mood between nondysphorics who ruminated ($M = -0.08$, $SD = 0.73$) or distracted ($M = -0.25$, $SD = 0.72$), $F < 1$, *n.s.* Furthermore,

the results of a planned contrast showed that after the response task manipulation, dysphoric participants who ruminated reported significantly higher levels of depressed mood than the remaining three groups, $F(1, 45) = 54.12$, $p < .0001$. Mean levels of depressed mood following the response task manipulation were as follows: dysphoric-ruminative, $M = 4.69$, $SD = 1.22$; dysphoric-distracting, $M = 3.54$, $SD = 0.81$; nondysphoric-ruminative, $M = 2.37$, $SD = 1.00$; and nondysphoric-distracting, $M = 1.38$, $SD = 0.64$.

Autobiographical Memories

We hypothesized that dysphoric students who ruminated about their feelings and personal characteristics would recall the most negative memories in response to both negative (unhappy) and positive (happy) memory prompts. Our findings confirmed this hypothesis, replicating and extending the results of Study 1. A planned contrast revealed that dysphoric ruminators generated unhappy memories that were rated as more negative than those of the other three groups, $F(1, 43) = 8.57$, $p < .006$, and even generated happy memories that were rated as more negative (or less positive) than those of the other three groups, $F(1, 40) = 8.52$, $p < .006$. A linear contrast testing whether dysphoric ruminators recalled the most negative unhappy memories, followed by dysphoric distractors, and, finally, the two nondysphoric groups, was also significant, $F(1, 43) = 4.94$, $p < .04$. A linear contrast testing whether dysphoric ruminators recalled the most negative (or least positive) happy memories, followed by dysphoric distractors, and, finally, the two nondysphoric groups, was also significant, $F(1, 40) = 6.42$, $p < .02$. The four groups' mean negativity ratings for unhappy memories and mean negativity ratings for happy memories are displayed in Table 1.²

The results of Studies 1 and 2 together provide evidence for the proposition that self-focused, dysphoric rumination can enhance the negatively biasing effects of depressed mood on the retrieval of autobiographical memories. In Study 3, we tested whether this hypothesis would extend to memories of how frequently certain events have occurred in one's life. After all, rumination while feeling depressed can also enhance the biasing effects of mood on judgments of how frequently particular classes of events have occurred in one's past. People often make judgments of frequency by invoking the availability heuristic (Tversky & Kahneman, 1973); that is, they judge the frequency of an event according to how easily they can either recall an example of the event or imagine it happening. As noted earlier, ruminative responses direct attention to one's depressed mood; that mood, in turn, selectively primes mood-congruent informa-

¹ The judges were initially given several examples of autobiographical memories (from pilot studies), such as "lost my first love," "parents fighting and splitting up for a month," "my birthday party and my parents giving me a newborn cocker spaniel," and "seeing my boyfriend after being away for a year," to give them an opportunity to practice coding these memories on how positive and how negative they are and discussing any disagreements.

² Notably, because this study in part specifically prompted students for unhappy memories, these memories garnered much higher negativity ratings than did those generated by participants in Study 1.

tion such that negative or unhappy experiences are more easily retrieved (Blaney, 1986; Bower, 1981, 1991). Study 3 tested this hypothesis by examining participants' judgments of how frequently various positive and negative life events have occurred in their lives. We predicted that dysphoric students induced to ruminate would report negative events as occurring more frequently, and positive events as occurring less frequently, than would the other three groups.

Study 3

Method

Overview

Dysphoric and nondysphoric students ruminated or distracted, then judged the frequency that 10 positive and 10 negative events typically occur in their lives. Depressed mood was measured before and after the response manipulation task.

Participants and Procedure

Seventy-two introductory psychology students (39 women and 33 men) received course credit for their participation in this study. As in the first two studies, potential participants completed the BDI at the beginning of the quarter. Students with BDI scores above 16 were recruited for the moderately dysphoric group and students with BDI scores below 5 were recruited for the nondysphoric group. Thirty-nine dysphoric (24 women and 15 men) and 33 nondysphoric (15 women and 18 men) students participated, all within 2 weeks after completing the BDI. The procedure was identical to that used in Study 1, except that following the response manipulation task and the second mood assessment, instead of completing the free recall task, participants reported on the frequencies of life events.

Event Frequency Task

Participants were presented with a list of 20 events and experiences and asked to rate how frequently (1 = *never or hardly ever*, 4 = *sometimes*, 7 = *all the time*) these events typically happen to them in their life. Examples are "You have an argument with a friend," "Your parent(s) shows love," "You receive unfair treatment," and "You receive a grade on a test or paper that is higher than you expected." Ten of these events had been previously rated by 32 nondysphoric judges as positive ($M = 6.28$ on a 7-point positivity scale), and 10 of these events had been rated as negative ($M = 5.60$ on a 7-point negativity scale). Four randomly generated orders of these 20 events were counterbalanced across participants. The frequency ratings for the positive events and the negative events, respectively, were averaged to compute two separate frequency composites.

Results and Discussion

Because there were no main effects or interactions with sex or event order, we conducted all analyses by collapsing across these two variables. There were 20 participants in the dysphoric-ruminative group, 19 in the dysphoric-distracting group, 16 in the nondysphoric-ruminative group, and 17 in the nondysphoric-distracting group. Statistical analyses followed the procedures used in Studies 1 and 2.

Mood Changes

As in the first two studies, dysphoric participants reported greater dysphoria at the outset of the experiment ($M = 4.64$, $SD = 2.10$) than did nondysphoric participants ($M = 2.12$, $SD = 1.17$), $t(61) = 6.40$, $p < .0001$. The results of a pairwise comparison on changes in depressed mood between dysphoric participants in the rumination and distraction conditions showed a significant difference between the two groups, indicating that dysphorics who were induced to ruminate became more depressed ($M = 1.05$, $SD = 1.82$) and that dysphorics who were induced to distract became less depressed ($M = -0.50$, $SD = 1.13$), $F(1, 68) = 13.95$, $p < .0005$. As expected, no significant difference was found in changes in depressed mood between nondysphorics who ruminated ($M = 0.53$, $SD = 0.88$) or distracted ($M = -0.06$, $SD = 1.01$), $F < 2$, *n.s.* Furthermore, the results of a planned contrast showed that after the response task manipulation, dysphoric participants who ruminated reported significantly higher levels of depressed mood than the other three groups, $F(1, 68) = 45.68$, $p < .0001$. Mean levels of depressed mood following the response task manipulation were as follows: dysphoric-ruminative, $M = 6.00$, $SD = 2.02$; dysphoric-distracting, $M = 3.81$, $SD = 1.94$; nondysphoric-ruminative, $M = 2.66$, $SD = 1.64$; and nondysphoric-distracting, $M = 2.06$, $SD = 1.32$.

Event Frequency Judgments

Planned contrast analyses confirmed our hypothesis that dysphoric participants induced to ruminate would rate positive events as having occurred less frequently in their lives, $F(1, 68) = 9.77$, $p < .003$, and negative events as having occurred more frequently in their lives, $F(1, 68) = 10.75$, $p < .002$, than the remaining three groups (see Table 2). The results of linear contrasts testing whether the ratings of dysphoric ruminators were the most extreme, followed by dysphoric distractors, and, finally, the two nondysphoric groups, were significant for judgments of both positive events, $F(1, 68) = 7.95$, $p < .007$, and negative events, $F(1, 68) = 14.24$, $p < .0003$. As shown in Table 2, dysphoric students who ruminated were the only group who judged negative events as occurring more frequently in their lives than positive events.

For an alternative test of our hypothesis, we computed for each participant the percentage of the 10 positive events and the percentage of the 10 negative events that they had rated as "frequent" (i.e., above the midpoint on a 7-point Likert-type scale). Supporting our prediction, dysphoric participants who engaged in self-focused rumination reported the lowest percentage of frequent positive events occurring in their lives, $F(1, 68) = 6.75$, $p < .02$, and the highest percentage of frequent negative events, $F(1, 68) = 12.36$, $p < .0008$, among the four groups under investigation. Planned contrasts further revealed a significant linear effect for the percentage of both positive events, $F(1, 68) = 5.95$, $p < .02$, and negative events, $F(1, 68) = 20.45$, $p < .0001$. Again, as seen in Table 2, dysphoric ruminators were the only group who reported a higher percentage of frequent negative events than frequent positive events. These findings suggest that self-focused rumination leads dysphoric participants to judge negative events as relatively frequent, and positive events as relatively infrequent, in their lives.

Table 2
Responses of the Four Groups to the Event Frequency Task (Study 3)

Response	Group			
	Dysphoric– ruminative (<i>n</i> = 20)	Dysphoric– distracting (<i>n</i> = 19)	Nondysphoric– ruminative (<i>n</i> = 16)	Nondysphoric– distracting (<i>n</i> = 17)
Frequency judgments				
Positive events				
<i>M</i>	3.64	4.22	4.43	4.44
<i>SD</i>	1.03	1.15	0.60	0.44
Negative events				
<i>M</i>	3.90	3.49	3.04	2.88
<i>SD</i>	1.01	0.75	0.80	0.92
Percentage of frequent events				
Positive events				
<i>M</i>	37.5	49.0	52.5	55.9
<i>SD</i>	21.5	26.6	21.1	16.2
Negative events				
<i>M</i>	40.5	33.2	15.0	15.9
<i>SD</i>	24.6	20.6	15.5	20.0

In the first three studies, participants were required to retrieve memories from their past—whether as part of a free recall task (Study 1), a cued recall task (Study 2), or an event frequency judgment task (Study 3). The instructions given in these studies thus constrained our participants to recall autobiographical memories, an activity that they may not have engaged in naturally or spontaneously. In contrast, Study 4 participants were not directed to retrieve memories but were told simply to think about whatever came to mind as they engaged in rumination or distraction, be they memories, predictions, attributions, images, or free associations. Furthermore, the first three studies assessed participants' memories immediately after they ruminated or distracted. In Study 4, we hoped to capture autobiographical memories as they naturally occurred during rumination or distraction.

Study 4

Overview

Dysphoric and nondysphoric participants expressed their thoughts aloud into a microphone in response to instructions that were either ruminative (self-focused and emotion focused) or distracting (externally focused). Independent judges extracted autobiographical memories from the transcripts of students' audiotaped responses and rated them on negativity of tone. Before and after the manipulation, participants completed measures of depressed mood.

We predicted that the memories spontaneously generated by dysphoric ruminators would be more negative than those of the other three groups (dysphoric–distracting, nondysphoric–ruminative, and nondysphoric–distracting). Thus, as in the first three studies, analyses using planned contrasts comparing the dysphoric–ruminative group with the remaining three groups were performed on the dependent measures of interest. However, a unique element in this study was that we were extracting

memories from a set of expressed thoughts that were naturally entirely different depending on whether rumination or distraction was induced, that is, thoughts about oneself and one's feelings versus thoughts about external objects and scenes, respectively. Consequently, these differences in content per se might be expected to yield significant differences between participants' expressed thoughts in the rumination and distraction conditions. Thus, we additionally hypothesized that the memories produced by dysphorics in the rumination condition would differ from those of nondysphorics in the rumination condition. The responses of dysphorics who distracted were also expected to differ from those of dysphorics who ruminated, but they were not expected to differ from those of the two nondysphoric groups. In summary, we conducted planned pairwise comparisons between the dysphoric–ruminative group and the nondysphoric–ruminative group, as well as between the dysphoric–distracting group and each of the other three groups.

Method

Participants and Procedure

Forty introductory psychology students (22 women and 18 men) received course credit for their participation in this study. As in the first three studies, potential participants completed the BDI as part of a larger set of unrelated questionnaires. Students with BDI scores of 12 and above were classified as dysphoric, and students with BDI scores of 4 and below were classified as nondysphoric.³ A total of 10 men and 10 women participated in the dysphoric group, and 8 men and 12 women participated in the nondysphoric group. The procedure was similar to that used in the first two studies, except that participants completed only

³ Because of a shortage of dysphoric participants, less stringent cut-offs were used in this study. These cut-offs, however, follow the recommendations of Kendall and his colleagues (1987).

the mood assessments and the response manipulation task (which was performed aloud). The entire study lasted approximately 45 min.

Materials

Mood questionnaires. As in Studies 1, 2, and 3, participants completed two packets of mood questionnaires during the experiment, as well as a number of filler scales.

Response manipulation think aloud tasks. The response manipulation tasks used in the first three studies were modified into a think aloud procedure in which participants were instructed to speak their thoughts aloud in response to items that were either ruminative or distracting (cf. Lyubomirsky et al., 1997). This task was described as one in which "you must use your ability to visualize, concentrate, and verbalize, focusing your mind and thinking out loud about a series of ideas and images." Participants were informed that their responses would be audio-recorded and that they would be confidential. To familiarize participants with this procedure, we conducted a 2-min warm-up phase, in which students talked aloud into a microphone about the day's events. After this phase, participants were instructed to begin the think aloud task. As in the original procedure, after the experimenter left the laboratory room, everyone spent exactly 8 min on this task.

Students' audiotaped responses during the think aloud procedure were transcribed and then scored through a two-stage procedure. In the first stage, two independent judges, who were unaware of participants' dysphoria status and manipulation condition, carefully read each transcript and extracted all autobiographical memories (defined as references to events, activities, or emotions experienced in the recent or distant past) spontaneously generated by participants. Minor disagreements between the two judges on the identification of memories were resolved by discussion and consensus. The total number of memories extracted per transcript ranged from 0 to 22 ($M = 6.42$).

In the second stage, the extracted memories were scored by two new independent judges unaware of participants' condition. Each memory was given two global ratings using 7-point Likert-type scales (1 = *not at all*, 4 = *some*, 7 = *very much*): (a) How negative is the memory, and (b) how unhappy is the memory. These two ratings were averaged and combined into an overall negativity score for each memory. Intraclass correlation coefficients revealed that inter-rater reliability was excellent, ranging from .89 to .97 ($M = .93$).

Results and Discussion

Because there were no main effects or interactions with sex, we conducted all analyses by collapsing over sex of participants. There were 10 participants in the dysphoric-ruminative group, 10 in the dysphoric-distracting group, 10 in the nondysphoric-ruminative group, and 10 in the nondysphoric-distracting group.

Mood Changes

At the beginning of the study, participants in the dysphoric group were more depressed ($M = 4.22$, $SD = 2.02$) than those in the nondysphoric group ($M = 2.20$, $SD = 1.79$), $t(37) = 3.35$, $p < .002$. The results of a pairwise comparison on changes in depressed mood between dysphoric participants in the rumination and distraction conditions revealed a significant difference between the two groups, showing that dysphorics who were instructed to ruminate became more depressed ($M = 1.05$, $SD = 2.39$) and dysphorics who were instructed to distract became less depressed ($M = -0.70$, $SD = 0.79$), $F(1, 36) = 8.14$, $p < .008$. In contrast, no significant difference was found

in changes in depressed mood between nondysphorics who ruminated ($M = 0.15$, $SD = 0.58$) or distracted ($M = -0.40$, $SD = 0.94$), $F < 1$, *ns*. Furthermore, the results of a planned contrast showed that after the response task manipulation, dysphoric participants who ruminated exhibited significantly higher levels of depressed mood than the remaining three groups, $F(1, 36) = 21.99$, $p < .0001$. Mean levels of depressed mood following the response task manipulation were as follows: dysphoric-ruminative, $M = 5.45$, $SD = 1.23$; dysphoric-distracting, $M = 3.35$, $SD = 1.75$; nondysphoric-ruminative, $M = 2.55$, $SD = 2.53$; and nondysphoric-distracting, $M = 1.60$, $SD = 0.94$.

Autobiographical Memories

All participants recalled at least six autobiographical memories, with the numbers of participants recalling more than six dropping off dramatically. Thus, similar to the procedure of Study 1, to preserve the highest possible sample size, we analyzed our data using the average of negativity ratings for the first six memories only. Again, it should be noted that analyses using *all* the memories provided by participants yielded results that were very similar, and even stronger, than the ones reported. Furthermore, the four groups did not significantly differ in the number of memories they produced ($F < 2$, *ns*).

Our primary hypothesis, that dysphoric rumination would lead participants to generate negatively biased memories, was supported. According to the results of a planned contrast, the first six memories generated by the dysphoric-ruminative group were significantly more negative in tone (i.e., reflecting more negativity and unhappiness) than those of the other three groups, $F(1, 30) = 18.03$, $p < .0002$ (see Table 1). Furthermore, according to a pairwise comparison, the first six memories of dysphoric ruminators were rated as more negative in tone than those of nondysphoric ruminators, $F(1, 30) = 6.18$, $p < .02$. Results of pairwise comparisons also revealed that the first six memories of dysphoric ruminators were judged as significantly more negative than those of dysphoric distractors, $F(1, 30) = 20.46$, $p < .001$, but that, as expected, ratings of dysphoric distractors' first six memories did not differ significantly from those of the two nondysphoric control groups ($F < 4$). Mean ratings for negativity of the first six memories are shown at the bottom of Table 1.

General Discussion

The results of four studies strongly support our primary hypothesis that relative to short-term distraction, ruminative responses to depressed mood enhance the retrieval of negative life events from memory. Whether the autobiographical memories were prompted, recalled freely, or generated spontaneously; whether the hedonic tone of memories was determined by objective judges or the participants themselves; or whether the memories were produced during or following rumination did not alter this basic finding, which was replicated across four different paradigms. When dysphoric students were induced to ruminate, they came up with negative memories from their past (e.g., "Everyone passed the test except me"; "My girl cheated on me in Santa Barbara"; "Parents forced me to choose between them after their divorce") and felt that negative events were

more frequent in their lives than positive ones. These results provide further support to a growing body of theory and research, which suggests that self-focused rumination in the context of dysphoric mood is associated with more negative thinking than externally focused distraction (Carver & Scheier, 1990; Ingram, 1990; Lyubomirsky et al., 1997; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Nolen-Hoeksema, 1991; Pyszczynski & Greenberg, 1987; Smith & Greenberg, 1981).

Depressed or dysphoric mood generally increases the accessibility of negative cognitions (Blaney, 1986; Bower, 1981, 1991; Schwarz & Bohner, 1996). Self-focused rumination among people in a depressed mood may enhance negative memories simply by drawing attention to the memories made accessible and salient by the depressed mood. In contrast, distraction temporarily relieves a dysphoric mood and may thereby reduce the accessibility of negative thoughts (see also Lyubomirsky et al., 1997; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993). Thus, newly generated memories of dysphoric individuals who have distracted will be less likely to be primed by accessible negative thoughts and, therefore, less likely also to be negative.

Rumination alone, in the absence of dysphoria, was not associated with remembering negative life events. In addition, rumination did not lead to changes in the moods of nondysphoric participants. These results suggest that rumination has adverse consequences only in the context of a depressed mood and bolster the argument that rumination affects cognition by enhancing the effects of negative mood on the accessibility of negative memories (Nolen-Hoeksema, 1991).

An alternative interpretation of our findings in Studies 1 and 3 may be that the dysphoric participants in the rumination condition were using their negative moods as information in making their judgments of how negative or positive their memories were and of how frequently negative and positive events have happened to them in the past (cf. Schwarz & Bohner, 1996; Schwarz & Clore, 1987). That is, participants could have thought, "I feel pretty bad; I guess a lot of bad things are going on in my life," and used that line of reasoning to make the ratings asked for in Studies 1 and 3. Although this interpretation suggests that the results of Studies 1 and 3 are not simply due to the effects of negative mood and rumination on recall, it does not render the results of those studies unimportant. Indeed, Nolen-Hoeksema (1991) argued that one way rumination prolongs depressed mood is by making it more likely that the dysphoric ruminator will use his or her negative mood and other depressive symptoms as information in generating and interpreting memories and events (e.g., "My marriage must be a wreck; look how depressed I am").

Similarly, rumination in the context of dysphoria might contribute to the generation of more negative memories by setting the "starting point" or anchor from which dysphoric ruminators recall additional memories. That is, dysphoric ruminators may use the fairly negative thoughts they are currently thinking as their anchor or starting point when they try to generate additional memories in the process of evaluating their lives. Thus, many of the additional memories they generate may be equally, or even more, negative than the memories currently on their minds. And even if they try to generate positive memories or thoughts, they may begin at such a negative point on the hedonic contin-

uum that the positive memories they produce are not very positive. Wenzlaff, Wegner, and Roper (1988) showed that when depressed people are left on their own to generate distracting thoughts, they "know" that they should come up with positive thoughts to lift their mood, but they still tend to generate quite negative thoughts. This may be because their current thoughts, particularly if they are ruminating, may be so negative that most other thoughts appear positive in comparison.

Finally, another way that rumination in the context of a depressed mood may contribute to negative thinking is by increasing the attention paid to the highly elaborated negative self-schemas that dysphoric people often have (see Nolen-Hoeksema, 1991). These self-schemas may include well-rehearsed instances of negative events from the past and negative global evaluations of the self (e.g., "I'm a terrible student"), which can be used to interpret relatively neutral events called from memory. In contrast, dysphoric people made to distract for a time may be less likely to use these negative self-schemas in generating or evaluating memories from the past. Alloy and Abramson (1997) recently found that students who had both negative self-schemas and the tendency to engage in rumination were more likely to experience onsets of major depression during their college years than students who had only negative self-schemas or only a ruminative tendency. This suggests that the tendency to ruminate interacts with and enhances the effects of negative self-schemas.

Limitations

The participants in our studies were probably only moderately dysphoric or depressed; therefore, we do not know if our results generalize to a clinically depressed population. However, previous studies using clinical populations have shown that self-focusing manipulations maintain or enhance depressed mood among clinically depressed patients, whereas externally focusing manipulations lift it (Fennell & Teasdale, 1984; Gibbons et al., 1985). Furthermore, many studies have established the link between depressed mood and negative memories in depressives (e.g., Clark & Teasdale, 1982; DeMonbreun & Craighead, 1977; Fogarty & Hemsley, 1983; Gotlib, 1981, 1983; Lewinsohn & Rosenbaum, 1987; Lloyd & Lishman, 1975; MacLeod & Matthews, 1991). Still, the effects of focusing or rumination manipulations on the autobiographical memories of clinically depressed individuals are largely unknown (see Pyszczynski et al., 1989, for an exception). This is an important area of investigation for the future (see Gotlib, Roberts, & Gilboa, 1996).

Another concern that merits consideration is the nature of the think aloud procedure used in Study 4. It is arguable that this new method could not possibly capture naturalistic ruminative thought. For example, internal naturally occurring thoughts may be more incoherent, disorganized, or image based than thoughts that are expressed verbally. In addition, one might worry that in spite of assured confidentiality, our participants may have felt uncomfortable or diffident about sharing their private thoughts aloud. Our observations, however, indicated that almost all participants became easily accustomed to the task during the warm-up phase and subsequently revealed highly personal thoughts and feelings, often in a stream of consciousness manner. Our method of examining verbally expressed thoughts in response

to ruminative or distracting instructions was the closest we could reach the goal of Study 4, that is, to capture "real-life" spontaneous memories during the process of rumination and distraction (see also Lyubomirsky et al., 1997). Moreover, the limitations inherent in this paradigm should have worked only to dampen the predicted effects.

Implications for Psychotherapy

Whether a therapist's approach is cognitive-behavioral, humanistic, psychodynamic, insight oriented, or eclectic, he or she is likely to encourage clients to discuss their experiences, emotions, and intimate concerns. Thus, it can be argued that all psychotherapies invite clients to remember relevant events from their very recent or their very distant past. Identifying a client's problem (all therapies), pinpointing specific situations in which a particular problem occurs (behavioral therapy), understanding how a childhood relationship continues to influence the present (psychodynamic therapy), or exploring the significance of recent life events (humanistic therapy) all require the retrieval of autobiographical memories (Beckham & Leber, 1995; see also Loftus, 1993). Although most therapists probably do not regard their clients' reports of past events as absolutely accurate, they may sometimes fail to take into account individual differences among clients in the veridicality of these reports. The evidence from our four studies suggests that depressed or dysphoric clients who are prone to rumination are inclined to retrieve events or experiences from memory that are negatively biased. Assessing clients' tendencies to ruminate, and taking these tendencies into account in interpreting clients' reports of past events in their lives, may be an important goal for psychotherapists.

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