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The Consequences of Dysphoric Rumination

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Many people believe that, when they become depressed or dysphoric, they should try to focus inwardly and evaluate their feelings and their situation in order to gain self-insight and find solutions that might ultimately resolve their problems and relieve their depressive symptoms (Lyubomirsky & Nolen-Hoeksema, 1993; Papageorgiou & Wells, 2001a, 2001b; Watkins & Baracaia, 2001). Challenging this assumption, numerous studies over the past two decades have shown that repetitive rumination about the implications of one's depressive symptoms actually maintains those symptoms, impairs one's ability to solve problems, and ushers in a host of negative consequences (see Nolen-Hoeksema, 1991, 1996, for reviews). In this chapter, we describe in detail a ruminative style of responding to depressed mood and review both experimental and correlational research documenting its many adverse consequences.

Ruminative Responses to Negative Mood

Ruminative responses to negative mood and other depressive symptoms are thoughts and behaviors that repetitively focus the individual's attention on his or her negative feelings and the nature and implications of those feelings (Nolen-Hoeksema, 1991). For example, when feeling depressed or dysphoric, some people isolate themselves to brood about the problems at the root of their distress (e.g., "My children are too much for me to handle") without taking action to solve those problems, or dwell about the causes and consequences of their depressive symptoms (e.g., "Why haven't I been able to just snap out of this?") without doing anything constructive to relieve those symptoms (Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Nolen-Hoeksema, 1996). Other examples include thinking about how alone, unmotivated, lethargic, and hopeless one feels (e.g., "I just can't get going") and worrying about the implications of one's state of mind (e.g., "What if I can't muster the energy to go to

work tomorrow?"). Although such thoughts may naturally arise for anyone who experiences a depressed mood, some people persist in ruminating on the meanings, causes, and consequences of their feelings and symptoms without taking action to address their situation or to distract themselves. Indeed, the tendency to engage in rumination in response to negative moods appears to be both a relatively common (Rippere, 1977) and stable coping style (Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994). For example, in one study, 83% of students who recorded their daily moods for 30 consecutive days showed consistent styles of responding to their negative moods (e.g., by ruminating or not ruminating) within the same day and across all days (Nolen-Hoeksema et al., 1993).

Although dysphoric individuals may be hoping that their ruminations will help them solve their problems or relieve their symptoms, correlational studies have shown that people who engage in passive rumination are actually less likely to use active, planful problem solving to cope with problems or negative life events (Nolen-Hoeksema & Morrow, 1991; see also Carver, Scheier, & Weintraub, 1989). An adaptive and instrumental alternative that we have investigated is to use pleasant or neutral distractions to lift one's mood and relieve one's depressive symptoms; and only then, if necessary, to undertake problem solving. Distracting responses are thoughts and behaviors that help divert one's attention away from one's depressed mood and its consequences and turn it to pleasant or benign thoughts and activities that are absorbing, engaging, and capable of providing positive reinforcement (Nolen-Hoeksema, 1991; cf. Csikszentmihalyi, 1990) -- for example, going for a run or a bike ride, seeing a movie with friends, or concentrating on a project at work. Effective distractions do not include inherently dangerous or self-destructive activities, such as reckless driving, heavy drinking, drug abuse, or aggressive behavior, which may be distracting in the short-term but harmful in the long run. Indeed, engaging in such behaviors has been found to be significantly correlated with using ruminative, not distracting, responses to cope with depressed mood (Nolen-Hoeksema & Morrow, 1991). Distracting oneself with negative thoughts while depressed is also unlikely to be successful (Wenzlaff, Wegner, & Roper, 1988).

Having described what dysphoric ruminative responses are, we now turn our attention to what they are *not*. Although recent interest in ruminative thinking (e.g., Weyer, 1996) has prompted a number of reconceptualizations of rumination -- e.g., as reflecting a broad class of instrumentally-oriented recurring thoughts in response to goal discrepancies (Martin & Tesser, 1996) – we conceptualize ruminative responses to dysphoria as generally not adaptive or instrumental and as frequently occurring in the absence of goal discrepancy reduction (cf. Nolen-Hoeksema, 1996; Nolen-Hoeksema & Morrow, 1991; see also Erber & Wegner, 1996; Linville, 1996; Waenke & Schmid, 1996). For example, ruminative responses differ from structured problem solving in that they involve thinking about one's depressive symptoms and their meanings without actively doing anything to alleviate those symptoms or making any decisions or concrete plans of action. Although ruminations are often problem-focused (Lyubomirsky et al., 1999, Study 2), correlational studies have shown that people who engage in passive emotion-focused and self-focused rumination are actually less likely to endorse the use of active, structured problem solving to cope with problems or stressful circumstances (Nolen-Hoeksema & Morrow, 1991; see also Carver et al., 1989).

Ruminative responses also differ, both theoretically and empirically, from the depressive self-focusing style (Pyszczynski & Greenberg, 1987) and from private self-consciousness (Fenigstein, Scheier, & Buss, 1975). Pyszczynski, Greenberg, and colleagues emphasize that the defining feature of their depressive style is the focus on insurmountable discrepancies between ideal and real self-images following failure (cf. Pyszczynski, Greenberg, Hamilton, & Nix, 1991, p.540). This focus on self-discrepancies, they argue, can maintain depression. In contrast, ruminative responses are simply thoughts and behaviors that maintain one's attention on one's existing distress or depressive symptoms and need not involve concerns about personal failures. Similarly, whereas private self-consciousness is defined as a general tendency to chronically self-analyze regardless of one's mood (Fenigstein et al., 1975), we define rumination specifically as a response to an existing negative mood. Finally, dysphoric ruminative thought should be distinguished from worry, which primarily consists of

negative thoughts and expectations about perceived future threats; from traumatic ruminations, which are intrusive thoughts about a specific trauma; and from emotion-focused coping, which includes a mixed collection of responses to a negative life event, including participation in distracting activities, wishful thinking, and suppression or denial.

The Consequences of Rumination

Although many people feel compelled to ruminate about themselves and their problems when experiencing dysphoria or depression, converging empirical evidence suggests that such a coping style is associated with numerous deleterious outcomes. The most powerful evidence for the adverse effects of rumination comes from experimental studies that have recruited naturally dysphoric participants and induced them to ruminate in the laboratory (i.e., by instructing them to focus on their feelings, physical symptoms, and personal characteristics) and then assessed these participants' moods, cognitions, or behavior immediately after they have ruminated (e.g., Lyubomirsky et al., 1999; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Nolen-Hoeksema & Morrow, 1993; see also Morrow & Nolen-Hoeksema, 1990, which used an induction of sad mood). Alternatively, in other investigations, researchers have assessed individual differences in ruminative style using the Response Styles Questionnaire (RSQ; e.g., Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema et al., 1993, 1994), a measure of chronic responses to negative moods, and have related scores on the RSQ to other variables of interest using cross-sectional or longitudinal designs (e.g., Nolen-Hoeksema et al., 1994, Nolen-Hoeksema, McBride, & Larson, 1997). Although the correlational nature of the latter studies does not permit inferences regarding causal direction, these investigations are valuable in bolstering the evidence from the induction studies, as well as for allowing researchers to generalize the experimental laboratory findings to individuals with a history of dysphoric rumination in naturalistic settings.

Negative Affect and Depressive Symptoms

The most widely studied consequence of dysphoric rumination is undoubtedly negative mood. To date, numerous studies have shown that people who engage in ruminative responses to dysphoria experience longer and more severe periods of depressed mood than those who use distracting responses. For example, laboratory manipulations of rumination or self-focus (e.g., “Think about the kind of person you are”) maintain or enhance depressed mood in dysphoric or clinically depressed participants, whereas distraction or external-focus manipulations (e.g., “Think about the size of the Statue of Liberty”) produce significant relief from depressed mood (Gibbons et al., 1985; Lyubomirsky et al., 1998, 1999; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Papageorgiou & Wells, 2000; Trask & Sigmon, 1999; Watkins & Teasdale, 2001; Wells, 1990). Importantly, manipulations of rumination have been found not to induce depressed mood in nondysphoric individuals (e.g., Lyubomirsky et al., 1998, 1999; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993), suggesting that it is the *combination* of dysphoria and rumination that maintains depressed mood.

Studies of naturally-occurring dysphoria (e.g., due to stress or traumatic life events) have further shown that people who habitually respond to their negative moods with passive, repetitive rumination report longer and more severe periods of dysphoria than those who manage their mood with pleasant, distracting activities (Nolen-Hoeksema et al., 1993, 1994, 1997; Nolen-Hoeksema & C. G. Davis, 1999; Nolen-Hoeksema & Larson, 1999; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Morrow, 1991; Roberts, Gilboa, & Gotlib, 1998; Schwartz & Koenig, 1996; Segerstrom, Tsao, Alden, & Craske, 2000; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990). For example, Nolen-Hoeksema and colleagues have conducted several longitudinal studies of the response styles of bereaved individuals. In one such study, caretaking relatives of terminally-ill patients who showed a more ruminative style (as assessed by the RSQ) were more depressed 6 months after their loved one had died, even after controlling for initial depression levels, social support, and concurrent stressors

(Nolen-Hoeksema et al., 1994; see Bodnar & Kiecolt-Glaser, 1994, for similar results).

Similarly, men whose partners had recently died of AIDS were at a greater risk for psychological distress both 1 month and 12 months after the loss if they evidenced negative ruminative thoughts during free-response interviews (Nolen-Hoeksema et al., 1997).

Other investigations have examined people's chronic responses to traumatic events, as well as to everyday stress and strain. For example, in one study, Stanford University students who reported a tendency to ruminate in an assessment conducted 2 weeks before the 1989 San Francisco area earthquake were more dysphoric 10 days and 7 weeks after the earthquake than students who did not have ruminative tendencies, even after their levels of depressed mood before the earthquake were statistically controlled (Nolen-Hoeksema & Morrow, 1991). Furthermore, a study of community-dwelling adults revealed a significant association between ruminative response styles and protracted periods of depressive symptoms (Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 1999). And, in a daily diary study, the more frequently students reported engaging in ruminative responses to their naturally-occurring negative moods, the longer their periods of depressed mood, even after taking into account the initial severity of the mood (Nolen-Hoeksema et al., 1993).

Although the majority of research on the relationship between rumination and negative mood has been focused on dysphoric or depressed affect, similar findings have been reported for other negative moods, such as anxiety (Fritz, 1999; Schwartz & Koenig, 1996; Segerstrom et al., 2000) and anger (Rusting & Nolen-Hoeksema, 1998, Studies 1 and 3). Ruminative responses have also been found to be associated with clinically-significant psychiatric symptoms, including suicidal ideation (Eshun, 2000) and signs of post-traumatic stress (Nolen-Hoeksema & Morrow, 1991).

Unlike earlier research on dysphoric rumination, recent studies have increasingly assessed major depression in participants to determine whether rumination has similar effects for clinical levels of depressive symptoms. For example, prospective longitudinal studies have found that initially nondepressed individuals who have a ruminative style of responding to

negative mood are more likely to experience a major depressive episode (APA, 1987, 1994) from 1 to 2.5 years later (Just & Alloy, 1997; Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 1999; Spasojevic & Alloy, 2001), and more inclined to have severe depressive symptoms (Just & Alloy, 1997; Nolen-Hoeksema, 2000), than individuals without such a style. Furthermore, a large longitudinal study of over 1100 community-based adults showed that those who evidenced both clinical depression *and* a ruminative style at the initial assessment had relatively more severe and longer-lasting depressive symptoms one year later, were less likely to show remission of their depression, and more likely to have symptoms of anxiety (Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 1999). Similarly, a study of unipolar depressed inpatients found that those who showed a ruminative style after being discharged had higher levels of depression and were more inclined to still show signs of a major depressive episode after 4 months (Kuehner & Weber, 1999). These studies suggest that rumination may have a deteriorating effect on the course of depressive episodes in clinically depressed patients.

Negatively-Biased Thinking

Many investigations to date have provided evidence that dysphoric rumination negatively biases people's thinking. For example, in laboratory studies, dysphoric participants induced to ruminate, relative to nondysphorics or those induced to distract, have been found to give more pessimistic attributions for interpersonal problems and upsetting experiences (e.g., "I always seem to fail") and to chose more negatively-biased and distorted interpretations of hypothetical life events (e.g., minimizing their successes and overgeneralizing from their failures) (Lyubomirsky et al., 1999, Study 2; Lyubomirsky & Nolen-Hoeksema, 1995, Study 1; see also Greenberg, Pyszczynski, Burling, & Tibbs, 1992), as well as to make more negative self-evaluations (e.g., "I'm unattractive" or "My problems are unsolvable") and to feel less control over their lives (Lyubomirsky et al., 1999). In other experimental studies, as compared to distraction, rumination in the presence of a depressed mood led students to spontaneously retrieve more negative memories from their recent past (e.g., "My girl cheated on me in Santa Barbara") and to recall negative events (such as "my parents punished me unfairly") as having

occurred more frequently in their lives (Lyubomirsky et al., 1998; see also McFarland & Buehler, 1998, Study 2; Pyszczynski, Hamilton, Herring, & Greenberg, 1989). Dysphoric ruminators also have been shown to make relatively more gloomy predictions about positive events in their future (e.g., “I won’t have many friends after I graduate”) (Lyubomirsky & Nolen-Hoeksema, 1995, Study 2; see also Pyszczynski, Holt, & Greenberg, 1987, Studies 2 and 3) and to have low expectations for the likelihood of solving their problems (Lyubomirsky et al., 1999, Studies 1 and 3) and engaging in fun activities (Lyubomirsky & Nolen-Hoeksema, 1993, Study 1). In all of these studies, dysphoric participants instructed to distract for 8 minutes have proven to be no more pessimistic or negative in their thinking than nondysphorics (see also Pyszczynski et al., 1987, 1989).

A revealing set of results come from a study in which students’ actual ruminative thoughts, as spoken into an audiotape recorder, were coded by judges (Lyubomirsky et al., 1999, Study 2). Rumination led dysphoric students to mull over their most troubling problems, such as declining school performance, financial woes, and conflicts with family members. At the same time, those who engaged in rumination while depressed were inclined to be negative, self-critical, and likely to blame themselves for these problems (e.g., thinking “I’m lazy” or “I’ve always had trouble keeping my friends”); in addition, they showed reduced self-confidence and optimism (e.g., “I’ll never pass Biology”), and diminished feelings of control (“I’m lost when it comes to my parents”). By contrast, the ruminative thoughts of nondysphorics were rated as significantly more positive, optimistic, and less problem-focused. Corroborating evidence was provided in another study, in which students prepared written “thought samples” after either being instructed to ruminate or to distract (Lyubomirsky, Kasri, & Zehm, 2002, Study 1). Dysphoric ruminators displayed relatively more negatively-biased thoughts in general (e.g., “College is too hard”) and about themselves (e.g., “I feel all alone”) throughout the study session.

Although correlational studies documenting a link between a tendency to ruminate and depressogenic, pessimistic thinking can offer only tentative conclusions regarding the direction

of influence, such studies provide insights into the thoughts of “natural” ruminators, permitting greater external validity and bolstering the already rich experimental evidence. For example, in a study of 137 students, scores for ruminative style were significantly correlated with a pessimistic attributional style (e.g., stable, global, and internal explanations of negative events), maladaptive attitudes (e.g., pessimism, low expectations of control, and perfectionism), and self-criticism (e.g., “If I fail to live up to expectations, I feel unworthy”) (Spasojevic & Alloy, 2001). In investigations of community-dwelling adults, ruminative style has been found to be associated with a pessimistic outlook (Nolen-Hoeksema et al., 1994) and a reduced sense of mastery over one’s life (Nolen-Hoeksema et al., 1999; Nolen-Hoeksema & Jackson, in press; see also Waenke & Schmid, 1996). Corroborating the results from the rumination induction studies, individuals with a tendency to ruminate have also been found to express negatively-biased thoughts in free associations, to evaluate both themselves (Ward, Lyubomirsky, Sousa, & Nolen-Hoeksema, 2002) and their families (Aymanns, Filipp, & Klauer, 1995) in an unfavorable way, to recall negatively-biased memories (McFarland & Buehler, 1998, Studies 3, 4, and 5), and to show low self-confidence in their plans (Ward et al., 2002).

Poor Problem Solving

In addition to enhancing negatively-biased thinking, rumination in the context of a depressed mood has been shown to impair people’s problem-solving skills. Specifically, dysphoric rumination appears to interfere with one or more of the “stages” of the problem-solving process – that is, 1) definition or appraisal of the problem, 2) generation and selection of alternative solutions, and 3) solution implementation (e.g., D’Zurilla & Goldfried, 1971). Studies have provided evidence that ruminative focusing leads dysphoric individuals to appraise their problems as overwhelming and unsolvable (stage 1; Lyubomirsky et al., 1999, Studies 1 and 3), to fail to come up with effective problem solutions (stage 2; Lyubomirsky et al., 1999, Study 3; Lyubomirsky & Nolen-Hoeksema, 1995, Study 3), and to be reluctant to implement them (stage 3; Lyubomirsky et al., 1999, Studies 1 and 3; see also Lyubomirsky & Nolen-Hoeksema, 1993; Ward et al., 2002).

To date, the strongest evidence for the thesis that rumination impairs problem solving comes from an experiment in which, after engaging in either a ruminative or distracting task, students were instructed to imagine themselves experiencing several interpersonal and achievement problems (e.g., “a friend seems to be avoiding you”) (cf. Platt & Spivack, 1975) and then to write detailed descriptions of the steps they would take to resolve each problem (Lyubomirsky & Nolen-Hoeksema, 1995, Study 1; for a replication, see Lyubomirsky et al., 1999, Study 3). Dysphoric students who ruminated generated less effective solutions to the hypothetical problems than dysphorics who distracted or nondysphoric participants who ruminated or distracted (see also Brockner, 1979; Brockner & Hulton, 1978; Kuhl, 1981; Strack, Blaney, Ganellen, & Coyne, 1985).

Formulating an effective solution to one’s personal problems is clearly an important step of the problem-solving process. However, even once a promising plan has been conceived, an equally important step is to actually go ahead and carry it out. Unfortunately, this part appears to be difficult for dysphoric ruminators. For example, in one laboratory study, dysphoric students who ruminated about themselves came up with perfectly good solutions to their most pressing current problems (e.g., “study harder” or “spend less money”), but showed a reduced likelihood of actually implementing those solutions (Lyubomirsky et al., 1999, Studies 1 and 3; see also Lyubomirsky & Nolen-Hoeksema, 1993, Study 1).

Naturalistic, correlational studies further reinforce the laboratory evidence. People with ruminative tendencies report being relatively less inclined to engage in active problem-solving during stressful times (Nolen-Hoeksema & Morrow, 1991), tend to show maladaptive and even dangerous responses to interpersonal offenses (e.g., “I’ll make him pay”; McCullough et al., 1998, 2001), and express reduced satisfaction and commitment to their solutions and plans (Ward et al., 2002).

Impaired Motivation and Inhibition of Instrumental Behavior

One of the ways that ruminative responses to depressed mood can interfere with effective problem solving is by sapping people’s motivation and initiative. Rumination

maintains one's focus on one's depressive symptoms, which may persuade dysphorics that they lack the efficacy and wherewithal to engage in constructive behavior – for example, to carry out solutions to problems or to participate in mood-alleviating activities. Indeed, the results of several studies suggest that people who focus on themselves and their feelings in the context of a negative mood show reduced motivation to initiate instrumental behavior. For example, Lyubomirsky and colleagues (1999) asked students to generate their three biggest problems and then to come up with possible solutions to these problems. Rumination led dysphoric respondents to come up with solutions to their problems that they believed to be effective, but, at the same time, it lowered the likelihood that they would actually take action to solve these problems. Supporting these findings, a previous study revealed that although dysphoric ruminators recognized that pleasant, distracting activities would lift their mood, they were unwilling to do them (Lyubomirsky & Nolen-Hoeksema, 1993, Study 1; see also Wenzlaff et al., 1988).

The consequences of ruminative thinking for the inhibition of instrumental action can be troublesome or inconvenient at best, and serious and dangerous at worst. In the domain of health, laboratory and field studies suggest that women with chronic ruminative styles suffer heightened distress upon discovering potential health symptoms (e.g., a breast lump) and, consequently, delay seeking a diagnosis (Lyubomirsky, Kasri, & Chang, 2002). For example, a recent naturalistic investigation showed that women with breast cancer with a tendency to ruminate reported having delayed the presentation of their initial cancer symptoms to a physician more than two months longer than did nonruminators (Study 2). Notably, the relation between rumination and delay was not mediated by anxiety or cancer-related fears. In another set of studies, undergraduate ruminators engaged in community problem solving (i.e., formulating a plan to overhaul their university's housing system or to improve the course curriculum) were found to be more reluctant than nonruminators to put into effect the plans that they devised (Ward et al., 2002). In sum, ruminators' motivational deficits may inhibit them from enacting solutions to problems or taking appropriate action in various situations.

Impaired Concentration and Cognition

Rumination in the context of dysphoria has also been found to interfere with concentration and to impair performance on cognitive tasks. In a series of three experimental laboratory studies, dysphoric students who ruminated about their feelings and personal characteristics reported diminished concentration on academic tasks, needed additional time during reading and test-taking, and displayed impaired work strategies and performance (Lyubomirsky, Kasri, & Zehm, 2002; see also Kuhl, 1981; Strack et al., 1985). For example, in one study, as compared to dysphoric distractors, dysphoric ruminators who were instructed to read a passage from a graduate school entrance exam reported more difficulty concentrating and more frequent interfering, off-task thoughts (e.g., “I thought about the difficulty of the task”), were slower in reading the passage, and more likely to return to previously-read material. In yet another study, dysphoric ruminators were less proficient at catching spelling and grammatical mistakes on a page of written prose than dysphoric distractors or nondysphoric students. Again, rumination alone, in the absence of a depressed mood, was not associated with impaired concentration in these studies

Investigations using cognitive laboratory tasks highlight possible cognitive deficits associated with rumination. For example, depressed or dysphoric participants who engaged in ruminative thinking were more likely to show evidence of a type of “overgeneral” (i.e., categoric) autobiographical memory implicated in the maintenance of depression (Watkins & Teasdale, 2001; Watkins, Teasdale, & Williams, 2000), as well as to exhibit memory impairments in a controlled retrieval task (Hertel, 1998), than participants who did not focus or ruminate about themselves. Furthermore, a recent study found that individuals with a ruminative style made more perseverative errors on the Wisconsin Card Sorting Test, a task that requires cognitive flexibility and set shifting, and took more time on a measure of psychomotor speed, than did nonruminators (R. N. Davis & Nolen-Hoeksema, 2000). Finally, dysphoric students induced to focus on themselves or on their feelings have been found to perform relatively worse on cognitive discrimination (Kuhl, 1981) and anagram-solving tasks

(Strack et al., 1985). Although the precise implications of the cognitive impairments demonstrated in these studies are not yet clear, individuals with a ruminative style may be at risk for performance decrements in educational and occupational domains.

Increased Stress and Problems

The array of adverse consequences associated with dysphoric rumination can conspire to produce additional negative effects, including those for people's health, relationships, and levels of stress and emotional adjustment. It is worth noting, however, that research evidence for these effects comes solely from correlational investigations.

Threats to physical health. For example, as described above, relative to nonruminators, women with a ruminative style have been shown to delay help seeking for a serious physical symptom – a breast lump (Lyubomirsky, Kasri, & Chang, 2002). The results of this work are significant in light of research findings that the longer a woman waits to seek a diagnosis after discovering a breast symptom, the more advanced her cancer will be, and the lower likelihood of her survival (e.g., Neave, Mason, & Kay, 1990). Although research in the health domain is scarce, other correlational studies have also found associations between rumination and health risks. For example, a tendency towards rumination was related to low compliance with one's medical regimen among a diverse set of cancer patients in Germany (Aymanns et al., 1995), and emotion-focused rumination predicted rehospitalization four months after a coronary event, such as a heart attack, among first-time patients (Fritz, 1999).

Impaired social relationships. The interpersonal relationships of dysphoric ruminators also clearly suffer. Although to date only cross-sectional research has been conducted to investigate this issue, the results are quite consistent. First, chronic ruminators appear to behave in ways that are counterproductive to their relationships with family, friends, and even strangers. For example, several studies have found an association between rumination and the desire for revenge after an interpersonal transgression or slight (e.g., "I want to see her hurt and miserable") (McCullough et al., 1998, 2001), as well as increased aggression following a provocation (Collins & Bell, 1997). Other investigations have provided evidence that

ruminators, as compared to nonruminators, suffer from “unmitigated communion” (i.e., the tendency to assume undue responsibility for the well-being of others; Nolen-Hoeksema & Jackson, in press), dependency (e.g., “I often think about the danger of losing someone who is close to me”), and neediness (e.g., “I urgently need things that only other people can provide”) (Spasojevic & Alloy, 2001). Thus, it is not surprising that people who ruminate in response to depressed moods are perceived unfavorably by others (Schwartz & McCombs Thomas, 1995). These socially maladaptive tendencies may also account in part for the greater social friction that chronic ruminators experience following a trauma (Nolen-Hoeksema et al., 1994; Nolen-Hoeksema & C. G. Davis, 1999), as well as for their reports of receiving inadequate social support (Nolen-Hoeksema et al., 1994; Nolen-Hoeksema & C. G. Davis, 1999) and lower quality instrumental family support, in particular (Aymanns et al., 1995). For example, in the study by Aymanns and colleagues, the families of cancer patients with a ruminative style were more likely to avoid communicating with them about the disease and less inclined to urge the patients to take personal initiative.

Stress and emotional adjustment. Although many people ruminate because they believe that it will help solve their problems, ironically, ruminative responses to distress have been associated with ever-greater problems and stress. Nolen-Hoeksema and colleagues have documented that, over a year-long period, ruminators report more increases in stressful events in their lives (Nolen-Hoeksema et al., 1999), and more social friction and social isolation (Nolen-Hoeksema & C. G. Davis, 1999), than do nonruminators (see also Nolen-Hoeksema et al., 1994). In another study, caregivers of relatives with progressive dementia reported greater stress and fewer social roles and social contacts after their loved one’s death if they had a tendency to ruminate (Bodnar & Kiecolt-Glaser, 1994). Not surprisingly, dysphoric rumination also appears to be associated with low morale and poor emotional adjustment. For example, following a traumatic event, such as a natural disaster, the diagnosis of a serious illness, or the death of a partner or close relative, individuals with a chronic ruminative style, as compared to nonruminators, have been found to express less positive mood and fewer positive

states of mind (Nolen-Hoeksema et al., 1997), to show poorer coping and worse emotional adjustment (Fritz, 1999), to experience intrusive and avoidant thoughts (Nolen-Hoeksema et al., 1997), as well as other symptoms of post-traumatic stress disorder (Nolen-Hoeksema & Morrow, 1991), and to exhibit maladaptive attitudes (Spasojevic & Alloy, 2001).

A Vicious Cycle

The research reviewed above paints a fairly grim portrait of the many adverse outcomes likely to characterize an individual with a tendency to ruminate in response to his or her depressive symptoms. Although the empirical evidence for each of these negative consequences is oftentimes drawn from separate research investigations, it is important to note that the various outcomes are likely to have reciprocal influences on one another and thus cannot be truly disentangled. We suggest that the combination of rumination and dysphoria activates a vicious cycle among negative affect and depressive symptoms, negatively-biased thinking, poor problem solving, impaired motivation and inhibited instrumental behavior, impaired concentration and cognition, and increased stress and problems (see Figure 1). Furthermore, each part (or parts) of this vicious cycle may influence and “feed back” onto another part (or parts), and the sequence of relationships may follow a variety of paths.

As an illustration of one possible sequence of relationships, rumination in the context of a depressed mood may amplify the effects of the negative mood on thinking by selectively priming mood-relevant information and activating networks of negative memories, beliefs, expectations, and schemas (e.g., Bower, 1991; Forgas, 1991; Teasdale, 1983). In turn, the resulting negatively-biased judgments and interpretations may maintain, or even enhance, depressed mood, nourishing the vicious cycle between depressed mood and thinking. Depressed mood plus rumination may similarly enhance the effects of negative mood on problem solving and motivation (e.g., by heightening self-doubts about one’s ability to tackle problems or by depressing the motivation and resourcefulness to do so) and instrumental behavior (e.g., by impairing one’s concentration or cognitive agility). For example, when a chronic ruminator is feeling depressed, her personal problems and stresses can become

overwhelming and even take on threatening proportions. Consequently, she may allow her overly pessimistic expectations to inhibit herself from taking appropriate risks. Alternatively, her negative thoughts may promote self-fulfilling prophecies in which she acts on her negative conclusions and expectations in ways that create trouble – for example, by confronting her spouse about non-existent marital problems or by passing up a perfectly good job.

Furthermore, dysphoric ruminators may interpret their circumstances in a distorted and pessimistic manner and retrieve unpleasant memories from their past to support their negative conclusions. Consequently, they may take too long to think about how to resolve their problems; they may generate poor solutions; or, alternatively, they may come up with good solutions, but, given their reduced energy and motivation, be reluctant to initiate action to go through with them. The final result is that the problems do not disappear, or worse, are aggravated, thus maintaining or further exacerbating negative mood and adding more firewood to feed the vicious cycle (see Figure 1).

As an illustration of yet another possible sequence of relationships, deficits in concentration, motivation and instrumental behavior may reduce people's effectiveness at work and their facility in social situations, leading to strained relationships and lost business opportunities, and, in turn, contributing to ever-greater problems and distress. For example, dysphoric ruminators appear to have generally low expectations of control and to believe that they lack the energy, resources, or ability to respond appropriately to their life situations. As a result, they may fail to take constructive action or to enact appropriate solutions to problems. Furthermore, their ruminative thoughts, which are often absorbing, compelling, and self-perpetuating, are likely to intrude during both trivial and important everyday activities and chores, thereby interfering with concentration and performance. For example, engaging in dysphoric rumination could lead people to neglect important social cues during a conversation with their boss, to miss an opportunity to present their views during a business meeting, or to be inattentive to their child or spouse. In sum, by triggering a host of cognitive, motivational, and behavioral deficits, dysphoric ruminators may unwittingly end up exacerbating their

problems and elevating their levels of stress, thus, further reinforcing their depressive symptoms (see Figure 1). Indeed, the ultimate negative consequence of dysphoric rumination may be continued dysphoric rumination.

Future Directions and Implications

The results from numerous experimental and correlational investigations converge on the conclusion that dysphoric rumination is associated with negative, and sometimes even dangerous, outcomes. The research reviewed in this chapter highlights the consequences of ruminative responses to depressed mood for negative affect and clinical depressive symptoms, for negative, pessimistic thinking and ineffective problem solving, for impaired motivation, concentration, and cognition, for the inhibition of instrumental action, and, finally, for increased stress and problems. Undoubtedly, more research is needed to establish the robustness and breadth of these effects, especially with more routine use of experimental designs to allow for stronger causal inferences. For example, the domains of health and interpersonal relationships have received relatively little empirical attention. Future investigators could study the actual behavior of dysphoric individuals in social situations immediately after they have ruminated, as well as determine how ruminators are perceived by significant others, peers, and strangers. Furthermore, the health habits and health outcomes of people induced to engage in rumination or who have a history of ruminative tendencies could be examined.

Ideally, future researchers should use more sophisticated methodologies to bolster the findings of the extant studies, which have almost exclusively relied on self-reports. Behavioral and “real-time” measures, such as codings of videotaped behavior, informant records of activities, or experience sampling methods (Csikszentmihalyi & Larson, 1987), could tap what dysphoric ruminators “actually” do, rather than what they report doing or what they intend to do – for example, in implementing solutions to problems (Lyubomirsky et al., 1999; Ward et al., 2002) or in delaying help seeking for health symptoms (Lyubomirsky, Kasri, & Chang, 2002). Reaction time and physiological measures (e.g., assessments of cardiovascular and

immune parameters) could also be used to assess the effects of rumination on physical states and on various aspects of cognition, as well on the “signatures” of the basic emotions (Frijda, 1986; Lazarus, 1991). Furthermore, a challenge for future investigators would be to develop innovative ways to measure more directly such constructs as insight (Lyubomirsky & Nolen-Hoeksema, 1993), motivation (Lyubomirsky et al., 1999), and concentration (Lyubomirsky, Kasri, & Zehm, 2002).

Another direction for future research would be to extend and improve current measures of ruminative style (i.e., the RSQ), as well as the procedures for inducing rumination in the laboratory. For example, following recent research suggesting that ruminative responses may be multi-dimensional in nature (Fritz, 1999; Roberts et al., 1998), researchers may wish to consider developing separate measures of distinct components of rumination. Furthermore, because tendencies to ruminate, as well as most of the outcome measures used in the research in this area, are customarily measured via self-report, we must be vigilant of inherent difficulties with this method. Participants may show systematic bias in their responses or be simply unaware of their cognitive and affective experiences and thus unable to accurately report them. For example, if ruminators are more attuned to their internal states than nonruminators, they may report greater intensity or variability in their emotions and physical symptoms. Nevertheless, we believe that the participants themselves are our best resources for information about their own internal, subjective states. However, further research may benefit from combining self-report assessments with more “objective” evaluations, such as informant reports and behavioral observations.

Rumination inductions also suffer from their own special problems. For example, because rumination occurs “in people’s heads,” researchers cannot verify whether participants are actually doing what they are asked to do. Thus, despite the challenge, it is important to develop effective and appropriate manipulation checks. Promising research directions also lie in investigating the precise mechanisms by which rumination produces its deleterious effects. For example, whether the critical feature of ruminative thoughts is their repetitive,

disorganized, image-based, or chaotic nature remains a question for the future. Finally, it is essential to test the viability of the hypothesized ensuing vicious cycle. Alternative technologies might be developed to capture the reciprocal and self-perpetuating influences displayed in Figure 1 – for example, by separately manipulating each variable involved in the vicious cycle or by using simultaneous on-line or reaction time assessments of these variables.

Future research also promises to determine whether the findings of the work described here generalize to other populations within and outside of the United States and Western Europe. Unfortunately, virtually all of the experimental studies of dysphoric rumination have used undergraduate student samples, whereas many of the cross-sectional and longitudinal studies have included diverse groups of community-dwelling adults. Furthermore, given the existence of distinct cultural norms and expectations for desirable and appropriate ways to respond to depressed mood and depressive symptoms, it is likely that the rates, phenomenology, and effects of ruminative thought differ across cultural, national, and ethnic boundaries. For example, in cultures that place a lower value on self-analysis and self-understanding or ones that encourage or necessitate distraction (e.g., through work and subsistence activity), episodes of dysphoric rumination may be short-circuited easily and frequently, thus reducing the likelihood of them contaminating the ruminator's subsequent affect, cognition, and behavior.

Finally, and perhaps most important, applied research should test interventions to teach individuals prone to ruminate alternative emotion regulation strategies in response to negative feelings and stressful or traumatic life events. To break the vicious cycle, mood management strategies, such as the types of cognitive control (Alford & Beck, 1997), attention training (Papageorgiou & Wells, 2000; Wells, 1990), and behavioral (Lewinsohn, Munoz, Youngren, & Zeiss, 1986) techniques taught by cognitive-behavioral therapists, can help alleviate depressive symptoms and counter ruminative thoughts. Diminished levels of stress, problems, and negatively-biased thinking, as well as increased motivation, concentration, initiative, and problem-solving skills, will inevitably follow.

When asked, “What’s the thing to do when you’re feeling depressed?” fully one-third of survey participants, ages 9 to 68, spontaneously mentioned reflecting on the reasons for their dysphoric mood (Rippere, 1977). Women, in particular, have been observed to ruminate in even greater numbers (Nolen-Hoeksema, 1996; Nolen-Hoeksema et al., 1999). Furthermore, in a recent study, 80% of self-identified ruminators and 100% of individuals with major depression reported various benefits to rumination, such as increased control over one’s feelings and deeper self-understanding and insight into current problems (Papageorgiou & Wells, 2001a; Watkins & Baracaia, 2000). Indeed, contemporary Western culture appears to embrace the notion that contemplating one's feelings in the face of personal problems and negative moods is valuable and adaptive. Our hope is that the force of the accumulating research evidence will eventually erode this belief, so that millions of people can avoid suffering the negative consequences of dysphoric rumination described herein.

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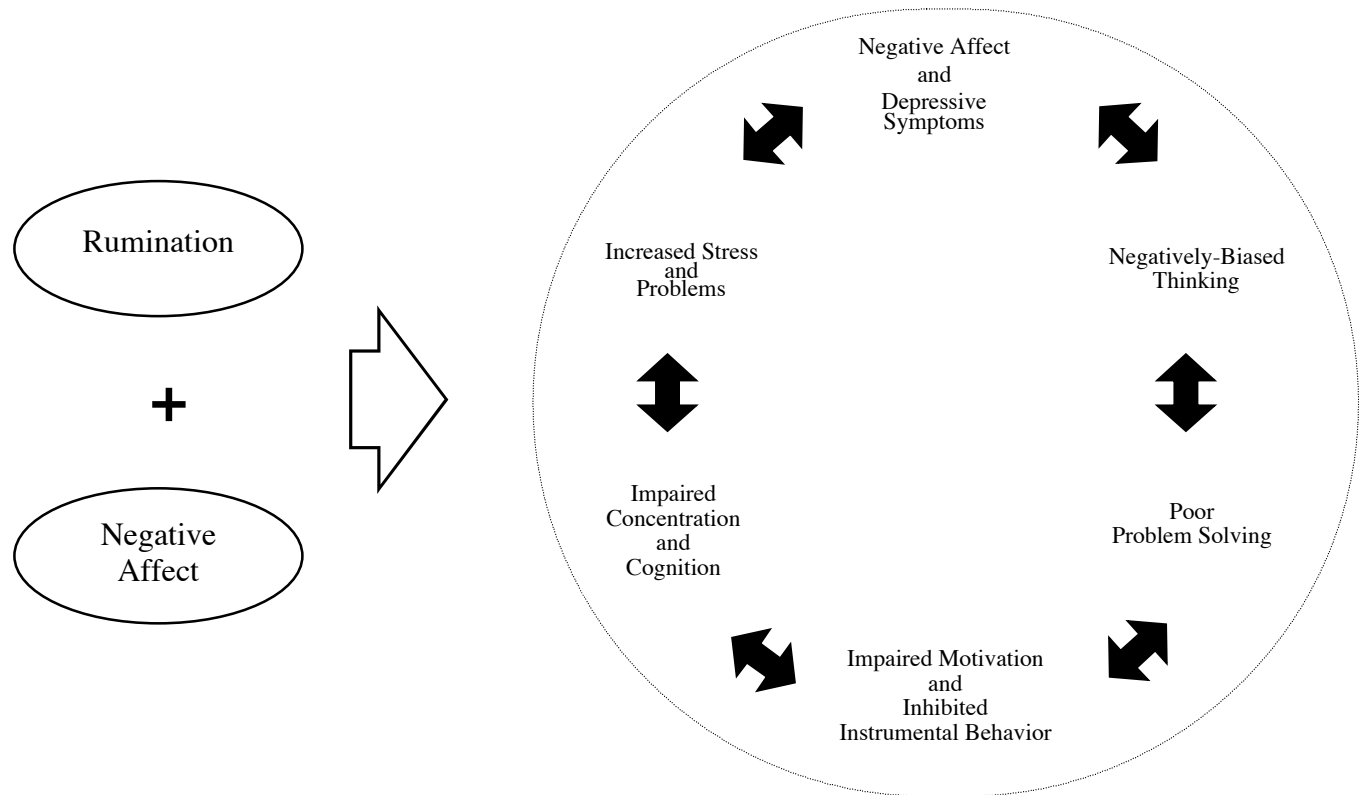


Figure 1. A vicious cycle between rumination, negative affect, and multiple adverse consequences.