



Shorter communication

Valence of autobiographical memories: The role of mood, cognitive reappraisal, and suppression

Blair E. Wisco^{*,1}, Susan Nolen-Hoeksema¹

Yale University, Department of Psychology, Box 208205, New Haven, CT 06520-8205, USA

ARTICLE INFO

Article history:

Received 19 June 2009

Received in revised form

4 September 2009

Accepted 13 November 2009

Keywords:

Emotion regulation

Reappraisal

Suppression

Dysphoria

Depression

Memory

ABSTRACT

The selective recall of positive memories is thought to be an effective mood repair technique, but little research has examined individual differences in the motivation or ability to implement this strategy. This study examined factors considered likely to impact valenced memory recall: dysphoria and emotion regulation strategies (i.e., cognitive reappraisal and suppression). Dysphoria was related to memory negativity but not positivity, whereas cognitive reappraisal was associated with positivity but not negativity. Suppression was not reliably related to the valence of self-reported memories, but was associated with increased accessibility of negative memories, as indicated by a response time measure. Our results indicate a relationship between cognitive reappraisal and more positive memory and suggest that the experience of dysphoria is more strongly related to negativity than positivity of memory. Our findings highlight the utility of examining emotion regulatory variables, in addition to mood, in the study of valenced memory recall, and underscore the importance of including both behavioral and self-report memory measures.

© 2009 Elsevier Ltd. All rights reserved.

The relationship between mood and memory has been a topic of great interest for many years. Much of this literature has focused on mood-congruency effects, generally finding that the valence of recalled memories tends to be congruent with current mood state, whether the focus is on state-like mood (e.g., a negative mood induction immediately prior to a memory task) or trait-like mood effects (e.g., comparisons of participants with low or high scores on a self-report measure of depressive symptoms; Blaney, 1986; Matt, Vasquez, & Campbell, 1992). However, there have been some notable exceptions to the mood-congruency findings. Some studies have found the opposite effect: negative mood states facilitate the recall of positive memories (Parrott & Sabini, 1990; Rusting, 1998).

To reconcile these findings, theorists have argued that motivational factors can override mood-congruency effects under some circumstances (Rusting, 1998). For example, individuals may selectively recall positive memories if they are motivated to repair negative moods. Although positive memory recall is thought to be an effective mood repair strategy, surprisingly few studies have examined individual differences in the strategic recall of positive memories. Individuals may vary in their ability or motivation to recall positive memories, thus impacting the effectiveness of this

mood repair strategy. In the current study, we examine two factors thought to influence participants' likelihood to engage in positive memory recall: dysphoria and emotion regulation style. Dysphoria, or the prolonged experience of negative mood, may impair individuals' ability to recall positive events. Studies that compare recall of positive and negative words typically find that dysphoric or depressed individuals recall fewer positive words and more negative words than nondepressed controls, suggesting a possible impairment in recall of positive material (Blaney, 1986; Matt et al., 1992). When explicitly instructed to recall positive memories, depressed participants recall memories that are just as positive as memories recalled by control participants, according to both self-ratings and ratings by independent coders (Joormann & Siemer, 2004; Joormann, Siemer, & Gotlib, 2007). Interestingly, these positive memories are less effective than distraction at repairing negative mood for the depressed participants, even though positive memories and distraction are both effective for control participants. Therefore, dysphoric participants might also be less motivated to recall positive memories, if such memories will have little effect on their mood.

Individuals' emotion regulation styles may also affect the valence of their memories. In the current study, we focus on an emotion regulation style we consider particularly relevant to valenced memory: cognitive reappraisal. Cognitive reappraisal is defined as trying to view situations in more positive or benign terms in order to regulate one's mood (Gross & John, 2003). If one

* Corresponding author. Tel.: +1 203 432 4522; fax: +1 203 432 7172.

E-mail address: Blair.wisco@yale.edu (B.E. Wisco).

¹ The authors thank Jessica Thomas and Minh Tran for their work as coders on this study.

tends to positively reappraise past experiences, one would be expected to selectively recall the positive, and ignore the negative, aspects of past experiences. Cognitive reappraisal is typically contrasted with the less adaptive emotion regulation strategy of emotion suppression, or not expressing one's emotions to others. Because suppression involves masking one's emotional expression, rather than changing one's thinking about experiences, suppression would not be expected to facilitate positive memory recall. Most of the research on the effects of cognitive reappraisal and suppression on memory has focused on the ability to retain information while engaging in these strategies, rather than the valence of the memories recalled (Rice, Levine, & Pizarro, 2007; Richards & Gross, 1999, 2000; Scheibe & Blanchard-Fields, 2009). However, some evidence has emerged that inducing cognitive reappraisal can increase the positivity of memory recall. Rusting and DeHart (2000) manipulated mood regulation strategies following a negative mood induction which involved imagining or recalling a negative event. When participants were asked to reappraise this negative event by reinterpreting it in a positive light, they later retrieved more positive memories than participants who were instructed to continue to focus on their negative mood or participants who were given no instructions. Thus, inducing cognitive reappraisal appears to have the beneficial effect of encouraging more positive memory recall, at least in the context of negative mood. However, we are unaware of any studies that have examined the relationship between trait cognitive reappraisal, or the habitual use of this emotion regulation strategy, and memory valence. Trait cognitive reappraisal might be expected to be associated with a more general tendency to engage in positive memory recall, in order both to repair existing negative moods (if present) and to avoid creating a negative mood.

In the current study, we examine the relationships between dysphoria, two emotion regulation tendencies (cognitive reappraisal and suppression) and the valence of autobiographical memory. We chose an autobiographical memory task in order to assess the type of memory that most closely resembles the positive memories recalled when engaging in mood repair. Autobiographical memory is typically assessed by asking participants to recall memories from a certain time of life (e.g., high school) or in response to single-word cues, and then to report the memories they recall. Such self-report measures of cognitive processes have been criticized because they are subject to response biases (Nisbett & Wilson, 1977). For example, self-presentation concerns could influence which memories participants choose to report or the way they describe their memories. To avoid such effects, we examine the accessibility of positive, neutral, and negative memories using a response time measure in addition to the valence of the memories recalled. This study extends previous research by examining the relationship between emotion regulation styles and memory valence and by including both self-report and behavioral measures of memory.

Method

Participants

These data were collected as part of a larger study examining cognitive and mood processes in depression (Wisco & Nolen-Hoeksema, 2009). Eighty-three individuals participated in this experiment and were compensated with either course credit or a payment of twenty US dollars. Participants were recruited through the Introductory Psychology pool and by advertisements posted on the university campus and in the community. Individuals who expressed interest in participating in this study were asked to complete a prescreening measure, a modified version of the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) excluding

one BDI-II item assessing suicidal ideation. Adopting commonly used cut-offs, individuals scoring below a 9 or above a 16 on the prescreener were invited to participate in this study (e.g., Grant & Beck, 2006; Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998). At the time of the experiment, all participants completed the full BDI-II. Only individuals who met the minimum or maximum BDI-II cut-off score at both prescreen and the time of participation were included in the final sample, ensuring that participants had relatively stable high or low levels of depressive symptoms. Two participants were not able to complete one of the study measures, the Emotion Regulation Questionnaire, due to time constraints, and thus were dropped from analyses including this measure.

The final sample consisted of 43 nondysphoric and 40 dysphoric participants. Thirty-one men (37.3%) and 52 women (62.7%) participated in this study. The age of participants ranged from 18 to 57, with a mean age of 23.3 ($SD = 7.1$). In terms of ethnicity and race, 48 participants identified as White, nonhispanic (57.8%), 16 as Asian (19.3%), nine as Multiracial (10.8%), six as Black, nonhispanic (7.2%), and three as Hispanic or Latino (3.6%). One participant declined to provide racial or ethnic information. Dysphoric and nondysphoric participants did not significantly differ in terms of age, sex, or ethnic/racial group.

Materials

Emotion Regulation Questionnaire

The Emotion Regulation Questionnaire (Gross & John, 2003) is a ten item self-report questionnaire that assesses the tendency to engage in two forms of emotion regulation techniques: cognitive reappraisal and suppression. In the current study, the six-item reappraisal and four-item suppression scales of the measure had adequate internal consistency, $\alpha_s = 0.78$ and 0.81 respectively.

Mood measure

We measured state-like mood at multiple times throughout the experiment. Participants were asked to describe themselves "right now" by completing a series of ratings of different adjectives on a Likert-type scale from 1 to 9. Embedded within several distracter ratings (e.g. not creative-very creative, tame-wild) were the three mood ratings of interest (not happy-happy, not sad-sad, and not depressed-depressed). The happiness rating was reverse-scored and the three items were summed to form a single mood rating. This particular questionnaire was chosen because the distracter items reduce demand characteristics of the repeated measure by hiding its purpose as a mood assessment. These Likert-type scales have been used extensively in previous research as measures of state-like mood (e.g., Lyubomirsky et al., 1998; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Rusting & Nolen-Hoeksema, 1998).

Cued autobiographical memories

The participants' autobiographical memories were prompted by single words which had been judged to be negative, neutral, and positive in valence in previous research (e.g., "hopeless," "bread," and "happy;" Jones et al., 1999). Six prompts of each type were given in a standardized order, with neutral, positive, and negative prompts alternating, giving a total of 18 memories. The experimenter asked participants to recall a specific memory from their past in response to each word and instructed them to report the first memory that came to mind. The participants' responses were recorded on a digital audio recorder.

The valence of the memories was coded by two independent coders blind to the study hypotheses and the dysphoria status of the participants. The coders rated how positive and how negative the memories were on two Likert-type scales from 1 to 7, ranging from not at all to extremely. The coders demonstrated adequate

inter-rater reliability for both positivity ($r = 0.79, p < .001$) and negativity ratings ($r = 0.84, p < .001$). All coder differences of more than one point for either positivity or negativity were resolved by consensus, and differences of one point were simply averaged together to give the consensus positivity and negativity ratings.

Memory latency measure

An independent coder examined the digital recordings of participants' memories and computed the response time index. Response time was calculated as the difference in seconds between the first onset of the participant's voice describing the memory minus the offset of the experimenter's voice providing the cue. The onset of the participant's response was operationalized as the beginning of the first full word of their response, excluding verbal tics (e.g., "umm," "hmm," etc.).

Procedure

Participants completed a packet of study questionnaires including the BDI-II and ERQ prior to completing the autobiographical memory task. Mood was assessed immediately prior to and immediately following the autobiographical memory task. Participants were told that the purpose of the study was to investigate the relationship between imagination and memory.²

Results

We first examined the interrelationships between our predictor variables. Consistent with previous research, we found that BDI-II scores and cognitive reappraisal scores were negatively correlated, $r = -0.45, p < .05$. Suppression was not significantly correlated with either BDI-II score or reappraisal, $r_s < 0.2, ns$. For all analyses reported below, reappraisal and suppression are entered as continuous variables, centered around their means, while BDI-II score is split into a dichotomous variable (Dysphoric, BDI-II ≥ 16 , and Control, BDI-II ≤ 9).

Mood results

To examine the possible impact of the memory task on participants' moods, we conducted a repeated measures ANOVA, with mood at two time points (pre and post the memory task) entered as a within subjects variable and dysphoria status, reappraisal, and suppression entered as between subjects variables. Participants' moods did not change significantly during the autobiographical memory task, $F(1, 77) = 0.02, ns, \eta_p^2 < 0.001$. A main effect of dysphoria status on mood emerged, $F(1, 77) = 65.9, p < .05, \eta_p^2 = 0.46$, with dysphoric participants reporting more negative mood during the experiment than control participants. No main effects of reappraisal or suppression on mood emerged, $F_s < 1, ns, \eta_p^2 < 0.01$. No significant interactions emerged between change in

emotion (from pre to post memory task) and dysphoria status, reappraisal, or suppression, $F_s < 2.6, ns, \eta_p^2 < 0.04$.

Memory valence results

We first examined whether the prompts (positive, neutral, or negative cue words) were effective in eliciting the desired memory type. Positivity scores were significantly higher for positive prompts than for neutral prompts, $t(82) = 27.3, p < .05, d = 3.7$, and significantly higher for neutral than for negative prompts, $t(82) = 7.9, p < .05, d = 1.1$. Similarly, negativity scores were significantly lower for positive prompts than for neutral prompts, $t(82) = 10.0, p < .05, d = 1.3$, and significantly lower for neutral than for negative prompts, $t(82) = 24.0, p < .05, d = 3.4$, indicating that our prompts were successful. Because there were no significant interactions between prompt type and dysphoria status, reappraisal, or suppression on memory positivity or negativity, $F_s < 2.5, ns, \eta_p^2 < 0.03$, we collapsed across prompt type for the following analyses.

We conducted two linear regressions with dysphoria status, reappraisal, suppression and all 2- and 3-way interactions entered as predictor variables, and memory negativity and positivity entered as outcome variables. Dysphoria status predicted the negativity of memory recall, with dysphoric participants recalling significantly more negative memories than nondysphoric participants, $\beta = 0.43, t(73) = 3.7, p < .05$ (Fig. 1). There was a statistical trend for suppression to predict memory negativity, $\beta = -0.20, t(73) = -1.71, p = .09$, with higher levels of suppression related to less negative memories. Cognitive reappraisal was not significantly related to memory negativity and none of the 2- or 3-way interactions were statistically significant, $\beta_s < 0.15, t_s < 1.3, ns$.

In terms of memory positivity, neither dysphoria nor suppression were significant predictors, $\beta_s < 0.16, t_s < 1.3, ns$. Cognitive reappraisal, however, was a significant predictor, with higher levels of reappraisal predicting more positive memories, $\beta = 0.36, t(73) = 2.7, p < .05$. The main effect of reappraisal on memory positivity was qualified by an interaction between reappraisal and suppression, $\beta = -0.28, t(73) = -2.0, p = .05$. This interaction revealed that the relationship between reappraisal and positivity got weaker as suppression increased (see Fig. 2). Simple slopes analyses, using the procedures described by Aiken and West (1994), confirmed a relationship between reappraisal and positivity that differed significantly from zero for low (-1 SD) values of suppression, $\beta = 0.61, t(73) = 3.07, p < .05$. The relationship between reappraisal and positivity for high suppressors ($+1$ SD) did not differ significantly from zero, $\beta = 0.11, t(73) = 0.66, ns$. No other two-way or three-way interactions in the model were statistically significant, $\beta_s < 0.10, t_s < 0.7, ns$.

Memory latency results

We conducted a series of regressions with dysphoria status, reappraisal, suppression, and all 2- and 3-way interactions entered as predictor variables. We examined the relationship between these variables and response time for each prompt type (positive, neutral, or negative). There were no significant main effects or 2- or 3-way interactions of any variables for the response time to positive or neutral prompts, $\beta_s < 0.25, t_s < 2.0, ns$. In terms of the speed to recall memories to negative prompts, a main effect of suppression emerged, such that greater levels of suppression were associated with faster response times, $\beta = -0.33, t(73) = -2.7, p < .05$. There were no significant main effects of either reappraisal or dysphoria status on the speed to recall memories to negative prompts, $\beta_s < 0.10, t_s < 0.8, ns$.

The main effect of suppression on speed to recall negative memories was qualified by a significant interaction between

² As part of the larger experiment (Wisco & Nolen-Hoeksema, 2009), participants also watched a short video that induced either a positive or negative mood earlier in the experiment. We assessed whether it was appropriate to include the type of mood induction received by participants as another predictive factor in these analyses. Although participants experienced a brief mood induction immediately following the videos, all participants had returned to their baseline mood levels by the time the autobiographical memory task was administered (Wisco & Nolen-Hoeksema, 2009). There was no significant difference between participants' baseline mood and their mood at time of the memory task, $F(1, 82) = 0.17, ns, \eta_p^2 = 0.002$. Additionally, there was no effect of mood induction on mood at the time of the memory task, $F(1, 81) = 0.04, ns, \eta_p^2 < 0.001$. Mood induction did not predict either positivity, $F(1, 81) = 0.03, ns, \eta_p^2 < 0.001$, or negativity, $F(1, 81) = 0.21, ns, \eta_p^2 = 0.003$, of the memories recalled. Therefore, data are collapsed across mood induction condition for all of the analyses reported above.

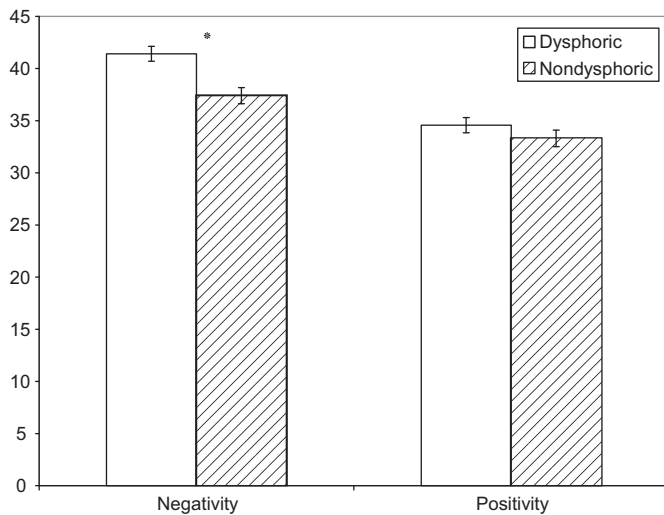


Fig. 1. Relationship between depressive symptoms and memory valence. Note. The values for negativity and positivity are the summed scores for all 18 prompted memories. Higher values correspond to higher negativity or higher positivity respectively.

suppression and dysphoria status, $\beta = 0.31$, $t(73) = 2.6$, $p < .05$. Simple slopes analyses indicated that the relationship between suppression and speed to recall negatively prompted memories was significantly different from zero for control, $\beta = -0.48$, $t(37) = 2.8$, $p < .05$, but not for dysphoric participants, $\beta = -0.03$, $t(36) = -0.20$, *ns* (see Fig. 3). A significant interaction also emerged between dysphoria status and reappraisal, $\beta = 0.26$, $t(73) = 2.2$, $p < .05$. Examination of the parameter estimates reveals that the direction of the relationship between reappraisal and response time differed between controls and dysphorics. However, interpretation of this finding is complicated by the fact that the relationship between reappraisal and response time was not significantly different from zero for either control, $\beta = -0.23$, $t(37) = -1.5$, *ns*, or dysphoric participants, $\beta = 0.26$, $t(36) = 1.6$, *ns*. No other 2- or 3-way interactions in the model were statistically significant, $\beta_s < 0.23$, $t_s < 1.7$, *ns*.

Discussion

The results of this study indicate that both mood and emotion regulation strategies are related to the valence of autobiographical

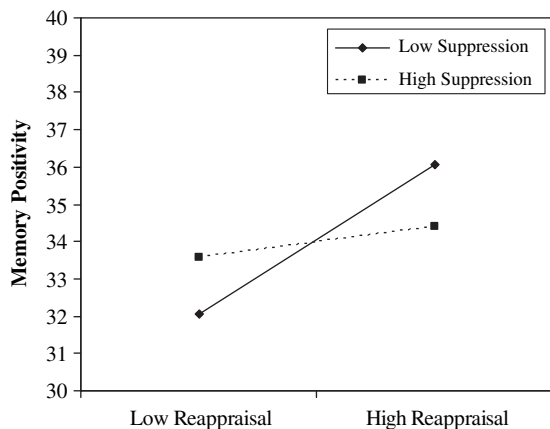


Fig. 2. Interaction of reappraisal and suppression on memory positivity. Note. Low values are defined as one standard deviation below the mean, and high values are defined as one standard deviation above the mean for each measure. Memory positivity refers to the summed score for all 18 prompted memories.

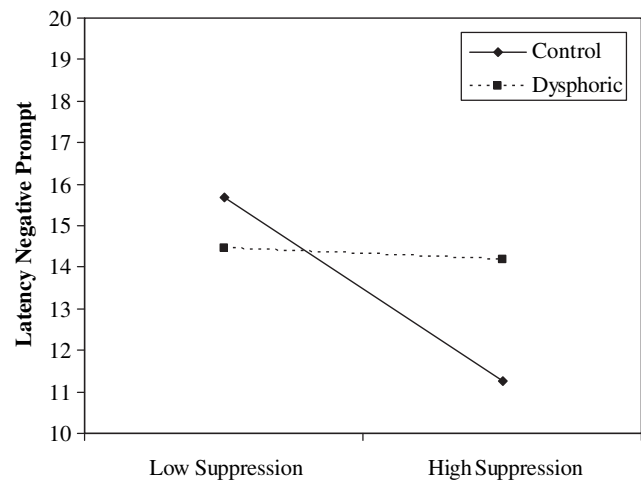


Fig. 3. Interaction of dysphoria and suppression on speed to recall negatively prompted memories. Note. Low suppression is defined as one standard deviation below the mean, and high suppression as one standard deviation above the mean. Latency is the response time in seconds for negatively prompted memories.

memory. Dysphoria and cognitive reappraisal had differential relationships to the valence of memory recall. Dysphoria predicted increased memory negativity but was not related to memory positivity. Cognitive reappraisal was not related to memory negativity, but did predict increased memory positivity. The effects of dysphoria on memory valence have interesting implications for strategic recall of positive memories as a form of mood repair in dysphoric individuals. Our results suggest that dysphorics are not impaired in their ability to recall the positive aspects of memories, but that these positive aspects are accompanied by increased negative thinking, perhaps canceling out the beneficial mood effects of positive memory recall. This explanation is consistent with previous findings by Joormann and Siemer (2004), Joormann et al. (2007) that depressed participants are able to recall positive memories, but that these memories are not an effective means of mood repair for this group. One possible explanation for these findings is that recall of positive memories invites comparison between dysphoric participants' current circumstances and a more positive past. Such unappealing comparisons could encourage dysphoric participants to recall the negative aspects of positive memories and interfere with any mood repair functions of positive memory recall (e.g., Conway & Ross, 1984, as cited in Joormann & Siemer, 2004).

The intriguing finding that cognitive reappraisal was associated with increased memory positivity could be explained in a number of ways. Reappraising a current situation could be easier if one is able to recall many examples of past experiences that turned out well. Alternatively, continually reappraising situations to view them in a positive light might increase the likelihood that such events will be encoded into memory as positive experiences, and thus recalled that way. This explanation is consistent with previous experimental research by Rusting and DeHart (2000) which found that inducing cognitive reappraisal encouraged more positive memory. We also found that the effect of reappraisal on memory positivity was moderated by level of suppression. The relationship between reappraisal and memory positivity was only present for participants who were low on suppression. Perhaps engaging in suppression reduces the beneficial effects of reappraisal on memory, or reduces the degree to which positive memories facilitate reappraisal.

Suppression was not reliably associated with the negativity of memories recalled but was associated with faster responses to negative prompts, suggesting that accessibility of negative

memories increases with higher levels of suppression. Interestingly, there was a statistical trend for suppression to be associated with *decreased* negativity of memories. This pattern of results suggests that suppressors might be likely to think of negative memories quickly but then minimize the negative aspects of those memories when reporting them to others. These results are broadly consistent with prior research indicating that suppression is effective for reducing expression of negative emotions to others but not for regulating the experience of negative emotions (Butler et al., 2003; Gross & John, 2003). The inconsistency between the self-report and the performance-based results for suppression effects also highlights the importance of examining both measures of memory valence. Furthermore, the relationship between suppression and speed to recall negatively prompted memories emerged only for controls, not for dysphoric participants. Perhaps because dysphoric individuals are already focusing on negative memories much of the time, suppression does not further increase the accessibility of negative memories for this group.

Finally, we assessed change in mood during the autobiographical memory task. Interpretation of this mood change is complicated by the fact that participants were asked to recall memories in response to an equal number of positive, neutral, and negative prompts. This design feature allowed us to assess speed of recall for each of these memory types, but also allowed for any potential benefits of positive memories to be negated by the effects of negative memories. Indeed, we found that participants' moods did not change significantly during the autobiographical memory task. Moreover, we found no interactions between change in mood and either dysphoria status or cognitive reappraisal. This effect was surprising because both dysphoria status and cognitive reappraisal were reliably associated with the valence of memories recalled overall, regardless of prompt type. However, given the heterogeneous nature of the memories participants were asked to recall, it seems likely that participants' moods changed multiple times throughout the autobiographical memory task. Our simple pre-post assessment could not detect any mood changes during the task, and thus may have been insufficient to test the relationship between memory valence and change in mood. Use of a block design which groups together memory prompts of the same valence and assessment of mood before and after each block would address this limitation and offer a better test of the relationship between memory valence and change in mood.

Limitations of this study include the small sample size and the cross-sectional nature of the data, which precludes us from drawing conclusions about causality. Another limitation of this study is our use of independent coder ratings of memory valence, rather than participants' own ratings. Coder ratings have the advantage of being standardized across participants, thus eliminating any possible influence of systematic biases in rating (e.g., the same memory might be rated as more negative by dysphoric than control participants). However, independent coders may not be sensitive to the personal relevance of such memories, which may influence their valence for the individual. Future research which includes both coder and participant ratings of memory valence would address this concern. Another limitation is the use of a dysphoric sample which did not meet full criteria for Major Depressive Disorder. Our intention was to examine trait-like mood, not clinical depression, but the use of a dysphoric sample limits the clinical implications of our results. Such clinical implications might include suggestions for implementation of cognitive therapy for depression, which encourages reappraisal of negative thoughts and memories. Our results suggest that suppression may hinder the effectiveness of reappraisal, implying that assessment of emotion suppression and encouragement of open emotional expression in session could increase the efficacy of reappraisal techniques.

A strength of this study is the examination of emotion regulatory variables, which have been relatively neglected within the literature on valenced memory. Other strengths include the examination of interactions between emotion regulatory strategies and dysphoric mood and the use of a response time measure of memory accessibility in addition to a measure of memory valence.

Conclusions and future directions

Our study offers preliminary evidence for the role of cognitive reappraisal and suppression in the recall of valenced memories. While dysphoria was associated with increased negativity of memory, cognitive reappraisal was associated with increased positivity of memory. The effect of reappraisal on memory positivity was moderated by suppression, such that the relationship between reappraisal and positivity was eliminated at high levels of suppression. Moreover, suppression was associated with increased accessibility of negative memories according to a response time measure, but was not associated with increased negativity of self-reported memories. In fact, there was a trend for suppression to be associated with *decreased* negativity of the memories reported. This research is consistent with and extends prior findings that cognitive reappraisal is generally more adaptive than suppression in terms of emotional well-being and cognitive functioning (Gross & John, 2003; Richards & Gross, 1999, 2000). Further research experimentally manipulating reappraisal and suppression could shed further light on the direction of causality between these strategies and memory, to determine whether emotion regulation style changes memory valence, memory valence affects tendency to engage in certain emotion regulation strategies, or both.

References

- Aiken, L. S., & West, D. G. (1994). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage Publications.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the beck depression inventory-II*. San Antonio, TX: Psychological Corporation.
- Blaney, P. H. (1986). Affect and memory: a review. *Psychological Bulletin*, 99, 229–246.
- Butler, E. A., Egloff, B., Wilhelm, F. H., Smith, N. C., Erickson, E. A., & Gross, J. J. (2003). The social consequences of expressive suppression. *Emotion*, 3, 48–67.
- Conway, M., & Ross, M. (1984). Getting what you want by revising what you had. *Journal of Personality & Social Psychology*, 47, 738–748.
- Grant, D. M., & Beck, J. G. (2006). Attentional biases in social anxiety and dysphoria: does comorbidity make a difference? *Journal of Anxiety Disorders*, 20, 520–529.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348–362.
- Jones, B., Heard, H., Startup, M., Swales, M., Williams, J. M. G., & Jones, R. S. P. (1999). Autobiographical memory and dissociation in borderline personality disorder. *Psychological Medicine*, 29, 1397–1404.
- Joormann, J., & Siemer, M. (2004). Memory accessibility, mood regulation, and dysphoria: difficulties in repairing sad mood with happy memories? *Journal of Abnormal Psychology*, 113, 179–188.
- Joormann, J., Siemer, M., & Gotlib, I. H. (2007). Mood regulation in depression: differential effects of distraction and recall of happy memories on sad mood. *Journal of Abnormal Psychology*, 116, 484–490.
- Lyubomirsky, S., Caldwell, N. D., & Nolen-Hoeksema, S. (1998). Effects of ruminative and distracting responses to depressed mood on retrieval of autobiographical memories. *Journal of Personality and Social Psychology*, 75, 166–177.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1993). Self-perpetuating properties of dysphoric rumination. *Journal of Personality and Social Psychology*, 65, 339–349.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69, 176–190.
- Matt, G. E., Vasquez, C., & Campbell, W. K. (1992). Mood-congruent recall of affectively toned stimuli: a meta-analytic review. *Clinical Psychology Review*, 12, 227–255.
- Nisbett, R., & Wilson, T. (1977). Telling more than we can know: verbal reports on mental processes. *Psychological Review*, 84, 231–259.
- Parrott, W. G., & Sabini, J. (1990). Mood and memory under natural conditions: evidence for mood incongruent recall. *Journal of Personality and Social Psychology*, 59, 321–336.

- Rice, J. A., Levine, L. J., & Pizarro, D. A. (2007). "Just stop thinking about it": effects of emotional disengagement on children's memory for educational material. *Emotion*, 7, 812–823.
- Richards, J. M., & Gross, J. J. (1999). Composure at any cost? The cognitive consequences of emotion suppression. *Personality and Social Psychology Bulletin*, 25, 1033–1044.
- Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: the cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology*, 79, 410–424.
- Rusting, C. L. (1998). Personality, mood, and cognitive processing of emotional information: three conceptual frameworks. *Psychological Bulletin*, 124, 165–196.
- Rusting, C. L., & DeHart, T. (2000). Retrieving positive memories to regulate negative mood: consequences for mood-congruent memory. *Journal of Personality and Social Psychology*, 78, 737–752.
- Rusting, C. L., & Nolen-Hoeksema, S. (1998). Regulating responses to anger: effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology*, 74, 790–803.
- Scheibe, S., & Blanchard-Fields, F. (2009). Effects of regulation emotions on cognitive performance: what is costly for young adults is not so costly for older adults. *Psychology and Aging*, 24, 217–223.
- Wisco, B. E., & Nolen-Hoeksema, S. (2009). The interaction of mood and rumination in depression: effects on mood maintenance and mood-congruent autobiographical memory. *Journal of Rational-Emotive and Cognitive Behavior Therapy*, 27, 144–159.