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Shorter communication

Positive emotion dysregulation across mood disorders: How amplifying versus dampening predicts emotional reactivity and illness course

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ABSTRACT

Maladaptive regulation of positive emotion has increasingly been associated with psychopathology. Little is known, however, about how individual strategies used to manage positive emotion predict concurrent emotional responding and prospective illness course across mood disorders. The present study examined the concurrent and prospective influence of amplification and dampening regulation strategies of positive emotion (i.e., self-focused positive rumination, emotion-focused positive rumination, and dampening) among remitted individuals with bipolar I disorder (BD; $n = 31$) and major depressive disorder (MDD; $n = 31$). Rumination over positive emotional states concurrently predicted increased positive emotion across both mood disordered groups during an experimental rumination induction. However, dampening positive emotion concurrently predicted increased emotional reactivity (i.e., heart rate and negative affect) and prospective increases in manic and depressive symptoms for the BD group only. This suggests that amplifying positive emotion transdiagnostically increases positive emotion across mood disordered groups, while attempts to dampen positive emotion may paradoxically exacerbate emotional reactivity and illness course in BD. For individuals with BD, negative thinking about one's positive emotion (via dampening) may be particularly maladaptive.

The strategies people use to regulate their emotions, and in particular, negative emotions, appear to be strongly linked to psychopathology (e.g., Aldao, Nolen-Hoeksema, & Schweizer, 2010). Recently, research has also suggested that dysfunctional regulation of positive emotion may play an important role in mood disorders (Gilbert, 2012; Gruber, 2011). There are many ways an individual can respond to a positive emotional state, and one response is to *ruminate* on it (often referred to as 'positive rumination'). Ruminating in a positive emotional state is defined as the tendency to respond to the positive state with recurrent thoughts of one's positive emotional state and positive self-qualities (Feldman, Joormann, & Johnson, 2008). Rumination in the context of a positive emotional state theoretically increases the intensity of, or amplifies, positive emotion (Feldman et al., 2008), much as negative rumination amplifies negative emotion (see Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Another form of responding to positive emotion is by *dampening* it, defined as actively decreasing positive feelings by ruminating on the negative aspects of the positive emotional state (Feldman et al., 2008). Dampening is a form of responding to positive emotion that theoretically works to decrease the intensity of positive emotions.

Research is beginning to examine correlates of both amplifying (i.e., ruminating) and dampening positive emotional states. However, there is little understanding of how tendencies to use these strategies are associated with emotional responding while actively engaging in rumination. Moreover, no studies with clinical populations have explored how these responses to positive emotion predict clinical course in disorders characterized by dysregulated positive emotion, such as bipolar disorder (BD) and depression (MDD) (Bylsma, Morris, & Rottenberg, 2008; Gruber, 2011). The current study was designed to address these research gaps.

Rumination on positive emotion is one form of positive emotion amplification, and is most commonly measured using a self-report questionnaire titled the Responses to Positive Affect (RPA; Feldman et al., 2008). The RPA assesses two subtypes of ruminating in positive emotional states, including emotion-focused rumination, characterized by repetitively focusing thoughts on a current positive emotional state, and self-focused rumination, or repetitively focusing on positive self-qualities. Positive rumination is elevated in BD, a disorder characterized by heightened positive moods and

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biases towards positive emotional responding (Gruber, Eidelman, Johnson, Smith, & Harvey, 2011; Johnson, McKenzie, & McMurrich, 2008). Individuals with BD engage in more emotion-focused positive rumination compared with healthy controls and individuals with unipolar depression (Johnson et al., 2008). Moreover, greater emotion-focused and self-focused positive rumination is associated with elevated concurrent hypomanic/manic symptoms (Feldman et al., 2008) and increased lifetime history of mania and depression frequency in BD (Feldman et al., 2008; Gruber et al., 2011). Emotion-focused and self-focused positive rumination are also cross-sectionally associated with increased manic symptoms following a positive mood induction (Edge et al., 2012).

Another method of responding to positive emotion assessed by the RPA is to dampen it. Dampening at first glance may appear to imply suppression of positive emotion. However, dampening is instead a negative reflection on and active dismissal of one's current positive emotional state (i.e., when in a positive emotional state, "think I don't deserve this"; Feldman et al., 2008). Individuals with BD and those at risk for developing BD endorse utilizing more dampening of positive emotion than healthy controls, and dampening is associated with elevated current depressive symptom severity in at-risk and BD groups (Feldman et al., 2008; Johnson et al., 2008). Dampening is also associated with current and prospective onset of depressive symptoms in non-clinical community samples (Bijttebier, Raes, Vasey, & Feldman, 2011; Raes, Smets, Nelis, & Schoofs, 2012).

The present investigation

Taken together, two domains of positive emotion regulation—amplification (positive rumination) and dampening—have been associated with increased current manic and depressive symptoms in both clinical and non-clinical populations. However, it is unknown how tendencies to ruminate or dampen positive emotion influence emotional responding while ruminating or the prospective relationship of ruminating and dampening positive emotion on illness course across two severe mood disordered groups. The current study addressed these aims.

Aim 1: concurrent associations with emotional responding

Given the burgeoning literature on positive emotion regulation, it is critical to understand how self-reported rumination and dampening relate to emotional responding when actively engaging in rumination. Thus, our first aim examined the specificity of relationships between rumination and dampening with emotional responding and participants included individuals with BD and MDD, both of whom are characterized by dysregulated positive emotion. Participants were induced to ruminate on a future goal in a laboratory task and their emotional and physiological responses were assessed. Both BD and MDD are characterized by goal-dysregulation: individuals with BD experience hyperactive goal pursuit (Johnson, 2005) while individuals with MDD display a lack of goal pursuit (Dickson & MacLeod, 2004). Moreover, thinking about goals can activate both negative and/or positive emotional reactions (Carver & Scheier, 1998). Thus, having participants ruminate in the context of a personalized goal allowed individuals' negative and/or positive emotions and trait tendencies to amplify or dampen these emotions to emerge naturally in an ecologically salient induction.

Given that rumination on positive emotions theoretically amplifies positive emotion (Feldman et al., 2008) and increases manic symptoms when individuals with BD are induced into a positive mood (Edge et al., 2012), we hypothesized that across mood disordered groups, elevated emotion-focused and self-focused rumination would be associated with increased self-reported positive emotion following the goal-primed rumination induction. Conversely, dampening purportedly decreases positive emotion via ruminating on the negative aspects of the positive state and is associated with increased depressive symptoms in non-clinical and BD groups (Feldman et al., 2008; Johnson et al., 2008; Raes et al., 2012). Thus, we hypothesized that across mood disordered groups, dampening positive emotions would result in elevated negative emotional reactivity and arousal after ruminating on ones' future goal. We measured emotional arousal using a multi-method approach of self-reported negative emotion and heart rate (HR), a robust and widely used physiological measure of emotional reactivity (Kreibig, 2010). Increases in HR purportedly reflect more than just task engagement (Levenson, 2003) and increases in HR are uniquely associated with ruminative processing of positive emotional material compared to other forms of equally cognitively taxing regulation strategies, such as third-person reflection (Gruber, Harvey, & Johnson, 2009).

Aim 2: prospective associations with illness course

Ruminating and dampening positive emotion have repeatedly been associated with elevated current symptoms, yet the only prospective research has studied non-clinical populations. It is thus imperative to understand how rumination and dampening predict the onset of symptoms in a mood-disordered population. Our second aim was to report the prospective relationships between self-reported amplification and dampening and symptom severity in individuals with BD and MDD. Given that emotion and self-focused positive rumination are associated with current manic symptoms while dampening is associated with current depressive symptoms in BD (Feldman et al., 2008; Johnson et al., 2008), we hypothesized that emotion and self-focused positive rumination would predict the onset of manic symptoms and dampening would predict the onset of depressive symptoms only in the BD group. We did not hypothesize any relationships between the self- or emotion-focused positive rumination subscales in the MDD group as positive rumination has not been previously implicated in unipolar depression (Johnson et al., 2008). However, we hypothesized that dampening would prospectively predict the onset of depressive symptoms in the MDD group given that dampening predicts increased depressive symptoms in non-clinical samples (Raes et al., 2012).

Method

Participants

Participants were 31 persons diagnosed with BD type I (currently remitted) and 31 persons diagnosed with MDD (currently remitted) recruited from online postings and flyers distributed in the New Haven, CT region. We focused on remitted mood disordered groups to examine the influence of rumination on concurrent emotional responding independent of mood phase, and also to examine prospective symptom exacerbation starting from a relatively low symptom baseline to follow-up. Exclusion criteria included history of head trauma, stroke, neurological disease, autoimmune disorder, cardiovascular disease or arrhythmia, and alcohol or substance abuse/dependence in the past six months. Diagnoses were confirmed using the Structured Clinical Interview for DSM-IV Patient Version (SCID-IV; First, Spitzer, Gibbon, & Williams, 2007) administered by trained researchers. Half ($n = 29$) of interviews were independently assessed by trained researchers and ratings matched 100% ($\kappa = 1.0$). Current remitted mood status was verified with the SCID-IV mood module for the