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Normal personality traits, rumination and stress generation among early adolescent girls

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Abstract

This study examined associations between personality and stress generation. Expanding upon prior work, we examined (a) the role of Positive Emotionality (PE), Negative Emotionality (NE), and Constraint (CON), and their lower-order facets, as predictors of acute and chronic interpersonal stress generation; (b) whether personality moderated effects of rumination on stress generation; and (c) whether personality increased exposure to independent (uncontrollable) stress. These questions were examined in a one-year study of 126 adolescent girls (M age = 12.39 years) using contextual stress interviews. NE predicted increases in acute and chronic interpersonal stress generation, but not independent stress. NE, CON and affiliative PE each moderated the effect of rumination on chronic interpersonal stress generation. These effects were driven by particular lower-order traits.

Keywords

Personality; Stress generation; Rumination; Negative emotionality; Positive emotionality; Constraint

Understanding the role of personality in determining the likelihood individuals will encounter stressful experiences has been of great interest to researchers. Central to this work is Hammen's (1991) stress generation model, which asserts that susceptible individuals actively contribute to the occurrence of stress in their lives (Hammen, 2006). Specifically, the model posits that individuals experience increased rates of stressful life events, especially interpersonal ones, that occur at least partially as a result of their individual characteristics, situation or behaviors (i.e., dependent interpersonal events, such as conflicts; Hammen, 1991). In addition, individuals select themselves into stressful interpersonal contexts that result in high levels of ongoing (i.e., chronic) interpersonal stress (e.g., dissatisfying relationships; Hammen, 2006). This model has accrued support among adolescents and adults, and research consistently demonstrates that personality, particularly

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neuroticism, predicts the generation of stressful life events (Hammen, 2006; Liu & Alloy, 2010). Yet, significant gaps in our understanding of the role of personality in stress generation remain, particularly with regard to (a) the predictive effects of personality traits other than neuroticism; (b) the role of personality in predicting chronic stress generation; (c) whether personality moderates the effect of other predictors of stress generation; and (d) whether personality predicts exposure to uncontrollable (i.e., independent) and non-interpersonal stress. The present study was designed to address these gaps.

One predominant approach to measuring personality is the Big Three hierarchical model (Tellegen, 1985; Watson & Clark, 1992). This model includes three higher-order dimensions: Negative Emotionality (NE; including elements of the Five Factor Model [FFM] Neuroticism and Agreeableness [inversely]), Positive Emotionality (PE/Extraversion, including FFM Extraversion and achieving aspects of FFM Conscientiousness) and Constraint (CON, including controlled aspects of FFM Conscientiousness and elements of Openness to Experience), which are each marked by a series of lower-order traits.¹ These dimensions are recognized in various structural models of personality (e.g., Clark & Watson, 1999; Goldberg, 1993; McCrae & Costa, 1990; Rothbart, Ahadi, & Evans, 2000) and have broad implications for social, academic and occupational outcomes as well as risk for psychopathology (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Kotov, Gamez, Schmidt, & Watson, 2010; Paunonen, 1998). Despite this, no study of stress generation has examined the role of all 3 higher-order traits (or all 5 FFM traits). Moreover, little work has investigated associations between the lower-order traits and stress generation, despite evidence that these traits account for substantial variance in behavioral and clinical outcomes, beyond that accounted for by the higher-order traits (Paunonen, 1998; Reynolds & Clark, 2001).

Most research examining personality and stress generation has focused narrowly on one trait-neuroticism. This work has consistently shown that individuals higher in neuroticism generate more stressful life events (e.g., Kendler, Gardner, & Prescott, 2003; Kercher, Rapee, & Schniering, 2009; Lakdawalla & Hankin, 2008). For example, Uliaszek et al. (2012) found that greater neuroticism predicted increases in dependent interpersonal stressful life events (i.e., acute interpersonal stress generation) and chronic interpersonal stress (i.e., chronic interpersonal stress generation) among a sample of late adolescents. Few studies have examined whether the findings for neuroticism are consistent with the higher-order trait NE. In exception, two investigations within the same sample of adolescents demonstrated that NE predicted increases in dependent events (Wetter & Hankin, 2009), including specifically interpersonal ones (Shapero, Hankin, & Barrocas, 2013). Moreover, other lower-order facets of NE (alienation, aggression) have received little empirical attention, with the exception of one daily diary study of young adults which found that alienation was not concurrently associated with, and did not predict changes in, stress over time (Hankin, 2010).

¹Among early adolescents, there is a similar relationship between the FFM and the Big Three, except that PE includes elements of Openness to Experience (instead of the achieving aspects of Conscientiousness) and CON also includes the affiliative aspects of Agreeableness (Tackett et al., 2012).

Prior work examining PE and CON, and their lower-order facets, is also scarce. In terms of PE, in a sample of adolescents, PE predicted increases in dependent interpersonal events when examined in isolation, but not when accounting for the effects of other predictors (e.g., NE, co-rumination; Shapero et al., 2013). Further, among older adolescents, the FFM trait Extraversion was associated with, but did not predict increases in, chronic interpersonal stress (Uliaszek et al., 2012). Similarly, social closeness, but not wellbeing, was associated with baseline stress, but did not predict changes in stress over time (Hankin, 2010). In terms of CON, prior work has not assessed the higher-order trait or its lower-order facets, but some work suggests that impulsivity or traits related to impulsivity may increase vulnerability for generating dependent events (Liu & Kleiman, 2012; Molz et al., 2013). Finally, Murphy, Miller, and Wrosch (2013) found that mid- to late-adolescents higher in the FFM trait Conscientiousness experienced fewer severe dependent events and lower levels of chronic interpersonal stress.

Despite support for the role of personality in stress generation, there are significant gaps in the literature. First, most prior work has utilized life-event checklists (for exceptions, see Hankin, 2010; Kendler et al., 2003; Murphy et al., 2013; Uliaszek et al., 2012), despite evidence that checklists may be biased by individuals' perceptions and subjective interpretations, and as such, may be more prone to errors in identifying life events (Hammen, 2006; Monroe, 2008). This may be particularly important when examining neuroticism, as Espejo et al. (2011) showed that individuals higher in neuroticism appraised events as more subjectively stressful, but did not actually experience more severe events, when stress exposure and severity were based on objective contextual ratings. Second, little research has explored personality and chronic interpersonal stress generation, which represents a considerable gap in the literature (Liu & Alloy, 2010). Further, most prior work has not controlled for chronic stress when examining the link between personality and acute stress generation, despite evidence that different forms of stress co-occur (Hammen, Kim, Eberhart, & Brennan, 2009).

Third, more work is needed to evaluate whether personality places individuals at risk for generating stress, specifically interpersonal stress, or whether personality increases exposure to diverse forms of stress, including independent stress (Rudolph & Hammen, 1999). Limited prior work suggests that NE, PE/Extraversion and Conscientiousness do not predict exposure to independent events (Murphy et al., 2013; Shapero et al., 2013; Uliaszek et al., 2012), consistent with the stress generation model. There is some evidence that personality plays a role in the generation of non-interpersonal acute (e.g., academic events; e.g., Shapero et al., 2013) and chronic (Murphy et al., 2013; Uliaszek et al., 2012) stress. However, research is limited because most prior work has not distinguished between independent (uncontrollable) and dependent events and/or explored effects for dependent stress including both interpersonal and non-interpersonal stressors (for exceptions, see Shapero et al., 2013; Uliaszek et al., 2012).

Fourth, prior work has not examined whether personality moderates the effect of other predictors on stress generation. In a prior study in this sample, rumination (the tendency to passively and repeatedly focus on one's distress and the associated causes and consequences; Nolen-Hoeksema, 1991; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008)

predicted increases in acute and chronic interpersonal stress generation (Stroud, Sosoo, & Wilson, submitted for publication). Based on models that posit that personality traits serve to promote risk or resiliency in the presence of adversity (for a review, see Shiner & Caspi, 2003), we predicted that personality would moderate the effect of rumination on stress generation. Several lines of evidence indirectly support this prediction. First, personality shapes coping strategy selection (Connor-Smith & Flachsbart, 2007). For instance, individuals higher in the FFM traits Extraversion and Conscientiousness use engagement strategies more frequently (e.g., problem-solving, distraction) whereas those higher in neuroticism use these strategies less frequently. The Response Styles Theory (Nolen-Hoeksema, 1991) asserts that distraction may allow individuals to disengage from rumination and then engage in problem-solving to address the source of their difficulties. This suggests that higher levels of CON or PE may interrupt the link between rumination and stress generation, whereas higher levels of NE may potentiate this effect. Second, research suggests that personality moderates the impact of coping strategies (e.g., Bolger & Zuckerman, 1995; Nolen-Hoeksema et al., 2008). For example, disengagement strategies (e.g., avoidance, escape) are associated with reductions in negative affect among those high in neuroticism, but increases in negative affect among those low in neuroticism (e.g., Bolger & Zuckerman, 1995). Third, personality shapes the quality of interpersonal relationships. For instance, the tendency of high PE individuals to have high quality relationships (Robins, Caspi, & Moffitt, 2002) and to approach the environment (Clark & Watson, 1999) may protect them from generating interpersonal stress in the context of rumination. Similarly, higher levels of aspects of CON have been linked with fewer social difficulties (e.g., Eisenberg et al., 2000), suggesting that CON may be similarly protective. In contrast, NE is negatively related to relationship quality (e.g., Caspi & Shiner, 2006; Kendler et al., 2003), which may amplify the predictive effect of NE on rumination.

Finally, little research has examined personality and stress generation among early adolescents. Moreover, of those studies that have included early adolescents (Kercher et al., 2009; Shapero et al., 2013; Wetter & Hankin, 2009), none have utilized contextual stress interviews. Given that disorders associated with personality, rumination and stress generation (e.g., depression) often emerge in mid-adolescence (Rohde, Beavers, Stice, & O'Neil, 2009), it is important to understand these associations during early adolescence. Moreover, as compared to early adolescent boys, early adolescent girls exhibit higher levels of rumination (Hampel & Petermann, 2005) and generate higher levels of interpersonal stress (Rudolph & Flynn, 2007; Rudolph & Hammen, 1999). Thus, it is particularly important to understand links between rumination, personality and stress generation among early adolescent girls, prior to the development of psychopathology.

To address these gaps, the present study examined the unique effects of higher- and lower-order traits on the generation of acute and chronic interpersonal stress. Moreover, we examined whether personality moderated the effect of rumination on interpersonal stress generation. Finally, we explored the specificity of the observed effects. These questions were examined in a one-year study of early adolescent girls using contextual stress interviews. Based on prior work (e.g., Murphy et al., 2013; Uliaszek et al., 2012), we predicted that higher levels of NE and neuroticism (as measured by the stress reaction subscale of the Multidimensional Personality Questionnaire; Patrick, Curtin, & Tellegen, 2002), as well as

lower levels of PE and CON, would each predict increases in interpersonal dependent stressful life events and chronic interpersonal stress. We also expected that greater NE would magnify the predictive effects of rumination on interpersonal dependent stressful life events and chronic interpersonal stress, whereas greater PE and CON would attenuate these effects. Given the lack of prior work on lower-order traits other than stress reaction, we did not make specific predictions. Finally, consistent with prior work (e.g., Murphy et al., 2013; Uliaszek et al., 2012), we expected that the higher-order traits would predict increases in non-interpersonal dependent stressful life events and non-interpersonal chronic stress.

1. Method

1.1. Participants

The 126 adolescent girls (M age = 12.39 years, SD = .76 years) who participated in the present study were in or entering 6th (48.4%) or 7th (33.3%) grade, or entering 8th (15.9%) grade (2.4% missing). Consistent with the ethnic composition of the counties from which participants were drawn (94% and 97% Caucasian), adolescents' self-reported ethnicity was: 4.8% Black/African American; 5.6% Asian; 82.6% White/Caucasian; 2.4% Hispanic/Latina; 2.4% Bi-racial/Multi-racial; 12.7% other. The percentages for ethnicity do not sum to 100% because participants were allowed to select more than one category. Most mothers (M age = 44.32 years, SD = 6.75 years) were the biological parent of the adolescent (94.4%), Caucasian/White (94.5%) and married (76.2%). Most mothers had bachelor's or advanced degrees (65.1% bachelor's or advanced degree) and most families were middle to upper class (<\$10,000 [4.0%]; \$10,000–\$20,000 [4.8%]; \$21,000–\$40,000 [10.3%]; \$41,000–\$60,000 [19.0%]; \$61,000–\$100,000 [26.2%]; >\$100,000 [35.7%]).

1.2. Procedure

Participants were recruited from two predominately rural counties in New England using multiple methods, including advertisements or flyers (10.3%), word-of-mouth (13.1%), and local schools (76.6%). To be eligible, adolescent girls had to be currently in or entering (i.e., summer before) 6th or 7th grade or entering 8th grade, and their primary caregiver (herein called mother) had to be willing to participate. Two fathers, who identified as primary caregivers, were excluded from analyses. At Time 1 (T1) participation included: (a) a laboratory visit during which mothers and daughters each completed separate diagnostic and objective stress interviews; and (b) online questionnaires completed separately at home, including measures of rumination and personality. Of the 126 daughters who completed the laboratory visit, 116 completed the online questionnaires. Ns varied due to missing data (see Table 1). Approximately one-year later, 86% (n = 108) participated in a follow-up (T2) that included the same interviews.²

²Four sibling pairs participated, but due to non-independence of data, only the first sibling who participated was included. However, the models for the higher-order traits were repeated with the second siblings included (instead of the first siblings) and results were identical.

1.3. Measures

1.3.1. Current depressive symptoms—Current (past month) depressive symptoms were assessed using the Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997). Symptoms were rated: 0 = no symptoms; 1 = mild symptoms; 2 = moderate, sub-threshold symptoms of depression; 3 = meets DSM-IV criteria for depression. Inter-rater reliability (assessed via electronic recordings for 27% of interviews) was good (T1: intra-class correlation [*ICC*] = 1.00). At T1, 7% of girls had depressive symptoms (rated 1–2) and none had diagnosable depression.³

1.3.2. Personality—Personality traits were assessed using the Multidimensional Personality Questionnaire-Brief Form (Patrick et al., 2002), a 155-item self-report questionnaire that assesses 3 higher-order traits: NE, PE and CON. Each higher-order trait is marked by the following lower-order scales: (a) NE: Stress Reaction, Alienation, Aggression; (b) PE: Wellbeing, Social Potency, Achievement, Social Closeness; and (c) CON: Control, Harm Avoidance, Traditionalism. In addition, the higher-order trait PE includes two subscales tapping agentic (achievement and social potency) and communal/affiliative aspects of PE (wellbeing, social closeness). The Absorption subscale was not used. Internal consistency reliabilities for the higher-order traits (NE: $\alpha = .92$; PE: $\alpha = .81$; CON: $\alpha = .82$), agentic PE ($\alpha = .80$) and affiliative PE ($\alpha = .84$) were in the high range; those for the scales tapping the subscales were in the moderate to high range (α s = .72–.89), with the exception of traditionalism ($\alpha = .52$). Given the low reliability of traditionalism in this sample, we did not examine this trait.⁴

1.3.3. Rumination—At T1, ruminative brooding (herein called rumination) or the tendency to passively focus on one's situation was assessed with 5 items from the Ruminative Responses Scale (e.g., “Think ‘Why do I always react this way?’”; Nolen-Hoeksema & Morrow, 1991), in line with prior work (e.g., Treynor, Gonzalez, & Nolen-Hoeksema, 2003). Directions were modified for adolescents to report on their responses to feeling “stressed or upset” rather than “depressed” (Burwell & Shirk, 2007). For each item, participants rated how often they “think or do each one” when they “feel stressed or upset” using a 4-point scale from 1 (almost never) to 4 (almost always). The mean was used ($\alpha = .80$).

1.3.4. Stress generation—A modified version of the UCLA Life Stress Interview (LSI; adapted from Hammen, 1991; Hammen et al., 1987; Rudolph & Flynn, 2007; Rudolph & Hammen, 1999; Rudolph et al., 2000) was used to assess adolescents' chronic and acute life stress. The T1 interview assessed the year prior to the interview; the T2 interview assessed the time period between T1 and T2. Mothers and daughters completed separate interviews with the same interviewer, and interviewers were blind to all other study data.

³At T1, 6 participants had history of MDD; when these individuals are excluded from the analyses, the findings for the higher-order traits hold. Full results available upon request.

⁴Because the internal consistency reliability for higher-order trait CON was in the high range ($\alpha = .82$), we retained the traditionalism items in the higher-order scale. However, we repeated the higher-order CON analysis without the traditionalism items and the interaction between CON and rumination in predicting chronic interpersonal stress generation remained significant ($b = -.611$ [–1.220 to –.002]; $SE = .311$; $p = .049$).

1.3.4.1. Acute stress: For each event, participants provided information about the surrounding context (e.g., circumstances and resources to cope with it, predictability, and prior experience with similar events), the duration, and the consequences to obtain the degree of impact for a typical individual given the context. Integrating information from mothers and daughters (e.g., Rudolph & Flynn, 2007), interviewers prepared narrative accounts of each event (excluding participants' subjective reactions). Narratives were presented to an independent rating team who were blind to participants' diagnostic information and subjective reactions.

The team rated the objective impact, independence and interpersonal nature of each event. Objective impact was rated on a scale of 1 (no negative impact) to 5 (extremely severe negative impact). Independence, or the degree to which the event resulted from the participant's behavior, was rated on a scale of 1 (fully independent of the person's behavior) to 5 (fully dependent; occurred strictly as a result of the person's own actions). Events rated as 3 or higher were coded as dependent and those rated 2.5 or lower were considered independent (e.g., Rudolph et al., 2000). The team also rated the event as interpersonal or non-interpersonal. Interpersonal events referred to those events in which the primary context involved relations with other people (e.g., conflicts) or events that happened to others that affected relations with the participant (e.g., friend moving away). A second team, blind to the original ratings, rerated a set of events ($n = 132$) on objective impact ($ICC = .92$), independence ($ICC = .99$), and interpersonal status ($ICC = .98$).

Consistent with prior work (e.g., Rudolph & Hammen, 1999), four acute stress composites were created for each time point by summing the objective ratings for each type of event: (1) interpersonal acute stress generation (i.e., dependent interpersonal events; e.g., conflicts, relationship break-up); (2) non-interpersonal acute stress generation (i.e., dependent non-interpersonal events; e.g., academic failure, extracurricular disappointment); (3) independent interpersonal acute stress (e.g., parental job loss, parental divorce); and (4) independent non-interpersonal acute stress (e.g., moved, changed schools).

1.3.4.2. Chronic stress: The LSI also examined ongoing objective stress over the interview period in several domains (academics, academic behavior, parent-child relationship, close friendships, peer social life, romantic relationships/dating, parents' marital [or cohabiting] romantic relationship [if applicable]). Using behavioral descriptions, interviewers assessed and rated each domain on a 9-point scale from 1 (*excellent/optimal circumstances*) to 5 (*very bad circumstances*) in half-point increments. Inter-rater reliability was good ($ICCs$: T1: $M = .80$ [range = .72–.89], daughter; $M = .83$ [.70–.91], mother; T2: $M = .93$ [.90–.97], daughter; $M = .96$ [.93–.98], mother).

Two chronic stress composites were created for each time point: (1) interpersonal chronic stress generation: the mean of the parent-child relationship, close friendships, peer social life, romantic relationships/dating, and parents' marital relationship (if applicable); and (2) non-interpersonal chronic stress generation: the mean of the academic and academic behavioral domains. At each time point, the composites based on mother and daughter report were highly correlated for interpersonal (T1: $r[124] = .74$, T2: $r[124] = .78$; $ps < .000$;) and non-interpersonal (T1: $r[124] = .78$; T2: $r[124] = .84$; $ps < .000$) chronic stress; thus, we

combined the mother and daughter ratings, consistent with prior work (Rudolph et al., 2000), by taking the mean of each domain.⁵

1.4. Data analytic plan

Path analyses were conducted in Mplus 7 (Muthen & Muthen, 1998–2012) using maximum likelihood estimation. Path analysis allowed us to simultaneously examine acute and chronic forms of stress generation, permitting identification of the unique predictive effects of personality, rumination, and their interaction on each type of stress generation. In addition, path analysis permitted the estimation of missing data. Little's MCAR test indicated that data were missing completely at random ($\chi^2[108] = 124.265$; $p = .136$); thus, missing data was estimated with full information maximum likelihood (FIML), consistent with current recommendations for handling missing data with interaction terms (Enders, 2010).

In Step 1, we examined the higher-order personality traits (NE, PE and CON) and rumination, and their interaction, as predictors of acute and chronic generation in separate models for each higher-order personality trait (NE, PE and CON). In each model, paths were estimated from the higher-order trait, rumination and the rumination X higher-order trait interaction (e.g., rumination X NE) to each of the T2 stress generation variables (T2 chronic stress generation, T2 acute stress generation; see Fig. 1). Interaction variables were computed in Mplus by multiplying the centered predictor variables with each other. Significant interactions were probed in Mplus using simple slopes. Covariances were included between the disturbances of: (1) the predictor variables (e.g., NE and rumination); (2) each of the predictor variables with the interaction variable (e.g., NE and NE X rumination); and (3) the outcome variables (e.g., T2 chronic and acute interpersonal stress generation). In Step 2, we ran a series of models to examine the lower-order traits, rumination and their interaction, as predictors of acute and chronic interpersonal stress generation. Separate models were estimated for each lower-order trait and were identical to those in Step 1. In Step 3, for each higher-order trait, we examined the specificity of the observed effects in separate analyses for each type of stress. Models were identical to those in Step 1, except one additional T2 stress outcome variable was added (independent interpersonal acute stress, independent non-interpersonal acute stress, dependent non-interpersonal acute stress or chronic non-interpersonal stress) to permit evaluation of the association between each higher-order trait and each form of stress, over and above the effects of personality, rumination and their interaction on T2 interpersonal chronic and acute stress generation.

In preliminary analyses, we controlled for several potential covariates including three T1 stress variables (T1 interpersonal chronic stress, T1 non-interpersonal chronic stress, T1 interpersonal dependent acute stress) and the other higher-order traits not being investigated

⁵Analyses examining NE, PE, affiliative PE and CON were repeated using the parent and child composites. All findings remained significant, except: (a) the interaction between NE and rumination on chronic interpersonal stress generation fell to marginal significance (mother: $p = .064$; daughter: $p = .075$); (b) the interaction between affiliative PE and rumination on chronic interpersonal stress generation no longer approached significance ($p = .130$) based on daughters' ratings; and (c) the interaction between affiliative PE and rumination on chronic interpersonal stress generation was marginally significant ($p = .069$) based on mothers' ratings. To examine whether the interaction paths were significantly different based on mothers' and daughters' ratings, we constrained the interaction paths to equality; results of Wald Z tests indicated that the interaction paths were equivalent.

as predictors in the model (e.g., PE and CON were covariates in the NE model). In addition, for Step 2 only, we controlled for the other lower-order subscales tapping the same higher-order trait (e.g., alienation and aggression were covariates in the stress reaction model). Finally, in Step 3 only, we controlled for the corresponding form of T1 stress (e.g., T1 independent interpersonal acute stress in the T2 independent interpersonal acute stress). Paths were included from each of the covariates to all other variables in the model and those that were not significant were trimmed. For Steps 1 and 2, preliminary models indicated that T1 non-interpersonal chronic stress was not significantly related to any of the variables, and thus, was dropped from all models. Full results for the paths included are available upon request (see also Tables 2–5). Covariances were included between the remaining covariates.

Model fit was assessed with: (a) Comparative Fit Index ($CFI > .95$ reflects good fit; Hu & Bentler, 1998); and (b) the Root Mean Squared Error of Approximation ($RMSEA < .06$ good fit; $< .08$ adequate fit) and its 90% Confidence Intervals (small ranges indicate $RMSEA$ accurately reflects fit; Hu & Bentler, 1998).

We conducted *a priori* power analyses to ensure that our sample size of $N = 126$ was adequate for the present analyses. We took a Monte Carlo approach in which we first defined a population model and generated data using hypothesized parameter values drawn from existing research (e.g., Flynn & Rudolph, 2011; Liu & Kleiman, 2012; Shapero et al., 2013; Uliaszek et al., 2012), then examined parameter estimates for a series of models (500 samples or replications) drawn from these simulated data (Muthen & Muthen, 2002; Thoemmes, MacKinnon, & Reiser, 2010). These analyses, using a population model defined by moderate effects on stress generation for NE, CON, and rumination, and modest effects for PE, indicated that with a sample of $N = 126$ we had adequate power (90–95% power across parameters) to detect as significant a moderate effect size—as we would expect for NE, CON and rumination—but low power (21–23%) to detect as significant a small effect size—as we would expect for PE. Full results of Monte Carlo analyses are available upon request.

2. Results

See Table 1 for descriptive statistics and intercorrelations.

2.1. Personality, rumination and acute and chronic interpersonal stress generation

2.1.1. Negative emotionality—Fit indices for the model examining NE were acceptable ($\chi^2[13] = 5.656$; $CFI = 1.000$; $RMSEA = .000$ [.000–.000]). Overall, the model explained 42.2% of the variance in T2 acute interpersonal stress generation and 52.8% of the variance in T2 chronic interpersonal stress generation. T2 acute and chronic interpersonal stress generation were significantly correlated ($r = .50$; $p < .001$). As hypothesized, greater NE predicted increases in T2 acute and chronic interpersonal stress generation (see Table 2). In addition, NE moderated the effects of rumination on acute and chronic interpersonal stress generation, such that rumination predicted increases in acute and chronic interpersonal stress generation among adolescents with higher NE (one SD above the mean; acute: $b = 2.042$; $SE = .592$; $p = .001$; chronic: $b = .209$; $SE = .075$; $p = .005$), but not among those with moderate (mean; acute: $b = .911$; $SE = .483$; $p = .059$; chronic: $b = .094$; $SE = .061$; $p = .124$) and

lower (one *SD* below the mean; acute: $b = -.220$; $SE = .711$; $p = .757$; chronic: $b = -.021$; $SE = .090$; $p = .814$) NE.

Fit indices for the models examining the lower-order facets of NE were adequate (alienation: $\chi^2[17] = 25.846$; $CFI = .963$; $RMSEA = .064$ [.000–.112]; aggression: $\chi^2[17] = 25.907$; $CFI = .955$; $RMSEA = .059$ [.000–.106]; stress reaction: $\chi^2[14] = 13.197$; $CFI = 1.000$; $RMSEA = .000$ [.000–.082]). Results indicated that alienation, aggression and stress reaction each predicted increases in acute interpersonal stress generation (see Table 2), but only alienation predicted increases in chronic interpersonal stress generation. In addition, alienation and aggression each moderated the effect of rumination on acute interpersonal stress generation. Specifically, rumination predicted increases in acute interpersonal stress generation among those with higher (alienation: $b = 2.334$; $SE = .594$; $p < .001$; aggression: $b = 2.479$; $SE = .557$; $p < .001$) and moderate (alienation: $b = 1.161$; $SE = .466$; $p = .013$; aggression: $b = 1.438$; $SE = .447$; $p = .001$) levels of alienation and aggression, but not among those with lower levels of these traits (alienation: $b = -.012$; $SE = .711$; $p = .987$; aggression: $b = .397$; $SE = .665$; $p = .550$). In contrast, stress reaction did not moderate the effect of rumination on acute interpersonal stress generation and none of the lower-order traits moderated the effect of rumination on chronic interpersonal stress generation.

2.1.2. Positive emotionality—Fit indices for the model examining PE were strong ($\chi^2[12] = 10.087$; $CFI = 1.000$; $RMSEA = .000$ [.000–.078]). Overall, the model explained 38.1% of the variance in T2 acute interpersonal stress generation and 50.7% of the variance in T2 chronic interpersonal stress generation. T2 acute and chronic interpersonal stress generation were significantly correlated ($r = .56$; $p < .001$). In contrast to predictions, PE was not associated with chronic and acute interpersonal stress generation and did not moderate the effect of rumination on acute interpersonal stress generation (see Table 3). However, the interaction between rumination and PE approached significance for chronic interpersonal stress generation. Among adolescents with lower PE, rumination predicted increases in chronic interpersonal stress generation ($b = .214$; $SE = .078$; $p = .006$), but not among those with moderate ($b = .097$; $SE = .062$; $p = .118$) or higher ($b = -.020$; $SE = .094$; $p = .834$) levels of PE.

Fit indices for the model examining affiliative ($\chi^2[28] = 38.157$; $CFI = .954$; $RMSEA = .054$ [.000–.093]) and agentic PE ($\chi^2[17] = 20.014$; $CFI = .984$; $RMSEA = .038$ [.000–.093]) were adequate. Results indicated that affiliative PE, but not agentic PE, moderated the effect of rumination on chronic interpersonal stress generation (see Table 3). Specifically, rumination predicted increases in chronic interpersonal stress generation only among those lower in affiliative PE (lower: $b = .214$; $SE = .075$; $p = .004$; moderate: $b = .095$; $SE = .062$; $p = .124$; higher: $b = -.024$; $SE = .088$; $p = .788$). The main effects of affiliative and agentic PE on acute and chronic interpersonal stress generation were not significant, and these traits did not moderate the effect of rumination on acute interpersonal stress generation.

Fit indices for the models examining the lower-order facets of PE were adequate (wellbeing: $\chi^2[16] = 10.913$; $CFI = 1.000$; $RMSEA = .000$ [.000–.052]; social closeness: $\chi^2[20] = 17.180$; $CFI = 1.000$; $RMSEA = .000$ [.000–.065]; social potency: $\chi^2[18] = 16.948$; $CFI = 1.000$; $RMSEA = .000$ [.000–.075]; achievement: $\chi^2[19] = 21.022$; $CFI = .990$; $RMSEA = .$

029 [.000–.085]). Analyses of the PE subscales suggested that one lower-order component of affiliative PE—wellbeing—was driving the moderating effect of affiliative PE on chronic interpersonal stress generation (see Table 4). Specifically, greater rumination predicted increases in chronic interpersonal stress generation among adolescents with lower ($b = .236$; $SE = .080$; $p = .003$), but not moderate ($b = .107$; $SE = .061$; $p = .077$) or higher ($b = -.021$; $SE = .081$; $p = .795$) well-being. The other lower-order components of PE did not moderate the effect of rumination on chronic interpersonal stress generation. In addition, the lower-order PE traits were not associated with acute and chronic interpersonal stress generation and did not moderate the effect of rumination on acute interpersonal stress generation.

2.1.3. Constraint—Fit indices were adequate ($\chi^2[13] = 10.637$; $CFI = 1.000$; $RMSEA = .000$ [.000–.074]). Overall, the model explained 40.4% of the variance in T2 acute interpersonal stress generation and 54.1% of the variance in T2 chronic interpersonal stress generation. T2 acute and chronic interpersonal stress generation were significantly correlated ($r = .52$; $p < .001$). CON was not associated with acute or chronic interpersonal forms of stress generation and did not moderate the effect of rumination on acute interpersonal stress generation (see Table 5). However, CON moderated the effect of rumination on chronic stress generation, such that rumination predicted increases in chronic interpersonal stress generation among adolescents with lower ($b = .304$; $SE = .088$; $p = .001$) and moderate ($b = .131$; $SE = .061$; $p = .031$) CON, but not among those with higher CON ($b = -.043$; $SE = .083$; $p = .607$).

Fit indices for the models examining the lower-order facets of CON were acceptable (control: $\chi^2[23] = 24.642$; $CFI = .992$; $RMSEA = .024$ [.000–.079]; harm avoidance: $\chi^2[16] = 12.432$; $CFI = 1.000$; $RMSEA = .000$ [.000–.063]). Results indicated that control was driving the moderating role of CON. Specifically, rumination predicted increases in chronic interpersonal stress generation among those with lower ($b = .302$; $SE = .081$; $p < .001$) and moderate ($b = .185$; $SE = .056$; $p = .001$), but not higher ($b = .067$; $SE = .080$; $p = .400$) control. In addition, control emerged as a moderator of the effect of rumination on acute interpersonal stress generation, such that greater rumination predicted increases in acute interpersonal stress generation among those with lower ($b = 2.608$; $SE = .658$; $p < .001$) and moderate ($b = 1.438$; $SE = .475$; $p = .002$), but not higher ($b = .268$; $SE = .644$; $p = .677$) control.

2.1.4. Specificity of observed effects—Fit indices for the models examining the specificity of observed effects were acceptable ($CFIs \geq .95$; $RMSEAs < .08$). The higher-order traits and their interactions were not associated with non-interpersonal chronic stress or other types of acute stress, except the effect of NE on T2 non-interpersonal independent acute stress approached significance ($b = 1.914$; $SE = .990$; $p = .053$). Full results available upon request.

3. Discussion

The present study explored the unique effects of the three-higher order dimensions of personality and their lower-order facets on acute and chronic interpersonal stress generation. We also explored whether personality moderated the effect of rumination on stress

generation. Three main findings emerged. First, NE predicted increases in acute and chronic interpersonal stress generation. Second, NE amplified the effect of rumination on acute and chronic interpersonal stress generation, such that rumination predicted increased stress generation only among those higher in NE. Third, moderate and higher levels of affiliative PE and CON protected adolescents from generating chronic interpersonal stress in the context of rumination. Finally, personality did not predict exposure to independent stress nor the generation of non-interpersonal stress.

3.1. NE predicts increases in acute and chronic interpersonal stress generation

The present study suggests that the higher-order trait NE uniquely predicted increases in chronic and acute interpersonal stress generation. These findings are consistent with prior work examining NE and acute stress generation (Shapero et al., 2013; Wetter & Hankin, 2009) and build upon this work by demonstrating that NE also confers vulnerability for the generation of chronic interpersonal stress. Moreover, all of the sub-facets of NE predicted increases in acute interpersonal stress generation, adding to the empirical literature by suggesting that in addition to stress reaction (e.g., Lakdawalla & Hankin, 2008), alienation and aggression also confer risk for acute interpersonal stress generation. In contrast, only alienation predicted increases in chronic interpersonal stress generation. This contradicts the only prior study that examined the generation of chronic interpersonal stress: neuroticism predicted increases in chronic interpersonal stress in a sample of older adolescents (Uliaszek et al., 2012). This discrepancy may be due to developmental differences between early and older adolescents, given evidence that among early adolescents, the sad and anxious components of NE do not emerge in investigations of the hierarchical structure of personality (Tackett et al., 2012). Moreover, the FFM trait Neuroticism increases between ages 12 and 18 for girls (McCrae et al., 2002). Given these mixed and limited findings, more work is needed to understand the role of the lower-order facets of NE in the prediction of chronic interpersonal stress across adolescence.

Future research should also aim to delineate the mechanisms by which NE leads to stress generation, drawing upon both the stress generation model (Hammen, 1991) and personality theory (e.g., Caspi & Shiner, 2006; Shiner & Caspi, 2003). First, adolescents high in NE may evoke negative behaviors from others (e.g., Caspi & Shiner, 2006), leading to stress generation. For example, as compared to mothers of low NE adolescents, mothers of high NE adolescents more frequently exhibited aggressive behaviors (e.g., displays of anger, threats, argumentative statements) and less frequently exhibited positive interpersonal behaviors (e.g., caring affect, affirmative statements) towards their children during parent-child interactions (Davenport, Yap, Simmons, Sheeber, & Allen, 2011). Second, adolescents high in NE may react to others (e.g., Caspi & Shiner, 2006) in ways that contribute to stress generation. For instance, during parent-child interactions, as compared to adolescents low in NE, those high in NE were more likely to respond their mothers' aggression with aggressive behavior (Yap et al., 2011). Third, high NE individuals may select friends, romantic partners and social groups (e.g., Caspi & Shiner, 2006) that lead not only to elevated acute stress, but also to ongoing chronic stress in their relationships. Supporting this, individuals who reported higher NE at age 18 exhibited more negative romantic relationship outcomes in young adulthood, regardless of whether or not individuals remained with the same partner

(Robins et al., 2002). Future research should explore the extent to which the mechanisms underlying the generation of acute and chronic interpersonal stress are distinct versus shared, with attention to both proximal (e.g., evoking and reacting to conflict) and distal (e.g., selecting into a maladaptive friendship) processes. Such findings will inform the behaviors and skills that should be targeted in prevention efforts aimed at disrupting the link between NE and stress generation.

3.2. NE moderates the effect of rumination on acute and chronic interpersonal stress generation

The present findings also suggest that NE enhances the effect of rumination on both acute and chronic forms of stress generation. Specifically, rumination predicted increases in acute and chronic interpersonal stress generation only among adolescents higher in NE. Alienation and aggression drove the moderating effect of NE on acute interpersonal stress generation, but for chronic interpersonal stress generation, only alienation had a moderating effect. Although novel, these findings fit with research documenting links between rumination and aggression. For example, ruminating about a mild provocation leads to greater negative affect and more negatively-biased interpretations of the provocation, and increases aggressive behavior towards others (e.g., Bushman, Bonacci, Pedersen, Vasquez, & Miller, 2005). Although Bushman et al. (2005) examined a different form of rumination than that investigated in the present study, these findings suggest that high ruminators with a propensity for aggression interpret events more negatively and experience greater negative affect in response to innocuous events, which leads to increased aggressive behavior (Bushman et al., 2005), and in turn, acute stress generation (Molz et al., 2013). Similarly, given that personality shapes the ways in which individuals construe the environment (Shiner & Caspi, 2003), perhaps adolescents high in alienation are more likely to interpret others' behavior as indicative of betrayal or mistreatment. Such interpretations may render them more vulnerable to engaging in maladaptive interpersonal behaviors, including aggression and excessive reassurance seeking, thereby enhancing risk for acute and chronic stress generation (Molz et al., 2013; Stroud et al., submitted for publication).

3.3. Affiliative PE moderates the effect of rumination on chronic interpersonal stress generation

In contrast to NE, PE was not directly associated with stress generation, and did not moderate the effect of rumination on stress generation. However, the affiliative component of PE, specifically wellbeing, emerged as a significant moderator: rumination predicted increased chronic interpersonal stress generation only among those lower in these traits. This finding fits with prior work indicating that the affiliative component may be particularly important for relationship functioning and satisfaction (Stroud, Durbin, Saigal, & Knobloch-Fedders, 2010). Moreover, given that agentic PE was not associated with stress generation, it will be important for future research to continue to examine the effects of these components of PE separately. In addition, future work should test hypotheses that might explain why moderate and higher levels of affiliative PE protect ruminators from generating chronic stress. One possibility is that adolescents with moderate and higher affiliative PE more frequently use coping strategies that interrupt the effect of rumination on chronic stress generation. Supporting this, the FFM trait Extraversion predicts greater use of engagement

coping strategies such as problem-solving, distraction and cognitive restructuring (Connor-Smith & Flachsbart, 2007).⁶ Response style theory (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008) posits that distraction may serve to elevate mood, permitting disengagement from rumination, and thereby facilitating problem-solving or reappraisal to address the source of the problem. By engaging in these strategies more frequently, adolescents with higher affiliative PE may prevent such problems from leading to chronically stressful interpersonal relationships (Nolen-Hoeksema et al., 2008). This may also explain why PE did not protect ruminators from generating acute stress: girls who engaged in greater levels of rumination generated increases in acute events, regardless of their level of PE. However, by directly addressing their problems via problem-solving or cognitive restructuring, high ruminators with greater affiliative PE may prevent acute stressors (e.g., conflict with a friend, interpersonal rejection) from accumulating into chronically stressful interpersonal experiences (e.g., low quality friendships, social exclusion). Thus, future work should evaluate whether girls higher in affiliative PE may be more likely to use primary engagement strategies, thereby buffering the impact of rumination on chronic stress generation.

3.4. CON moderates the effect of rumination on chronic interpersonal stress generation

CON did not directly confer risk for stress generation. However, rumination predicted increased chronic interpersonal stress generation among adolescents with low and moderate, but not higher levels of CON. The protective effect of CON was driven by the lower-order facet control: adolescent girls with a high propensity towards reflective, cautious, and careful behavior; who tend to be sensible and level-headed; and who make detailed plans were not at risk for generating interpersonal chronic stress in the context of rumination. Moreover, control also moderated the effect of rumination on acute stress generation. Together, this suggests that higher control may buffer the effect of rumination on chronic interpersonal stress generation. Future work is needed to understand the underlying mechanisms of this protective effect. It may be that adolescents higher in control may be more effective in inhibiting the maladaptive interpersonal behaviors that mediate the link between rumination and stress generation. For example, given that rumination may confer risk for stress generation by increasing aggressive behavior (McLaughlin & Nolen-Hoeksema, 2012), those with higher control may be more effective in inhibiting aggressive behavior, thereby interrupting the link between rumination and stress generation. Supporting this, greater CON has been associated with greater compliance and reduced aggressive behavior (Shiner, Masten, & Tellegen, 2002). Thus, future work should examine whether those with lower and moderate levels of control have greater difficulty inhibiting maladaptive interpersonal behaviors, thereby conferring risk for stress generation.

3.5. Specificity of predictive effects

Consistent with the stress generation model (Hammen, 1991) and prior work (e.g., Shapero et al., 2013), the higher-order personality traits were not associated with independent acute

⁶Affiliative PE ($r = -.24, p = .016$) and wellbeing ($r = -.25, p = .012$) were each negatively correlated with rumination. However, this does not necessarily imply that these traits will be positively associated with distraction and problem-solving, as research is mixed regarding the direction of the association between rumination and these strategies (e.g., see Hilt, McLaughlin, & Nolen-Hoeksema, 2010).

stress. This suggests that adolescent girls high in NE do not simply experience greater total stress or passively inherit interpersonal stress created by their parents (Rice, Lewis, Harold, & Thapar, 2013), but rather generate interpersonal stress. Moreover, PE, NE and CON did not modify the effect of rumination on other forms of stress, suggesting specificity in the moderating effect of these traits on the link between rumination and stress generation. In contrast to prior work (e.g., Shapero et al., 2013), there was not evidence that personality was associated with the generation of non-interpersonal forms of acute stress (e.g., academic events). Moreover, personality did not predict changes in non-interpersonal chronic stress over time. Together these findings suggest that links between personality and stress vary according to several dimensions of stress, including form (chronic versus acute), independence and interpersonal nature.

3.6. Role of developmental context and gender

These findings may have been influenced by the early adolescent developmental stage of participants and may be specific to early adolescent girls. In line with this, Liu and Alloy (2010) posited that stress generation effects might intensify between early adolescence and adulthood, as individuals increasingly play a direct role in shaping their social experiences. Moreover, adolescent girls increase in the FFM trait Neuroticism from early to late adolescence (McCrae et al., 2002), suggesting that for girls, the effects of neuroticism on stress generation may strengthen across adolescence. Similarly, given evidence that people increase in social dominance (a trait related to agentic PE) and Conscientiousness, particularly in young adulthood (Roberts, Walton, & Viechtbauer, 2006), facets of PE and CON may directly contribute to stress generation among adults. Moreover, the present findings may also be specific to early adolescent girls, who generate higher levels of interpersonal stress (Rudolph & Flynn, 2007; Rudolph & Hammen, 1999) and use higher levels of rumination (Hampel & Petermann, 2005), as compared to their male counterparts. In addition, girls increase in the FFM trait Neuroticism across adolescence, but boys do not (McCrae et al., 2002). Thus, future research exploring whether these findings generalize to other developmental periods and to early adolescent boys is needed.

4. Limitations and strengths

These findings should be interpreted within the context of several limitations. First, replication is important given the small and self-selected nature of the sample. Consistent with prior work (Flynn & Rudolph, 2011; Kendler et al., 2003), the magnitude of the effects of personality, particularly PE, and rumination, in predicting stress generation were small, and thus, larger sample sizes may be needed to detect these effects. Moreover, the sample was comprised of early adolescent girls who were mostly Caucasian and thus, it will be important to replicate these findings in a representative sample of early adolescents from diverse racial and ethnic backgrounds. Second, although our two-wave longitudinal design allowed us to examine whether personality predicted prospective increases in stress generation, we could not test whether stress generation predicts changes in personality. For example, girls high in NE may behave in ways that generate increased stress in their relationships (e.g., conflicts, relationship loss, ongoing poor quality relationships) and in turn, these experiences may increase NE. Indeed, prior work shows that relationship

experiences contribute to changes in personality over time (e.g., Robins et al., 2002), suggesting this will be an important question for future work. Third, to provide a comprehensive understanding of the role of personality in stress generation, we conducted a large number of analyses, which may have inflated the family-wise Type 1 error rate. Fourth, we did not investigate the interactive effects of multiple dimensions of personality on stress generation, despite evidence that certain combinations of traits increase susceptibility to social difficulties (e.g., high NE with low self-regulation; Eisenberg et al., 2000). Finally, we did not explore whether links between stress generation, personality, and rumination confer risk for psychopathology. Given that each has been identified as a transdiagnostic factor (e.g., Conway, Hammen, & Brennan, 2012; Kotov et al., 2010; Nolen-Hoeksema et al., 2008), future work should explore whether chronic and acute stress generation may be pathways through which personality contributes to diverse forms of psychopathology.

The study also has several strengths. First, extending much of the research on personality and stress generation, we explored the unique predictive effects of the higher- and lower-personality traits on stress generation. Second, we examined personality and rumination, and their interactions, in line with recommendations to examine the interplay of multiple predictors of stress generation within one investigation (Liu & Alloy, 2010). Third, we used contextual objective stress interviews with adolescents and their mothers to assess stress, reducing concerns that links between personality and stress generation may be an artifact of shared method variance or biases inherent in assessing stress with life-event checklists. Finally, building upon prior work, we examined both acute and chronic forms of stress generation, permitting examination of whether personality uniquely contributed to each form of stress generation. This provided a richer understanding of the influence of personality on stress generation.

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Fig. 1.

Conceptual Model. IP = interpersonal. T1 = Time 1. T2 = Time 2. In preliminary analyses, the six variables on the left side of the figure were examined as potential covariates. In Step 1, the other higher-order traits not being investigated as predictors were examined as potential covariates (e.g., PE and CON in the NE model). In Step 2, in addition to the two higher-order traits, the other lower-order subscales tapping the same higher-order trait were also examined as potential covariates (e.g., alienation and aggression in the stress reaction model), but are not represented in this figure. For ease of presentation, disturbances, covariances between covariates as well as paths between covariates and all other variables in the model not shown.

Table 1

Intercorrelations among and descriptive statistics for the continuous variables included in the models.

	1	2	3	4	5	6	7	8	9	10
1. T1 interpersonal dependent events	–									
2. T1 interpersonal chronic stress	.18 ^T	–								
3. T1 non-interpersonal chronic stress	.21 [*]	.49 ^{**}	–							
4. T1 current depressive symptoms	.07	.15	.10	–						
5. NE	.21 [*]	.47 ^{**}	.26 ^{**}	.10	–					
6. PE	.12	–.27 ^{**}	–.09	–.15 [*]	–.12	–				
7. CON	–.12	–.21 [*]	–.14	–.08	–.31 ^{**}	.00	–			
8. Rumination	.03	.35 ^{**}	.19 [*]	–.04	.42 ^{**}	–.14	.00	–		
9. T2 acute interpersonal stress generation	.35 ^{**}	.29 ^{**}	.22 [*]	.36 ^{**}	.42 ^{**}	.02	–.16	.36 ^{**}	–	
10. T2 chronic interpersonal stress generation	.13	.63 ^{**}	.36 ^{**}	.26 ^{**}	.49 ^{**}	–.23 ^{**}	–.19	.39 ^{**}	.63 ^{**}	–
<i>M</i>	2.46	2.09	1.71	.10	.35	.66	.61	2.02	3.89	2.19
<i>SD</i>	2.64	.49	.52	.44	.21	.14	.16	.67	3.64	.50
<i>n</i>	126	126	126	126	105	105	105	111	108	108

Notes. T1 and T2 stress variables assessed with the Life Stress Interview (LSI; adapted from Hammen, 1991; Hammen et al., 1987; Rudolph & Flynn, 2007; Rudolph & Hammen, 1999; Rudolph et al., 2000) assessed via separate interviews with mother and daughter. NE (Negative Emotionality), PE (Positive Emotionality), and CON (Constraint) assessed with the Multidimensional Personality Questionnaire (Patrick et al., 2002). Rumination assessed with items from Ruminative Responses Scale (Nolen-Hoeksema & Morrow, 1991). *N* = 126. *N*s vary due to missing questionnaire data and attrition at T2.

^{*}
p < .05.

^{**}
p < .01.

^T
p = .05.

Table 2

Negative emotionality, rumination, and their interaction predicting acute and chronic interpersonal stress generation.

	T2 acute IP stress generation				T2 chronic IP stress generation			
	<i>b</i> (95% CI)	SE	β	<i>p</i>	<i>b</i> (95% CI)	SE	β	<i>p</i>
<i>Negative Emotionality</i>								
T1 IP dependent acute stress	.39 (.20–.58)	.10	.24	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.48 (.35–.62)	.07	.48	<.001
T1 current depressive sx	2.31 (1.13–3.50)	.60	.28	<.001	.16 (.01–.31)	.08	.14	.033
Negative Emotionality	5.05 (2.02–8.09)	1.55	.29	.001	.56 (.16–.95)	.20	.24	.006
Rumination	.91 (–.04 to 1.86)	.48	.18	.059	.09 (–.03 to .21)	.06	.12	.124
Trait X Rumination	5.27 (1.25–9.30)	2.05	.22	.010	.54 (.03–1.05)	.20	.15	.039
<i>Alienation</i>								
T1 IP dependent acute stress	.42 (.23–.61)	.10	.30	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.49 (.35–.63)	.07	.48	<.001
T1 current depressive sx	2.24 (1.04–3.44)	.61	.27	<.001	.15 (.003–.30)	.08	.13	.045
Alienation	2.98 (.79–5.17)	1.12	.23	.008	.33 (.04–.62)	.15	.18	.025
Rumination	1.16 (.25–2.08)	.47	.21	.013	.12 (.07–.24)	.06	.16	.038
Trait X Rumination	4.15 (.96–7.34)	1.63	.21	.011	.35 (–.06 to .75)	.21	.13	.098
<i>Aggression</i>								
T1 IP dependent acute stress	.42 (.22–.61)	.10	.31	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.50 (.37–.63)	.07	.51	<.001
T1 current depressive sx	2.34 (1.12–3.56)	.62	.28	<.001	.16 (.01–.31)	.08	.15	.036
Aggression	2.49 (.12–4.86)	1.21	.17	.001	.28 (–.02 to .57)	.15	.14	.066
Rumination	1.39 (.56–2.31)	.45	.26	.001	.15 (.04–.26)	.06	.21	.009
Trait X Rumination	4.08 (.85–7.31)	1.65	.21	.013	.34 (–.07 to .75)	.21	.13	.106
<i>Stress Reaction</i>								
T1 IP dependent acute stress	.43 (.23–.62)	.10	.31	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.50 (.38–.63)	.07	.50	<.001
T1 current depressive sx	2.38 (1.14–3.62)	.63	.28	<.001	.17 (.02–.33)	.08	.15	.027
Stress Reaction	2.59 (.15–5.03)	1.24	.20	.037	.27 (–.03 to .57)	.15	.16	.081
Rumination	1.20 (.19–2.22)	.52	.22	.020	.13 (.00–.25)	.07	.17	.050

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	T2 acute IP stress generation				T2 chronic IP stress generation			
	<i>b</i>	(95% CI)	SE	<i>p</i>	<i>b</i>	(95% CI)	SE	<i>p</i>
Trait X Rumination	1.03	(2.54–4.60)	1.82	.05	.573	.22 (–.22 to .66)	.23	.08

Notes: T2 acute and chronic forms of interpersonal stress generation were investigated in the same model ($\kappa = .50-.55$, $p < .001$). IP = interpersonal. sx = symptoms. b = unstandardized coefficient. CI = confidence intervals. SE = standard error. β = standardized coefficient. The dashes show non-significant paths that were trimmed from the model. The covariates included in each model differ because non-significant paths between covariates and other variables in the model were trimmed. $N = 126$.

Table 3

Positive emotionality, rumination, and their interaction predicting acute and chronic interpersonal stress generation.

	T2 acute IP stress generation				T2 chronic IP stress generation			
	<i>b</i> (95% CI)	SE	β	<i>p</i>	<i>b</i> (95% CI)	SE	β	<i>p</i>
T1 IP dependent acute stress	.37 (.17–.57)	.10	.26	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.46 (.32–.60)	.07	.47	<.001
T1 current depressive sx	1.56 (.54–2.58)	.55	.27	.003	–	–	–	–
Negative Emotionality	5.06 (1.97–8.16)	1.57	.27	.001	.60 (.20–.99)	.20	.22	.003
Positive Emotionality	1.60 (–2.72 to 5.93)	2.21	.10	.467	–.23 (–.77 to .31)	.28	–.04	.399
Rumination	1.12 (.15–2.09)	.50	.21	.024	.10 (–.03 to .22)	.06	.13	.118
Trait X Rumination	–1.92 (–8.89 to 5.05)	3.56	–.04	.589	–.87 (–1.75 to .00)	.45	–.14	.050
<i>Affiliative PE</i>								
T1 IP dependent acute stress	.37 (.18–.57)	.10	.27	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.47 (.34–.61)	.07	.47	<.001
T1 current depressive sx	1.52 (.50–2.55)	.52	.18	.003	–	–	–	–
Negative Emotionality	5.73 (2.33–9.14)	1.74	.34	.001	.60 (.18–1.02)	.21	.26	.005
Affiliative PE	.80 (–.97 to 2.57)	1.18	.08	.362	–.03 (–.25 to .19)	.11	–.02	.79
Rumination	1.07 (.11–2.04)	.49	.20	.029	.10 (.03–.22)	.06	.13	.124
Trait X Rumination	–1.08 (–3.40 to 1.24)	1.18	–.07	.362	–.33 (–.62 to –.04)	.15	–.16	.026
<i>Agentic PE</i>								
T1 IP dependent acute stress	.39 (.19–.58)	.10	.28	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.48 (.34–.62)	.07	.47	<.001
T1 current depressive sx	1.51 (.48–2.54)	.53	.18	.004	–	–	–	–
Negative Emotionality	4.70 (1.50–7.90)	1.63	.28	.004	.58 (.15–.99)	.22	.25	.008
Agentic PE	.44 (–1.19 to 2.07)	.83	.05	.595	–.01 (–.22 to .20)	.11	–.01	.923
Rumination	1.14 (.18–2.10)	.49	.21	.020	.12 (.00–.24)	.06	.16	.060
Trait X Rumination	.06 (2.57–2.69)	1.34	.00	.965	–.03 (–.47 to .31)	.17	–.01	.862

Notes. T2 acute and chronic forms of interpersonal stress generation were investigated in the same model ($r_s = .49-.56$, $p_s < .001$). IP = interpersonal. sx = symptoms. *b* = unstandardized coefficient. CI = confidence intervals. SE = standard error. β = standardized coefficient. The dashes show non-significant paths that were trimmed from the model. The covariates included in each model differ because non-significant paths between covariates and other variables in the model were trimmed. $N = 126$.

Table 4

Lower-order traits of positive emotionality, rumination, and their interaction predicting acute and chronic interpersonal stress generation.

	T2 acute IP stress generation				T2 chronic IP stress generation			
	<i>b</i> (95% CI)	SE	β	<i>p</i>	<i>b</i> (95% CI)	SE	β	<i>p</i>
<i>Social Closeness</i>								
T1 IP dependent acute stress	.35 (.16–.55)	.10	.26	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.48 (.35–.62)	.07	.47	<.001
T1 current depressive sx	1.54 (.53–2.56)	.52	.18	.003	–	–	–	–
Negative Emotionality	6.47 (2.95–10.00)	1.80	.38	<.001	.62 (.18–1.06)	.23	.26	.006
Social Closeness	2.28 (–.51 to 5.06)	1.42	.15	.109	–.01 (–.36 to .33)	.18	–.01	.952
Rumination	1.05 (.08–2.02)	.50	.19	.034	.10 (–.03 to .22)	.06	.13	.136
Trait X Rumination	–.82 (–4.79 to 3.13)	2.01	–.03	.684	–.42 (–.92 to .09)	.26	–.12	.104
<i>Wellbeing</i>								
T1 IP dependent acute stress	.34 (.15–.54)	.10	.25	.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.48 (.34–.61)	.07	.47	<.001
T1 current depressive sx	1.49 (.47–2.51)	.52	.18	.004	–	–	–	–
Negative Emotionality	6.50 (3.14–9.86)	1.72	.38	<.001	.56 (.17–.95)	.20	.24	.005
Social Closeness	3.06 (.34–5.78)	1.39	.20	.027	–	–	–	–
Wellbeing	–1.94 (–5.65 to 1.78)	1.90	–.09	.307	–.09 (–.51 to .34)	.22	–.03	.692
Rumination	.98 (.04–1.93)	.48	.18	.042	.11 (–.01 to .23)	.06	.14	.077
Trait X Rumination	–2.17 (–6.66 to 2.32)	2.29	–.08	.344	–.70 (–1.27 to –.14)	.29	–.18	.014
<i>Social Potency</i>								
T1 IP dependent acute stress	.38 (.19–.58)	.10	.28	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.49 (.36–.63)	.07	.48	<.001
T1 current depressive sx	1.49 (.48–2.51)	.52	.18	.004	–	–	–	–
Negative Emotionality	4.60 (1.52–7.69)	1.58	.27	.003	.54 (.14–.95)	.21	.23	.009
Social Potency	1.80 (–.66 to 4.26)	1.25	.12	.151	.09 (–.22 to .40)	.16	.04	.562
Rumination	1.24 (.28–2.20)	.49	.23	.012	.12 (.00–.24)	.06	.16	.058
Trait X Rumination	1.56 (–2.62 to 5.73)	2.13	.06	.466	–.03 (–.57 to .51)	.28	–.01	.910
<i>Achievement</i>								
T1 IP dependent acute stress	.40 (.20–.59)	.10	.28	<.001	–	–	–	–

	T2 acute IP stress generation				T2 chronic IP stress generation			
	<i>b</i>	(95% CI)	SE	<i>p</i>	<i>b</i>	(95% CI)	SE	<i>p</i>
T1 IP chronic stress	–		–	–	.48 (.34–.63)		.07	<.001
T1 current depressive sx	1.41 (.38–2.44)		.53	.008	–		–	–
Negative Emotionality	5.07 (1.84–8.30)		1.65	.002	.61 (.18–1.04)		.22	.005
Achievement	–.66 (–3.13 to 1.81)		1.26	.04	–.12 (–.43 to .20)		.16	.48
Rumination	1.13 (.18–2.09)		.49	.020	.12 (.00–.24)		.06	.055
Trait X Rumination	–1.35 (–5.26 to 2.57)		2.00	.06	–.04 (–.55 to .46)		.26	.875

Notes. T2 acute and chronic interpersonal stress generation were investigated in the same model ($r_s = .52-.56, p_s < .001$). IP = interpersonal. sx = symptoms. *b* = unstandardized coefficient. CI = confidence intervals. SE = standard error. β = standardized coefficient. The dashes show non-significant paths that were trimmed from the model. The covariates included in each model differ because non-significant paths between covariates and other variables in the model were trimmed. $N = 126$.

Table 5

Constraint, Rumination, and their Interaction Predicting Acute and Chronic Interpersonal Stress Generation.

	T2 acute IP stress generation				T2 chronic IP stress generation			
	<i>b</i> (95% CI)	SE	β	<i>p</i>	<i>b</i> (95% CI)	SE	β	<i>p</i>
<i>Constraint</i>								
T1 IP dependent acute stress	.39 (.19–.59)	.10	.28	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.48 (.35–.62)	.07	.46	<.001
T1 current depressive sx	1.46 (.44–2.49)	.52	.27	.005	–	–	–	–
Negative Emotionality	4.94 (1.66–8.22)	1.67	.27	.003	.59 (.18–1.00)	.21	.23	.005
Constraint	–.70 (–4.46–3.07)	1.91	–.03	.717	–.10 (–.55 to .36)	.23	–.03	.674
Rumination	1.18 (.22–2.15)	.49	.22	.016	.13 (.01–.25)	.06	.17	.035
Trait X Rumination	–4.54 (–10.43 to 1.37)	3.01	–.11	.132	–1.05 (–1.77 to –.32)	.37	–.20	.005
<i>Control</i>								
T1 IP dependent acute stress	.39 (.20–.59)	.10	.28	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.48 (.35–.62)	.07	.48	<.001
T1 current depressive sx	2.21 (1.01–3.41)	.61	.26	<.001	.15 (.00–.30)	.08	.13	.050
Negative Emotionality	4.91 (1.59–8.22)	1.69	.28	.004	.57 (.14–.99)	.22	.24	.009
Control	–.64 (–3.43 to 2.15)	1.42	–.04	.654	–.01 (–.36 to .33)	.18	–.01	.942
Rumination	1.16 (.16–2.08)	.49	.20	.023	.11 (–.01 to .23)	.06	.15	.080
Trait X Rumination	–5.03 (–8.79 to –1.28)	1.91	–.21	.009	–.51 (–.99 to –.03)	.24	–.15	.037
<i>Harm Avoidance</i>								
T1 IP dependent acute stress	.38 (.18–.58)	.10	.28	<.001	–	–	–	–
T1 IP chronic stress	–	–	–	–	.49 (.35–.62)	.07	.48	<.001
T1 current depressive sx	1.45 (.44–2.47)	.52	.17	.005	–	–	–	–
Negative Emotionality	4.78 (1.59–7.97)	1.63	.29	.003	.55 (.14–.97)	.21	.24	.009
Harm Avoidance	–.58 (–2.86 to 1.70)	1.16	–.04	.617	–.05 (–.33 to .23)	.14	–.03	.721
Rumination	1.09 (.13–2.06)	.49	.20	.026	.12 (.01–.25)	.06	.16	.049
Trait X Rumination	1.26 (–2.50 to 5.01)	1.92	.05	.512	–.22 (–.70 to .26)	.24	–.07	.364

Notes. T2 acute and chronic interpersonal stress generation were investigated in the same model ($r_s = .49$ –.57, $p_s < .001$). IP = interpersonal. sx = symptoms. *b* = unstandardized coefficient. CI = confidence intervals. SE = standard error. β = standardized coefficient. The dashes show non-significant paths that were trimmed from the model. The covariates included in each model differ because non-significant paths between covariates and other variables in the model were trimmed. $N = 126$.