

This article was downloaded by: [Amy H. Mezulis]

On: 24 February 2014, At: 07:35

Publisher: Routledge

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.tandfonline.com/loi/pcem20>

### Cognitive mechanisms linking low trait positive affect to depressive symptoms: A prospective diary study

Kaitlin A. Harding<sup>a</sup>, Melissa R. Hudson<sup>a</sup> & Amy Mezulis<sup>a</sup>

<sup>a</sup> Department of Clinical Psychology, Seattle Pacific University, Seattle, WA, USA

Published online: 20 Feb 2014.

To cite this article: Kaitlin A. Harding, Melissa R. Hudson & Amy Mezulis, Cognition & Emotion (2014): Cognitive mechanisms linking low trait positive affect to depressive symptoms: A prospective diary study, Cognition & Emotion, DOI: [10.1080/02699931.2014.889661](https://doi.org/10.1080/02699931.2014.889661)

To link to this article: <http://dx.doi.org/10.1080/02699931.2014.889661>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

## BRIEF REPORT

# Cognitive mechanisms linking low trait positive affect to depressive symptoms: A prospective diary study

Kaitlin A. Harding, Melissa R. Hudson, and Amy Mezulis

Department of Clinical Psychology, Seattle Pacific University, Seattle, WA, USA

Low trait positive affect represents an affective vulnerability to depression, but little research has examined mechanisms linking low trait positive affect to depressive symptoms. The current study investigated whether the cognitive strategies of dampening and positive rumination mediated the prospective association between low trait positive affect and depressive symptoms. Participants were 209 undergraduate students who participated in an eight-week online study. Depressive symptoms and trait temperament were assessed at baseline, followed by seven weekly questionnaires which assessed cognitive strategies in response to weekly events and weekly depressive symptoms. Data were analysed using multilevel modelling following the mediation approach proposed by Nezlek. Results indicated that low trait positive affect significantly predicted less positive rumination but not greater dampening in response to weekly positive events. Less positive rumination in response to weekly positive events partially mediated the association between low trait positive affect and greater depressive symptoms across the study.

**Keywords:** Depression; Positive affect; Dampening; Positive rumination; Temperament; Cognitive mediation.

Depressive symptoms are a significant mental health concern in adolescence and early adulthood. Depression markedly increases in adolescence and early adulthood with 15.7% of Americans reporting at least one major depressive episode by age 24 (Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993). Affective models of depression suggest that individual differences in trait emotionality, a key

component of temperament, may predispose individuals to develop depression (Hyde, Mezulis, & Abramson, 2008). One such affective vulnerability is low trait positive affect. Trait positive affect is a temperamental feature associated with the ability to experience pleasurable emotions and engage in approach behaviours; individual differences in trait positive affect are observable early in life and are

---

Correspondence should be addressed to: Kaitlin A. Harding, Clinical Psychology, Seattle Pacific University, Marston 107, 3307 3rd Avenue West, Seattle, WA 98119-1922, USA. Email: [hardingk@spu.edu](mailto:hardingk@spu.edu)

---

relatively stable from early childhood into adulthood (Rothbart & Bates, 2006). As a vulnerability factor to depression, low trait positive affect predicts greater depressive symptoms in adolescence and adulthood (Clark & Watson, 1991; Verstraeten, Vasey, Raes, & Bijttebier, 2009). However, the mechanisms linking low trait positive affect to depressive symptoms are largely unknown.

Integrated cognitive-affective models of depression hypothesise that maladaptive cognitive strategies in response to affect-eliciting life events may mediate the relationship between trait affect and subsequent depressive outcomes. Two such maladaptive cognitive strategies may be high *dampening*, thoughts that decrease positive affect, and low *positive rumination*, thoughts that increase positive affect. Individuals with low trait positive affect may be at an elevated risk for depression because, when faced with positive life events, they tend to employ maladaptive cognitive strategies that reduce their event-specific, or state, positive affect (e.g., dampening) and fail to employ adaptive cognitive strategies that may enhance their state positive affect (e.g., positive rumination). Thus, the purpose of our study is to examine whether the cognitive strategies of dampening and positive rumination mediate the relationship between trait positive affect and depressive symptoms among young adults.

### Low trait positive affect predicts depression

Depression is an affective disorder characterised by an excess of negative affect (e.g., sadness) and a lack of positive affect (e.g., anhedonia; Clark & Watson, 1991). Both the temperamental traits of high negative affect and low positive affect have been implicated in the onset and maintenance of depression (Brown, Chorpita, & Barlow, 1998), which explains why many theoretical models of depression include trait affective vulnerability factors. Trait negative affect is a temperamental feature described by high levels of frustration, fear, discomfort, sadness and low soothability. In contrast, trait positive affect is described by high activity, pleasure and positive anticipation of the

future (Rothbart, 2007). Trait positive affect and trait negative affect are enduring temperamental dimensions throughout an individual's lifespan (Rothbart & Bates, 2006).

As early as age 9, low trait positive affect is indicated as a vulnerability factor for depression (Olinio et al., 2011); yet, research on affective vulnerabilities to depression typically focuses on negative affect and neglects positive affect. As a result, little is known regarding the mechanisms by which low trait positive affect exerts its effect on depressive symptoms. To understand the development and course of depression, however, it is imperative that researchers examine potential mechanisms in the relationship between low trait positive affect and depressive symptoms. Based on cognitive theory and recent depression research, cognitive mediators of positive affect appear to be a likely pathway linking trait positive affect to depressive symptoms.

### Cognitive-affective theories on positive affect and depression

Cognitive theories of depression assume that life events naturally elicit positive and negative emotional responses, and individuals' cognitive responses to life events may diminish or enhance their affective responses to those events (Abramson et al., 1999; Nolen-Hoeksema, 1991). Similarly, the broaden-and-build theory of positive emotions addresses the role of cognitive mediators of the effect of low trait positive affect on depression (Fredrickson, 2001). This theory suggests that low positive affect may increase depressive symptoms by narrowing attentional biases and reducing access to alternative cognitions. Over time, these cognitive patterns constitute cognitive strategies which influence the experience of both state positive affect and state negative affect in response to life events. Through cognitive strategies that regulate positive affect, the broaden-and-build theory suggests that the relationship between positive affect and depressive behaviours is influenced by cognition. As an extension of these cognitive-affective theories, our study examines two cognitive strategies that may mediate the

effect of low trait positive affect on depressive symptoms: dampening and positive rumination. In particular, our study rationale was that the affective vulnerability of low trait positive affect prospectively predicts depressive symptoms through event-specific cognitive strategies that exacerbate and maintain state positive affect.

### Cognitive strategies may mediate the effect of low trait positive affect on depression

A growing body of depression literature suggests that certain cognitive strategies in response to positive and negative life events may influence the effects of life events on depressive symptoms (Feldman, Joormann, & Johnson, 2008; Johnson, McKenzie, & McMurrich, 2008). Two common cognitive strategies that influence the experience of positive affect in response to life events are dampening and positive rumination. Dampening describes thoughts that decrease state positive affect such as thinking about potential negative events or distracting attention from events that elicit pleasure (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). Dampening predicts greater depressive symptoms in clinical samples (Werner-Seidler, Banks, Dunn, & Moulds, 2013) and non-clinical samples, even after controlling for baseline depressive symptoms and rumination on negative affect (Raes, Smets, Nelis, & Schoofs, 2012).

In contrast, positive rumination describes thoughts that increase state positive affect such as focusing attention on personal strengths and current experiences of pleasure (Martin & Tesser, 1996). Positive rumination predicts fewer depressive symptoms and is negatively associated with rumination on negative affect (Feldman et al., 2008). Positive rumination in response to positive life events is also shown to increase state positive affect, which suggests that cognitive mediation may operate through influencing event-specific affective responses (Quoidbach et al., 2010). Both dampening and positive rumination are proposed to alter state positive affect in response to positive life events, but the likelihood of an individual engaging in each cognitive strategy may be predicted by trait positive affect.

Trait positive affect is conceptualised as a global, genetically based capacity to experience pleasure, while state positive affect describes an individual's event-specific experience of pleasure that is rooted in their temperamental capacity for positive emotion. Hence, trait positive affect predicts state positive affect, and cognitive strategies in response to state positive affect may mediate the relationship between trait positive affect and depressive symptoms. Despite recent studies examining dampening and positive rumination as cognitive strategies associated with state positive affect and depressive symptoms, no research has examined whether dampening and positive rumination mediate the effect of low trait positive affect on depressive symptoms.

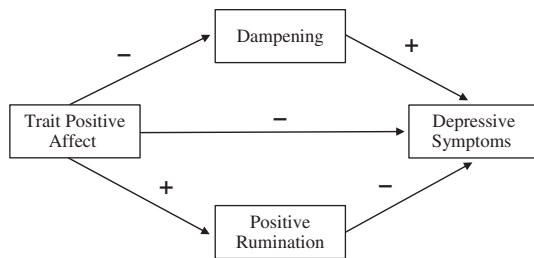
### The current study

The purpose of the current study was to examine cognitive mediators of the relationship between trait positive affect and depressive symptoms. We hypothesised that low trait positive affect would predict greater depressive symptoms across the study period. We further hypothesised that individuals with low trait positive affect would report greater dampening and less positive rumination in response to weekly positive events across the study period. Finally, we hypothesised that the relationship between trait positive affect and depressive symptoms would be mediated by these two cognitive strategies (Figure 1). Study hypotheses were examined in a short-term prospective weekly diary study among young adults.

## METHOD

### Participants

Participants were 211 (71.09% female) undergraduate students recruited from a university in the Pacific Northwest. Two participants were excluded from analyses due to insufficient data (greater than 20% missing data on the baseline assessment) resulting in a final sample size of 209 participants (70.81% female). Of the 209 participants, who were at least 18 years old with a mean



**Figure 1.** *Proposed theoretical model of dampening and positive rumination mediating the relationship between trait positive affect and depressive symptoms.*

age of 18.92 years (standard deviation [SD] = 2.32 years), approximately 71.29% were Caucasian, 2.39% were African-American, 13.88% were Asian, .96% were Native American, 5.26% were Hispanic/Latino and 6.22% identified as another ethnicity.

## Procedure

Participants were recruited in undergraduate psychology courses to complete a baseline questionnaire that included measures of trait affect and depressive symptoms. Students who completed the baseline questionnaire were then invited to participate in the next seven weekly questionnaires of the study, which included measures of weekly depressive symptoms, weekly life events and cognitive strategies in response to a self-selected most positive weekly event. Participants received course credit and completed each diary assessment during a 48-hour window to maintain an interval of approximately one week between assessments.

Participation across weekly assessment was excellent. The average number of weekly assessments completed was 7.64 out of a possible 8. In total, 76.08% (159) of participants completed all eight assessments, 17.70% (37) completed seven assessments, 3.83% (8) completed six assessments, 1.43% (3) completed five assessments, .48% (1) completed four assessments, 0% completed three assessments and .48% (1) completed two assessments.

## Measures

### *Trait positive affect*

Trait positive affect was measured at baseline using the Positive Affect subscale of the Adult Temperament Questionnaire (ATQ; Evans & Rothbart, 2007). Participants rated 11 items such as, 'It doesn't take much to evoke a happy response in me' on a 7-point Likert scale of how true each item was for them, from 1 (extremely untrue of you) to 7 (extremely true of you). We calculated a total score for this subscale with higher scores representing higher trait positive affect. In the current study, the internal consistency for the Positive Affect subscale was  $\alpha = .84$ .

### *Trait negative affect*

The covariate of trait negative affect was measured at baseline using the Negative Affect subscale of the ATQ (Evans & Rothbart, 2007). Participants rated 51 items such as, 'I become easily frightened' on a 7-point Likert scale of how true each item was for them, from 1 (extremely untrue of you) to 7 (extremely true of you). We calculated a total score for this subscale with higher scores representing higher trait negative affect. In the current study, the internal consistency for the Negative Affect subscale was  $\alpha = .82$ .

### *Depressive symptoms*

Depressive symptoms were measured at baseline using the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which is a 20-item measure of depressive symptoms. The nine-item CES-D Short Form (CES-D SF; Martens et al., 2006) was used in the weekly assessment for weeks two through eight and is comprised of items from the original measure. For both measures, participants rated how they felt and behaved during the past week. Responses ranged from 0 (rarely or none of the time) to 3 (most or all of the time) for items such as, 'I was bothered by things that usually don't bother me' and 'I felt lonely'. A total score was calculated ranging from 0 to 60 for the full form CES-D and 0 to 27 for the short form CES-D, with higher

scores representing greater depressive symptoms. The CES-D shows strong convergent validity with other depression measures (Radloff, 1977). In the current study, the alpha coefficient for the CES-D was .87 at baseline and for the CES-D SF averaged  $\alpha = .85$  across the subsequent seven weeks (range of .83–.87).

### *Cognitive strategies*

Weekly event-specific dampening and positive rumination were measured using the Event-Anchored Response to Positive Affect Scale (EA-RPA; Feldman et al., 2008), which is a nine-item scale linking an individual's self-selected most positive weekly event to the cognitive strategies employed during that positive event. The EA-RPA was constructed from the three items that loaded highest onto each subscale of the Response to Positive Affect Scale (dampening, emotion-focused positive rumination and self-focused positive rumination). We calculated a mean score for dampening and a mean score for positive rumination that included emotion-focused and self-focused positive rumination. While prompted to think about the best event of the past week, participants rated to what extent they did or thought about each item (i.e., 'Think about how proud you are of yourself'). Responses were on a 4-point scale ranging from 1 (almost never) to 4 (almost always). In the current study, the internal consistency across all subscales averaged  $\alpha = .78$  across the subsequent seven weeks (range of .67–.84).

### **Data analyses**

Missing data analyses in SPSS 20 indicated that 1.01% total missing data were missing completely at random (MCAR), as determined by non-significant Little's MCAR test results [ $\chi^2 (27033) = 787.894, p = 1.000$ ] across all the eight weekly assessments. Based on the recommendations of Parent (2013) for handling missing data, we used person-mean imputation in addition to Hierarchical Linear Modelling (HLM) 6.04 to impute scale scores on an item basis for participants who had completed at least 80% of a given scale.

Although person-mean imputation is not as robust as other imputation methods for data exceeding 10–20% missingness, our 1.01% missingness produced nearly identical results across imputation methods.

Data were analysed using multilevel modelling in HLM 6.04 (Raudenbush & Bryk, 2002). Advantages of multilevel modelling include the ability to handle missing data without violating the assumptions of the statistical tests or inaccurately representing data. Multilevel modelling also affords high power to detect significant effects due to data collection across multiple time points. In multilevel models, Level 1 regression equations are constructed as model variation in the repeated-measure dependent variable (i.e., depressive symptoms) as a function of within-subjects predictors (i.e., event-specific dampening and positive rumination) and between-subjects predictors (i.e., trait positive affect) over time. The dependent variable and weekly predictors were entered into Level 1 equations to examine the effects of weekly event-specific cognitions on weekly fluctuations in depressive symptoms. In Level 2, equations were specified that modelled individual differences in the Level 1 variables as a function of the Level 2 variable of trait positive affect.

The Level 1 models of the current study represent an individual's weekly fluctuations in depressive symptoms as a function of the cognitive strategies of event-specific dampening and positive rumination, while the Level 2 models explain between-subjects differences as a function of trait positive affect. In all HLM analyses, depressive symptoms were modelled in Level 1 as a function of intercept and random error and in Level 2 as a function of trait positive affect. Each Level 1 variable was entered into the model uncentered so that the resulting intercept reflected the mean value of expected weekly fluctuations in depressive symptoms across assessments.

Since multilevel modelling does not provide a direct test of mediation, we followed the recommended approach of Nezlek (2007) for assessing mediation relationships within multilevel data. This approach is based on the Baron and Kenny (1986) stepwise method for testing indirect effects, which requires four criteria to be met: (1) low trait



Table 1. Variable correlations, means and standard deviations

<i>N</i>	<i>Variable</i>	1	2	3	4	5	6	7	8	9	10	<i>M (SD)</i>
209	1. Week 1 CES-D											10.33 (6.14)
	2. ATQ (PA)	-.54*										5.07 (.92)
	3. ATQ (NA)	.54*	-.49*									3.97 (.69)
	4. Gender	.12	.09	.27*								1.71 (.45)
209	5. Week 2 CES-D SF	.61*	-.48*	.51*	.13							7.22 (5.54)
199	6. Week 3 CES-D SF	.56*	-.44*	.49*	.09	.64*						6.55 (4.93)
205	7. Week 4 CES-D SF	.65*	-.50*	.46*	.05	.63*	.67*					6.35 (5.02)
195	8. Week 5 CES-D SF	.60*	-.43*	.43*	.14	.61*	.61*	.69*				6.50 (5.01)
200	9. Week 6 CES-D SF	.55*	-.36*	.42*	.12	.52*	.55*	.57*	.65*			6.34 (4.80)
195	10. Week 7 CES-D SF	.52*	-.40*	.37*	.06	.46*	.45*	.53*	.63*	.57*		6.57 (5.12)
200	11. Week 8 CES-D SF	.48*	-.37*	.40*	.04	.52*	.53*	.57*	.58*	.57*	.67*	5.75 (4.93)

CES-D = Center for Epidemiologic Studies Depression Scale; ATQ (PA) = Adult Temperament Questionnaire Positive Affect subscale; ATQ (NA) = Adult Temperament Questionnaire Negative Affect subscale; Gender = 1 is male, 2 is female; CES-D SF = Center for Epidemiologic Studies Depression Scale Short Form; \* $p < .01$ .

positive affect predicts greater depressive symptoms across weeks; (2) low trait positive affect predicts the mediators of greater dampening and less positive rumination across weeks; (3) when trait positive affect and a mediator are entered into the model, the significant relationship between the mediator and depressive symptoms is maintained across weeks; and (4) when trait positive affect and a mediator are entered into the model, the relationship between trait positive affect and depressive symptoms becomes weaker or non-significant across weeks. We controlled for trait negative affect and baseline depressive symptoms across all analyses and examined each potential mediator in a separate model, since our hypotheses proposed distinct mediation relationships for dampening and positive rumination.

## RESULTS

Variable correlations, means and standard deviations for trait negative affect, trait positive affect, gender and depressive symptoms are shown in Table 1. The correlations between weekly dampening and weekly depressive symptoms ranged from .29 to .54. The correlations between weekly positive rumination and weekly depressive symptoms ranged from -.26 to .04. The correlations between weekly dampening and weekly positive rumination ranged

from -.05 to .19. Finally, the correlations between weekly dampening and gender ranged from -.10 to .05 and the correlations between weekly positive rumination and gender ranged from .06 to .19.

### Does low trait positive affect predict greater depressive symptoms?

We first examined the hypothesis that low trait positive affect predicts greater depressive symptoms across the study period. Weekly depressive symptoms were entered as the outcome variable with trait positive affect as the Level 2 predictor (equation shown below). Trait negative affect and baseline depressive symptoms were controlled in analyses. As hypothesised, results indicated that individuals with low trait positive affect at baseline assessment reported greater depressive symptoms across the study period [unstandardised coefficient =  $-.71$ ,  $t(205) = -2.82$ ,  $p = .006$ ].

$$CESDW_{ij} = \gamma_{00} + \gamma_{01} * CESD@W1_j \\ + \gamma_{02} * ATQPA_j + \gamma_{03} * ATQNA_j \\ + u_{0j} + r_{ij}$$

### Does low trait positive affect predict greater dampening or less positive rumination?

We then examined the hypothesis that low trait positive affect predicts greater dampening and less

positive rumination in response to weekly positive events across the study period. Weekly event-specific dampening and positive rumination were entered as dependent variables into separate models to examine whether the Level 2 predictor of trait positive affect significantly predicted weekly dampening or positive rumination (equations shown below). Results indicated that low trait positive affect did not significantly predict dampening [unstandardised coefficient =  $-.17$ ,  $t(205) = -1.31$ ,  $p = .191$ ], but low trait positive affect did significantly predict less positive rumination [unstandardised coefficient =  $1.04$ ,  $t(205) = 3.50$ ,  $p = .001$ ].

$$\begin{aligned}DAMPW_{ij} &= \gamma_{00} + \gamma_{01} * CESD@W1_j \\&= \gamma_{02} * ATQPA_j + \gamma_{03} * ATQNA_j \\&\quad + u_{0j} + r_{ij}\end{aligned}$$

$$\begin{aligned}POSNUMW_{ij} &= \gamma_{00} + \gamma_{01} * CESD@W1_j \\&\quad + \gamma_{02} * ATQPA_j + \gamma_{03} * ATQNA_j \\&\quad + u_{0j} + r_{ij}\end{aligned}$$

### Is the relationship between trait positive affect and depressive symptoms mediated by positive rumination?

Lastly, we examined the hypothesis that the relationship between low trait positive affect and depressive symptoms is mediated by positive rumination, such that low trait positive affect predicts less positive rumination in response to weekly positive events, which in turn predicts greater depressive symptoms. In support of Criterion 1, low trait positive affect significantly predicted greater depressive symptoms prior to entering dampening or positive rumination into the model (reported earlier). In support of Criterion 2, low trait positive affect also significantly predicted less positive rumination but not greater dampening (reported earlier). Thus, only positive rumination was further examined for mediation (equation shown below). In support of Criterion 3, less positive rumination in response to weekly positive events significantly predicted greater

depressive symptoms [unstandardised coefficient =  $-.11$ ,  $t(1357) = -3.31$ ,  $p = .001$ ]. Lastly, in support of Criterion 4, the strength of the direct relationship between trait positive affect and depressive symptoms was significantly weakened when positive rumination was added to the model [unstandardised coefficient =  $-.60$ ,  $t(205) = -2.38$ ,  $p = .018$ ], compared to when positive rumination was not in the model [unstandardised coefficient =  $-.71$ ,  $t(205) = -2.82$ ,  $p = .006$ ].

$$\begin{aligned}CESDW_{ij} &= \gamma_{00} + \gamma_{01} * CESD@W1_j + \gamma_{02} * ATQPA_j \\&\quad + \gamma_{03} * ATQNA_j + \gamma_{10} * POSNUMW_{ij} \\&\quad + u_{0j} + r_{ij}\end{aligned}$$

The effect of trait positive affect on depressive symptoms decreased by 16.07% when positive rumination was in the model. The total variance in our unspecified model with no predictors was 15.53%. The addition of trait positive affect as a predictor reduced the variance to 10.75, suggesting that trait positive affect accounted for 30.8% of the variance in weekly depressive symptoms. With all variables in the model, the variance of the fully specified model was 6.31, suggesting that the predictor variables accounted for 59.4% of the variance. Thus, results of multilevel modelling suggest that the effect of low trait positive affect on depressive symptoms is partially mediated by less positive rumination in response to positive events.

## DISCUSSION

The current study hypothesised that the relationship between low trait positive affect and greater depressive symptoms would be mediated by greater dampening and less positive rumination. These predictions were derived from cognitive-affective theories on positive affect and depression, which state that cognitive responses to life events may diminish or enhance an individual's affective responses to those events. Over time, these event-specific affective responses represent trait affect, which predicts depressive symptoms as mediated



by cognitive responses to state affect (Abramson et al., 1999; Fredrickson, 2001; Nolen-Hoeksema, 1991). Based on this theoretical framework, we examined cognitive mechanisms linking low trait positive affect to greater depressive symptoms.

Our study utilised a short-term prospective design to investigate the relationship between low trait positive affect and greater depressive symptoms as mediated by the cognitive strategies of dampening and positive rumination. After following young adults across eight weekly assessments, individuals with low trait positive affect reported the greatest depressive symptoms across the study, which was partially mediated by less positive rumination as a cognitive strategy in response to weekly positive events. While trait positive affect did not significantly predict dampening, it is interesting to note that trait negative affect did significantly predict dampening. Findings highlight positive rumination as a potential cognitive mechanism through which the affective vulnerability of low trait positive affect may influence depressive symptomatology. Additionally, findings support low trait positive affect as a related but distinct vulnerability from high trait negative affect in predicting depressive symptoms that may confer risk through distinct cognitive mechanisms.

Current findings are consistent with research that low trait positive affect predicts depressive symptoms (Brown et al., 1998; Clark & Watson, 1991; Verstraeten et al., 2009), which further supports low trait positive affect as an affective vulnerability for the development of depressive symptoms. Results are also consistent with cognitive-affective theories on positive affect and depression by demonstrating that low trait positive affect predicts the cognitive strategy of less positive rumination, although results do not support a significant relationship between low trait positive affect and greater dampening. The relationship between trait positive affect and positive rumination suggests that the affective components of individual temperament may influence event-specific cognitive responses to state positive affect, which over time contribute to the presentation of depressive symptoms.

Depression research consistently supports high trait negative affect as an affective vulnerability to depression through rumination on event-specific negative affect, which amplifies negative affect over time to predict depressive symptoms (Hankin et al., 2009). Through a lack of positive rumination, the affective vulnerability of low trait positive affect may similarly predict depressive symptoms through the cognitive reduction of event-specific positive affect. Practical implications of our study include greater emphasis on cognitive interventions to amplify positive affect in the prevention and treatment of depression. Specifically, implementing the cognitive strategy of positive rumination may improve resiliency against depressive symptoms, especially for individuals with low trait positive affect.

### Study limitations and future research

The current research design included several limitations that invite future research. First, the current study utilised a non-experimental design that provided more cautious support for causal inferences due to internal validity concerns. Second, study conclusions may be limited by the similar nature of each weekly questionnaire, since participant responses may have been biased by increasing familiarity with the measures. Third, our sample of university students represented a convenience population that may not generalise to all adult populations. Finally, an overall lack of research on dampening and positive rumination in relation to trait positive affect and depression highlights an empirical need to further support the theoretical basis on which our study was proposed. The partial mediation of positive rumination represents a significant but likely not the only cognitive mechanism in the relationship between trait positive affect and depressive symptoms.

To address these limitations, future studies could further examine the depression outcomes of individuals who report greater dampening as compared to individuals who report less positive rumination, since dampening and positive rumination are currently described as distinct cognitive strategies that may influence the relationship

between trait positive affect and depressive symptoms differently (Feldman et al., 2008). Additionally, research on the potential interaction of trait negative affect and trait positive affect in predicting depression may better inform the relationship that temperament shares with depression, since trait positive affect and trait negative affect exert distinct effects on depressive symptoms that may be mediated by distinct cognitive strategies. As the phenomenon of depression is increasingly understood, researchers and practitioners alike may more effectively prevent and treat the debilitating effects that depressive symptoms inflict. With this goal in mind, our hope is that the presented findings move towards a more comprehensive understanding of the affective and cognitive processes underlying depressive symptomatology.

Manuscript received 10 May 2013

Revised manuscript received 14 October 2013

Manuscript accepted 25 January 2014

First published online 19 February 2014

## REFERENCES

- Abramson, L. Y., Alloy, L. B., Hogan, M. E., Whitehouse, W. G., Donovan, P., Rose, D. T., ... Raniere, D. (1999). Cognitive vulnerability to depression: Theory and evidence. *Journal of Cognitive Psychotherapy*, 13(1), 5–20.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182. doi:10.1037/0022-3514.51.6.1173
- Brown, T. A., Chorpita, B. F., & Barlow, D. H. (1998). Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of Abnormal Psychology*, 107, 179–192. doi:10.1037/0021-843X.107.2.179
- Clark, L. A., & Watson, D. (1991). Tripartite model of depression and anxiety: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology*, 100, 316–336. doi:10.1037/0021843X.100.3.316
- Evans, D. E., & Rothbart, M. K. (2007). Developing a model for adult temperament. *Journal of Research in Personality*, 41, 868–888. doi:10.1016/j.jrp.2006.11.002
- Feldman, G. C., Joormann, J., & Johnson, S. L. (2008). Responses to positive affect: A self-report measure of rumination and dampening. *Cognitive Therapy and Research*, 32, 507–525. doi:10.1007/s10608-006-9083-0
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56, 218–226. doi:10.1037/0003-066X.56.3.218
- Hankin, B. L., Oppenheimer, C., Jenness, J., Barocas, A., Shapero, B. G., & Goldband, J. (2009). Developmental origins of cognitive vulnerabilities to depression: Review of processes contributing to stability and change across time. *Journal of Clinical Psychology*, 65, 1327–1338. doi:10.1002/jclp.20625
- Hyde, J., Mezulis, A. H., & Abramson, L. Y. (2008). The ABCs of depression: Integrating affective, biological, and cognitive models to explain the emergence of the gender difference in depression. *Psychological Review*, 115, 291–313. doi:10.1037/0033-295X.115.2.291
- Johnson, S. L., McKenzie, G., & McMurrich, S. (2008). Ruminative responses to negative and positive affect among students diagnosed with bipolar disorder and major depressive disorder. *Cognitive Therapy and Research*, 32, 702–713. doi:10.1007/s10608-007-9158-6
- Kessler, R. C., McGonagle, K. A., Swartz, M., Blazer, D. G., & Nelson, C. B. (1993). Sex and depression in the National Comorbidity Survey: I. Lifetime prevalence, chronicity and recurrence. *Journal of Affective Disorders*, 29(2–3), 85–96. doi:10.1016/0165-0327(93)90026-G
- Martens, M. P., Parker, J. C., Smarr, K. L., Hewett, J. E., Ge, B., Slaughter, J. R., & Walker, S. E. (2006). Development of a shortened center for epidemiological studies depression scale for assessment of depression in rheumatoid arthritis. *Rehabilitation Psychology*, 51(2), 135–139. doi:10.1037/0090-5550.51.2.135
- Martin, L. L., & Tesser, A. (1996). Some ruminative thoughts. In R. Wyer (Ed.), *Ruminative thoughts* (pp. 1–47). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Nezlek, J. B. (2007). A multilevel framework for understanding relationships among traits, states, situations and behaviours. *European Journal of Personality*, 21, 789–810. doi:10.1002/per.640
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, 100, 555–561. doi:10.1037/0021-843X.100.4.569

- Olino, T. M., Lopez-Duran, N. L., Kovacs, M., George, C. J., Gentzler, A. L., & Shaw, D. S. (2011). Developmental trajectories of positive and negative affect in children at high and low familial risk for depressive disorder. *Journal of Child Psychology and Psychiatry*, 52, 792–799. doi:[10.1111/j.1469-7610.2010.02331.x](https://doi.org/10.1111/j.1469-7610.2010.02331.x)
- Parent, M. C. (2013). Handling item-level missing data: Simpler is just as good. *The Counseling Psychologist*, 41, 568–600. doi:[10.1177/0011000012445176](https://doi.org/10.1177/0011000012445176)
- Quoidbach, J., Berry, E. V., Hansenne, M., & Mikolajczak, M. (2010). Positive emotion regulation and well-being: Comparing the impact of eight savoring and dampening strategies. *Personality and Individual Differences*, 49, 368–373. doi:[10.1016/j.paid.2010.03.048](https://doi.org/10.1016/j.paid.2010.03.048)
- Radloff, L. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401. doi:[10.1177/014662167700100306](https://doi.org/10.1177/014662167700100306)
- Raes, F., Smets, J., Nelis, S., & Schoofs, H. (2012). Dampening of positive affect prospectively predicts depressive symptoms in non-clinical samples. *Cognition and Emotion*, 26(1), 75–82. doi:[10.1080/02699931.2011.55547](https://doi.org/10.1080/02699931.2011.55547)
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Newbury Park, CA: Sage.
- Rothbart, M. K. (2007). Temperament, development, and personality. *Current Directions in Psychological Science*, 16, 207–212. doi:[10.1111/j.1467-8721.2007.00505.x](https://doi.org/10.1111/j.1467-8721.2007.00505.x)
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., vol. 3, pp. 99–166). Hoboken, NJ: John Wiley & Sons.
- Verstraeten, K., Vasey, M. W., Raes, F., & Bijttebier, P. (2009). Temperament and risk for depressive symptoms in adolescence: Mediation by rumination and moderation by effortful control. *Journal of Abnormal Child Psychology*, 37, 349–361. doi:[10.1007/s10802-008-9293-x](https://doi.org/10.1007/s10802-008-9293-x)
- Werner-Seidler, A., Banks, R., Dunn, B. D., & Moulds, M. L. (2013). An investigation of the relationship between positive affect regulation and depression. *Behaviour Research and Therapy*, 51(1), 46–56. doi:[10.1016/j.brat.2012.11.001](https://doi.org/10.1016/j.brat.2012.11.001)