

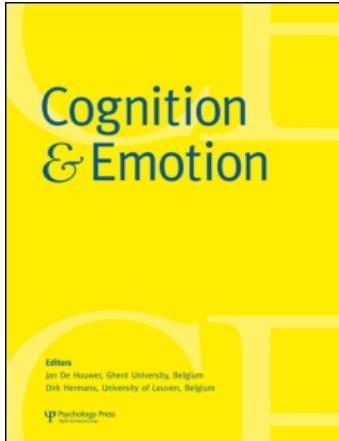
This article was downloaded by: [University Of Exeter]

On: 15 June 2010

Access details: Access Details: [subscription number 918549106]

Publisher Psychology Press

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Cognition & Emotion

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713682755>

Negative affect and ruminative self-focus during everyday goal pursuit

Nicholas J. Moberly^a; Edward R. Watkins^a

^a University of Exeter, Exeter, UK

First published on: 26 January 2009

To cite this Article Moberly, Nicholas J. and Watkins, Edward R.(2010) 'Negative affect and ruminative self-focus during everyday goal pursuit', *Cognition & Emotion*, 24: 4, 729 – 739, First published on: 26 January 2009 (iFirst)

To link to this Article: DOI: 10.1080/02699930802696849

URL: <http://dx.doi.org/10.1080/02699930802696849>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

BRIEF REPORT

Negative affect and ruminative self-focus during everyday goal pursuit

Nicholas J. Moberly and Edward R. Watkins

University of Exeter, Exeter, UK

Models of self-regulation propose that negative affect is generated when progress towards goals is perceived to be inadequate. Similarly, ruminative thinking is hypothesised to be triggered by unattained goals (Martin & Tesser, 1996). We conducted an experience-sampling study in which participants recorded their negative affect, ruminative self-focus, and goal appraisals eight times daily for one week. Negative affect and ruminative self-focus were each associated with low levels of goal success and (with the exception of sadness) high levels of goal importance. As predicted, the combination of low goal success and high goal importance was associated with the highest levels of negative affect, and this interaction was marginally significant for ruminative self-focus. Decomposition of the ruminative self-focus measure revealed that the success by importance interaction was significantly associated with focus on problems but not focus on feelings. Findings did not differ for individuals reporting high versus low levels of depressive symptoms or trait rumination. These results suggest that self-regulatory models of goal pursuit provide a useful explanatory framework for the study of affect and ruminative thinking in everyday life.

Keywords: Experience-sampling; Affect; Rumination; Goals; Self-regulation.

Leading theories of self-regulation propose that affect is central to motivated behaviour (e.g., Carver & Scheier, 1998). Specifically, these approaches suggest that affect is closely related to perceived rates of progress towards personal goals. High perceived rates of goal progress are associated with positive affect, whereas low rates of goal progress are associated with negative affect. Consistent with this, Brunstein (1993)

found that perceived progress towards the accomplishment of life goals prospectively predicted levels of subjective well-being among undergraduates.

Perceived difficulties in goal pursuit may also have cognitive consequences. Martin and Tesser (1996) suggested that discrepancies in self-regulatory feedback processes underlie rumination, defined as “a class of conscious thoughts that revolve around a common instrumental theme and

Correspondence should be addressed to Edward R. Watkins, Mood Disorders Centre, School of Psychology, University of Exeter, Exeter EX4 4QG, UK. E-mail: e.r.watkins@exeter.ac.uk

This research was supported by a project grant (08099/Z/06/Z) from the Wellcome Trust, UK, awarded to ERW.

that recur in the absence of immediate environmental demands requiring the thoughts" (p. 1). Although this definition is valence-neutral in that rumination may include phenomena such as dwelling on successful experiences, Martin and Tesser (1996) proposed that rumination is most commonly prompted by problems in goal achievement. Nolen-Hoeksema (1991) proposed a more restricted conceptualisation of rumination in the context of depressed mood, defining it as "repetitively focusing on the fact that one is depressed; on one's symptoms of depression; and on the causes, meanings, and consequences of depressive symptoms" (p. 569). Considerable evidence exists to show that this type of dysphoric rumination prolongs sad mood relative to engagement in pleasant, distracting activities and exacerbates negative cognitive styles (see Lyubomirsky & Tkach, 2004).

There have only been a few studies that have linked problematic goal attainment with rumination, consistent with Martin and Tesser's (1996) theory. For example, Millar, Tesser, and Millar (1988) found that the extent to which an individual was unable to continue activities with a significant other after leaving college was positively associated with ruminative thoughts about that person. Rumination about unattained goals is hypothesised to be most intense when these goals are linked to important, higher-level outcomes (Martin & Tesser, 1996). Consistent with this, McIntosh, Harlow, and Martin (1995) found that participants who habitually linked their lower-level goals (e.g., losing weight) to the attainment of higher-order goals (e.g., being happy) reported more rumination than participants who did not link their goals in this way. Furthermore, over a two-week interval, everyday hassles were more predictive of depressive symptomatology for linkers than for non-linkers. However, these studies only provide indirect support for the Martin and Tesser (1996) hypothesis because they did not directly examine how appraisals of importance and success for idiographic goals are associated with rumination.

Given the centrality of the Martin and Tesser (1996) theory in the conceptualisation of rumination, it seems important that predictions from this influential theory are tested more directly.

Moreover, few studies have attempted to capture the relationships between affect or ruminative thinking and goal appraisals using multiple ecologically valid assessments. Affleck et al. (1998) asked fibromyalgia patients to complete mood measures several times daily and rate their progress towards a self-selected interpersonal goal. Regardless of concurrent levels of pain and fatigue, daily reports of goal progress were associated with within-day increases in positive affect. Similarly, a daily diary study by Harris, Daniels, and Briner (2003) found that attainment of work goals was associated with pleasurable affect among call-centre staff, and that this relationship was stronger for more important goals. However, neither of these studies assessed rumination.

One study that assessed goal pursuit and rumination was conducted by Lavalley and Campbell (1995), who asked students to list their life goals and then, one month later, had them complete a daily diary in which they rated their mood and described their most bothersome event of the day and the extent to which they ruminated about it. Rumination and negative affect were greater after goal-relevant negative events than after goal-irrelevant negative events, suggesting that problematic goal attainment was associated with negative affect and ruminative thinking. However, this study did not directly assess progress on the goals.

Thus, evidence indicates that both rumination and negative affect are associated with difficulties in goal progress, but no study has concurrently assessed rumination, goal success and goal importance. Moreover, past studies have assessed goal progress daily, typically at the end of the day, and none of these studies randomly sampled at the occasion level throughout the day. This means that the assessment involved retrospective

reporting of rumination, mood and goal progress, and was therefore prone to retrospective reporting biases. Further, the lack of repeated random sampling in real-time means that this assessment method cannot detect contingencies between events of which participants are unaware, and is relatively insensitive to the relationships among goal appraisals, affect and rumination across time and across different contexts. To overcome these limitations and to provide a direct test of Martin and Tesser's (1996) hypothesis that difficulties in resolving goals would be associated with rumination, we conducted an experience-sampling study (ESM; Csikszentmihalyi & Larson, 1987) in which adults reported their negative affect, ruminative self-focus, and goal appraisals at random intervals eight times daily for one week. By asking participants to rate these aspects of their experience "online", we were able to track fluctuations in these variables over relatively short intervals, while reducing retrospective bias.

We measured momentary negative affect as a composite of sadness, anxiety, and irritation ratings, on the basis that rumination is associated with anxiety and anger as well as sadness (Nolen-Hoeksema, 2000; Rusting & Nolen-Hoeksema, 1998). Momentary ruminative self-focus was assessed using a two-item measure addressing the extent to which people were focused on (i) their feelings and (ii) their problems. Although not explicitly linked to mood state, these items are based both on Nolen-Hoeksema's (1991) definition of rumination implicating focus on mood and its causes and on Martin and Tesser's (1996) conceptualisation of rumination as relating to focus on unresolved problems (see also Lyubomirsky, Tucker, Caldwell, & Berg, 1999). On each occasion, participants noted their most salient goal, and then rated the extent to which this goal was important and the extent to which they were successfully accomplishing this goal.

Based on Martin and Tesser's (1996) model, we hypothesised that negative affect and ruminative self-focus would be associated with difficulties in goal progress, particularly for important

goals. We therefore predicted that negative affect would be associated with low ratings of goal-related success, and that persons would experience most negative affect when reporting low levels of success in the pursuit of important goals. Our key predictions were that participants would report high levels of ruminative self-focus on occasions when they reported low levels of goal success, and that this relationship would be stronger for more important goals than for less important goals. Finally, in exploratory analyses, we tested whether the predicted relationships between the outcome variables and the goal variables would differ for individuals reporting high versus low levels of depressive symptoms or trait rumination.

METHOD

Participants

Participants were recruited from the University of Exeter and the local area using e-mails and newspaper advertisements. One hundred thirty-nine persons (100 women) consented to take part (range = 18–67 years, $M = 26.8$ years old, $SD = 13.3$). Most (107) were university students, the remainder were community adults. Data from a subset of these participants examining the direct relationship between negative affect and ruminative self-focus has already been reported (Moberly & Watkins, 2008). Participants were paid £10 (\$20) for completing the study.

Materials

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II assesses levels of depressive symptomatology using 21 items that are each rated on a scale from 0 to 3, with higher scores indicating more depressive symptoms (range 0–63). Cronbach's alpha for our sample was .90.

Response Styles Questionnaire–Ruminative Responses Scale (RSQ; Nolen-Hoeksema & Morrow, 1991). The RSQ assesses the extent to which individuals respond to depressed mood by focusing on self,

symptoms and on the causes and consequences of their mood (trait rumination), using 22 items that are each rated on a 4-point frequency scale. Cronbach's alpha for our sample was .91.

Procedure

We used ESM to assess negative affect, ruminative self-focus, goal importance and goal success eight times daily over seven days, using signal-contingent methodology in which participants rated their moods and thinking styles when signalled by an alarm from a wrist-worn actiwatch (Cambridge Neurotechnology Ltd, Cambridge, UK). Each participant's day was divided into eight equal periods with one alarm occurring at a random time within each period, with the restriction that no two alarms occurred within 15 minutes. This resulted in a 12-hour daily sampling period (e.g., 10.00 to 22.00) with one alarm occurring within each of eight 90-minute periods (e.g., 10.00 to 11.30). Times were individually randomised for each participant to suit their sleep-wake schedule (actual range: 07.00–23.59).

At each alarm, a flashing letter on an LED display prompted participants to enter a rating for the moment before the alarm sounded, by pressing a button on the actiwatch to cycle through ratings from 1 to 7. After each rating was entered, the next letter was displayed and the participant made the next rating. The actiwatch only accepted entries within 20 s of each alarm, ensuring all data were entered promptly. Participants recorded their levels of sadness (S), anxiety (N), and irritation (I), and the extent to which they were focusing on their feelings (F) and focusing on their problems (P) on a 7-point scale from 1 (*not at all*) to 7 (*very much*). As an *aide memoire*, participants carried a card on their person that explained these prompts.

Participants received booklets for each day of the study. Each booklet included eight experience-sampling forms, corresponding to the actiwatch alarms. On each form, there was a space for participants to note the current time and any delay since the actiwatch alarm, and a space to write down their "main purpose or goal" when the

watch beeped, however trivial. There followed two Likert scales on which participants were asked to rate (i) "How important was this goal for you?", and (ii) "How successful were you in achieving this goal?" by circling a number from 1 (*not at all*) to 7 (*extremely*). Participants were instructed that these questions referred strictly to the moment just before the alarm sounded.

At an initial briefing session, participants completed the RSQ and BDI-II. Participants were then shown the actiwatch and experience-sampling forms, and practised responding to a hypothetical alarm. Participants were asked to complete as many accurate reports as possible. Each participant was then asked to select a beginning and an end of the daily sampling period, which were used to configure the actiwatch. After the week of experience sampling, participants returned the actiwatch and forms to the laboratory and were then paid and debriefed.

Data were excluded from 22 participants who withdrew from the study prematurely ($n = 13$, ESM was too time-consuming; $n = 5$, actiwatch malfunctioned; $n = 1$, illness; $n = 1$, family emergency; $n = 1$, experienced mood recording as upsetting; $n = 1$, ESM interfered with therapy). Data were also excluded for occasions when the participant failed to complete the watch and form ratings within 15 minutes. Timely completion of the experience-sampling forms was verified with reference to both (i) the reported time of form completion and (ii) the reported time interval between the actiwatch signal and form completion. Following standard guidelines (Delespaul, 1995), 14 participants who completed less than one third of the actiwatch ratings and experience-sampling forms within 15 minutes of the alarm were excluded from the analysis. Non-completers did not differ significantly from completers on BDI-II score, RSQ score, gender, recruitment source (university recruited vs. community recruited) or age.

Data from 103 participants (75 women) were analysed (age range = 18–67 years, $M = 25.4$ years, $SD = 12.5$). Gender, recruitment source and age were not significantly associated with any study variable. The mean response rate for

ratings entered into the actiwatch was 83.0% ($SD = 10.8\%$) and the mean completion rate for the experience-sampling forms was 63.0% ($SD = 15.3\%$). The total number of occasions that were validly recorded and analysed was 3631.

We calculated a composite measure of momentary negative affect by standardising each of the sad, anxious, and irritated ratings and summing the resulting z-scores ($\alpha = .70$). We also calculated a composite measure of momentary ruminative self-focus by standardising the focus on feelings and focus on problems ratings and summing the resulting z-scores ($\alpha = .67$).

Statistical analysis

In our dataset, occasions (Level 1) were nested within days (Level 2) and within persons (Level 3), so we used hierarchical linear modelling to test our hypotheses without violating independence assumptions. We constructed a multivariate multilevel model in which negative affect and ruminative self-focus were modelled simultaneously as a function of our person-level and occasion-level variables (see Snijders & Bosker, 1999, pp. 200–206). In our multilevel model, the intercept was specified as randomly varying at both the day and person levels, reflecting the fact that observations tend to be more similar if they are (a) taken on the same day, and (b) taken from the same person. BDI score was root-transformed to normalise this variable. To ease interpretation and reduce multicollinearity,

person-level and occasion-level variables were centred on their respective grand means.

RESULTS

We first modelled negative affect and ruminative self-focus with linear and quadratic effects of time and linear effects of day to control for temporal variation and reduce the autocorrelation between successive observations. Both linear effects were specified as random at the person level to model individual variation in diurnal and weekly fluctuations. Ruminative self-focus was higher at the beginning and end of the day than it was in the mid-afternoon (quadratic effect of time, $B = 2.351$, $SE = 1.042$, $p < .05$), but no other fixed effects of time or day were statistically significant. Inclusion of the time and day variables significantly improved model fit over the null model, change in log-likelihood $\chi^2(24) = 132.51$, $p < .001$.

Subsequently, to account for individual differences in negative affect and ruminative self-focus, we simultaneously added the person-level variables of depressive symptomatology (BDI-II) and trait rumination (RSQ). Trait rumination was significantly and independently associated with both negative affect and ruminative self-focus, but depressive symptoms were significantly and independently associated with negative affect only (see Table 1). Entered together, these variables

Table 1. Fixed effect coefficients (SE) for multivariate multilevel model

| Predictor | Criterion variable | |
|---------------------------------|--------------------|-----------------------------|
| | Negative affect | Ruminative self-focus |
| <i>Person-level variables</i> | | |
| BDI-II | 0.548 (0.129)*** | 0.109 (0.093) |
| RSQ | 0.028 (0.013)* | 0.019 (0.009)* |
| <i>Momentary goal variables</i> | | |
| Importance | 0.084 (0.021)*** | 0.093 (0.018)*** |
| Success | -0.224 (0.019)*** | -0.113 (0.016)*** |
| Importance success | -0.037 (0.009)*** | -0.014 (0.008) [†] |

Note: Analyses include 3631 occasions. Model includes linear and quadratic effects of time of day, and linear effect of day. BDI-II = Beck Depression Inventory-II score, RSQ = Ruminative Response Scale score. [†] $p < .10$; * $p < .05$; *** $p < .001$.

resulted in a significant improvement in model fit, $\chi^2(4) = 48.39, p < .001$.

Next, we tested our main hypotheses by simultaneously entering the momentary variables of goal importance and goal success, followed in a subsequent step by the goal importance by goal success interaction. Goal importance was positively associated with both negative affect ($B = 0.102, SE = 0.020, p < .001$) and ruminative self-focus ($B = 0.100, SE = 0.017, p < .001$). Goal success was negatively associated with both negative affect ($B = -0.214, SE = 0.019, p < .001$) and ruminative self-focus ($B = -0.109, SE = 0.016, p < .001$). Inclusion of these variables significantly improved the model fit, $\chi^2(4) = 146.40, p < .001$. When included in a subsequent step, the interaction between goal importance and goal success was significantly associated with negative affect (see Table 1) and significantly improved the model fit, $\chi^2(4) = 15.53, p < .001$. Figure 1 illustrates this interaction by plotting levels of negative affect against levels of goal importance and goal success that are one standard deviation above and below the mean. As predicted, a combination of high goal importance and low goal success was associated with the highest levels of

negative affect. Furthermore, the interaction between importance and success was also marginally associated ($p = .08$) with ruminative self-focus. A plot of this marginally significant interaction revealed a similar pattern to that shown in Figure 1.

In subsequent steps, we tested whether the association between goal importance, goal success, the importance by success interaction, and the two outcome variables would differ for individuals reporting high versus low levels of depressive symptomatology or trait rumination. However, model fit was not improved by adding cross-level interactions between the momentary variables and either BDI-II score, $\chi^2(6) = 5.56, ns$, or RSQ score, $\chi^2(6) = 9.10, ns$. Thus, there was no evidence that the relationship between negative affect, ruminative self-focus and goal appraisals was different for persons high in depressive symptoms or trait rumination.

Concerns about the reliability of the negative affect composite (median within-person $\alpha = .50$) prompted us to repeat the above analyses for sad, anxious, and irritated affect independently. Results for each affect item were very similar to those for the composite measure, although there was no significant association between goal

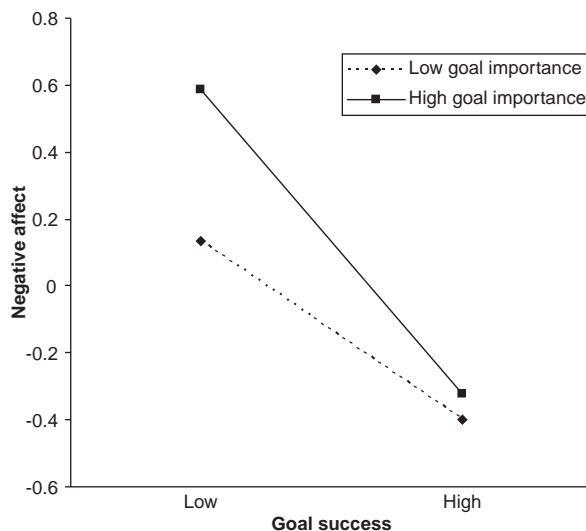


Figure 1. Relationship between goal importance, goal success and negative affect. Goal importance and goal success are plotted at values 1 SD above and 1 SD below their respective means.

importance and sadness ($B = 0.008$, $SE = 0.012$, ns) even though the effect of goal success and the importance by success interaction remained significant. Each negative affect item was significantly associated with ruminative self-focus (all $ps < .001$), although this relationship was stronger for sadness ($B = 0.568$, $SE = 0.021$) than for anxiety ($B = 0.392$, $SE = 0.021$) and irritation ($B = 0.335$, $SE = 0.020$). Thus, the hypothesised association between negative affect and low levels of goal success, particularly for important goals, is robust across distinct negative affects.

When we decomposed the ruminative self-focus composite (median within-person $\alpha = .64$) into its constituent items and repeated the original analyses, results were very similar, with two exceptions. First, focus on problems was independently associated with depressive symptoms ($B = 0.181$, $SE = 0.079$, $p < .05$) but not trait rumination ($B = 0.011$, $SE = 0.008$, ns). Second, the goal success by goal importance interaction was significantly associated with focus on problems ($B = -0.019$, $SE = 0.008$, $p < .05$) but not focus on feelings ($B = -0.003$, $SE = 0.007$, ns). During unsuccessful goal pursuit, the tendency for an individual to report greater ruminative self-focus when pursuing important goals is specific to focus on problems.¹

Finally, in univariate models, we examined whether relationships between the goal variables and ruminative self-focus were robust when negative affect was included as a predictor. Goal importance remained significantly associated ($B = 0.062$, $SE = 0.015$, $p < .001$) and goal success was marginally associated ($B = -0.028$, $SE = 0.015$, $p = .06$) with ruminative self-focus when negative affect was included in the model. Negative affect was itself strongly associated with ruminative self-focus ($B = 0.382$, $SE = 0.012$, $p < .001$). However, the coefficient for the previously mar-

ginal goal importance by goal success interaction reduced to zero ($B = 0.000$, $SE = 0.007$, ns). Sobel (1982) tests of the mediated effects of negative affect on ruminative self-focus were highly significant for goal importance ($z = 5.04$, $p < .001$), goal success ($z = 10.58$, $p < .001$), and the importance by success interaction ($z = 3.97$, $p < .001$). Results were very similar when we substituted individual affect items for the negative affect composite, with goal success significantly negatively associated with ruminative self-focus in each analysis (all $ps < .001$). Thus, contemporaneous negative affect at least partly mediated the association between the goal variables and ruminative self-focus.

Neither goal importance ($B = 0.077$, $SE = 0.0152$, ns) nor goal success ($B = 0.008$, $SE = 0.015$, ns) remained significantly associated with focus on feelings when negative affect was included in the model. However, both goal importance ($B = 0.092$, $SE = 0.014$, $p < .001$) and goal success ($B = -0.053$, $SE = 0.014$, $p < .001$) remained significantly associated with focus on problems. The goal success by goal importance interaction was not significantly associated with either focus on feelings ($B = 0.006$, $SE = 0.007$, ns) or focus on problems ($B = -0.006$, $SE = 0.007$, ns) when negative affect was included in the model. Nonetheless, mediated effects of negative affect on both focus on feelings and focus on problems were highly significant for goal importance, goal success, and their interaction (all $zs \geq 4$, $ps < .001$). Negative affect therefore fully mediated the association between the goal variables and focus on feelings and at least partly mediated the association between the goal variables and focus on problems. However, our cross-sectional measurements preclude us from drawing causal conclusions from these findings.²

¹ These results were robust when sadness, anxiety or irritation items were each analysed in place of the negative affect composite (i.e., when both the ruminative self-focus composite and the negative affect composite were decomposed), although the association between trait rumination and mean levels of irritation no longer reached significance. Once again, sadness was not associated with goal importance.

² An identical pattern of results emerged when sadness, anxiety or irritation items were each analysed in place of the negative affect composite, with the exception that goal importance remained significantly associated with focus on feelings when sadness was included in the model.

DISCUSSION

To our knowledge, this is the first experience-sampling study to examine negative affect and ruminative self-focus simultaneously as a function of goal appraisals and individual differences in depressive symptoms and trait rumination. Although a few previous studies (e.g., McIntosh et al., 1995; Millar et al., 1988) have examined whether differences in the extent to which individuals “link” lower-order goals to higher-order goals are associated with negative affect and ruminative thinking, they have not directly examined how appraisals of importance and success for idiographic goals are associated with rumination. Thus, direct evidence pertaining to the Martin and Tesser (1996) theory of rumination is minimal. Moreover, the current study also built upon prior research by examining momentary relationships between goal appraisals, negative affect and ruminative self-focus multiple times daily in an ecologically valid context. Thus, this study provides the first direct test of the predictions of Martin and Tesser’s (1996) theory of rumination in everyday life.

With respect to our key predictions, the findings relating to ruminative self-focus were consistent with some but not all the predictions from Martin and Tesser’s (1996) model of ruminative thought. Consistent with the model, at the within-person level, participants reported higher levels of ruminative self-focus both when reporting low levels of goal success and when pursuing important goals. However, the interaction between goal success and importance failed to reach conventional levels of statistical significance, although ruminative self-focus tended to be highest when participants were reporting low levels of success on important goals. Though requiring replication, these results offer partial support for the notion that ruminative self-focus is associated with problematic goal attainment and most intense when these difficulties relate to important goals (Martin & Tesser, 1996).

More specifically, when we decomposed the ruminative self-focus composite, goal importance moderated the relationship between perceived

success and focus on problems, but did not moderate the relationship between perceived success and focus on feelings. Thus, the findings were consistent with Martin and Tesser’s theory of rumination for problem-focused rumination but not for emotion-focused rumination. That is, when important goals go badly, individuals are more likely to ruminate about problems, but the occurrence of emotion-focused rumination is associated with factors above and beyond the interaction of goal success and goal importance. This pattern of findings is consistent with the emphasis of Martin and Tesser’s (1996) theory on the problem-based nature of rumination, with a focus on non-clinical populations. However, it raises questions as to whether the Martin and Tesser (1996) theory can fully account for Nolen-Hoeksema’s (1991) characterisation of rumination as a focus on symptoms and feelings. The failure of the interaction of goal success and goal importance to predict focus on feelings may be consistent with Nolen-Hoeksema’s (1991) conceptualisation in which the development of a response style is more central to explaining why people ruminatively focus on negative moods.

Our finding of a negative relationship between perceived goal success and negative affect supports the self-regulatory principle that negative affect is associated with low perceived rates of goal progress (Carver & Scheier, 1990). This was true across distinct negative affects, although goal importance was more strongly associated with high-arousal affect (anxiety, irritation) than with low-arousal affect (sadness). Results also supported the view that rumination is associated with a range of negative affects (Nolen-Hoeksema, 2000; Rusting & Nolen-Hoeksema, 1998), although sadness had an especially strong relationship with ruminative self-focus.

When predicting negative affect, we found evidence for the hypothesised goal success by goal importance interaction: at low levels of goal success, participants experienced greater levels of negative affect when they were pursuing important goals. A goal’s importance may be increased by various factors (Carver & Scheier, 1998, pp. 90–91), such as if it is: (a) situated at a more

abstract level reflecting fundamental values relative to a more concrete behavioural level in a person's motivational hierarchy; (b) associated with the attainment of multiple other goals; (c) associated ("linked"; McIntosh et al., 1995) with higher-level goals (e.g., "Be happy") that capture broad principles of self-regulation. Because they are more likely to be central to the person's sense of self, discrepancies on such goals may be associated with particularly high levels of negative affect.

Unsurprisingly, negative affect was strongly associated with ruminative self-focus. Associations between the goal variables and ruminative self-focus were reduced when negative affect was included as a covariate, particularly for the focus on feelings component. Although our cross-sectional measurement occasions prevent us from specifying a causal mediational model, these results suggest that goal appraisals may be associated with a feeling-focused component of rumination through their shared relationship with negative affect, but that goal appraisals may be more independently associated with a problem-focused component of rumination. Prospective relationships between goal appraisals, ruminative self-focus and negative affect may be addressed by more sophisticated experience-sampling designs incorporating sequential data points and structural equation modelling.

We found no evidence that the relationship between goal appraisals and either negative affect or ruminative self-focus differed for individuals who reported high versus low levels of either depressive symptomatology or trait rumination. Though this finding may be related to our non-clinical sample, an implication is that ruminative self-focus and negative affect are relatively typical concomitants of difficulties in goal pursuit. In this regard, it is important to point out that ruminative self-focus as operationalised here is not necessarily maladaptive, but rather reflects Martin and Tesser's (1996) more inclusive conceptualisation of rumination, in which rumination can be adaptive or maladaptive. Our measure of ruminative self-focus did not capture the abstract, evaluative, and repetitive styles of thinking that

characterise more dysfunctional forms of rumination (Watkins, 2008). Future experience-sampling studies using more elaborate measures of ruminative self-focus may be able to assess these adaptive and maladaptive cognitive styles and analyse them as a function of goal appraisals, person-level traits and their interaction.

We acknowledge some limitations. First, our sample consisted mainly of undergraduates, who may have a more homogeneous range of goals than other adults. Second, there may have been an under-representation of certain situations (e.g., driving) in which participants could not complete the measures. Third, although we asked participants to write down the time they completed the form, we could not rule out retrospective completion of the goal ratings. Fourth, we did not ask participants to rate the discrepancy between their perceived and desired rates of goal progress, which corresponds more closely to control theory accounts of affect generation (Carver & Scheier, 1990). Fifth, because participants recorded their goal appraisals shortly after rating their negative affect, concurrent associations between these variables cannot establish that negative affect and ruminative self-focus were *caused* by particular goal appraisals. Negative affect may lead individuals to appraise their goals more negatively (e.g., Cervone, Kopp, Schaumann, & Scott, 1994). Finally, it is unclear to what extent the ESM process exaggerated the relationships between variables, given that heightened self-focus (induced here by self-ratings) is believed to increase the salience of goal discrepancies (Carver & Scheier, 1998).

It is noteworthy that this research focused on negative affect rather than on positive affect. These two constructs are believed to represent orthogonal rather than bipolar affective dimensions (Watson, Clark, & Tellegen, 1988). It remains for future investigations to determine whether positive and negative affect exhibit an asymmetrical relationship with motivational appraisals, given that negative affect is hypothesised to interrupt behaviour and initiate goal reprioritisation to a greater extent than positive affect (Simon, 1967). Future experience-sampling

research could also test Carver and Scheier's (1998) proposal that the *quality* of positive and negative affect (e.g., excitement vs. relief, dejection vs. anxiety) depends on whether the person is self-regulating with respect to an approach or an avoidance goal.

By asking participants to make goal appraisals as they went about their everyday lives, we were able to show that ruminative self-focus and negative affect are elevated when people experience difficulties in goal attainment, consistent with one prediction from Martin and Tesser's (1996) theory of rumination. Importantly, the support that we provide for motivational models of negative affect and ruminative thought derives from momentary experience-sampling measures with high ecological validity. Further research could investigate under what circumstances these affective and cognitive sequelae are associated with increased effort mobilisation and goal disengagement, and under what circumstances they are associated with more maladaptive responses that maintain goal discrepancies and prolong distress.

Manuscript received 23 April 2008

Revised manuscript received 4 December 2008

Manuscript accepted 16 December 2008

First published online 26 January 2009

REFERENCES

- Affleck, G., Tennen, H., Urrows, S., Higgins, P., Abeles, M., Hall, C., et al. (1998). Fibromyalgia and women's pursuit of personal goals: A daily process analysis. *Health Psychology, 17*, 40–47.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for Beck Depression Inventory – II*. San Antonio, TX: Psychological Corporation.
- Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology, 65*, 1061–1070.
- Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97*, 19–35.
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. Cambridge, UK: Cambridge University Press.
- Cervone, D., Kopp, D. A., Schaumann, L., & Scott, W. D. (1994). Mood, self-efficacy, and performance standards: Lower moods induce higher standards for performance. *Journal of Personality and Social Psychology, 67*, 499–512.
- Csikszentmihalyi, M., & Larson, R. W. (1987). Validity and reliability of the experience sampling method. *Journal of Nervous and Mental Disease, 175*, 526–536.
- Delespaul, P. A. E. G. (1995). *Assessing schizophrenia in daily life: The experience sampling method*. Maastricht, Netherlands: Maastricht University Press.
- Harris, C., Daniels, K., & Briner, R. B. (2003). A daily diary study of goals and affective well-being at work. *Journal of Occupational and Organizational Psychology, 76*, 401–410.
- Lavallee, L. E., & Campbell, J. D. (1995). Impact of personal goals on self-regulation processes elicited by daily negative events. *Journal of Personality and Social Psychology, 69*, 341–352.
- Lyubomirsky, S., & Tkach, C. (2004). The consequences of dysphoric rumination. In C. Papageorgiou & A. Wells (Eds.), *Depressive rumination: Nature, theory and treatment* (pp. 21–41). Chichester, UK: Wiley.
- Lyubomirsky, S., Tucker, K. L., Caldwell, N. D., & Berg, K. (1999). Why ruminators are poor problem solvers: Clues from the phenomenology of depressive rumination. *Journal of Personality and Social Psychology, 77*, 1041–1060.
- Martin, L. L. & Tesser, A. (1996). Some ruminative thoughts. In R. S. Wyer (Ed.), *Advances in social cognition* (Vol. 9, pp. 1–47). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- McIntosh, W. D., Harlow, T. F., & Martin, L. L. (1995). Linkers and nonlinkers: Goal beliefs as a moderator of the effects of everyday hassles on rumination, depression, and physical complaints. *Journal of Applied Social Psychology, 25*, 1231–1244.
- Millar, K. U., Tesser, A., & Millar, M. G. (1988). The effects of a threatening life event on behavior sequences and intrusive thought: A self-disruption explanation. *Cognitive Therapy and Research, 12*, 441–457.
- Moberly, N. J., & Watkins, E. R. (2008). Ruminative self-focus and negative affect: An experience sampling study. *Journal of Abnormal Psychology, 117*, 314–323.

- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569–582.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*, 504–511.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and distress following a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology, 61*, 105–121.
- Rusting, C. L., & Nolen-Hoeksema, S. (1999). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology, 74*, 790–803.
- Simon, H. A. (1967). Motivational and emotional controls of cognition. *Psychological Review, 74*, 29–39.
- Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modelling*. London: Sage.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). Washington, DC: American Sociological Association.
- Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin, 134*, 163–206.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.