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Trait Affect, Emotion Regulation, and the Generation of Negative and Positive Interpersonal Events

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Abstract

Positive and negative trait affect and emotion regulatory strategies have received considerable attention in the literature as predictors of psychopathology. However, it remains unclear whether individuals' trait affect is associated with responses to state positive affect (positive rumination and dampening) or negative affect (ruminative brooding), or whether these affective experiences contribute to negative or positive interpersonal event generation. Among 304 late adolescents, path analyses indicated that individuals with higher trait negative affect utilized dampening and brooding rumination responses, whereas those with higher trait positive affect engaged in rumination on positive affect. Further, there were indirect relationships between trait negative affect and fewer positive and negative interpersonal events via dampening, and between trait positive affect and greater positive and negative interpersonal events via positive rumination. These findings suggest that individuals' trait negative and positive affect may be associated with increased utilization of emotion regulation strategies for managing these affects, which may contribute to the occurrence of positive and negative events in interpersonal relationships.

Keywords

affect; dampening; positive rumination; brooding; interpersonal events

According to stress generation theory, individuals are not simply passive recipients of events in their lives, but actively contribute to the occurrence of events that are *dependent* on their characteristics or behaviors, particularly those involving their interpersonal relationships, but not *independent* (e.g., fateful) events (Liu & Alloy, 2010). Although originally proposed to

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explain the greater number of negative events experienced by depressed women compared to their non-depressed peers (Hammen, 1991), the stress generation effect since has been replicated among adults, children, and adolescents with clinical, remitted, and subthreshold depression, and extended to individuals vulnerable to depression but not yet depressed, as well as other psychopathology (for review, see Liu & Alloy, 2010). These studies overwhelmingly demonstrate that individuals with vulnerabilities to depression and other psychiatric disorders (Conway, Hammen, & Brennan, 2012) are more likely to experience negative interpersonal dependent events, which, in turn, further their risk for subsequent disorder.

Negative and Positive Affect in Negative Interpersonal Events

Despite origins of research on stress generation in depression, little work has evaluated the potential influence of affect on the stress generation process. This is surprising given that trait affective states are often implicated in psychopathology, and specifically in mood and anxiety disorders (Clark & Watson, 1988; Wetter & Hankin, 2009). In particular, individuals with trait negative affect, which refers to the greater propensity to experience more intense and frequent negative emotions (Clark, Watson, & Mineka, 1994), may inadvertently elicit more negative events in their lives, especially interpersonal events that confer the greatest risk for disorder (Hammen, 2005). Relatedly, there is evidence that neuroticism, which encompasses negative emotionality, is a predictor of stress generation (e.g., Uliaszek et al., 2010), which suggests that trait negative affect also may contribute to interpersonal stress generation. Although closely related, negative affect and neuroticism are distinct constructs that reflect different aspects of personality and emotional experience (Miller, Vachon, & Lynam, 2009). Further, identifying the potential role of trait negative affect in stress generation among relatively healthy samples of late adolescents may highlight a target for intervention. Given that negative affect is a prospective risk factor for depression and anxiety (Watson, Clark, & Carey, 1988), yet distinct from depression itself (Harding, Willey, Ashles, & Mezulis, 2016), identifying whether negative affect contributes to stress generation may elucidate a potential transdiagnostic mechanism contributing to mood and anxiety disorders. In particular, stress generation may be a process through which individuals with higher levels of trait negative affect are doubly at risk- both due to their tendency towards negative affective states and generation of negative interpersonal stressors.

Although there has been considerable research on negative affect, it is important to simultaneously examine trait positive affect, defined as the tendency to experience positive emotions, such as enthusiasm, excitement, and joy (e.g., Gruber & Moskowitz, 2014), to better understand how affective experiences influence psychological processes. Although negative and positive affects are closely related, positive affect is uniquely associated with psychopathology (Carl, Soskin Kerns, & Barlow, 2013; Gilbert, 2012; Harding et al., 2016). Individuals with low trait positive affect often experience less positive emotions and energy, which is characteristic of anhedonia- a hallmark of depression (e.g., Pizzagalli, 2013), and predicts greater depressive symptoms (Watson et al., 1988; Hudson, Harding, & Mezulis, 2015). Positive affect is important for initiating and maintaining interpersonal relationships (Campos, Mumme, Kermoian, & Campos, 1994), thereby suggesting that individuals with low positive affect may behave in ways (such as diminished approach behavior) that elicit

negative events in interpersonal relationships. Although this has not been directly tested within interpersonal relationships, one study found that negative emotionality predicted *dependent* stressors (Wetter & Hankin, 2009), which may indicate that trait negative affect also contributes to interpersonal dependent stressors. Better understanding the unique or shared roles of negative and positive affect in interpersonal relationships, and specifically in the context of stress generation, will further extend our understanding of these affective systems and their role in processes that confer risk for psychopathology.

Responses to Negative and Positive Affect in Negative Interpersonal Events

Beyond affective experiences, how individuals respond to affect also may influence the onset and maintenance of disorder (Joormann & D'avanzato, 2010). Given that individuals experience both negative and positive affect, regulatory responses to negative and positive affect may have distinct influences on a person's behaviors and interpersonal relationships. In particular, individuals' trait affect may influence what emotion regulatory strategies are employed in response to affect (Arger, Sanchez, Simonson, & Mezulis, 2012; Nelis, Bastin, Raes, Mezulis, & Bijttebier, 2016). One influential theory of negative emotion regulation, response styles theory (Nolen-Hoeksema, 1991), has been frequently investigated. This theory posits that individuals who respond to negative affective states with brooding rumination (i.e., repetitively and passively focusing on their dysphoric mood and its meaning and consequences) are at greater risk for depression and anxiety (e.g., McLaughlin & Nolen-Hoeksema, 2011). Although there is an established relationship between state negative affect and brooding rumination (Moberly & Watkins, 2008), recent research also indicates that trait negative affect predicts the tendency for brooding rumination among young adults (Hudson et al., 2015). Given that ruminative responses have been found to contribute to the occurrence of negative life events at least in part dependent on the individuals (McLaughlin & Nolen-Hoeksema, 2012), it is possible that individuals with more trait negative affect may engage in brooding rumination, which, in turn, contributes to the occurrence of negative events in their lives, particularly in interpersonal relationships. Thus, trait negative affect may be indirectly related to maladaptive interpersonal processes through brooding rumination as a regulatory response to negative affect, highlighting one potential pathway of increased risk of psychopathology.

In addition to responses to negative affect, how individuals respond to positive affect also may increase or diminish the experience of depression (Feldman, Joormann, & Johnson, 2008; Nelis, Holmes, & Raes, 2015). For instance, emotion-focused rumination on positive affect, defined as focusing on the somatic and affective sensations themselves (e.g., "I think about how happy I feel"), and self-focused rumination on positive affect, which is characterized as focusing on the positive meaning of the emotion and its impact for oneself (e.g., "I think 'I am living up to my potential'"), both amplify positive emotions. However, dampening positive affect serves to diminish or decrease the experience of positive affect (e.g., "I think 'I don't deserve this'") (Feldman et al., 2008). Interestingly, a daily diary study found that individuals with greater trait positive affect were more likely to engage in positive rumination, but those with low positive affect were not more likely to dampen their positive

mood states on a daily basis (Harding, Hudson, & Mezulis, 2014). However, a subsequent study indicated that low trait positive affect predicted greater use of dampening strategies, which contributed to depressive symptoms (Hudson et al., 2015). Thus, it remains unclear whether these responses contribute to the occurrence of life events, such that individuals who dampen positive affect may behave in less contextually-appropriate ways, inadvertently eliciting negative interpersonal experiences, or whether those who engage in positive rumination may actually contribute to fewer negative events. To our knowledge, no study has empirically tested whether responses to positive affect, such as dampening and positive rumination, contribute to interpersonal event generation, which may provide another avenue for how certain individuals may actively contribute to stressors in their lives, thereby providing mutable targets for prevention and intervention programs.

Affect, Regulatory Responses to Affect, and Positive Interpersonal Events

Importantly, few studies have evaluated stress generation in the context of positive self-generated events in interpersonal relationships, such as making a new friend or attending a social event, which are important for mental and physical well-being (e.g., Shahar & Priel, 2002; Umberson & Montez, 2010). Although positive interpersonal events may be interpreted and experienced as stressful (related to Selye's (1956) concept of "eustress" or "good stress"), social engagement is crucial in protecting against depression (Matthews et al., 2016). Specifically, individuals who are more socially isolated and experience fewer positive events are at greater risk for depression (e.g., Beevers & Meyer, 2002; Matthews et al., 2016), thereby highlighting the importance of positive interpersonal events in risk and resiliency for disorder.

The concept of "positive event generation" in interpersonal relationships shares conceptual similarities to both stress generation and behavioral activation. Whereas behavioral activation is a technique utilized in behavioral therapies focused on the importance of increasing activities that elicit and heighten the experience of self-efficacy and positive emotions (Martell, Dimidjian, & Herman-Dunn, 2010), stress generation emphasizes individuals' role (directly and indirectly) in contributing to events in their environment, particularly in the interpersonal domain (Hammen, 1991). Thus, positive event generation may be fostered by behavioral activation approaches; though, the generation of positive events (and possibly eustress) is distinct. Similar to negative events/stress generation, individuals may have certain characteristics or act in certain ways that contribute to more positive social interactions or events with peers, family, and/or romantic partners. For instance, individuals who have more positive affect and amplify their state positive affect through positive rumination may engage in more social interactions, thereby eliciting a greater number of positive interpersonal dependent events. Alternatively, however, individuals with lower levels of positive affect may be more likely to dampen this affect, thereby contributing to fewer positive events in their lives by avoiding social interactions or situations that could elicit positive experiences within interpersonal relationships.

Relatedly, individuals with more negative affect may persevere on these emotional states, which may interfere with positive events and actively generate negative events in interpersonal relationships. Given research on the benefits of behavioral activation in

treatment for depression (e.g., Dimidjian et al., 2006) and the potential influence of individual differences in processing affect (Gollan et al., 2015), identifying whether individuals with higher levels of negative affect or lower levels of positive affect not only generate more negative events in interpersonal relationships, but also contribute to the occurrence of fewer positive interpersonal events may help us better understand which individuals are most at risk for disorder, as well as highlight novel points of intervention within treatment models to improve response rates.

The Current Study

We sought to evaluate the role of affect and emotion regulatory responses within the context of both positive and negative interpersonal event generation. Further, we evaluated whether these relationships were significantly different for males versus females given research demonstrating females' greater propensity to brood and experience stress generation (Hammen, 2005; Nolen-Hoeksema & Jackson, 2001). We hypothesized that individuals with higher levels of negative affect would be more likely to *brood* on negative affect and/or *dampen* their positive affective experiences, which would contribute to experiencing more negative *dependent* interpersonal events and fewer positive events. In addition, we hypothesized that individuals with greater positive affect may engage in positive rumination, which would contribute to the occurrence of greater positive *dependent* interpersonal events. Consistent with stress generation theory, we expected that these relationships would be specific to dependent events. Better understanding whether responses to affect (brooding rumination, positive rumination, and dampening) serve as indirect pathways from negative and positive affect to interpersonal event generation (positive and negative) may yield information regarding who is at risk for generating more negative and fewer positive events in their interpersonal relationships, thereby contributing to greater risk for subsequent disorder.

Method

Participants

Adolescents from Philadelphia-area public high schools and colleges (ages 14–19) were selected for participation in a behavioral high-risk study designed to evaluate characteristics of individuals hypothesized to be at high versus low risk for a first onset of bipolar disorder based on Behavioral Approach System (BAS) sensitivity (see Alloy et al., 2012 for full discussion of screening procedures). In brief, participants were selected based on a two-phase screening procedure. During Phase I, students ($N = 9,991$) were screened using two self-report BAS sensitivity measures: the Behavioral Inhibition System/Behavioral Activation System (BIS/BAS) Scales (Carver & White, 1994) and Sensitivity to Punishment/Sensitivity to Reward Questionnaire (SPSRQ; Torrubia, Avila, Molto, & Caseras, 2001). Students who scored in the highest 15th percentile on both the BAS-Total score of the BIS/BAS Scales (high BAS-T score cutpoint = 43) and the Sensitivity to Reward (SR) scale of the SPSRQ (high SR cutpoint = 16) were classified as High BAS (HBAS), whereas students who scored between the 40th and 60th percentile on both measures (BAS-T (cutpoints = 37 and 39) and SR (cutpoints = 10.4 and 12.6)) were categorized as

Moderate BAS (MBAS). In total, 7.77% (n=776) qualified for HBAS and 4.04% (n=404) for MBAS status. A random subsample of the adolescents who met inclusion criteria and did not meet criteria for any bipolar spectrum disorder was invited to participate.

The selection of individuals based on BAS risk groups was not of primary relevance to the theoretical questions evaluated in the present report, but we account for BAS group status in the analyses presented below and compare our sample by BAS status given that BAS level was used to select the sample.¹ The current sample consisted of 304 participants (62% HBAS and 38% MBAS) who had completed the Phase II screening and a follow-up visit. In this sample, participants were 68% female with a mean age of 18.20 years ($SD = 1.39$ years). In addition, the study sample was 58% Caucasian, 25% African American, 11% Asian or Pacific Islander, 2% Biracial, 1% Native American and 3% identified as 'other.' The study sample did not differ from the larger sample that only completed the larger screening process on any demographic characteristics.

Procedures

After completing the screening processes, participants completed an initial session involving further interviews and questionnaires, including a measure of depressive symptoms (included as a covariate given its relevance to stress generation), trait positive and negative affect, responses to positive affect, and rumination on negative affect. All participants who completed the initial assessment completed a follow-up assessment six months later. At the follow-up, participants completed a questionnaire and subsequent interview that assessed positive and negative life events that occurred since the Time 1 visit.

Measures

BAS Sensitivity Measures—The Behavioral Inhibition System/Behavioral Activation System Scales (BIS/BAS; Carver & White, 1994) were one of the two measures used to select the sample. The self-report BIS/BAS scales are frequently used to assess individual differences in BAS sensitivity. Participants respond to 20 questions on a 4-point Likert scale ranging from strongly disagree (1) to strongly agree (4). A BAS total score was calculated by summing all BAS items. The BIS/BAS scales have good internal consistency and retest reliability (Carver & White, 1994). In the present study, the BAS total scale was used at the Phase I screening. The internal consistency of the BAS total scale was $\alpha = .80$. In addition, the Sensitivity to Punishment/Sensitivity to Reward Questionnaire (SPSRQ; Torrubia et al., 2001) is a 48-item self-report questionnaire and is the second measure used to select the sample. It assesses sensitivity to reward (SR) and punishment (SP) with 24 items for each subscale. The SPSRQ was designed to be theoretically consistent with Gray's (1991) BIS/BAS theory, to have greater construct validity, and to improve on weaknesses in the BIS/BAS scale's content. The SPSRQ was used with the BIS/BAS scale to determine group status. Both subscales have demonstrated good internal consistency and retest reliability (Torrubia et al., 2001). In the Phase I screening process, the SR demonstrated good internal consistency with $\alpha = .76$, and SR correlated with the BAS total in Phase I ($r = .40$).

¹Analyses also were conducted with BAS as a potential moderator to determine whether individuals with high and moderate BAS differed on these relationships. Results indicated there were no significant interactions and are available upon request.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988)—The PANAS consists of 10 positive and 10 negative adjectives, which measure positive affect (PA) and negative affect (NA), respectively. Participants rated the degree to which they experienced each of the 20 adjectives over the past 30 days on a scale from 1 = *very slightly or not at all* to 5 = *extremely*. The PANAS has good psychometric properties, including construct validity and test-retest correlations (Watson et al., 1988). In the current study, the PANAS-NA and PANAS-PA were given at Time 1 and demonstrated good internal consistency, $\alpha = .84$ and $\alpha = .88$, respectively.

Responses to Positive Affect Scale (RPAS; Feldman et al., 2008)—The RPAS is a 17-item self-report measure designed to examine ruminative responses to positive affective states: emotion-focused rumination, self-focused rumination, and dampening. The emotion-focused and self-focused rumination subscales assess the tendency to intensify positive affect, whereas the dampening subscale measures the tendency to diminish positive affect. Items are rated on 4-point Likert scales, ranging from *I almost never respond in this way* to *I almost always respond in this way*. All three scales have acceptable internal consistency (α 's ranged from .72–.76; Feldman et al., 2008); in the present study, the RPAS was given at Time 1 and α 's ranged from .76 to .83.

Ruminative Responses Scale (RRS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003)—The brooding subscale of the RRS was used to assess the extent to which participants engage in “moody pondering” (i.e., brooding) in response to their depressed mood. The subscale consists of five items scored on 4-point Likert scales (1 = *almost never*, 4 = *almost always*). It has demonstrated good one-year retest reliability ($r = .62$) and good internal consistency ($\alpha = .72$; Treynor et al., 2003); in the present study, the RRS was given at Time 1 and $\alpha = .83$.

Life Events Scale (LES) and Life Events Interview (LEI)—Life events were assessed at follow-up via a combination of self-report and interview measures. The 193-item LES (Francis-Raniere, Alloy, & Abramson, 2006) assessed positive and negative life events that occurred since Time 1. Each item on the LES received a consensus-based, *a priori* valence categorization (positive or negative) and dependence/independence categorization as determined by the principal investigators and senior research staff of a previous project (Alloy et al., 2008). Participants then completed a Life Events Interview about the events endorsed on the LES and interviewers dated their occurrence using manualized, event-specific criteria probes, which maintained consistency across interviews. Any event that did not meet pre-determined definitional criteria was disqualified, and contextual information was used to adjust dependence/independence based on consensus. In the present study, we used events that were categorized as interpersonal positive *dependent* ($n = 20$; “I began a relationship with a new boyfriend/girlfriend/spouse”), interpersonal positive *independent* ($n = 10$; “Family member had a positive outcome to what had been a serious problem (e.g., won a lawsuit; rehired at job; was readmitted to school; recovered from medical issue”), interpersonal negative *dependent* ($n = 50$; “I had a fight, argument, or serious disagreement with a friend or roommate”), and interpersonal negative *independent* ($n = 25$; “A close friend had significant emotional problem or trauma, medical problem, or alcohol or drug-related

problem”). Average inter-rater reliability of rating life events was .89, and the LES demonstrates good reliability and validity (Francis-Raniere et al., 2006).

Depressive symptoms—The Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) is a 21-item self-report questionnaire that assesses the presence and severity of cognitive, affective, motivational, and somatic symptoms of depression. The BDI has been found to have good internal consistency (α 's = .81–.86) and retest reliability (r 's = .48–.86) in both clinical and nonclinical samples and has been validated in student samples (Beck et al., 1988). In the present study, we included the BDI at Time 1 as a covariate. The internal reliability was $\alpha = .89$.

Results

Descriptive Analyses

Descriptive statistics and bivariate correlations of primary study variables are presented in Table 1. Analyses also were conducted to determine if primary outcome variables were associated with any demographic characteristics (sex, race, SES). There were no sex differences in Time 1 depressive symptoms, positive affect, or responses to positive affect or negative affect. Girls reported significantly greater negative affect ($t = 3.08, p < .01$) and interpersonal dependent events that were positive ($t = 2.16, p = .03$) and negative ($t = 2.17, p = .03$) than boys. Asian adolescents utilized significantly more dampening strategies ($t = 4.20, p < .001$) and experienced fewer positive interpersonal dependent events than Caucasian adolescents ($t = 2.48, p = .01$). Thus, sex and race were included as covariates in study analyses. There were no other sex or racial differences on primary study variables.

Given the selection of our sample based on BAS status, we also evaluated whether there were differences on primary study variables by BAS Sensitivity. These analyses revealed that individuals who were high BAS experienced more dampening ($t = 2.27, p = .03$), emotion-focused ($t = 3.74, p < .001$) and self-focused ($t = 2.78, p < .01$) positive rumination than those who were moderate BAS (Stange et al., 2013). In addition, High BAS individuals experienced more positive ($t = 2.59, p = .01$) and negative ($t = 2.04, p = .04$) interpersonal dependent events, but not independent events, than moderate BAS individuals. However, there were no differences by BAS status on trait positive ($t = 1.10, p = .27$) or negative affect ($t = 1.45, p = .15$). Given these significant differences, BAS status was covaried in all analyses.

Path Analyses of Affect, Responses to Affect, and Events

To examine whether there were indirect pathways between positive and negative affect and life events (positive and negative) via responses to affect, we conducted path analysis using Mplus 7.0 with full information maximum likelihood estimation and bootstrapping procedures (Muthen & Muthen, 2007). This method allowed parameters to be estimated for all 304 participants, including those without complete data at all assessments.² The nonparametric bootstrapping procedure approximates the sampling distribution of a statistic

²These analyses also were conducted only with participants who had complete data on all study measures. These analyses revealed the same pattern of results as reported here.

from the available data; bias-corrected confidence intervals of indirect effects were obtained using 10,000 resamples.

The path analysis was fitted to test whether positive and negative affect at Time 1 predicted positive and negative interpersonal *dependent* events at follow-up through responses to positive affect (emotion-focused, self-focused, and dampening) or negative affect (brooding). We controlled for initial depressive symptoms, BAS status, sex, and race for all paths to regulatory responses (brooding, emotion-focused, self-focused, and dampening) and life events (positive and negative interpersonal dependent events). Responses to positive affect were allowed to covary with one another and brooding; positive and negative interpersonal dependent events also were allowed to covary. To examine the specificity of paths to dependent versus independent events, we conducted a comparison path model to examine whether positive and negative affect at Time 1 predicted follow-up positive and negative interpersonal *independent* events through responses to positive affect (emotion-focused, self-focused, and dampening) or negative affect (brooding), controlling for initial depressive symptoms, BAS status, sex, and race.

Our first model demonstrated satisfactory fit, $\chi^2(16) = 28.28, p = .03$; comparative fit index (CFI) = .98; root mean square error of approximation (RMSEA) = .05 [CI = .02 – .08]; standardized root mean square residual (SRMR) = .03). First, we will review the direct paths between each of the study variables prior to describing the indirect paths (Figure 1). Consistent with hypotheses, there was a significant direct effect of negative affect, but not positive affect, on negative interpersonal dependent events ($\beta = .24, SE = .02, p < .001$). In contrast to hypotheses, there was no significant path between positive or negative affect and positive interpersonal dependent events. However, consistent with hypotheses, trait positive affect was associated with greater emotion-focused and self-focused ruminative responses to positive affect, but not dampening of positive affect. Further, there were significant paths from trait negative affect and greater use of dampening of positive affect and brooding in response to dysphoric mood, but there were not significant paths to emotion-focused or self-focused responses to positive affect. With respect to responses to positive affect, there were significant paths from emotion-focused responses to greater positive and negative interpersonal dependent events, and from dampening to fewer positive and negative interpersonal dependent events. Brooding and self-focused responses to positive affect did not predict positive or negative interpersonal dependent events.

Although there was no direct effect between positive affect and positive or negative dependent events, there may still be significant indirect effects without the evidence of direct effects. Moreover, theory suggests that only considering indirect effects in the presence of direct effects has significant limitations (Hayes, 2009; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Our results indicate that there were significant indirect effects in the relationships between positive affect and positive interpersonal dependent events through emotion-focused responses to positive affect ($\beta = .10, SE = .04, CI = .02-.17, p = .01$). Interestingly, positive affect also predicted greater negative interpersonal dependent events through emotion-focused responses to positive affect ($\beta = .09, SE = .03, CI = .03-.16, p = .01$). Thus, individuals with greater positive affect were more likely to use emotion-focused responses to positive affect, which predicted greater positive *and* negative dependent events.

In addition, there also was an indirect effect from negative affect to negative and positive interpersonal dependent events through dampening ($\beta = -.06$, $SE = .03$, $CI = -.12 - -.01$, $p = .02$; $\beta = -.06$, $SE = .03$, $CI = -.11 - .01$, $p = .04$, respectively), such that individuals with greater negative affect were more likely to use dampening strategies in response to positive affect, which predicted fewer positive and fewer negative interpersonal dependent events. There were no significant indirect effects from negative or positive affect to interpersonal dependent events through brooding or self-focused responses to positive affect. Overall, our model accounted for 12.1% of the variance in positive dependent interpersonal events and 17.5% of the variance in negative interpersonal dependent events. However, the model accounted for 36.4% of the variance in dampening, 24.7% of ruminative brooding, 21.7% of self-focused rumination, and 14.9% of emotion-focused rumination. To more stringently test this indirect pathway model, we also compared our models with and without the regulatory responses. Examination of the differences on the chi-square tests between these models indicated that there were significant differences between the models, $\chi^2(8) = 18.22$, $p < .05$, and the model with the indirect paths involving the emotion regulatory responses fit the data significantly better.

Our second model including interpersonal independent events also demonstrated satisfactory fit, ($\chi^2 = 30.15$ ($df = 16$), $p = .03$; CFI = .98; RMSEA = .05 CI = .02 - .08; SRMR = .03). In line with hypotheses, there were no direct effects from responses to positive or negative affect to positive or negative interpersonal independent events, or indirect effects from trait affect to positive or negative interpersonal independent events through responses to affect (Figure 2).³

Sex Differences in Indirect Pathways

We also examined whether the indirect pathways were moderated by sex using multi-group comparison analyses. First, the paths in the model were constrained to be equal for both girls and boys, and then all paths were freely estimated. Examination of the differences on the chi-square tests between the constrained and unconstrained models for the indirect pathway analysis revealed that there were no significant differences by sex, $\chi^2(43) < 55.76$, $p > .05$.

Discussion

The results of this study implicate trait negative and positive affect as important constructs to assess independently in understanding psychopathology, given their distinct roles in affect regulation and interpersonal event generation. Results indicated that individuals with higher levels of trait negative affect were more likely to utilize dampening as a response style to state positive affect and brooding rumination in response to state negative affect. Importantly, these results were observed even when controlling for co-occurring depressive symptoms, indicating that negative and positive affect have unique associations with these regulatory strategies. In addition, only dampening contributed to the subsequent occurrence

³Given the cross-sectional nature of the Time 1 affect and regulatory responses variables, we also tested these models in reverse to evaluate whether there were indirect pathways between regulatory styles and interpersonal dependent events (positive and negative) via positive and negative affect. These models indicated that there were no significant indirect pathways in this reverse direction, suggesting that our directional models may be more appropriate.

of *fewer* negative and fewer positive interpersonal dependent, but not independent, events. Further, individuals with higher levels of trait positive affect were more likely to utilize positive rumination strategies, specifically emotion-focused responses, which, in turn, contributed to the later occurrence of *more* positive and more negative interpersonal dependent, but not independent, events.

These results confirm and build upon previous research indicating that state negative affect is associated with brooding rumination (Moberly & Watkins, 2008; Roelofs, Huibers, Peeters, Arntz, & van Os, 2008), but extend these findings to trait negative affect and responses to *positive* affect as well. Specifically, our findings demonstrate that trait negative affect not only is associated with a response style to negative affect that amplifies negative affect (i.e., brooding), but that individuals with greater trait negative affect also respond to positive emotional states by actively diminishing these experiences via dampening. These findings are consistent with recent research indicating that trait negative affect is associated with both brooding and dampening (Nelis et al., 2016). Thus, individuals with trait negative affect may be doubly at risk for disorder by enhancing negative affect through the use of brooding and diminishing positive affect through the use of dampening regulatory strategies. Again, these results were observed despite controlling for depressive symptoms, suggesting that affect has associations with regulatory styles distinct from depression.

Importantly, our findings also have important implications for the stress generation model of psychopathology. Contrary to hypotheses, trait negative affect was associated with dampening, which predicted *fewer* subsequent negative interpersonal dependent events, and (consistent with hypotheses) *fewer* subsequent positive interpersonal dependent events. Consistent with the stress generation framework, this finding was specific to positive and negative interpersonal *dependent* events, but not *independent* events. However, it is important to note that negative affect was only indirectly related to positive interpersonal events through dampening, as there was no direct relationship of negative affect and later positive events (as expected). One possible explanation for these findings is that individuals who dampen their positive emotions may be less likely to engage in positive or pleasurable interactions with others and be less likely to pursue positive interpersonal opportunities with peers, family, and coworkers. Further, these individuals may be more socially avoidant in general, and thus, be at a reduced likelihood of putting themselves in situations in which positive or negative interpersonal events are likely to occur. For these individuals, although negative events are avoided (which may be reinforcing), exposure to positive interpersonal events also may be reduced, likely maintaining and/or exacerbating depression and other psychopathology. Further research is needed to determine the potential impact of low exposure to both positive and negative interpersonal events.

Importantly, the present study demonstrates that individuals with higher levels of trait positive affect are more likely to engage in positive rumination, specifically the strategies of emotion- and self-focused responses (but not dampening), thereby replicating recent findings (Harding et al., 2014; Nelis et al., 2016). Further, trait positive affect also predicted the occurrence of more positive and negative interpersonal dependent events six months later through greater employment of emotion-focused responses to positive affect. Thus, this is the first study to our knowledge to identify a *positive* emotion regulation style that may

contribute to the generation of positive events (and potentially the occurrence of “eustress” or positive stress), although this strategy may also contribute to negative events. Parallel to our explanation for the role of dampening in reduced likelihood of negative and positive interpersonal events, emotion-focused responses may amplify the degree to which individuals engage in their social environments. Increasing one’s social interactions may increase the extent to which individuals elicit both positive and negative interpersonal experiences. Future research should examine the degree to which emotion-focused and dampening responses to positive affect are associated with particular behaviors that may serve as mechanisms through which individuals beget both positive and negative events. For example, dampening responses to positive affect may be specifically associated with avoidance behavior, particularly in the social domain, which may account for the relationship between dampening and the experience of both fewer positive and negative interpersonal events, whereas emotion-focused responses may be associated with greater engagement in interpersonal relationships. Of note, positive affect was not directly associated with positive or negative events, suggesting that positive affect may only contribute to positive and negative event generation through its effect on regulatory styles to positive affect.

Further, our results did not find evidence of significant differences based on sex, which was surprising given documented sex differences in the stress generation effect and in brooding (Hammen, 2005). Although surprising, these findings indicate that individuals, regardless of sex, who experience trait negative or positive affect are vulnerable to engaging in brooding in response to negative affect and positive rumination in response to positive affect, as well as to experiencing subsequent interpersonal stress generation of both negative and positive events. In this sense, this stress generation model may not explain females’ heightened vulnerability to experience negative interpersonal dependent events, but possibly may reflect a shared vulnerability among males and females. Thus, targeting negative affect among both males and females may be important in preventing the occurrence of these maladaptive emotion regulatory styles, specifically brooding and dampening. Importantly, we need more information about whether the generation of positive events buffers the simultaneous generation of negative events, which may indicate whether we should target positive affect amplification responses among males and females as well.

Although there were a number of strengths, the current study had several limitations. Importantly, the present study included simultaneous measurement of trait affect and regulatory responses, which precluded our ability to test for mediation, which requires the presence of completely separate time points. Relatedly, we measured *trait* affect as the theoretically primary construct in the present model; however, we cannot truly determine the directionality of trait affect and regulatory responses to affect. For instance, it is possible that trait affect contributes to regulatory responses to affect and regulatory responses also influence trait affect. However, we tested our models with a reverse direction framework and did not find significant indirect effects, which suggests that the proposed models may accurately reflect that trait affective states are associated with regulatory responses, which, in turn, contribute to events rather than regulatory responses predicting to event generation via trait affect. Further, it is possible that affect and responses to affect are involved in a cyclical process with both *trait* and *state* affect and responses to affect, such that particular

responses to affect may, in turn, contribute to greater state positive and negative affect and employment of specific regulatory responses, thereby maintaining the occurrence of either (or both) negative or positive events. Future research will benefit from multiple assessments to examine these relationships, as well as identification of possible transactional relationships that were unable to be examined in the current study.

Another limitation of the present study is that the majority of the study's constructs were measured via self-report instruments, which may be biased by shared method variance. However, the study benefitted from a sensitive interview of life events designed to limit reporting biases and ensure correct categorization of events as either dependent or independent (necessary for an accurate examination of stress generation). Additionally, given the study's design, negative and positive life events were not assessed at baseline, so we were unable to control for baseline interpersonal events to examine whether there were increases in positive and negative interpersonal events over time. Further, future research should assess both depressive and (hypo)manic symptoms at follow-up, in addition to baseline, given that both positive and negative affect, as well as responses to affect, have been found to confer risk for depressive, anxiety, and bipolar-spectrum disorders (e.g., Johnson, McKenzie, & McMurrich, 2008). Determining the degree to which the event generation relationships identified in this study may contribute to the onset and/or maintenance of these disorders may inform treatment development for these disorders. However, the current findings are crucial as they reveal a better understanding of how trait affect, regulatory responses, and negative and positive event generation are related.

Finally, the current study sample was selected based on behavioral approach system sensitivity for the goals of the larger longitudinal study. Thus, the findings may not generalize to those not pre-selected based on these attributes. In particular, individuals high in BAS status were more likely to engage in positive rumination, as well as brooding and dampening, than those moderate in BAS, which suggests that our sample may have higher than typical levels of positive and negative rumination. Thus, it is possible that selection of our sample on BAS status may have influenced the results of our study and may not hold in samples not selected based on BAS. However, we examined whether BAS sensitivity moderated the observed relationships and did not find evidence. Although we controlled for BAS in all analyses, future research should further test these relationships in clinical and community samples not selected by BAS status, which may generalize to other populations.

Despite these limitations, the current study's findings that trait negative and positive affect contribute to subsequent generation of both positive and negative interpersonal events via employment of specific responses to positive affect has several important implications for both research and practice. Importantly, our findings suggest that negative and positive affect have unique associations with regulatory responses to positive emotion. Specifically, negative affect may be associated with the utilization of dampening and brooding strategies, whereas positive trait affect may be associated with emotion- and self-focused strategies for amplifying positive affect. However, the use of these strategies did not selectively predict positive or negative event generation, suggesting that the use of certain emotion regulatory responses may heighten or diminish exposure to both positive and negative interpersonal events. For instance, the employment of dampening contributed to the reduced occurrence of

positive and negative interpersonal events, suggesting that individuals with negative affect and dampening responses to positive affect may behave in ways that contribute to a more isolated and withdrawn environment, thereby increasing risk for subsequent psychopathology. Alternatively, certain individuals (e.g., those with positive affect) may be more engaged in their interpersonal environment through use of emotion-amplifying strategies and, in turn, experience more positive events (or “eustress”), but also may have the unintended effect of experiencing heightened negative interpersonal events. Consequently, it is important to identify whether there are other regulatory styles that may confer unique risk to positive and/or negative event generation, and the specific role of these styles in contributing to event generation. Given studies indicating that a wide range of response styles is beneficial (e.g., Bonanno & Burton, 2013), prevention and intervention programs should aim to identify individuals with greater negative and positive affect and encourage flexible engagement in contextually appropriate responses to affect, particularly positive affect, which might provide a broader coping repertoire to adaptively handle both types of affect. Greater investigation of trait affect, and response styles to positive affect is merited, as they may serve as potential points of intervention to modify exposure to interpersonal negative and positive events and build resiliency against disorder (Shahar & Priel, 2002).

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Highlights

- Trait negative affect was associated with more brooding and dampening
- Trait positive affect was associated with more positive rumination
- Dampening predicted fewer negative and positive interpersonal events
- Positive rumination predicted greater positive and negative interpersonal events
- Implications for stress generation and psychopathology are discussed

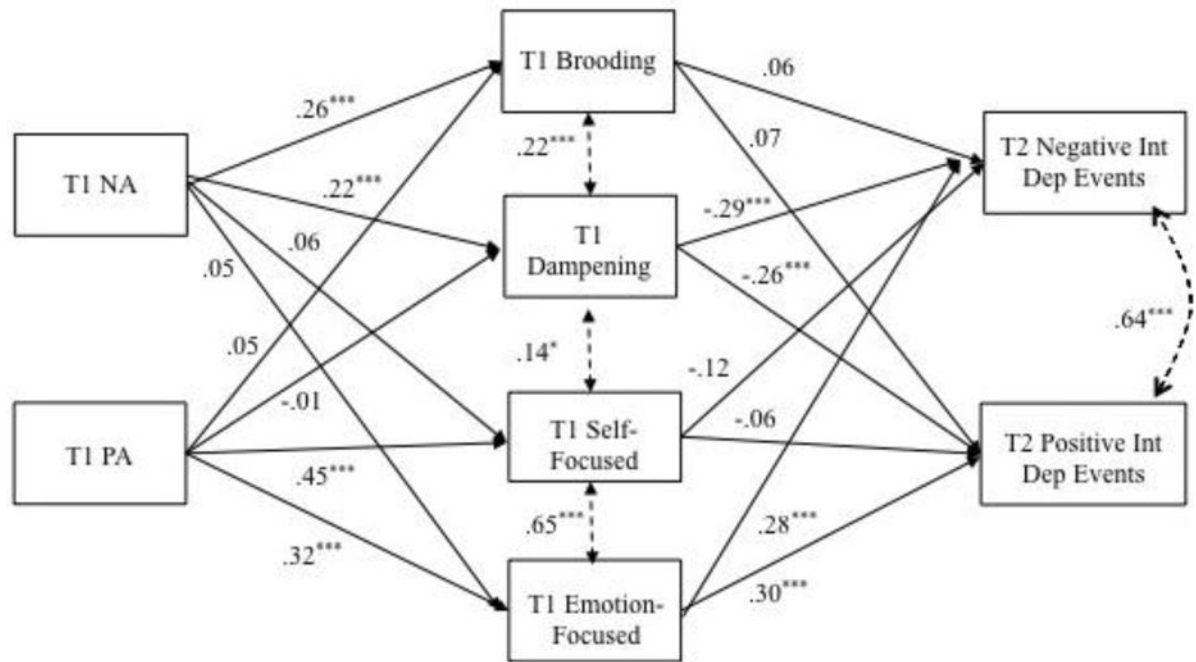


Figure 1.

Path coefficients from affect, responses to affect, and positive and negative interpersonal dependent stressors.

Note. Standardized path coefficients are presented in the figure. Dotted lines are covariances.

NA = Negative Affect, PA = Positive Affect; Int = Interpersonal; Dep = Dependent.

Additional paths were included between each variable in the model, but are not included in the figure for ease of interpretation. Time 1 depressive symptoms, BAS status, sex, and race were also covaried in all analyses when predicting all dependent variables.

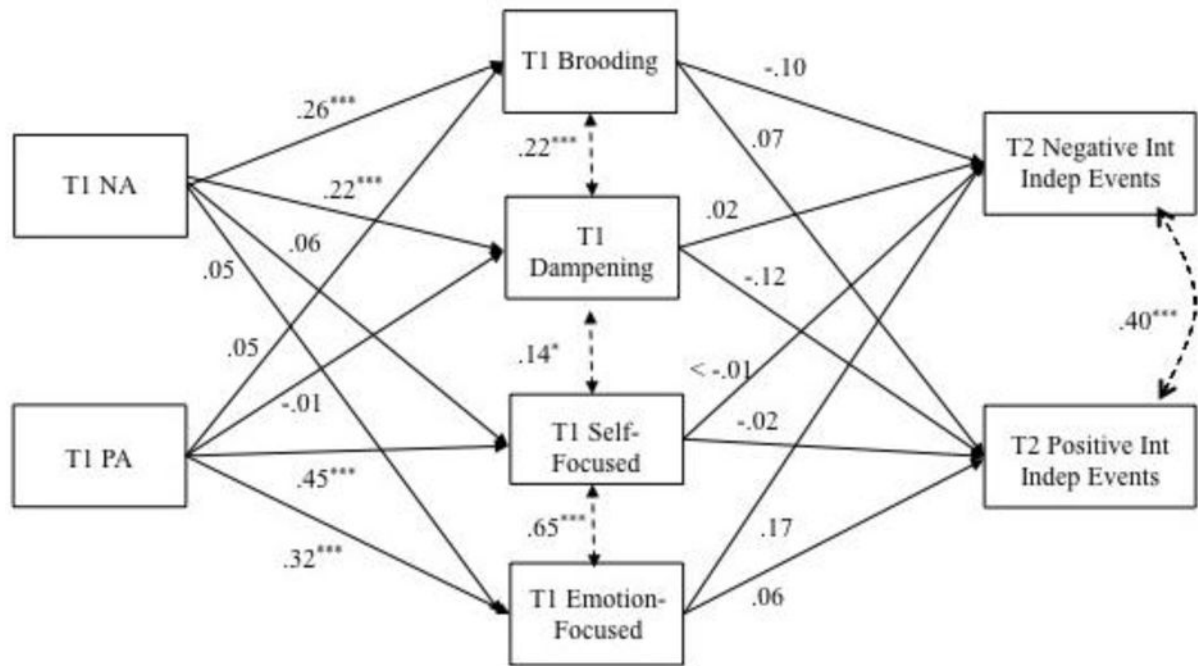


Figure 2.

Path coefficients from affect, responses to affect, and positive and negative interpersonal independent stressors.

Note. Standardized path coefficients are presented in the figure. Dotted lines are covariances.

NA = Negative Affect, PA = Positive Affect; Int = Interpersonal; Indep = Independent.

Additional paths were included between each variable in the model, but are not included in the figure for ease of interpretation. Time 1 depressive symptoms, BAS status, sex, and race were also covaried in all analyses when predicting all dependent variables.

Table 1

Bivariate Correlations Between Primary Study Variables

Measure	1	2	3	4	5	6	7	8	9	10	
1 NA	–	–.11	.43	.46	.15	.10	.24	.12	<.01	<.01	
2 PA		–	–.09	–.21	.26	.38	–.02	.07	.11	.09	
3 Brooding			–	.51	.34	.30	.19	.02	.08	.03	
4 Dampening				–	.26	.20	<.01	.07	–.13	–.04	
5 Emo-Focused					–	.72	.23	.18	.23	.10	
6 Self-Focused						–	.07	.13	.14	.08	
7 Neg Dep							–	.44	.64	.36	
8 Neg Indep								–	.38	.42	
9 Pos Dep									–	.25	
10 Pos Indep										–	
Mean		32.77	67.75	12.03	14.52	14.44	10.73	4.38	1.75	3.64	.30
SD		11.21	13.71	3.72	5.14	3.27	2.96	4.33	1.63	2.09	.60

Note: All correlations greater than .13 are significant at $p < .05$. PA = Positive Affect; NA = Negative Affect; Emo-Focused = Emotion Focused, Neg Dep = Negative Dependent, Neg Indep = Negative Independent, Pos Dep = Positive Dependent, Pos Indep = Positive Independent