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Responses to Positive Affect: A Self-Report Measure of Rumination and Dampening

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Abstract

Rumination in response to dysphoric moods has been linked to the onset and maintenance of depressive symptoms; however, responses to positive moods have received less attention despite the theoretical roles of both positive and negative affect in mood disorders. The purpose of the present study was to develop a self-report measure of ruminative and dampening Responses to Positive Affect (RPA), which we called the RPA Questionnaire. In two psychometric studies, the three subscales of the RPA (Dampening, Self-focused positive rumination, and Emotion-focused positive rumination) demonstrated acceptable structural validity, internal consistency, and preliminary evidence of convergent and incremental validity with concurrent measures of self-esteem, depressive rumination, and depressive and manic symptoms among undergraduates. The present results suggest that future research on mood disorders would benefit from measuring responses to both negative and positive moods.

Keywords

Depression; Rumination; Mania; Positive affect; Emotion regulation

Introduction

Researchers interested in the link between cognitive and emotional processes increasingly have focused on emotion regulation. Indeed, a growing number of studies suggest that people do not endure their affective states passively but rather respond to them and make efforts to regulate them (Gross, 1998; Larsen, 2000). Importantly, there is increasing evidence that it is the response to the affective state rather than the affective state itself that is linked to the onset and maintenance of emotional disorders (Nolen-Hoeksema, 1991; Teasdale, 1988). Emotion regulation has been defined as “the processes by which individuals influence which emotions they have, when they have them, and how they experience and express their emotions” (Gross, 1998, p. 275). Emotion regulation can include automatic processes and effortful strategies that people use to initiate, maintain, intensify, or eliminate their affective states (Gross, 1998; Gross & John, 2003).

In depression research, an influential theory of emotion regulation, the Response Style Theory (RST, Nolen-Hoeksema, 1991), focuses on strategic responses to an existing affective state. The RST suggests that the strategies people use to respond to negative mood states contribute

to the onset and maintenance of depression. Two regulation strategies proposed in the RST (Nolen-Hoeksema, 1991) are depressive rumination (“behaviors and thoughts that focus one’s attention on one’s depressive symptoms and on the implications of those symptoms” p. 569) and distraction (“the purposeful turning of one’s attention away from one’s symptoms of depression and its possible causes and consequences to pleasant or neutral activities” p. 570). Rumination in response to sad moods has been shown to predict the maintenance of negative affect and depression (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolen-Hoeksema, 2000; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993).

Most studies investigating responses to affective states and their consequences for mood disorders have focused on responses to sad or depressed mood. Responses to positive affect (RPA), however, might be equally important in research on emotion regulation strategies. Recently, several authors have described the importance of understanding positive rumination for self-regulatory functions. In an influential paper on goal-related rumination, Martin and Tesser (1996) suggest that people engage in positive forms of rumination, such as reminiscing and basking, to bolster self-esteem and confidence when approaching new challenges. Similarly, Larsen, and Prizmic (2004) suggest that people actively engage in affect regulation strategies to maintain positive moods. Some of these regulation strategies, which the authors characterize as “ruminating on the positive” (p. 50), include focusing on personal strengths or favorable life circumstances.

Research suggests that some RPA do not enhance positive moods. Wood, Heimpel, and Michela (2003) found that in descriptions of reactions to positive life events, people with high self-esteem describe using strategies to maintain or increase positive moods, whereas those with low self-esteem report that they tend to use strategies to decrease positive moods. The authors refer to these strategies as “savoring” and “dampening” and suggest that low self-esteem individuals may dampen positive moods because they feel they do not deserve to experience positive moods (Parrott, 1993), thus are motivated to diminish them to maintain the predictability and stability of their world, consistent with self-verification theory (e.g., Swann & Schroeder, 1995). In sum, there may be important individual differences in the regulation of positive affect. Understanding whether people respond to a positive mood state with strategies that enhance or dampen their mood can provide valuable insight into self-regulation processes.

Beyond the importance of such regulatory processes for self-esteem, one might expect that RPA have implications for depression and mania. Although rumination research has focused on responses to negative moods, Clark and Watson (1991) have hypothesized that depression involves both increases in negative affect and decreases in positive affect. Several studies support the idea that depression is related to less attention and responsivity to positive stimuli (Rottenberg, Kasch, Gross, & Gotlib, 2002; Henriques & Davidson, 2000; Sloan, Bradley, Dimoulas, & Lang, 2002), and that this decreased responsivity predicts slower recovery (Rottenberg et al., 2002).

At least part of the deficit in experience of positive affect in depression may be tied to how people respond to positive mood states. It has been suggested that persons recovering from depression may actively avoid positive affective experience (Hayes & Feldman, 2004). College students with greater depressive symptoms report more suppression of positive emotions and less savoring of positive experience (Bryant, 2003; Min’er & DeJun, 2001). Further, people with depressive symptoms may engage in less cognitive elaboration of positive mood states. Following a positive mood induction, dysphoric compared to non-dysphoric participants showed decreased accessibility of positive autobiographical memories (Joormann & Siemer, 2004). Moreover, dysphoric participants were unable to use positive autobiographical memories to repair an induced negative mood state. Thus, in response to a positive mood state,

people who are depressed may respond with more dampening of the positive mood and less rumination on positive topics compared to people who are not depressed.

Beyond the growing literature on depression, vulnerability to mania appears tied to increased responsivity to positive stimuli. That is, people who are vulnerable to mania have been found to demonstrate manic symptoms after life events involving success, psychophysiological reactivity to positive pictures, and elevated confidence after false success feedback (Johnson et al., 2000; Johnson, Ruggero, & Carver, 2005; Sutton & Johnson, 2002). It has been hypothesized that initial positive successes can spiral into elevated confidence and goal engagement in people vulnerable to mania (Johnson, 2005). Hence, one theory is that manic symptoms may be triggered by responses to positive mood states (Johnson, 2005).

In sum, RPA may be as important as responses to negative affect for understanding depression and mania. Despite a great deal of focus on how people respond to negative moods with rumination as measured by the Response Styles Questionnaire (RSQ, Nolen-Hoeksema & Morrow, 1991), little attention has been paid to how to assess rumination on positive content and affect (Segerstrom, Stanton, Alden, & Shortridge, 2003). To address this gap, we developed a self-report measure of RPA to parallel the RSQ. We define positive rumination as the tendency to respond to positive affective states with recurrent thoughts about positive self-qualities, positive affective experience, and one's favorable life circumstances. A second process related to the regulation of positive emotion is dampening, which we define as the tendency to respond to positive moods states with mental strategies to reduce the intensity and duration of the positive mood state. In the context of Gross's emotion regulation theory (Gross, 1998; Gross & John, 2003), we conceptualize that positive rumination and dampening reflect cognitive response-focused emotion regulation strategies, in that both reflect an attempt to modify an emotion once it has begun to be experienced (i.e., maintain/enhance the positive mood in the case of positive rumination and decrease/eliminate the positive mood in dampening). As both strategies have positive emotions as their starting point, they differ from strategies used to decrease negative emotions by shifting one's attention to positive thoughts in an attempt to feel better (e.g., Carver, Scheier, & Weintraub, 1989; Wells & Davies, 1994).

In study 1, we describe the results of an exploratory factor analysis. In study 2, we performed a confirmatory factor analysis and measured the association of the RPA with measures of symptoms of depression and mania. We hypothesized that the positive rumination subscales would be correlated with lower depressive symptom severity, more manic symptom severity, greater mania vulnerability, less depressive rumination, and greater self-esteem. We also hypothesized that dampening would be associated with greater depressive symptom severity, less manic symptom severity, less mania vulnerability, greater depressive rumination, and lower self-esteem.

Study 1

The primary goal of study 1 was to conduct an exploratory factor analysis of a set of items assessing RPA. The response format was modeled after the RSQ (Nolen-Hoeksema & Morrow, 1991), the widely used measure for assessing rumination and distraction responses to sad or depressed mood. Because previous research on self-esteem (Wood et al., 2003) and emotional disorders (Min'er & Dejun, 2001) suggests it is important to include items addressing both strategies that focus attention on one's experience of positive affect as well as strategies that would likely shorten the duration of positive affect, we included items covering both content areas.

A number of factor analytic studies have presented evidence of multidimensionality in the rumination subscale of the RSQ (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Roberts, Gilboa, & Gotlib, 1998; Segerstrom, Tsao, Alden, & Craske, 2000; Segerstrom et al., 2003; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Because the focus of these studies is typically on isolating aspects of the rumination construct, the rumination and distraction subscale are rarely factor analyzed together, leaving open the question of whether items reflecting distracting responses would load primarily on a separate factor. One study in which the authors conducted a factor analysis including *both* the items from the rumination and distraction subscales entered simultaneously (Bagby & Parker, 2001) found three factors: two depressive rumination factors (self-focus and symptom-focus) and one factor reflecting efforts to reduce sad mood (distraction). Based on these findings, we predicted that a measure of RPA would contain separate factors for dampening and positive rumination, with potential further multidimensionality within the positive rumination items.

Method

Undergraduates completed the study to partially satisfy the research component of introductory psychology courses at the University of Miami ($n = 403$, 63.5% female, data on age and ethnicity not available for this sample). Participants completed written informed consent measures and then responded to an item set in-group testing sessions.

Positive affect responses item set—The authors, whose work focuses on cognition and mood disorders, developed a pool of 54 items reflecting cognitive processes that would potentially amplify or dampen positive affect. These items were modeled after the RSQ (Nolen-Hoeksema & Morrow, 1991); however, care was taken to avoid depression symptom contamination, a critique of the RSQ rumination scale (Arnou, Spangler, Klein, & Burns, 2004; Bagby & Parker, 2001; Kasch, Klein, & Lara, 2001) that has been addressed in more recent revision of the measure (Treynor et al., 2003). Items varied in the degree to which they reflected volitional or consciously chosen RPA.

Instructions for these items stated “*People think and do many different things when they feel happy. Please read each of the following items and indicate whether you never, sometimes, often, or always think or do each one when you feel happy, excited, or enthused. Please indicate what you generally do, not what you think you should do*”. Participants were asked to rate their responses on a scale of 1 (*Almost never*) to 4 (*Almost always*).

Results

Item screening and exploratory factor analysis—Five items had low levels of endorsement ($M < 1.5$) and were eliminated from the item pool. Exploratory factor analyses were conducted on the remaining items, including testing a series of iterative models. Exploratory principal axis factor analyses with oblique rotation were selected to allow for intercorrelation among factors. Items were eliminated in iterative models if they met one or more of the following criteria: the item demonstrated crossloadings on multiple factors greater than 0.32 (Tabachnick & Fidell, 2001), the item failed to sufficiently load on any factor, or the item loaded primarily on factors that were either uninterpretable or contained three or fewer items. This process resulted in the retention of 17 items.

In the final model, a solution emerged that accounted for 48.76% of the total variance (Table 1). This model contained three factors with eigenvalues greater than 1. Use of the Kaiser–Guttman criterion (i.e., retain all factors with eigenvalues > 1) would suggest retention of all three factors. However, this criterion has several limitations (Floyd & Widaman, 1995), so we also examined a scree plot and performed a parallel analysis. Both methods also suggested

retention of all three factors. When this analysis was repeated using an orthogonal rotation (i.e., varimax), comparable results were obtained.

Two of these factors reflected forms of positive rumination, one consisted of rumination on mood and somatic experiences (Factor I: Emotion-focus) and one of rumination on aspects of self and pursuit of personally relevant goals (Factor III: Self-focus). A third factor contained items reflecting thoughts that would likely dampen positive moods (Factor II: Dampening). We named the resulting 17-item questionnaire the RPA questionnaire. The internal consistency for each scale was acceptable ($\alpha = 0.76, 0.72, 0.73$ for Factors I–III, respectively). All item-total correlations and factor loadings were above 0.30. The pattern of scale and factor intercorrelation (Table 2) suggests that the two positive rumination scales (Factors I and III) are strongly correlated whereas the dampening factor is largely independent of the positive rumination scales.

Discussion for study 1

Results of the exploratory factor analysis supported the multidimensionality of the RPA questionnaire. The first and third factors reflected forms of rumination on positive affective experience. The second factor reflected the tendency to experience thoughts that would dampen a positive mood. An analysis of the intercorrelation of the factors revealed a moderately strong association between the two positive rumination factors as well as virtually no association between the dampening scale and the two positive rumination factors. Internal consistency of these factors was acceptable for a questionnaire to be used in research (Nunnally, 1967).

Interestingly, results paralleled the findings of Bagby and Parker's (2001) factor analysis of rumination and distraction items of the RSQ that revealed three factors: distraction, self-focus, and symptom-focus. That is, the dampening factor identified in the present study, is parallel to the distraction scale, in that such RPA would likely shorten the duration of the affective experience. The remaining two factors captured different forms of rumination: one focused on emotional/somatic experience (similar to symptom focus) and the other focusing on an analysis of one's self and one's life circumstances (similar to self-focus). The patterns of intercorrelations of the RPA subscales was also similar to those found in the Bagby and Parker (2001) study, which found moderate intercorrelation between the two rumination subscales and much smaller associations between the distraction subscale and the rumination subscales.

Study 2

One purpose of study 2 was to validate the factor structure of the 17-item, three-factor solution for the RPA obtained in study 1 by performing a confirmatory factor analysis (CFA) in an independent sample using structural equation modeling (SEM). In addition to replicability, we evaluated whether the three-factor model would provide a better fit to the data than alternative models by comparing the goodness of fit of the three-factor solution suggested by study 1 with one-factor and two-factor solutions. A second purpose of study 2 was to test the association of the RPA subscales with measures of individual differences in self-esteem and depressive rumination, as well as current symptoms of depression and mania. We hypothesized that the positive rumination subscales would be correlated with lower depressive symptom severity, more manic symptom severity, greater mania vulnerability, less depressive rumination, and greater self-esteem. We also hypothesized that dampening would be associated with greater depressive symptom severity, less manic symptom severity, less mania vulnerability, greater depressive rumination, and lower self-esteem.

A third purpose of study 2 was to examine the potential role of "symptom contamination" in the items of the RPA. A frequent critique of emotion-focused coping measures is that the items overly emphasize symptoms of distress rather than coping skills, per se (Stanton, Kirk,

Cameron, & Danoff-Burg, 2000). Because some items contain mention of positive affect, energy, and vitality (the lack of which could constitute depression symptoms), we conducted partial correlational analyses between the RPA subscales and criterion variables while controlling for concurrent depression symptoms.

A final purpose of this study was to test the incremental validity of this measure. Given the established association between brooding and depression symptoms reviewed in the introduction as well as emerging evidence linking mania risk and depressive rumination (Knowles, Tai, Christensen & Bental, 2005), it is important to determine if the RPA uniquely explains variance in measures of depression and mania symptoms. We predicted that RPA would be predictive of symptoms of depression and mania above and beyond the brooding subscale of the RSQ.

Methods

Undergraduates ($N = 182$; 56% female; Age $M = 19.37$; $SD = 2.10$; 5.7% Asian/Asian-American, 8.9% African-American, 15.9% Hispanic/Latino, 61.8% White/Caucasian, 7.6% Other/Mixed Heritage) completed the study to partially satisfy the research component of introductory psychology courses at the University of Miami. Participants completed written informed consent measures and then responded to a packet of questionnaires in mass testing sessions. The questionnaire packet included the RPA as well as the following questionnaires to assess self-esteem, depressive rumination, current depressive symptoms, current manic symptoms, and lifetime vulnerability to mania.

Self-esteem—The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) is a 10-item self-report measure developed to assess trait global self-esteem. Sample items include “On the whole, I am satisfied with myself,” and “At times, I think I am no good at all” (reverse-scored). Items are rated on a Likert scale that ranges from 1 (I agree a lot) to 7 (I disagree a lot). The RSE is one of the most widely used measures of self-esteem (Blascovich & Tomaka, 1991) and has adequate psychometric properties (Corwyn, 2000; Rosenberg, 1965). In this study, internal consistency was high ($\alpha = 0.88$).

Depressive rumination—Rumination was measured with brooding and reflection subscales (Treyner et al., 2003) of the Rumination scale from the RSQ (Nolen-Hoeksema & Morrow, 1991). Some critiques of the RSQ rumination subscale have suggested that the strength of the association of rumination and depression symptoms is due in part to an artifact of content overlap (Arnold et al., 2004; Bagby & Parker, 2001; Kasch et al., 2001). In response to these critiques, Treyner et al. (2003) have identified two subscales of the RSQ labeled “brooding” and “reflection”, in which items were selected to be free from explicit mention of depression symptoms. Brooding involves “moody pondering” on personal shortcomings and life set-backs whereas reflection involves efforts to analyze one’s self, feelings, thoughts, and events in a “resolution-oriented perspective” (Treyner et al., 2003). Brooding has been shown to be the more consistent predictor of depression symptoms, whereas reflection is associated with more adaptive outcomes, including reduction in depression symptoms over time (Treyner et al., 2003) and benefit-finding in the loss of a loved one (Nolen-Hoeksema & Davis, 2004). In this study, we administered only the ten items that comprise the brooding and reflection subscales.

For both subscales, participants indicate on a 4-point scale (1 = *almost never*, 4 = *almost always*) the extent to which, when feeling depressed, they focus on themselves, their symptoms, and the possible antecedents and consequences of their mood. Higher scores indicate more rumination. In this sample, internal consistency for both subscales was high (brooding $\alpha = 0.83$, reflection $\alpha = 0.80$).

Current depression symptoms—Participants completed the short form of the Beck Depression Inventory (BDI; Beck & Beck, 1972), a widely used 13-item, self-report measure of the severity of depressive symptoms. The acceptable reliability and validity of the BDI has been well documented (Beck, Steer, & Garbin, 1988) in both clinical and non-clinical samples. In the present study, the internal consistency of this measure was $\alpha = 0.83$ and scores ranged from 0 to 24.

Current mania symptoms—The Altman Self-Rating Mania Scale (ASRM; Altman, Hedeker, Peterson, & Davis, 1997, 2001) is a five-item questionnaire that measures current (the past week) symptoms of mania. These items include increased cheerfulness, inflated self-confidence, talkativeness, reduced need for sleep, and excessive behavioral activity. For each item, five response options are provided with increasingly severe descriptions. The ASRM has been found to be sensitive to changes in clinical state, to differentiate mania from other clinical conditions (Altman et al., 1997), and to predict related measures in non-clinical student samples (Meyer, Beevers, & Johnson, 2004). In the present study, this measure had acceptable internal consistency ($\alpha = 0.70$) and scores ranged from 0 to 17.

Manic vulnerability—The Hypomanic Personality Scale (HPS; Eckblad & Chapman, 1986) is a 48-item true–false self-report measure designed to identify people at risk for manic episodes. Sample items include “I often feel excited and happy for no apparent reason”, and “I often have moods where I feel so energetic and optimistic that I feel I could outperform almost anyone at anything”. In previous studies, more than 75% of persons with HPS scores more than two standard deviations above the mean were found to meet diagnostic criteria for bipolar spectrum disorders (Eckblad & Chapman, 1986), and scores robustly predicted the onset of manic symptoms over a 10-year period (Kwapil et al., 2000). The measure has high reliability (15-week test–retest reliability = 0.81; α coefficient = 0.87). In this sample, internal consistency was high, $\alpha = 0.87$.

Results

Confirmatory factor analysis—We tested the replicability of the factor structure using SEM software (LISREL 8.51; Jöreskog & Sörbom, 2001) in an independent sample of unselected undergraduates. The conventional test of fit in SEM models is the chi-square (χ^2) statistics, which assesses the magnitude of discrepancy between the sample and the fitted covariance matrices. A non-significant chi-square indicates a good fit but given that chi-square statistics are dependent on sample size, it has been suggested that different fit indices should be compared when evaluating an SEM model (Hu & Bentler, 1999). We therefore calculated root-mean-square error of approximation (RMSEA), root mean square residual (RMSR), and comparative fit index (CFI) indices in addition to chi-square. The RMSEA and the RMSR are residual based fit indices that depend on the differences between each of the sample covariances (and variances) and the estimated covariances. Finally we used the CFI (Bentler, 1988), which assesses fit relative to an independence model, which assumes that the variables are unrelated. Because violations of normality can artificially inflate fit statistics (Hu & Bentler, 1999), we examined the skew and kurtosis of each of the 17 retained items in this sample, as well as the sample used for study 1. In all cases, these statistics indicate that the data were normally distributed (all skew values $< |1.3|$, all kurtosis values $< |1.1|$).

The three-factor model (see Fig. 1) that emerged in the exploratory factor analysis was found to be an acceptable fit to the data [$\chi^2(116) = 156.19$, $P = 0.007$; RMSEA = 0.043; CFI = 0.94; RMSR = 0.049]. The RMSEA, RMSR, and the CFI were within the cut-off range recommended by Hu and Bentler (1999). The chi-square test fell short of non-significance (an indication of model fit); however, it should be noted that the chi-square statistic has been criticized as an overly sensitive test that can suggest rejecting potential useful models (Bollen, 1989). It should

be also noted that the ratio of χ^2 to df was 1.35, satisfying the $\chi^2:df < 2$ criterion (Kline, 1998), which is an indication of acceptable model fit. All factor loadings were greater than 0.30. Consistent with the EFA, the two positive rumination factors were strongly intercorrelated whereas the associations between the dampening factor and the two positive rumination factors were more modest. The internal consistency of the measure in this sample (dampening $\alpha = 0.79$, self-focus positive rumination $\alpha = 0.71$, emotion-focus positive rumination $\alpha = 0.69$) was acceptable and replicated findings from study 1.

To assess whether a one- or two-factor model fit the data better than the three-factor model, two alternate models were tested. In the first model, a single factor called “RPA” was tested with 17 indicators (i.e., the 17 items retained after the study 1 factor analysis). The second model consisted of two factors: “dampening” (with the eight dampening items identified in study 1 used as indicators) and “positive rumination” (with the five emotion-focused and four self-focused items fixed to load on a single factor). The first model was poor fit to the data ($\chi^2(119) = 616.98, P < 0.001$; CFI = 0.59; RMSEA = 0.15; RMSR = 0.08). The second model was a better fit to the data ($\chi^2(118) = 182.89, P < 0.001$; CFI = 0.91; RMSEA = 0.05; RMSR = 0.05). Nonetheless, the proposed three-factor model was a significantly better fit to the data than the one-factor model ($\Delta\chi^2 = 460.70, \Delta df = 3, P < 0.001$) or the two-factor model ($\Delta\chi^2 = 26.7, \Delta df = 2, P < 0.001$).

Convergent validity—Correlational results and descriptive statistics for the RPA and criterion measures appear in Table 3. To provide an estimation of effect size for statistically significant correlations, the r^2 statistic are also provided in Table 3 as an indication of the percentage of common variance in the two measures. Higher scores on the dampening subscale were associated with lower self-esteem, greater depressive rumination (both reflection and brooding), greater current symptoms of depression, and mania vulnerability but not current manic symptoms. Higher scores on the self-focused positive rumination subscale were associated with greater self-esteem, lower current depression, and greater manic symptoms and vulnerability to mania. Higher scores on the emotion-focused positive rumination subscale were associated with greater self-esteem, higher levels of depressive rumination (both brooding and reflection), current manic symptoms, and vulnerability to mania.

To assess the potential role of “symptom contamination” as an alternative explanation for the above findings, partial correlations between RPA subscales and criterion measures controlling for concurrent depression symptoms, are presented in Table 3. The association between self-esteem and both the dampening and self-focused positive rumination subscales fell to non-significance when depression symptoms were controlled. Beyond this notable exception, the magnitude of the associations between RPA subscales and criterion variables were minimally affected by controlling for depression symptoms.

Incremental validity—The purpose of these analyses was to test whether the subscales of the RPA explained significant amount of variability in depression and mania symptoms above and beyond the established construct of depressive rumination. For these analyses, we focused on the brooding subscale because it is more strongly associated with depression symptoms than the reflection subscale (Nolen-Hoeksema & Davis, 2004; Treynor et al., 2003). To do this, we conducted two separate hierarchical multiple regression analyses. In both analyses, the brooding subscale of the RSQ was entered in block 1. The three subscales of the RPA were simultaneously entered in block 2. In predicting depressive symptoms (see Table 4), the RPA predicted 10% of the variability in symptoms above and beyond depressive rumination, with dampening uniquely predicting greater depression and emotion-focused positive rumination predicting less depression. When parallel analyses were conducted to predict manic symptoms (see Table 5), the RPA accounted for 8% of the variance in mania above and beyond rumination,

with self-focused positive rumination remaining a significant predictor of greater manic symptoms.

Discussion for study 2

The results of this study confirm the three-factor structure revealed in study 1 in an independent sample and demonstrate the superior fit of this model to the data, relative to one-factor and two-factor models. Also, the acceptable levels of internal consistency for the three RPA subscales were replicated. Tests of convergent validity largely supported expected links of the RPA scales with related mood and personality measures, particularly the dampening subscale. Most findings were largely unchanged by controlling for concurrent depression severity, helping to rule out symptom contamination as an alternative explanation for the associations between RPA subscales and criterion variables. This was especially true of the correlations between criterion measures and the emotion-focus positive rumination subscale, which were not diminished despite the mention of positive affect, energy, and vitality in this subscale's items.

There were decreases in two associations when depression symptoms were held constant: (1) the correlation between self-esteem and self-focused positive rumination and (2) the correlation between self-esteem and dampening. Although dampening and self-focus were confounded with depression analytically, unlike the emotion-focused positive rumination scale, the items of these two scales did not contain explicit mention of either depression symptoms or positive emotional states. Thus, symptom confounding is unlikely to explain this reduction in these two correlations. One possible explanation may involve the large association between depression symptoms and self-esteem in this sample ($r = -0.58$). It is possible that controlling for depression removed a large amount of potential variance to be explained in self-esteem, thereby limiting associations of self-esteem with RPA subscales. Our findings suggest that depression may be an important mediator of the links observed by Wood et al. (2003) between self-esteem and deficits in the ability to savor positive moods. This possible interpretation deserves further study.

The RPA was correlated with depression and mania even after accounting for depressive rumination. Thus, depressive symptoms were associated with more dampening responses to positive mood states and less emotion-focused positive rumination. In contrast, only individual differences in self-focused positive rumination were related to mania scores.

General discussion

Research on emotion regulation in relation to mood disorders has focused almost entirely on responses to negative mood states. In this study, we present a measure that has been developed specifically for the assessment of responses to positive mood states, the RPA questionnaire. The subscales of the RPA, dampening, emotion-focused rumination and self-focused rumination, demonstrated acceptable structural validity, internal consistency, and the scale demonstrated a replicable factor structure. Importantly, this study demonstrated predicted correlations of the RPA subscales with measures of self-esteem, depressive rumination, and depressive and manic symptoms.

Although several existing questionnaires assess constructs related to positive rumination, the RPA makes a distinct contribution in that existing questionnaires do not capture individual differences in RPA. Rather, existing questionnaires assess the degree to which people think about their emotions (e.g., emotional processing; Stanton et al., 2000) or try to create positive emotions by turning attention away from negative experiences [e.g., the COPE questionnaire (Carver et al., 1989) and the Thought Control Questionnaire (Wells & Davies, 1994)] in response to *negative* affect (i.e., feelings of stress or the experience of unpleasant intrusive

thoughts). Other questionnaires assess general tendency to ruminate or reflect on one's self, but do not specify the emotional antecedents for such processes (Trapnell & Campbell, 1999). A subscale of the Savoring Beliefs Inventory (Bryant, 2003) was designed to tap "individuals' perceptions of their ability to derive pleasure through... savoring positive moments" (p. 175); however, the content of many items is focused on difficulty enjoying experiences (i.e., anhedonia). Indeed, the items capturing anhedonia exhibit the highest loading on the scale total, and, not surprisingly, the scale's total score is strongly correlated with measures of anhedonia (Bryant, 2003). In sum, the current measure fills a gap in assessing the use of *strategies* to respond to *positive* moods as opposed to measures that capture responses to *negative* experiences or *perceived ability* to experience positive emotions.

This discussion section will focus on the associations of positive rumination and dampening with self-esteem, depressive rumination, and depression and mania. Then, we will review study limitations and areas for further research.

Self-esteem

The RPA subscales demonstrated expected correlations with self-esteem. That is, the tendency to dampen positive affect was related to low self-esteem, and strategies to intensify positive affect were related modestly to greater self-esteem, consistent with previous research (Wood et al., 2003). Wood et al. (2003) suggest that people with lower self-esteem may dampen positive moods because they are inconsistent with personal expectancies or they believe they are unworthy of positive affect. This interpretation is consistent with some of the items that comprise the dampening subscale including thinking "This is too good to be true" and "I don't deserve this." It is important to note that these associations were not significant when depression symptoms were controlled. Longitudinal studies may best help to disentangle the likely complex relationship between positive affect regulation, self-esteem, and depression.

Depressive rumination

Consistent with predictions, people who reported dampening positive affect also reported increased use of rumination on negative affect, particularly brooding, which has been shown to be the maladaptive aspect of rumination that is most strongly predictive of depression (Nolen-Hoeksema & Davis, 2004; Treynor et al., 2003). We also found coherence in the associations of negative and positive affect regulation strategies. Interestingly, the emotion-focus positive rumination scale was positively related to rumination on negative affect, particularly reflection, which has been described as a potentially more adaptive form of rumination associated with benefit-finding and reductions in depression symptoms over time (Nolen-Hoeksema & Davis, 2004; Treynor et al., 2003). Rumination on negative and positive moods may both be indicators of a higher order factor, such as emotional processing. Such an interpretation is supported by past research showing that depressive rumination is positively associated with a general tendency toward emotional processing (Stanton et al., 2000). This possible interpretation could be tested with longitudinal examinations of rumination in naturalistic settings or repeated measures in laboratory studies using think-aloud paradigms. Such an approach could also potentially help to illuminate the somewhat counterintuitive positive association of dampening and reflection.

Depression symptoms

Consistent with hypotheses and previous research (Bryant, 2003; Min'er & Dejun, 2001), multivariate analyses revealed that people who endorsed using more dampening strategies and less emotion-focused positive rumination endorsed more depressive symptoms, above and beyond the variance accounted for by brooding. It remains unclear whether depression interferes with positive mood regulation, or whether deficits in positive mood regulation might increase risk of depression. Despite the need for more prospective research, the association of

dampening with current depression symptoms suggests that it may be valuable for clinicians working with clients with depression to assess strategies that clients use to regulate positive affect, however fleeting. If a patient reports a tendency either to dampen, ignore, or fail to elaborate upon positive affect, a therapist may wish to provide psychoeducation about the adaptive function of positive emotions or to use cognitive restructuring when appropriate around a client's distorted thinking about their worthiness of experiencing positive emotional states. This may be particularly important in treatments where increasing pleasant activities is a therapeutic focus (Beck, Rush, Shaw & Emery, 1979; Jacobson et al., 1996; Lewinsohn, Antonuccio, Steinmetz, & Teri, 1984) as dampening or ignoring positive affect may undermine these interventions.

An important question is the degree to which this measure is applicable to severe depression, which might interfere with experiences of positive affect. We would argue that most people who are depressed will experience at least fleeting positive emotions and that it is important to know the degree to which they capitalize on or diminish this experience through their choice of mood regulation strategies.

The negative association between depression symptoms and self-focused positive rumination was in the hypothesized direction but of small magnitude. It is possible that the hypothesized association is not evident as a main effect, but may be more apparent in interaction with another variable, such as the occurrence of objectively positive, self-relevant life events. Such an interpretation may help to explain the generally smaller magnitude of the self-focused positive rumination with other criterion variables.

The inverse association of emotion-focused positive rumination and depression symptoms that emerged in the multivariate analysis is consistent with our hypotheses; however, we were surprised to not find the predicted univariate association between these variables. It is possible that once common variance across the RPA scales and the RSQ-brooding scale (which, as noted previously, may reflect a common factor such as "emotional processing") is separated from this individual scale, attending specifically to positive emotional experience without dampening emerges as an emotion regulation strategy that may help to differentiate dysphoric from non-dysphoric individuals.

Mania symptoms and vulnerability

People with high levels of manic vulnerability reported that they used more dampening *and* rumination in response to good moods than do those with less vulnerability. The positive association between dampening and mania vulnerability was counter to predictions. One interpretation of this finding is that some people vulnerable to lifetime mania may "put the brakes on" periods of elevated mood, consistent with findings that people with Bipolar I Disorder choose self-calming strategies during early phases of hypomania to try to prevent the emergence of manic symptoms (Lam & Wong, 1997). Beyond dampening though, the current findings suggest an association between manic vulnerability and the tendency to choose cognitive strategies that could potentially intensify positive mood states through emotion-focus and, to a minor degree, self-focus. This fits with previous findings that people with bipolar disorder pursue goals with greater vigor after an initial success, one behavioral strategy that might also intensify positive affect (Johnson et al., 2005). Further research is needed to understand why people who are vulnerable to mania report that they are more likely to either dampen or potentially intensify a positive mood state.

In the context of poor neurobiological regulation, individual differences in responding to positive mood may have implications for the experience of manic symptoms (Johnson, 2005; Lozano & Johnson, 2001). Congruent with this idea, current hypomania was higher among people who endorsed using positive self-focused strategies, which may have the effect of

intensifying positive affect. The result held even when the brooding subscale of the RSQ and the other subscales of the RPA were entered simultaneously. It should be noted, however, that only a small proportion of the variance in current mania was accounted for by RPA. Results for current mania, though, are likely limited by the rarity of current manic symptoms in any undergraduate sample such as this one. Future research should prospectively examine positive rumination as a predictor of symptoms among people with clinically severe bipolar disorder.

Limitations and future directions

The present studies represent a modest starting point in the investigation of positive rumination and dampening using the RPA questionnaire. Beyond the reliance on a non-clinical sample, it is important to acknowledge other limitations in the current study as well. First, this study provided only one set of tests of construct validity. Future studies could profitably examine how this scale correlates with other mood regulation scales and individual difference measures to help place the measure within a larger nomo-logical network (Cronbach & Meehl, 1955). In the present study, care was taken to design items that were relatively free from explicit symptom contamination and partial correlations suggest that, in most cases, observed correlations are not better explained by depression severity. Nonetheless, the possibility of construct contamination remains an explanation for some of the results obtained in this study; thus, future validation studies could employ more stringent tests of construct validity by removing potentially confounding items from the criterion measures in some analyses.

As a cross-sectional study, this study cannot tease apart the causal relationships between these emotion regulation strategies and symptoms of mood disorders. As such, longitudinal studies are an essential next step to address whether concurrent symptoms induce bias in how people describe their typical RPA, and whether strategies genuinely fluctuate with mood episodes. Furthermore, future studies with intensive repeated assessments could test the within-subject associations of regulation strategies and mood states. Longitudinal research is particularly needed for understanding links between positive rumination and mania; it may be that positive rumination intensifies risk for mania, but we cannot rule out that the intense positive emotions experienced during mania merely create a ruminative focus on understanding those states. Research exploring how the RPA predicts regulation in the context of positive mood inductions would be helpful. If people with depression show greater dampening across both self-report and experimental paradigms, a key question is whether interventions could profitably target more selective use of positive mood regulation strategies. To build in this direction, it will be important to examine whether RPA scores prospectively predict the course of symptoms. Hence, there is a need for more basic and clinical research to validate the RPA.

Taken together, the present results offer initial psychometric support for the RPA questionnaire based on the factor structure and internal consistency estimates. More importantly, the scale demonstrated preliminary evidence of convergent validity in analyses of self-esteem, mood regulation, and symptoms of mood disorders. The present results suggest that future research on mood disorders would benefit from measuring responses to positive moods.

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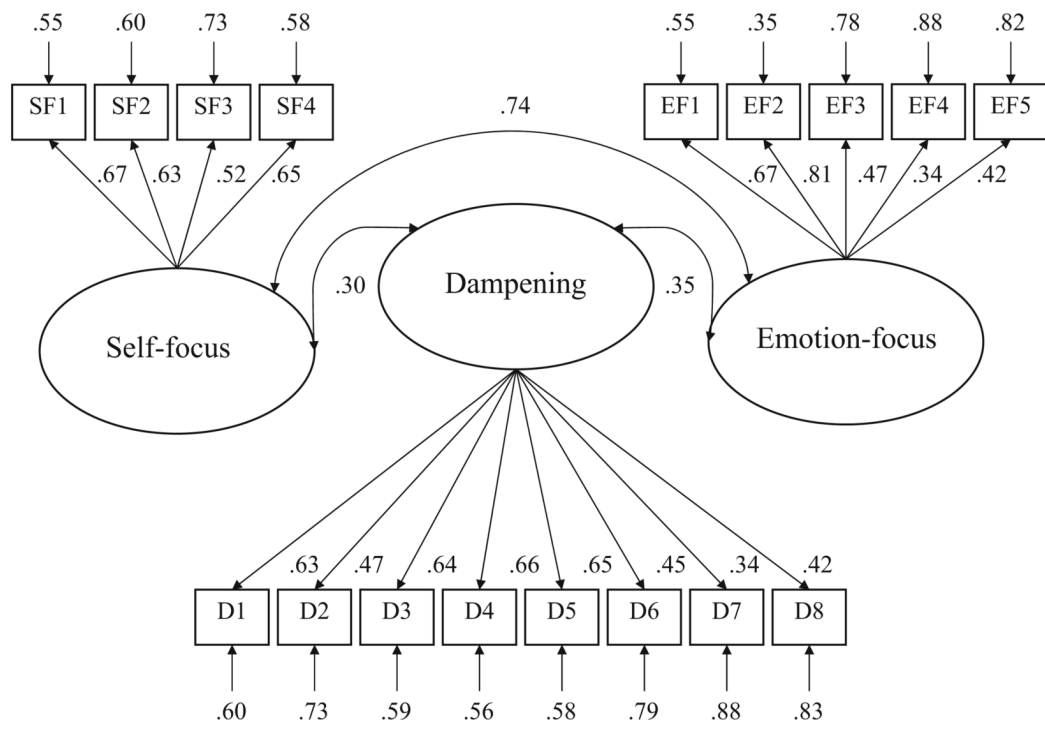


Fig. 1. Results from a confirmatory factor analysis (LISREL) for the RPA Questionnaire

Table 1

Pattern matrix and corrected item-total correlations (Study 1)

RPA item	Factors			
	I	II	III	r^a
Factor I: Emotion-focus (Eigenvalue = 3.73, 21.94% variance explained)				
EF1. Think about how happy you feel	0.83	0.05	-0.11	0.63
EF2. Think about how strong you feel	0.70	0.13	0.13	0.62
EF3. Think about how you feel up to doing everything	0.53	0.04	0.18	0.52
EF4. Notice how you feel full of energy	0.51	-0.14	0.03	0.45
EF5. Savor this moment	0.47	-0.03	-0.01	0.41
Factor II: Dampening (Eigenvalue = 3.26, 19.32% variance explained)				
D1. Think "My streak of luck is going to end soon"	0.05	0.67	-0.07	0.59
D2. Think "I don't deserve this"	-0.10	0.65	-0.01	0.56
D3. Think about things that could go wrong	-0.03	0.61	-0.03	0.54
D4. Think about things that have not gone well for you	-0.07	0.59	-0.05	0.52
D5. Remind yourself these feelings won't last	-0.04	0.58	0.02	0.50
D6. Think "This is too good to be true"	0.08	0.56	0.05	0.51
D7. Think about how hard it is to concentrate	0.07	0.51	-0.06	0.44
D8. Think "people will think I'm bragging"	0.01	0.41	0.14	0.39
Factor III: Self-focus (Eigenvalue = 1.32, 7.50% variance explained)				
SF1. Think "I am achieving everything"	-0.03	-0.01	0.79	0.62
SF2. Think "I am living up to my potential"	-0.06	-0.04	0.63	0.49
SF3. Think about how proud you are of yourself	0.18	-0.02	0.56	0.54
SF4. Think "I am getting everything done"	0.21	0.12	0.42	0.43

^a r Corrected correlation between the item and its subscale

Table 2

Descriptive statistics and scale and factor intercorrelations for study 1

	<i>M</i>	<i>SD</i>	1	2	3
Emotion-focus	13.46	3.18	(0.76)	0.03	0.50
Dampening	15.52	4.49	0.02	(0.79)	0.06
Self-focus	9.07	2.57	0.49	0.05	(0.73)

Note: $N = 403$. Alpha reliabilities of the subscales are found on the diagonal. Correlation coefficients for scale values (unweighted sums of items loading on factor) appear below the diagonal and factor correlations appear above the diagonal

Table 3

Correlations of RPA subscales and criterion variables

	<i>M</i>	<i>SD</i>	Dampening	Self-focus	Emotion-focus	Dampening	Self-focus	Emotion-focus
			<i>r</i> (<i>r</i> ²)					
Self-esteem (RSE)	55.22	10.20	-0.35 (0.12)**	0.20 (0.04)**	0.19 (0.04)*	-0.15	-0.14	0.18*
Brooding (RSQ)	11.68	3.69	0.60 (0.36)**	0.10 (0.01)	0.27 (0.07)**	0.52**	0.19*	0.34**
Reflection (RSQ)	11.19	3.60	0.44 (0.19)**	0.10 (0.01)	0.34 (0.12)**	0.37**	0.15	0.37**
Depressive Symp. (BDI)	3.67	3.93	0.40 (0.16)**	-0.15 (0.02)*	-0.07 (0.00)	-	-	-
Manic Symp. (ASRM)	4.96	3.63	-0.04 (0.00)	0.25 (0.06)**	0.19 (0.04)*	0.07	0.22**	0.17*
Mania Vulnerability (HPS)	19.57	8.60	0.28 (0.08)**	0.16 (0.03)*	0.30 (0.09)**	0.26**	0.17*	0.30*
			<i>M</i> = 16.41 <i>SD</i> = 4.61	<i>M</i> = 9.01 <i>SD</i> = 2.39	<i>M</i> = 12.77 <i>SD</i> = 2.90			

Note: Variability in sample size is due to missing data

ASRM Altman Self-Rating Mania Scale, BDI Beck Depression Inventory, HPS Hypomanic Personality Scale, RPA Responses to Positive Affect, RSE Rosenberg Self-Esteem scale, RSQ Response Style Questionnaire

Note: *N* = 168–177

* *P* < 0.05

** *P* < 0.01

Table 4

Summary of hierarchical regression analysis for RPA subscales and brooding predicting depression symptoms (BDI)

	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 1				
Constant	-1.97	0.92		0.20**
Brooding (RSQ)	0.49	0.08	0.44**	
Step 2				
Constant	0.43	1.45		0.10**
Brooding (RSQ)	0.39	0.09	0.35**	
Dampening (RPA)	0.23	0.07	0.26**	
Self-focus (RPA)	-0.18	0.13	-0.11	
Emotion-focus (RPA)	-0.26	0.11	-0.19*	

Note: *BDI* Beck Depression Inventory, *RSQ* Response Style Questionnaire, *RPA* Responses to Positive Affect

* $P < 0.05$

** $P < 0.01$

Table 5

Summary of hierarchical regression analysis for RPA subscales and brooding predicting mania symptoms (ASRM)

	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 1				
Constant	5.22	0.95		0.001
Brooding (RSQ)	-0.03	0.08	-0.03	
Step 2				
Constant	1.60	1.54		0.08**
Brooding (RSQ)	-0.02	0.10	-0.02	
Dampening (RPA)	-0.07	0.08	-0.09	
Self-focus (RPA)	0.29	0.14	0.19*	
Emotion-focus (RPA)	0.16	0.12	0.13	

Note: ASRM Altman Self-Rating Mania Scale, RSQ Response Style Questionnaire, RPA Responses to Positive Affect

* $P < 0.05$

** $P < 0.01$