THOUGHT SUPPRESSION, DEPRESSIVE RUMINATION AND DEPRESSION: A MEDIATION ANALYSIS

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Abstract
The present study is an investigation of the relationship between depressive rumination and thought suppression in predicting clinical depression. While there is significant amount of data supporting their role in depression, no attempts have been made so far to study the relationship between these two types of mental control strategies and emotion regulation in clinical depression. Depressed patients completed a battery of questionnaires including measures of thought suppression, depressive rumination, and depressive symptoms. Results show that both thought suppression and depressive rumination are related to depression, and that the impact of thought suppression on depression is completely mediated by depressive rumination (as an ironic effect of thought suppression). The roles of thought suppression and depressive rumination in depression, potential mechanisms and implications are discussed.

Keywords: depressive rumination, thought suppression, depression

Depressive rumination

Depressed people often put much more effort that their non-depressed counterparts in trying to cognitively regulate their emotions in order to achieve a positive desired mental state. However, they often fail, and engage in counterproductive mental control strategies such as depressive rumination (Nolen-Hoeksema, 1991, 1998, 2000) and chronic thought suppression (Wenzlaff & Bates, 1998; Wegner & Zanakos, 1994). According to Response Style Theory (Nolen-Hoeksema, 1991), rumination is a process whereby one turns one’s attention to the causes and consequences of depressive symptoms. In their studies Nolen-Hoeksema and her colleagues revealed that rumination in the context of depressed moods prolongs and exacerbates depressive symptoms (Marrow & Nolen-Hoeksema, 1990). Longitudinal studies of naturally occurring depressed

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moods also show that people who respond to these moods with rumination manifest longer periods of depressed mood (Nolen-Hoeksema & Morow, 1991; Nolen-Hoeksema, Morrow, & Frederickson, 1993).

A longitudinal community-based study of over 1,100 adults showed that those who exhibited clinical depression and a ruminative thinking style at the initial assessment had relatively more severe and longer lasting depressive symptoms after the first year, were less likely to show remission of their depression, and more likely to have symptoms of anxiety (Lyubomirsky & Tkach, 2003; Nolen-Hoeksema, 2000; Nolen-Hoeksema et al., 1999) In laboratory studies it has been found that among dysphoric individuals, a ruminative task leads to persistence of depressive mood, whereas a distracting task leads to decreases in such mood (Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Nolen-Hoeksema & Morrow, 1993). Recent studies have extended these findings to clinical depression (Just & Alloy, 1997; Nolen-Hoeksema, 2000; Raes et al., 2006). Rumination also predicts elevated levels of depressive symptoms (Just & Alloy, 1997) and episodes of major depression (Kuehner & Weber, 1999). Kuehner & Weber (1999) showed that among unipolar depressed inpatients, those who had a ruminative style had higher levels of depression and were more inclined to still show signs of a major depressive episode at four months after discharge. It has also been found for the interaction between rumination and negative cognition, that the tendency to ruminate in response to stressful life events was more strongly predictive of future episodes of major and hopeless depression among individuals who reported high levels of negative thought content than among individuals who reported low levels (Robinson & Alloy, 2003). Compared to depressed people induced to distract, or nondepressed people who either ruminate or distract, depressed people when induced to ruminate generate more negative memories from the past (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998), are more negative in their evaluations of current situations (Lyubomirsky & Nolen-Hoeksema, 1995), and are more pessimistic in their expectations for the future (Lyubomirsky & Nolen-Hoeksema, 1995). In response to depressed mood people who engage in ruminative response may isolate themselves to brood about the problems at the root of their distress and think about their symptoms (e.g., “my children are too much for me to handle”), dwelling on the causes and consequences of their depressive symptoms (e.g., “What does it mean that I feel this way?”, “why haven’t I been able to just snap out of this?”), without taking action to solve those problems or doing anything constructive to relieve the symptoms (e.g., sitting at home thinking “I just don’t feel like doing anything”) (Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Nolen-Hoeksema & Larson, 1994; Nolen-Hoeksema & Larson, 1996). Laboratory studies also found that possible cognitive deficits are associated with rumination. Depressed or dysphoric individuals who engage in ruminative thinking are more likely to show evidence of a type of “overgeneral” autobiographical memory implicated in the maintenance of depression (Watkins & Teasdale, 2001;
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Watkins, Teasdale, & Williams, 2000), than individuals who do not focus or ruminate about themselves (Lyubomirsky & Tkach, 2003).

Thought suppression

Experiencing negative, intrusive, unwanted thoughts is common for non-clinical and clinical subjects (Freestone, Ladouceur, Thibodeu, & Gagnon, 1991; Purdon & Clark, 1993). People will often try to control/change and manipulate their mental state in order to obtain a desirable mental and emotional state by attempting to get rid of unwanted intrusive thoughts and push them out of consciousness. One such strategy which research has showed that it could be counterproductive is thought suppression, which refers to the effort “not to think of a particular thought” (Wegner, Schneider, Carter, & White, 1987).

Previous research has shown that attempts to suppress a thought can cause an increase in the frequency of the thought during and post-suppression attempts (i.e., immediate enhancement effect and rebound effect respectively). Thought suppression leads to an increase in the accessibility of suppressed thoughts (Wegner & Erber, 1992; Wegner, Erber, & Zanakos, 1993), and to the rebound of suppressed thoughts once suppression attempts are suspended (Wegner, Schneider, Carter, & White, 1987). Several studies have established that suppression of emotional thoughts increases the strengths of the emotional reactions (Wegner & Gold, 1995; Wegner, Shortt, Blake, & Page, 1990), and that people who chronically suppress thoughts are more susceptible to chronic rumination in the form of clinical obsessions, anxiety, and unwanted depressive thoughts (Wegner & Zanakos, 1994; Erber & Wegner, 1994). For people with depression, negative thoughts are a primary cause of their unhappiness, and trying to suppress those negative thoughts can be a frequently chosen coping strategy (Wenzlaff, 1993).

According to the ironic processes theory (Wegner 1992, 1994, 1997; Wegner & Wenzlaff, 1996) thought suppression involves two mechanisms: an intentional operating process (controlled distracter search) that seeks thoughts that will promote the preferred state, and an ironic monitoring process that remains in the background of consciousness and searches for mental contents that signal the failure to achieve the desired state (Wenzlaff & Wegner, 2000). The operating process is effortful and conscious, whereas the monitoring system is usually unconscious and less demanding of mental effort (Wenzlaff & Wegner, 2000). Both processes increase the cognitive accessibility of the mental content that they are searching for. Mental control is the result of the interaction between the operating (distracting) and monitoring processes, the two being complementary (Wegner & Wenzlaff, 1996). The operating process rules the monitoring process and produces modification by bringing into focus sensations and thoughts relevant for the desired mental state, while the monitoring process searches repeatedly for mental content that indicates the necessity of mental control, thus
regulating the activity of the operating process (Szentagotai, 2007). Because the monitoring process is predisposed to failures, there appears an elevated sensitivity to mental content that indicates failure in intentional control (Wegner, 1994; Wegner & Wenzlaff, 1996; Wegner & Bargh, 1998).

In situations of mental load, when cognitive resources are low, the intention of control activates the monitoring process, which will not only search for mental content that signals failure to control, but also may produce this failure (Wegner, 1994; Wegner & Wenzlaff, 1996; Wegner & Bargh, 1998). The monitoring process can undermine the goal of suppression by maintaining vigilance for the thoughts that have been targeted for elimination. In this situation the monitoring process can provide unwanted thoughts that may become problematic when the operating process is disrupted (Wenzlaff, 2004). Cognitive demands can interfere with controlled processes (Posner & Snyder, 1975; Shiffrin & Schenider, 1977), in this case the operating process and disrupt distraction. The result is that unwanted thoughts intrude awareness with greater frequency and potency than it would have occurred if suppression had never been attempted (Wenzlaff, 2004). In the case of people with depression, when the operating process or controlled distracter search is disrupted, distracters themselves are “contaminated” with the same negativity as the thoughts that they are trying to suppress. Wenzlaff, Wegner, & Roper (1988) showed that in comparison to non-depressed subjects, participants with depression choose more negative distracters, which leading them to failures in the ability to suppress negative material. Also, participants with depression manifest deficits in generating adequate distracters when asked to suppress a negative thought. When the possibility to choose positive distracters from a list is available, there are no performance differences between depressed and non-depressed participants (Wenzlaff, Wegner, & Roper, 1988). Also, depressed individuals do not have difficulties in generating negative distracters when asked to suppress a positive thought (Wenzlaff, Wegner, & Roper, 1988).

Depressive rumination and thought suppression

Rumination is a process that has been extensively investigated from different perspectives, beginning with Nolen-Hoeksema’s response styles theory (1991), to Matthews and Wells’s S-REF metacognitive model of depressive rumination (2004), and to Martin and Tesser’s (1989) view of rumination as a function of goal frustration and right hemisphere activation and conceptualization of rumination as an instance of the Zeigarnik effect (Brotman & Derubeis, 2004). Gold and Wegner (1995) proposed a mechanism for intrusive thoughts that focuses on how people react to emotional thoughts that return to mind following a traumatic event. They suspected that ruminations occur not only because of the traumatic event itself, but as a result of the fact that in the aftermath of the event, people may try not to think about the event or its implications (Gold & Wegner,
Longitudinal studies have showed that thought suppression is associated with elevated levels of rumination and depressive affect (Wenzlaff & Bates, 1998; Rude, Wenzlaff, Gibbs, Vane & Whitney, 2002). In a recent study Wenzlaff & Luxton (2003) showed that, over time, higher levels of life stress interact with chronic suppression and increase the risk of depressive rumination supporting the idea that when stress undermines mental control, thought suppression efforts can ironically fuel depressive rumination. The study indicated that there is a strong positive correlation between suppression and rumination. The correlation between measures of thought suppression (as measured by the White Bear Suppression Inventory: Wegner & Zanakos, 1994) and rumination (as measured by the short form of the Rumination Response Scale: Nolen-Hoeksema & Morrow, 1991) was .54 (Wenzlaff & Luxton, 2003). The findings of this study suggest that depressed individuals often seek relief from intentional rumination by engaging in thought suppression (Wenzlaff, 2004). However, the study did not involve clinically depressed individuals.

The goal of the present study was to investigate the interrelations between depressive rumination and thought suppression in predicting depression. When depressed, patients may experience intrusive negative thoughts regarding specific situations, which they appraise as being uncontrollable and harmful, they may engage in chronic thought suppression and depressive rumination.

More precisely, the present study had the following goals: (1) to examine the effects of depressive rumination on depression in patients with major depression; (2) to examine the effects of thought suppression on depression in depressed patients; (3) to investigate the mediation pathway by which depressive rumination and thought suppression contribute to the levels of depression in depressed patients.

We proposed two possible models for the interrelations between depressive rumination, thought suppression and depression. In the first model thought suppression mediates the relationship between depressive rumination and depression, intervening as a thought control strategy of ruminative thoughts. In the second model, the relationship between thought suppression and depression is mediated by depressive rumination as an ironic effect of suppression. These relationships have not yet been studied.

Method

Participants.

Participants in this study were forty-six Romanian inpatients from local psychiatric clinics (26 women) diagnosed with major depressive disorder. Participants scored at least 20 on the Beck Depression Inventory Second Edition (BDI-II. Beck, Steer, & Brown, 1996). Their age ranged between 19-49 years (mean age 31.22). Informed consent was obtained from each participant.
Measures. Predictor variables:

**Rumination Response Scale (RRS).** The RRS (Nolen-Hoeksema & Morrow, 1991) was used to assess tendencies to ruminate, and ruminative coping in response to depression. This measure is made up of 22 items from the 71 items of the Response Style Questionnaire (Nolen-Hoeksema & Morrow, 1991), presented in a Likert-type format. Respondents were instructed to focus on their thoughts when feeling “sad, blue, or depressed” and to indicate for each item how they experience each response on a four-point scale ranging from 1 (“almost never”) to 4 (“almost always”). RRS scores can range from 22-88. The scale has adequate internal reliability, with Cronbach’s alphas ranging from .88 to .92.

**White Bear Suppression Inventory (WBSI).** The WBSI (Wegner & Zanakos, 1994) was used to assess the general tendency to suppress thoughts. This measure is made up of 15 items, presented in a Likert-type format. Respondents indicate the degree to which they agree with each item using a 5-point scale (1=strongly disagree; 5=strongly agree). Scores can range from 5-75, with higher scores reflecting a greater tendency to suppress. The scale has adequate internal reliability (α = .84).

Outcome variables:

**Beck Depression Inventory Second Edition (BDI-II).** The BDI-II (Beck, Steer, & Brown, 1996) was used to assess the presence and severity of depression. The BDI-II is made up of 21 items and measures symptoms of depression as they appear in DSM-IV (APA, DSM-IV, 1994). Respondents have to consider each item and indicate the degree to which each item applies to the way they have felt in the last two weeks. The inventory has adequate internal reliability (α = .92).

Procedure.

Participants completed all measures on one occasion. Scales were administered individually and were randomly distributed. Participants received a short debriefing from the clinicians after completing the questionnaires.

Results

Table 1 summarizes the mean scores and standard deviations for the measures.

**Table 1. Means and standard deviations of measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>Standard deviation</th>
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<tbody>
<tr>
<td>BDI-II</td>
<td>35.15</td>
<td>9.27</td>
</tr>
<tr>
<td>RRS</td>
<td>66.20</td>
<td>10.46</td>
</tr>
<tr>
<td>WBSI</td>
<td>62.48</td>
<td>6.61</td>
</tr>
</tbody>
</table>
An alpha level of .01 was used for all statistical analyses.

The first step in data analysis was correlational analysis. Table 2 summarizes inter-correlations of the measures. Results show that both depressive rumination and thought suppression are positively associated with depression.

<table>
<thead>
<tr>
<th>N=46</th>
<th>Depression</th>
<th>Depressive rumination</th>
<th>Thought suppression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>.64**</td>
<td>.48**</td>
<td></td>
</tr>
<tr>
<td>Depressive rumination</td>
<td>.54**</td>
<td></td>
<td></td>
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</tbody>
</table>

** p < .01

Mediation analysis followed according to the algorithm described by Baron & Kenny (1986), to examine the predictions we made. Results are considered consistent with a mediation model if (1) variations in levels of both the predictor and hypothesized mediator significantly account for variations in the outcome and (2) after controlling for the effects of the mediator, a previously significant relation between the predictor and the outcome is reduced and no longer significant. The direction of the mediation (i.e., depressive rumination mediates the relationship between thought suppression and depression or thought suppression mediates the relationship between depressive rumination and depression) was determined by comparison of the relative changes in the parameter estimates.

Bivariate correlations between depressive rumination, thought suppression and depression are presented in Table 2. Both depressive rumination and thought suppression are positively correlated with depression (p < .01).

Mediation models (see Figure 1) of the relationships among depressive rumination, thought suppression and depression were analyzed (Baron & Kenny, 1986). The results were consistent with the model in which depressive rumination completely mediates the impact of thought suppression on depression.

![Figure 1. Mediation (path) diagrams. Values are standardized parameter estimates. Values above lines reflect bivariate relations (r). Values below lines reflect multivariate relations (β). All relations are significant, unless indicated (NS).](image-url)
Discussion and conclusions

The aim of this study was to investigate the interrelationships between two mental activities that may appear to be incompatible. The present study investigated the relationships between depressive rumination and thought suppression in predicting depression, in a sample of clinically depressed patients. We found a strong positive correlation between depressive rumination and depression, indicating that depressed patients engage in rumination by turning their attention to the causes and consequences of symptoms of depression. We also found a positive association between thought suppression and depression. Thought suppression is a mental control strategy used to manage intrusive, negative unwanted thoughts and moods that can ironically enhance the accessibility of those thoughts and moods. Depressed patients, when confronted with negative unwanted thoughts and moods may engage in chronic thought suppression in order to try to achieve a more desirable mental state or mood. Because of the depressed mood, mental control may be undermined, allowing the unwanted thoughts to intrude with greater frequency and potency than would have occurred if suppression had never been attempted.

The results of our mediation analysis show that the relationship between thought suppression and depression in clinical depressed patients is completely mediated by depressive rumination (as an ironic effect of thought suppression). Depressed people, when confronted with the negative consequences of depressive rumination, may engage in thought suppression in order to get rid of the ruminative thoughts. The ironic process theory suggests that suppression involves an operating effortful distraction process and a monitoring process. When resources for a successful distraction process are low because, of the depressed mood, and attempts to suppress unwanted thoughts fail, ruminative thoughts may came into consciousness with greater frequency and potency than before. Our results suggest that in the case of severe forms of depression, engaging in chronic thoughts suppression may further elevate the sensitivity to ruminative thoughts, and depressive rumination might become an ironic effect of thoughts suppression.

Concerning the limitations of the study, firstly, the questions addressed should be answered and results replicated using larger samples, to ensure the generalizability of results. Second, our conclusions are similar to post hoc theorizing, and further studies are needed to clarify them.

To our knowledge this is the first study that investigated the relationship between these two types of mental control strategies and emotion regulation in clinically depressed patients. Beside the theoretical implications, our results could also prove interesting from a clinical point of view. In clinical settings, thought control strategies can be assessed and might be the target of intervention by teaching depressive patients more helpful mental control and emotion regulation strategies.
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