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Effect of ruminations on the saliva cortisol response to a social stressor

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Abstract

Depression is generally precipitated by stressful life events, which suggests that there could be differences in response to stress in individuals at risk for depression compared to normal subjects. To test this hypothesis, we compared individuals who scored high on ruminative coping, a risk factor for depression, to individuals low on ruminative coping. We used the Trier Social Stress Test (TSST), a mock job interview in front of a panel of judges, and collected saliva cortisol to assess neuroendocrine response. While we observed a clear effect of the stressor on saliva cortisol secretion, we observed no differences in this response between high and low ruminators. However, the task itself failed to cause a significant increase in rumination in either group, suggesting the task itself may not be optimal for testing the hypothesis. Finally, a modified version of the TSST in which the subjects were allowed a longer preparatory period resulted in a markedly diminished saliva cortisol response to the TSST. © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Social stress; Cortisol; Ruminative coping; HPA; Depression

1. Introduction

Numerous investigators have shown a link between stressful life events and depression (Brown et al., 1994; Frank et al., 1994; Kendler et al., 1993a; Post, 1992). However, not all individuals appear to be equally susceptible so that vulnerability factors appear to interact with stressful life events to produce a depressive episode

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(Kendler et al., 1993b; Breslau et al., 1991). Furthermore, sensitization to stressors has been proposed to occur over the course of illness so that progressively smaller stressors can trigger a depressive episode (Post, 1992). These observations raise the possibility that there are intrinsic differences in the stress systems or the reaction to stress in individuals at high risk for depression. Among the numerous risk factors for depression, ruminations are a well described and replicated risk factor for depression. Rumination involves passively and repetitively focusing on your feelings of distress and the possible meanings and consequences of these feelings (e.g., "I feel so down and unmotivated." "What's wrong with me?" "Why can't I snap out of this?"). Some people ruminate more than others and longitudinal studies show that a ruminative style is a stable individual difference variable (Nolen-Hoeksema and Davis, 1999; Nolen-Hoeksema et al., 1993, 1999).

Both naturalistic studies of community samples and controlled experimental studies show that rumination prolongs and worsens depressed and anxious moods, and increases risk for unipolar depressive disorders (Nolen-Hoeksema, 2000; Nolen-Hoeksema and Davis, 1999; Nolen-Hoeksema et al., 1999). For example, a study of recently bereaved adults found that those with a more ruminative style had longer periods of depressive symptoms and were more likely to have major depressive disorder in the 18 months following their loss than those with a less ruminative style (Nolen-Hoeksema and Larson, 1999).

Rumination appears to prolong distress through at least four mechanisms. First it enhances depressogenic thinking about the past, present and future (Lyubomirsky et al., 1998; Lyubomirsky and Nolen-Hoeksema, 1995). Second, it interferes with interpersonal problem-solving (Lyubomirsky and Nolen-Hoeksema, 1995). Third, it saps motivation to engage in instrumental behavior (Lyubomirsky and Nolen-Hoeksema, 1993). Fourth, it impairs social relationships because friends and family members tire of listening to ruminations (Nolen-Hoeksema and Davis, 1999). Thus, a ruminative coping style is both a risk factor for depression and a psychological mechanism that exacerbates distress.

Furthermore, the process of rumination itself could provide a psychological mechanism for amplifying a stressor i.e. by continuing to think about the stressful situation, individuals who are high ruminators may magnify the stressor and consequently the stress response. In order to examine the relationship between ruminative copying, depression and the stress response, we evaluated the saliva cortisol response to a well standardized stressor, the Trier Social Stress Test (TSST) (Kirschbaum et al., 1993) in undergraduate women scoring high and low on use of ruminative coping style. We hypothesized that individuals who are prone to ruminating after a negative event would show a prolonged cortisol response to a stressor, (TSST) which would induce ruminations.

2. Methods

All subjects were recruited from the normal psychology pool, or from undergraduate psychology courses. To measure ruminative coping, a 7-item version of the

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