

## Negative Emotion-Focused Coping Mediates the Relationships Between Neuroticism and Psychological Outcomes in College Students

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**ABSTRACT.** There is a mental health crisis among undergraduates (Beiter et al., 2015), with nearly half reporting psychological disorders (Blanco et al., 2008). To inform this crisis, this study examined neuroticism and negative emotion-focused coping (NEFC) as transdiagnostic mechanisms that might account for a range of psychopathology among college students. Specifically, NEFC was examined as a mediator in the relationships between neuroticism and 4 psychological outcomes: depression, anxiety, stress, and well-being. In the present study, NEFC was comprised of self-blame (negative thinking) and venting (expression of negative emotion). Participants were 189 undergraduates from a 4-year public university ( $n = 142$  women and  $n = 47$  men). In conditional process analyses (Hayes, 2013), NEFC mediated the relationships between neuroticism and all psychological outcomes (i.e., depression, anxiety, stress, and well-being). In addition, confirming their transdiagnostic roles, both neuroticism and NEFC significantly and positively predicted depression, anxiety, and stress. Results suggested that addressing both neuroticism and NEFC in college students may decrease a range of psychopathologies, thereby improving the mental health status of this population.

Psychological distress among college students is a pressing issue, with researchers having declared a “mental health crisis” within this population (Beiter et al., 2015; Krumrei, Newton, & Kim, 2010). Although there are higher rates of depression, anxiety, and stress symptoms in college students than in the general population (Bayram & Bilgel, 2008; Wong, Cheung, Chan, Ma, & Tang, 2006), overall rates of psychological disorders are no different between college students and their same-age peers either in the United States (Blanco et al., 2008) or across 21 other countries (Auerbach et al., 2016). However, 45.79% of college students in a national study met criteria for a psychological disorder in the 12 months prior to assessment, with alcohol use disorders (20.37%) and personality disorders (17.68%) leading the prevalence rates (Blanco et al., 2008). Another national survey found that 86% of students with psychological disorders

dropped out of college without completing a degree (Kessler, Foster, Saunders, & Stang, 1995), identifying these students as a vulnerable group.

In their efforts to identify individual differences associated with psychological distress in college students, researchers have found that neuroticism, a dimension of personality, is positively associated with depression, anxiety, and stress (Chien, Ko, & Wu, 2007; Matthews et al., 2006; Wong, Lee, Ang, Oei, & Ng, 2009) and inversely related to well-being (Gutiérrez, Jiménez, Hernández, & Puente, 2005) in this population. Additional research has established that personality and coping styles are closely intertwined (Bouchard, Guillemette, & Landry-Léger, 2004). In the present study, therefore, we investigated coping as a mechanism through which neuroticism might predict depression, anxiety, stress, and well-being among college students. More specifically, we examined

negative emotion-focused coping (NEFC) comprised of both negative thoughts (self-blame) and negative behaviors (venting) as a transdiagnostic mediator of the relationships between neuroticism and depression, anxiety, stress, and well-being.

Previous research has established associations between personality and psychological distress among undergraduates (Bouchard et al., 2004). Personality is defined as a set of characteristics that are stable across time and situation (Connor-Smith & Flachsbart, 2007). The most common model of personality is the “Big Five” or five-factor model (FFM), which encompasses the dimensional traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1992). Neuroticism, the dimension of emotional stability vs. instability, is consistently the strongest of the FFM personality traits to predict psychological distress (Bouchard et al., 2004; Costa & McCrae, 1992; Malouff, Thorsteinsson, & Schutte, 2005), and was therefore the focus of the present study. High neuroticism is comprised of high physiological arousal (Connor-Smith & Flachsbart, 2007) and a perception of stressors as threatening rather than challenging (Carver & Connor-Smith, 2010).

Not surprisingly, among the FFM personality traits, high neuroticism was the sole positive predictor of anxiety and stress among both Australian and Singaporean undergraduates in one study (Wong et al., 2009). Matthews et al. (2006) also found that neuroticism positively predicted stress and worry in undergraduates. In a separate college sample, high neuroticism and low agreeableness, extraversion, and conscientiousness predicted depressive symptoms, with neuroticism displaying the highest predictive value (Chien et al., 2007). Researchers have found similar results regarding the primacy of neuroticism as an inverse predictor of well-being. Wong et al. (2007) reported that extraversion (positively) and neuroticism (inversely) predicted life satisfaction in Australian and Singaporean undergraduates, respectively. Furthermore, neuroticism was the single FFM personality trait that negatively predicted psychological well-being in law students (James, Bore, & Zito, 2012). The literature indicates that, among the FFM personality traits, neuroticism is indeed the primary predictor of psychological outcomes in college students.

There is a strong association between personality and coping (Bouchard et al., 2004), which is the process of responding to perceived threat, loss, or harm (Carver & Connor-Smith, 2010). Situational coping refers to a person’s responses to a specific

source of stress or stressor (Folkman & Lazarus, 1985), whereas dispositional coping refers to habitual ways of responding to a variety of stressors (Carver & Scheier, 1994). It is dispositional coping that is closely linked to personality traits (Bouchard et al., 2004). Both situational and dispositional coping are often classified as problem-focused, emotion-focused, or both. Problem-focused coping is aimed at altering or finding solutions to a stressor, and emotion-focused coping is aimed at reducing or managing the emotional distress associated with the stressor (Folkman & Lazarus, 1988). Furthermore, Folkman and Lazarus (1988) stated that problem-focused coping is more often utilized in situations perceived as changeable or controllable, whereas emotion-focused coping is used when situations are assessed as unchangeable or uncontrollable.

Although researchers have historically studied problem-focused and emotion-focused coping as broad categories, reviews have concluded that such an approach is inadequate and misleading (Compass, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner, Edge, Altman, & Sherwood, 2003). Compass et al. (2001) emphasized the importance of differentiating between unregulated emotional reactivity that predicts poor outcomes versus appropriate expressions and emotional modulations that predict good outcomes. They drew a distinction between intentional, voluntary emotion-focused coping versus involuntary emotion-focused responses (e.g., self-blame, venting, and rumination). Our focus in the present study is dispositional coping that is comprised of involuntary emotion-focused strategies.

Consistent with the perspective of Compass et al. (2001), Connor-Smith and Flachsbart (2007) defined and coded negative emotion-focused coping (NEFC) as emotional expressions indicating loss of control, distress, and hostility towards others. Conversely, positive emotion-focused coping represented intentional, controlled strategies to regulate and decrease negative emotion. Based upon their definition, self-blame and venting are components of NEFC that were included in their meta-analysis (Connor-Smith & Flachsbart, 2007). Similar to NEFC, Ehring et al. (2011) defined repetitive negative thinking as a style of thinking about one’s problems in a manner that is repetitive, intrusive, and from which it is difficult to disengage (i.e., uncontrollable). Negative thinking (e.g., self-blame) and behavioral expressions of negative emotions (e.g., venting) may be two sides

of the same coin, as both involve a negative focus on the self (Vollrath, Torgersen, & Alanæs, 1998). Repetitive negative thinking was a significant, positive predictor of depression and anxiety among college students in one study (Macedo et al., 2015). Likewise, self-blame and venting may be involuntary dispositional coping responses that have a negative emotion focus, associated with psychological distress.

Addressing the link between aspects of NEFC and psychopathology, researchers have found that self-blame predicts depression, anxiety, and stress among diverse populations (Foody, James, & Leader, 2014; Xu et al., 2013), including college students (Martin & Dahlen, 2005). Likewise, venting has predicted depressive and anxiety symptoms in undergraduates (Klostermann et al., 2011; Liverant, Hofmann, & Litz, 2004). Researchers have established fewer links between these coping strategies and psychological well-being. Within non-student samples, however, self-blame has inversely predicted positive affect (Mackay, Charles, Kemp, & Heckhausen, 2011) and psychological health (Xu & He, 2012), both representations of psychological well-being. Further, both self-blame and venting predicted depression, anxiety, and positive affect in a sample of cancer patients (Keeling, Brambough, & Simpson, 2013).

Returning to personality, Connor-Smith and Flachsbart (2007) found that neuroticism was significantly, positively associated with NEFC, the strongest link between neuroticism and all types of coping investigated in their meta-analysis. Personality and coping are distinct constructs for a variety of reasons, but most importantly, coping appears to predict psychological outcomes over and above personality, demonstrating independent variance (Murberg, Bru, & Stephens, 2002). Personality may shape the selection of specific coping strategies; for example, the physiological arousal of neuroticism may facilitate self-blame and venting negative emotions (Connor-Smith & Flachsbart, 2007). Regarding the interplay between personality, coping, and psychological outcomes, there is evidence for a mediation model (Carver & Connor-Smith, 2010; Panayiotou, Kokkinos, & Kapsou, 2014); that is, personality may affect the selection of coping strategies, which in turn influence psychological outcomes.

Based upon the primacy of neuroticism among the FFM personality factors in predicting both psychological distress and well-being, researchers have examined neuroticism together with coping

strategies in predicting distress (Aarstad, Beisland, & Aarstad, 2012; Beisland, Aarstad, Osthuis, & Aarstad, 2013) and well-being (Beisland et al., 2013) among cancer patients. Telles-Correia, Barbosa, Mega, and Monteiro (2011) found that among liver transplant patients, neuroticism and self-blame predicted anxiety, and neuroticism and venting predicted depression. Importantly, these studies demonstrated that neuroticism and aspects of NEFC contributed independent variance in predicting psychological distress and well-being. Nonetheless, these studies did not examine a spectrum of specific psychological outcomes such as depression, anxiety, stress, and well-being within a single sample, nor did they examine these relationships in college students.

Given the relationship between neuroticism and NEFC, as well as the associations between NEFC and psychological distress and well-being, NEFC strategies may partially account for (or mediate) the relationship between neuroticism and psychological outcomes. Indeed, venting mediated the relationship between neuroticism and dysthymia (low-grade depression) but not anxiety among former psychiatric outpatients (Vollrath et al., 1998). Expanding on this work, Panayiotou et al. (2014) reported that venting negative feelings partially mediated the relationship between neuroticism and psychological distress (e.g., depression, anxiety, hostility) in a general population sample. Conversely, Pearson et al. (2014) found that self-blame mediated the relationship between neuroticism and negative affect, but not positive affect, among college students. The literature thus suggests that NEFC could be a transdiagnostic mediator in the relationships between neuroticism and psychological outcomes.

### Present Study

To advance the literature on psychological distress among college students, we examined NEFC as a transdiagnostic mediator in the relationships between neuroticism and four specific psychological outcomes: depression, anxiety, stress, and well-being. Although the APA (1994) proposed conceptual distinctions between depression and anxiety, there is substantial clinical overlap between the two types of disorders (Lovibond, P. & Lovibond, S., 1995). We examined separate predictive models for each psychological outcome to assess the veracity of NEFC in predicting the conceptual aspects of multiple psychological outcomes. Researchers have yet to conceptualize self-blame and venting as representing the negative self-focus of NEFC

in accounting for transdiagnostic psychological outcomes in college students. If NEFC accounts for the relationships between a neurotic personality style and a spectrum of psychopathologies, it could be a target of intervention. In the present study, we hypothesized that NEFC would positively mediate the relationships between neuroticism and (a) depression, (b) anxiety, and (c) stress, and (d) inversely mediate the relationship between neuroticism and well-being.

## Method

### Participants

Participants included 189 undergraduates (men = 47, women = 142) recruited from a pool of General Psychology students whose options for a research requirement in the course included participation in departmental research studies. Students who were 18 to 25 years old ( $M = 18.98$ ,  $SD = 1.30$ ) and enrolled in college full-time (at least a 12-credit course load) were eligible for the study. First-year students represented 55% of the sample, followed by sophomores (23.8%), juniors (14.3%), and seniors (6.9%). Regarding ethnicity, 84% identified as European American, 8.5% as Latino American, 3.2% as Native American, 1.6% as Asian American, 1.1% as African American, and 1.6% as multiethnic.

### Materials

**Demographics.** We created a questionnaire to assess age, sex, college year, ethnicity, and course credit load in the semester of recruitment in order to confirm study eligibility and describe our sample.

**Personality.** Neuroticism was assessed with the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Although participants responded to the full 60-item measure, we used only the Neuroticism subscale (12 items) in this study. Students responded to each item on a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*), with higher scores indicating a stronger level of neuroticism. In the Neuroticism subscale, items 1, 16, 31, and 46 were reverse-scored and summed with the other items. Sample items from the Neuroticism subscales were as follows: "When I'm under a great deal of stress, sometimes I feel like I'm going to pieces" and "I often get angry at the way people treat me." In the present study, the Cronbach's alpha for the Neuroticism subscale was .89, consistent with the .86 value reported by Costa and McCrae (1992). Murray, Rawlings, Allen, and Trinder (2003) reported that

test-retest reliability coefficients for the Neuroticism subscale were .80 at 6 months and .75 at 30 months. In terms of content validity, Rosellini and Brown (2011) found that the Neuroticism subscale was significantly and positively associated with major depression, generalized anxiety disorder, and social anxiety disorder.

**Coping.** Based upon the predictive value of aspects of dispositional negative emotion-focused coping (NEFC) in relation to psychological distress (Compass et al., 2001; Panayiotou et al., 2014), we combined the Self-Blame ( $\alpha = .77$ ) and Venting ( $\alpha = .58$ ) subscales from the Brief COPE (Carver, 1997) to create a 4-item NEFC subscale ( $\alpha = .73$ ). Only these two subscales were used in the study, although participants responded to the full 28-item measure. In the meta-analysis where they defined and coded NEFC, Connor-Smith and Flachsbart (2007) included 10 studies that used the COPE subscales (Carver, 1997), among others, to assess dispositional coping in undergraduates. The response format on the Brief COPE was a 4-point Likert-type scale scored from 1 (*I haven't been doing this at all*) to 4 (*I've been doing this a lot*). No items were reverse-scored. A higher total score indicated greater use of the strategy during a given time, which was set as the semester of recruitment to reflect dispositional coping; the Brief COPE can be used to assess either situational or dispositional coping by adjusting the instructions to participants. A sample item for self-blame was "I've been blaming myself for things that happened." A sample item for venting was "I've been expressing my negative feelings."

Carver (1997) suggested that individual subscales could be used in novel ways based on the needs and imagination of the researcher. He reported Cronbach's  $\alpha = .50$  for Venting and .69 for Self-Blame across three studies, stating that these reliabilities were adequate based on Nunnally (1978). More recently, Ward and Hay (2015) reported Cronbach's alphas of .80 for Self-Blame and .58 for Venting. Researchers have combined individual subscales using novel conceptualizations such as maladaptive coping (Self-Blame and Behavioral Disengagement), which was inversely related to well-being (Pérez-García, Oliván, & Bover, 2014). However, Elliott and Daley (2013) combined five subscales (10 items) that included Self-Blame and Venting, calling it negative coping ( $\alpha = .77$ ). They found that negative coping significantly and positively predicted emotional exhaustion. Together, these studies provide support for the content validity of the Self-Blame and Venting

subscales, while also highlighting the novel use of subscales in combination.

**Distress.** Symptoms of depression, anxiety, and stress were assessed with the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995). Respondents used a 4-point Likert-type scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). None of the items were reverse-scored. For each outcome, responses were added across seven items and the sum was doubled to yield a subscale score as suggested by the authors. Higher scores indicated more distress. Sample items for subscales were as follows: (a) Depression: "I felt down-hearted and blue," (b) Anxiety: "I felt I was close to panic," and (c) Stress: "I felt that I was rather touchy." In our study, Cronbach's  $\alpha = .90$  for Depression, .83 for Anxiety, and .86 for Stress, similar to those of Lovibond and Lovibond (1995), who reported .96 for Depression, .89 for Anxiety, and .93 for Stress. In addition, they reported that 2-week test-retest reliability coefficients were .71 for Depression, .79 for Anxiety, and .81 for Stress.

The DASS-21 recognizes the conceptual distinction between the *DSM-IV* (APA, 1994) classifications of depression and anxiety, while acknowledging their clinical overlap (Lovibond & Lovibond, 1995). However, it is not designed to be a diagnostic tool. Demonstrating evidence of content validity, researchers have found that the subscales of the DASS-21 each have moderate to high correlations with the Beck Depression Inventory, Beck Anxiety Inventory, State-Trait Anxiety Inventory, and Positive and Negative Affect Schedule (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005) as well as distinct factor structures (Lovibond & Lovibond, 1995). The preceding studies support the use of the DASS-21 subscales rather than the overall score.

**Well-being.** Psychological well-being was assessed with the WHO-Five Well-Being Index (WHO-5; World Health Organization, 1998). Participants responded on a 6-point Likert-type scale ranging from 0 (*at no time*) to 5 (*all the time*). None of the items were reverse-scored. Responses to the five items were added and then multiplied by 4 to yield a percentage, as suggested by the developers, with a higher score indicating greater well-being. A sample item was "I have felt cheerful and in good spirits." In the present study, the Cronbach's  $\alpha = .81$ , like that of Bech, Olsen, Kjoller, and Rasmussen (2003), who reported a Cronbach's alpha of .84. Demonstrating content validity, Awata

et al. (2007) found that the WHO-5 significantly and positively correlated with the Short-Form 36 Health Survey, a measure of subjective health and quality of life.

### Procedure

The study was approved by the Worcester State University Human Subjects Review Board. We assessed participants in person in a group setting. The duration of the study was about 30 minutes. Participants provided informed consent. The self-report questionnaires were presented in the following order: Demographic questionnaire, NEO-FFI, Brief COPE, WHO-5, and DASS-21. We did not counter-balance the presentation of questionnaires because the DASS-21 and WHO-5 might have cued participant responses to the personality and coping measures.

### Data Analytic Procedure

We conducted mediation analyses to test all hypotheses. In conditional process analyses (Hayes, 2013), mediation occurs when a mediator ( $M$ ) significantly accounts for the relationship between a predictor variable ( $X$ ) and a criterion variable ( $Y$ ), as indicated in Figure 1. In the present study, we examined whether NEFC ( $M$ ) accounted for the relationship between neuroticism ( $X$ ) and one of four psychological outcomes ( $Y_1 - Y_4$ ).

We used Model 4 in the Hayes (2013) PROCESS macro to conduct four mediation analyses using conditional process analyses in SPSS Version 24. This macro utilizes bootstrapping (set at 5,000), which resamples data to construct bias-corrected confidence intervals. If the 95% confidence interval (CI) spans zero, the result is not significant. The 95% confidence interval reflects two-tailed analyses. In conditional process analyses, mediation occurs if the "indirect effect" of neuroticism ( $X$ ) on the psychological outcomes ( $Y_1 - Y_4$ ) via coping ( $M$ ) is significant (the interaction between paths  $a$  and  $b$  in Figure 1). Hayes further stated that paths  $a$ ,  $b$ , and  $c$  in Figure 1 do not require significance for indirect effects to be statistically significant. Path  $a$  was shared across all four conditional process analyses (see Figure 1).

## Results

### Descriptive Statistics

Descriptive statistics and a correlation matrix for neuroticism, NEFC, and the four psychological outcomes appear in Table 1.

### Mediation Analyses

We first examined skewness and kurtosis to assess the normality of data (Field, 2013). Regarding skewness, subscale scores were within the range of -1 to +1, indicating normality for neuroticism (.21), NEFC (.41), anxiety (.96), stress (.33), and well-being (-.20), but not depression (1.2). Nonetheless, the *SE* of skewness for depression was .18, and three times .18 is less than 1.00, another measure of normality. Kurtosis was within -1 and +1 for all subscale scores, indicating normality for neuroticism (-.48), NEFC (-.58), depression (-.58), anxiety (.08), stress (-.57), and well-being (.00). The bias-corrected bootstrapping method of testing mediation corrects for skew, further addressing concerns about whether data were normally distributed.

Analyzing mediated effects in 166 psychology articles published in two prestigious psychology journals between 2000 and 2003, Fritz and MacKinnon (2007) found that bias-corrected bootstrapping was consistently the most powerful test of mediation compared to the Baron and Kenny (1986) method and the Sobel (1982) test, among others. Using Cohen's (1988) criteria for small (2% of the variance), medium (13% of the variance), and large (26% of the variance) effect sizes, Fritz and MacKinnon (2007) identified corresponding values of paths *a* and *b* in a mediation model (see Figure 1). That is, a parameter value of 0.14 = small, 0.26 = small-medium, 0.39 = medium, and 0.59 = large effect sizes. Based on Fritz and MacKinnon's (2007) empirical estimates of the sample size needed for .80 power for small-medium effect sizes in paths *a* and *b*, a sample size of 150 is required. Our sample of *N* = 189 met this criterion.

However, Kenny (2016) argued that Cohen's (1988) parameter estimates for Path *a* and Path *b* in a mediation model should be squared when assessing the effect size of *ab*, the indirect effect. Kenny's conceptualization resulted in the following interpretation of effect sizes for indirect effects: .01 = small, .03 = medium, and .25 = large. We used the MedPower calculator (Kenny, 2016) to assess the sample size we required for a power of .80 and a medium mediation effect size (*ab* = .09). Our sample size of *N* = 189 exceeded the required *N* of 113.

There were some strong correlations between our four outcome variables, depression, anxiety, stress, and well-being (see Table 1), as stated by Lovibond and Lovibond (1995). Our primary objective was to examine NEFC as a mediator of the relationships between neuroticism and the conceptual definitions of our psychological outcomes rather

than their clinical overlap. Given our relatively small sample size and goal of .80 power (Cohen, 1992) for each analysis as described previously, a single Structural Equation Model that included a predictor, mediator, and four outcome variables was beyond the scope of this study, based on the empirical sample power estimates of Fritz and MacKinnon (2007). As a compromise, we examined multicollinearity in a multiple regression analysis with neuroticism and NEFC as predictors; depression, anxiety, and stress as covariates; and well-being as the outcome. The Variance Inflation Factor (VIF) was less than 3.00 for neuroticism (2.14), NEFC (1.87), depression (2.87), anxiety (2.27), and stress (2.28), consistent with the literature that suggests this value should be less than 4.00 (Pan & Jackson, 2008).

We examined our data for homoscedasticity using the Breusch and Pagan (1979) and Koenker tests (1981). We found evidence of heteroscedasticity in the models predicting depression (*BP* = 21.69, *p* = .000; Koenker = 16.66, *p* = .000) and anxiety (*BP* = 8.33, *p* = .02; Koenker = 6.80, *p* = .03) as well as well-being (*BP* = 10.57, *p* = .01; Koenker = 10.59, *p* = .01), but not stress (*BP* = 4.62, *p* = .10; Koenker = 4.92, *p* = .09). We used HC3 for heteroscedasticity-consistent standard errors, as recommended by Long and Ervin (2000) if *N* ≤ 250. The HC3 adjustment is available as an option in PROCESS.

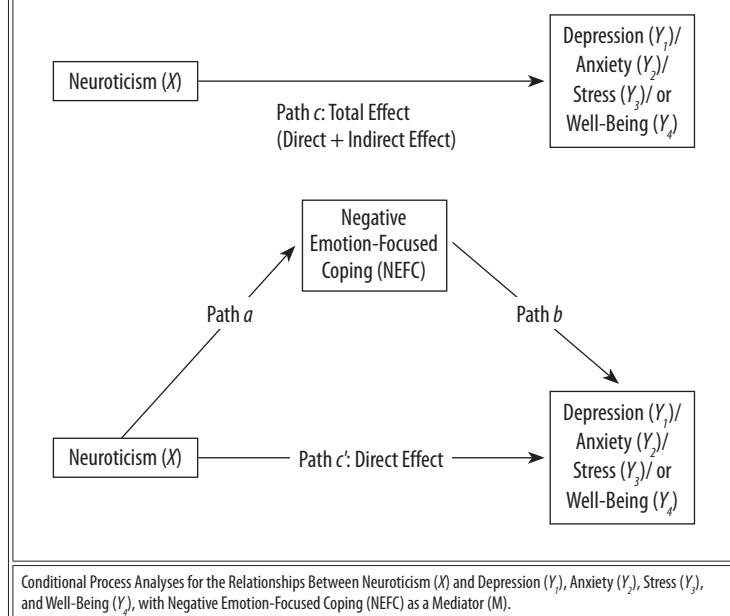
### Hypothesis 1

In the first hypothesis (see Figure 2a), neuroticism was the predictor (*X*), NEFC was the mediator (*M*), and depression was the outcome (*Y<sub>1</sub>*). In path *a* of conditional process analyses, neuroticism significantly and positively predicted NEFC,

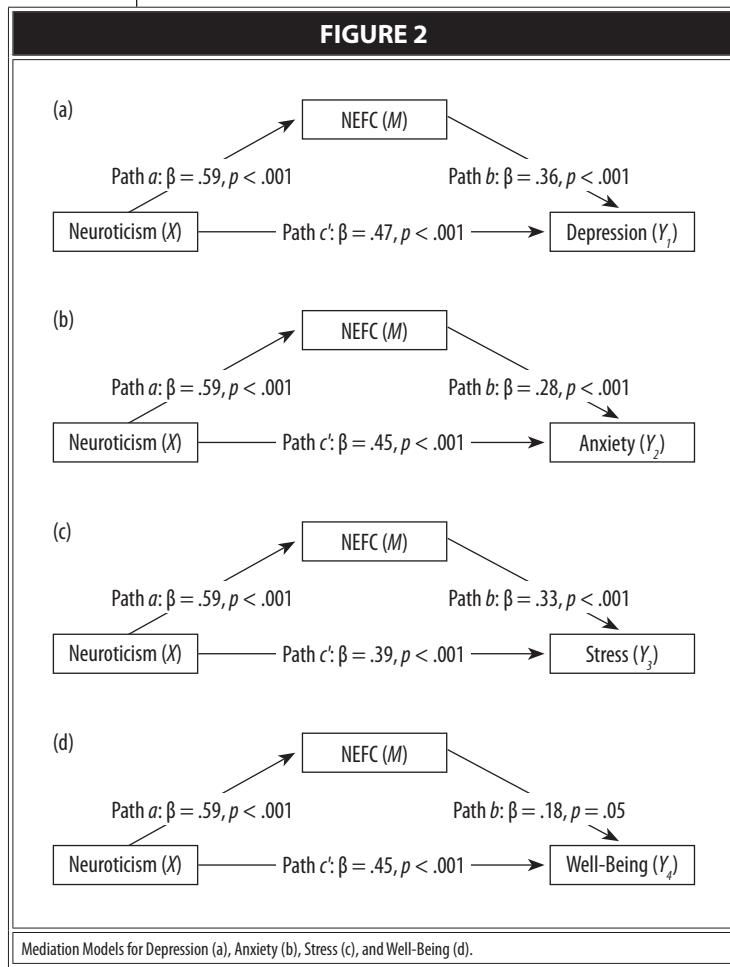
TABLE 1

Descriptive Statistics and Correlations Between Personality, Coping, Depression, Anxiety, Stress, and Well-Being						
	1	2	3	4	5	6
1. Neuroticism	1.00					
2. Negative Emotion-Focused Coping (NEFC)	.59***	1.00				
3. Depression	.68***	.63***	1.00			
4. Anxiety	.61***	.54***	.68***	1.00		
5. Stress	.58***	.56***	.69***	.66***	1.00	
6. Well-Being	-.56***	-.45***	-.60***	-.39***	-.50***	1.00
<i>M</i>	21.65	8.35	8.92	9.06	14.93	61.40
<i>SD</i>	9.11	2.89	9.32	8.81	9.38	16.44

Note. \*\*\**p* ≤ .001. Pearson bivariate correlations, one-tailed analyses.

**FIGURE 1**

Conditional Process Analyses for the Relationships Between Neuroticism (X) and Depression (Y<sub>1</sub>), Anxiety (Y<sub>2</sub>), Stress (Y<sub>3</sub>), and Well-Being (Y<sub>4</sub>), with Negative Emotion-Focused Coping (NEFC) as a Mediator (M).

**FIGURE 2**

Mediation Models for Depression (a), Anxiety (b), Stress (c), and Well-Being (d).

$R^2 = .34$ ,  $F(1, 187) = 97.35$ ,  $p < .001$ , Cohen's  $f^2 = .52$ . Furthermore, supporting Hypothesis 1, NEFC was a significant, positive mediator in the neuroticism–depression relationship,  $B = 0.22$ ,  $SE = 0.04$ , 95% CI [0.14, 0.31]. We present three effect size measures of mediation, all of which yielded significant results. The first is the variance in depression ( $Y_1$ ) that was accounted for by NEFC ( $M$ ),  $B = 0.32$ ,  $SE = 0.05$ , 95% CI [0.22, 0.41] (Fairchild, MacKinnon, Taborga, & Taylor, 2009). The second is the ratio of the indirect effect to the total effect (direct effect plus indirect effect =  $c$ ),  $B = 0.31$ ,  $SE = 0.06$ , 95% CI [0.21, 0.44] (Preacher & Kelley, 2011). The third is the completely standardized indirect effect,  $\beta = .21$ ,  $SE = 0.04$ , 95% CI [0.14, 0.29] (Preacher & Kelley, 2011), indicating a medium–large effect size (Kenny, 2016).

In addition to the preceding indirect effects, neuroticism had a direct, significant, and positive association with depression (Path  $c'$ ),  $B = 0.69$ ,  $SE = 0.06$ ,  $p < .001$ , 95% CI [0.57, 0.82]. The total effect of neuroticism (including direct and indirect effects) on depression (Path  $c$ ) was  $B = 0.69$ ,  $SE = 0.06$ , 95% CI [0.57, 0.82]. In the model proposed in Figure 2a, neuroticism and NEFC accounted for 54% of the variance in depression, where  $R^2 = .54$ ,  $F(2, 186) = 80.70$ ,  $p < .001$  and Cohen's  $f^2 = 1.17$ , a large effect size (Cohen, 1992).

### Hypothesis 2

In Hypothesis 2 (see Figure 2b), neuroticism was the predictor ( $X$ ), NEFC was the mediator ( $M$ ), and anxiety was the outcome ( $Y_2$ ). In conditional process analyses, neuroticism significantly, positively predicted NEFC (Path  $a$ ),  $R^2 = .34$ ,  $F(1, 187) = 97.35$ ,  $p < .001$ , Cohen's  $f^2 = .52$ . NEFC significantly and positively mediated the neuroticism–anxiety relationship,  $B = 0.16$ ,  $SE = 0.04$ , 95% CI [0.08, 0.24], supporting Hypothesis 2. Regarding effect sizes of mediation, the first is the variance in anxiety ( $Y_2$ ) that was accounted for by NEFC ( $M$ ),  $B = 0.24$ ,  $SE = 0.04$ , 95% CI [0.16, 0.34] (Fairchild et al., 2009). The second is the ratio of the indirect effect to the total effect (direct effect plus indirect effect =  $c$ ),  $B = 0.26$ ,  $SE = 0.07$ , 95% CI [0.14, 0.41] (Preacher & Kelley, 2011). The third is the completely standardized indirect effect,  $\beta = .16$ ,  $SE = 0.04$ , 95% CI [0.09, 0.24] (Preacher & Kelley, 2011), indicating a medium–large effect size (Kenny, 2016).

Furthermore, neuroticism had a direct, significant, and positive association with anxiety (Path  $c'$ ),  $B = 0.44$ ,  $SE = 0.06$ ,  $p < .001$ , 95% CI [0.32, 0.55].

The total effect of neuroticism (including direct and indirect effects) on depression (Path  $c$ ) was  $B = 0.59$ ,  $SE = 0.05$ , 95% CI [0.49, 0.70]. Overall, in Figure 2b, neuroticism and NEFC accounted for 43% of the variance in anxiety, where  $R^2 = .43$ ,  $F(2, 186) = 76.49$ ,  $p < .001$  and Cohen's  $f^2 = .75$ , a large effect size (Cohen, 1992).

### Hypothesis 3

In Hypothesis 3 (see Figure 2c), neuroticism was the predictor ( $X$ ), negative emotion-focused coping (NEFC) was the mediator ( $M$ ), and stress was the outcome ( $Y_3$ ). In conditional process analyses, in path  $a$ , neuroticism significantly and positively predicted NEFC,  $R^2 = .34$ ,  $F(1, 187) = 97.35$ ,  $p < .001$ , Cohen's  $f^2 = .52$ . Supporting Hypothesis 3, NEFC was a significant, positive mediator in the neuroticism–stress relationship,  $B = 0.20$ ,  $SE = 0.05$ , 95% CI [0.11, 0.31]. In terms of mediation effect size measures, first, variance in stress ( $Y_3$ ) that was accounted for by NEFC ( $M$ ),  $B = 0.24$ ,  $SE = 0.05$ , 95% CI [0.15, 0.33] was significant (Fairchild et al., 2009). Second, the ratio of the indirect effect to the total effect (direct effect plus indirect effect =  $c$ ),  $B = 0.34$ ,  $SE = 0.08$ , 95% CI [0.20, 0.53] was significant (Preacher & Kelley, 2011). Third, the completely standardized indirect effect,  $\beta = .19$ ,  $SE = 0.04$ , 95% CI [0.11, 0.29] was significant (Preacher & Kelley, 2011), indicating a medium-large effect size (Kenny, 2016).

In addition to the preceding indirect effects, neuroticism was directly, significantly, and positively associated with stress (Path  $c'$ ),  $B = 0.40$ ,  $SE = 0.07$ ,  $p < .001$ , 95% CI [0.25, 0.54]. The total effect of neuroticism (including direct and indirect effects) on stress (Path  $c$ ) was  $B = 0.60$ ,  $SE = 0.06$ , 95% CI [0.48, 0.72]. In Figure 2c, neuroticism and NEFC accounted for 41% of the variance in stress, where  $R^2 = .41$ ,  $F(2, 186) = 64.19$ ,  $p < .001$  and Cohen's  $f^2 = .69$ , a large effect size (Cohen, 1992).

### Hypothesis 4

In Hypothesis 4 (see Figure 2d), neuroticism was the predictor ( $X$ ), negative emotion-focused coping (NEFC) was the mediator ( $M$ ), and well-being was the outcome ( $Y_4$ ). In conditional process analyses, neuroticism significantly and positively predicted NEFC (Path  $a$ ),  $R^2 = .34$ ,  $F(1, 187) = 97.35$ ,  $p < .001$ , Cohen's  $f^2 = .52$ . NEFC significantly and inversely mediated the neuroticism–well-being relationship,  $B = -0.19$ ,  $SE = 0.10$ , 95% CI [-0.39, -0.01], supporting Hypothesis 4. Effect sizes of mediation were as follows. First, variance in well-being ( $Y_4$ )

that was accounted for by NEFC ( $M$ ),  $B = 0.18$ ,  $SE = 0.04$ , 95% CI [0.10, 0.28] (Fairchild et al., 2009). Second, the ratio of the indirect effect to the total effect (direct effect plus indirect effect =  $c$ ),  $B = 0.19$ ,  $SE = 0.10$ , 95% CI [0.01, 0.41] (Preacher & Kelley, 2011). Third, the completely standardized indirect effect,  $\beta = -.10$ ,  $SE = 0.05$ , 95% CI [-0.21, -0.01] (Preacher & Kelley, 2011), indicating a medium–large effect size (Kenny, 2016).

In the preceding analysis, neuroticism had a direct, significant, and inverse association with well-being (Path  $c'$ ),  $B = -0.82$ ,  $SE = 0.15$ ,  $p < .001$ , 95% CI [-1.12, -0.52]. The total effect of neuroticism (including direct and indirect effects) on well-being (Path  $c$ ) was  $B = -1.01$ ,  $SE = 0.11$ , 95% CI [-1.24, -0.78]. In Figure 2d, neuroticism and NEFC accounted for 31% of the variance in well-being, where  $R^2 = .33$ ,  $F(2, 186) = 40.05$ ,  $p < .001$  and Cohen's  $f^2 = .49$ , a large effect size (Cohen, 1992).

## Discussion

To address a gap in the literature, we examined negative emotion-focused coping (NEFC) comprised of self-blame and venting, as a mediator in the relationships between neuroticism and four psychological outcomes: depression, anxiety, stress, and well-being among college students (see Figure 1). To our knowledge, our study was the first to investigate this mediating effect in relation to a range of specific psychological outcomes in a single study.

### Neuroticism and Psychological Outcomes

Several interesting findings emerged from the present study. First, neuroticism directly and positively predicted depression, anxiety, and stress, and inversely predicted well-being (see Table 2) after controlling for mediation effects. Lovibond and Lovibond (1995) acknowledged that depression, anxiety, and stress may share a common source of negative affect in the form of neuroticism. Nonetheless, we found no evidence for multicollinearity between neuroticism and the three distress outcomes (depression, anxiety, and stress). Neuroticism appears to reflect a negative cognitive bias that is positively associated with poor psychological outcomes and negatively related to psychological well-being. The results of the present study confirm previous findings on the positive association between neuroticism and distress (Aarstad et al., 2012; Beisland et al., 2013; Chien et al., 2007; Matthews et al., 2006; Wong et al., 2009) and the inverse association between neuroticism

and well-being (Beisland et al., 2013; Gale, Booth, Mottus, Kuh, & Deary, 2013; Gutiérrez et al., 2005; James et al., 2012).

### Neuroticism and NEFC

A second interesting finding was that neuroticism significantly and positively predicted NEFC (see Table 2), with a large effect size. Our novel conceptualization of NEFC included both negative thoughts (self-blame) and negative emotional expression (venting). Our findings are consistent with a meta-analytic study that found a significant and positive association between neuroticism and negative emotion focus (Connor-Smith & Flachsbart, 2007). As Connor-Smith and Flachsbart (2007) suggested, personality seems to shape the selection of coping strategies, in that the negative cognitive bias and physiological arousal of neuroticism may facilitate self-blaming thoughts and negative emotional venting.

### NEFC and Psychological Outcomes

Another important finding in our study was that

NEFC significantly and positively predicted depression, anxiety, and stress. The positive relationship between NEFC and distress supports previous research regarding the relationship between self-blame (a component of NEFC) and psychological distress (Foody et al., 2014; Keeling et al., 2013; Martin & Dahlen, 2005; Xu et al., 2013). Likewise, our findings confirm previous work that found associations between venting (a component of NEFC) and depression, anxiety, and stress (Keeling et al., 2013; Klostermann et al., 2011; Liverant et al., 2004; Telles-Correia et al., 2011; Wang, Lambert, & Lambert, 2007).

NEFC did not significantly, inversely predict well-being ( $p = .05$ ), based on our conservative significance level of  $p < .001$  (see Table 2). Previous research has established inverse relationships between self-blame and psychological well-being (Keeling et al., 2013; MacKay et al., 2011; Xu & He, 2012) as well as between venting and psychological well-being (Keeling et al., 2013). Our findings were in the same predicted direction of the literature but were not strong enough, perhaps due to limitations in our measures or sample power. Overall, our study indicated that individuals who discharge their thoughts and emotions through self-blame and venting are at risk for depression, anxiety, and stress. The results support the idea that involuntary, repetitive negative thoughts and behaviors are detrimental to college students.

### NEFC as a Mediator

Most importantly in the present study, using three methods of calculating mediation effect sizes, we established NEFC as a mediator in the positive relationships between neuroticism and depression, anxiety, and stress, and in the inverse relationship between neuroticism and well-being, thus supporting all four hypotheses. Our results are in keeping with those of Aarstad et al. (2012), Beisland et al. (2013), and Panayiotou et al. (2014), who found that coping mediated the relationships between neuroticism and distress as well as the relationship between neuroticism and well-being (Beisland et al., 2013). The preceding studies were conducted among cancer patients (Aarstad et al., 2012; Beisland et al., 2013) and a community sample (Panayiotou et al., 2014), respectively. Furthermore, our findings support those of Pearson et al. (2014), who reported that self-blame mediated the relationship between neuroticism and negative affect among African American university students. Conversely, our findings differ from their report

**TABLE 2**

Mediation Analyses for the Relationships Between Neuroticism and Depression, Anxiety, Stress, and Well-Being						
	B	SE	95% CIs	B	SE	95% CIs
	Depression <sup>+</sup>			Anxiety <sup>++</sup>		
<b>Path a</b>						
<b>Constant</b>	4.34***	0.45	[3.46, 5.22]	4.34***	0.45	[3.46, 5.22]
Neuroticism	0.19***	0.02	[0.15, 0.22]	0.19***	0.02	[0.15, 0.22]
<b>Constant</b>	-11.12	1.47	[-14.02, -8.22]	-7.47	1.40	[-10.23, -4.71]
<b>Path b: NEFC</b>	1.17***	0.18	[0.81, 1.53]	0.85***	0.20	[0.46, 1.24]
<b>Path c': Neuroticism</b>	0.48***	0.06	[0.35, 0.60]	0.44***	0.06	[0.32, 0.55]
<b>Path a</b>						
<b>Constant</b>	4.34***	0.45	[3.46, 5.22]	4.34***	0.45	[3.46, 5.22]
Neuroticism	0.19***	0.02	[0.15, 0.22]	0.19***	0.02	[0.15, 0.22]
<b>Constant</b>	-2.67	1.68	[-5.98, 0.64]	87.65	3.26	[81.21, 94.08]
<b>Path b: NEFC</b>	-1.08***	0.23	[0.63, 1.53]	-1.02	0.52	[-2.04, 0.01]
<b>Path c': Neuroticism</b>	0.40***	0.07	[0.25, 0.54]	-0.82***	0.15	[-1.12, -0.52]
<b>Path a</b>						
<b>Constant</b>	4.34***	0.45	[3.46, 5.22]	4.34***	0.45	[3.46, 5.22]
Neuroticism	0.19***	0.02	[0.15, 0.22]	0.19***	0.02	[0.15, 0.22]
<b>Constant</b>	-2.67	1.68	[-5.98, 0.64]	87.65	3.26	[81.21, 94.08]
<b>Path b: NEFC</b>	-1.08***	0.23	[0.63, 1.53]	-1.02	0.52	[-2.04, 0.01]
<b>Path c': Neuroticism</b>	0.40***	0.07	[0.25, 0.54]	-0.82***	0.15	[-1.12, -0.52]

Note. \*\*\* $p < .001$ ;  $N = 189$ ; NEFC = Negative Emotion-Focused Coping

Predicting NEFC (Path a)  $R^2 = .34$ ,  $F(1, 187) = 97.35$ ,  $p < .001$ , Cohen's  $f^2 = .52$  (large effect size)

Predicting Depression<sup>+</sup>  $R^2 = .54$ ,  $F(2, 186) = 80.70$ ,  $p < .001$ , Cohen's  $f^2 = 1.17$  (large effect size)

Predicting Anxiety<sup>++</sup>  $R^2 = .43$ ,  $F(2, 186) = 76.49$ ,  $p < .001$ , Cohen's  $f^2 = .75$  (large effect size)

Predicting Stress<sup>+++</sup>  $R^2 = .41$ ,  $F(2, 186) = 64.19$ ,  $p < .001$ , Cohen's  $f^2 = .69$  (large effect size)

Predicting Well-Being<sup>\*\*\*\*</sup>  $R^2 = .33$ ,  $F(2, 186) = 40.05$ ,  $p < .001$ , Cohen's  $f^2 = .49$  (large effect size)

that self-blame did not (inversely) mediate the relationship between neuroticism and positive affect. In addition, our findings in relation to NEFC confirm those of Panayiotou et al. (2014), who found that venting negative feelings partially mediated the relationship between neuroticism and psychological distress (depression, anxiety, and hostility).

A concept that is similar to NEFC called repetitive negative thinking has been associated with several psychological outcomes even when accounting for neuroticism (Mahoney, McEvoy, & Moulds, 2012). Mahoney et al. (2012) emphasized the transdiagnostic value of repetitive negative thinking in independently predicting psychological outcomes, thereby serving as a potential focus of intervention. NEFC is comprised of both repetitive negative thinking and the expression of those thoughts. In the present study, NEFC demonstrated a transdiagnostic capacity in accounting for the relationships between neuroticism and three aspects of psychological distress (depression, anxiety, and stress) as well as well-being. Our findings support those of Panayiotou et al. (2014), who suggested that neuroticism shapes the selection of coping strategies, in turn exacerbating psychological distress and decreasing well-being.

Regarding the interconnections between personality, coping, and psychological distress, Bouchard et al. (2004) found that cognitive appraisals were a by-product of neuroticism, leading to dispositional coping, which in turn predicted both situational coping and psychological distress across time. Their finding that dispositional coping predicted situational coping established that individuals bring a preferred set of coping strategies to each new situation. Given this previous research, our finding that dispositional NEFC is a transdiagnostic mediator in the relationships between neuroticism and depression, anxiety, stress, and well-being in college students, may have even more significance. That is, interventions must target cognitive appraisal of stressors, an aspect of neuroticism, as well as NEFC, to disrupt the forward flow between neuroticism, dispositional coping, and psychological distress. Our conceptualization of self-blame and venting as components of transdiagnostic NEFC is a further contribution to the literature.

### **Limitations**

Several limitations were apparent in our study. Some limitations were due to difficulties in participant recruitment. First, we were unable to

obtain a similar number of men and women in this study, and the number of men in our sample was relatively small. We recommend that future research explore these variables in larger, gender-matched samples to examine potential gender differences in NEFC (Macedo et al., 2015) and the relationship between NEFC and specific psychological outcomes (i.e., depression, anxiety, stress, and well-being). Second, our sample size was not sufficient to permit adequate sample power for a structural equation model where all four outcomes were examined together. Although multicollinearity was not evident, future studies could account for shared variance in the distress outcomes by using a single model for statistical analysis. Third, our participants were students from a General Psychology undergraduate participant pool, which could have influenced the generalizability of our results to all college students.

In addition, the present study had a few methodological limitations. First, we did not counterbalance the presentation of measures because we wanted to avoid priming participants about the psychological outcomes under study; we acknowledge that this might have led to unintended order effects. Second, although our four-item NEFC subscale yielded an acceptable Cronbach's alpha of .73, the venting component had a Cronbach alpha of .58, the same as Ward and Hay (2015). Future studies could utilize more items representing the expression of negative emotion to improve the internal consistency of this subscale. Furthermore, such studies would benefit from an NEFC scale that assessed a greater variety of aspects of this concept. Finally, our study utilized a cross-sectional design, thus limiting the predictive value of our findings.

### **Conclusions**

Across separate studies, researchers have identified relationships between FFM personality traits and coping strategies in relation to depression, anxiety, stress, and psychological well-being or overall psychological distress. We established negative emotion-focused coping (NEFC) as a mediator in the relationships between neuroticism and several specific psychological outcomes (depression, anxiety, stress, and well-being) in the same undergraduate sample. Our study allowed for observations of the relative contributions of neuroticism and NEFC in predicting all four psychological outcomes. It is noteworthy that NEFC significantly and positively predicted depression, anxiety, and stress over and above the influence of neuroticism. Based on the

longitudinal findings of Bouchard et al. (2004), our findings suggest that aspects of neuroticism as well as NEFC need intervention, to alter the links between (a) a neurotic personality style and dispositional coping and (b) the association between dispositional coping and psychological distress in college students. Future research with larger gender-matched samples and longitudinal designs may identify preventive interventions to attenuate the high risk of attrition among students with psychological disorders.

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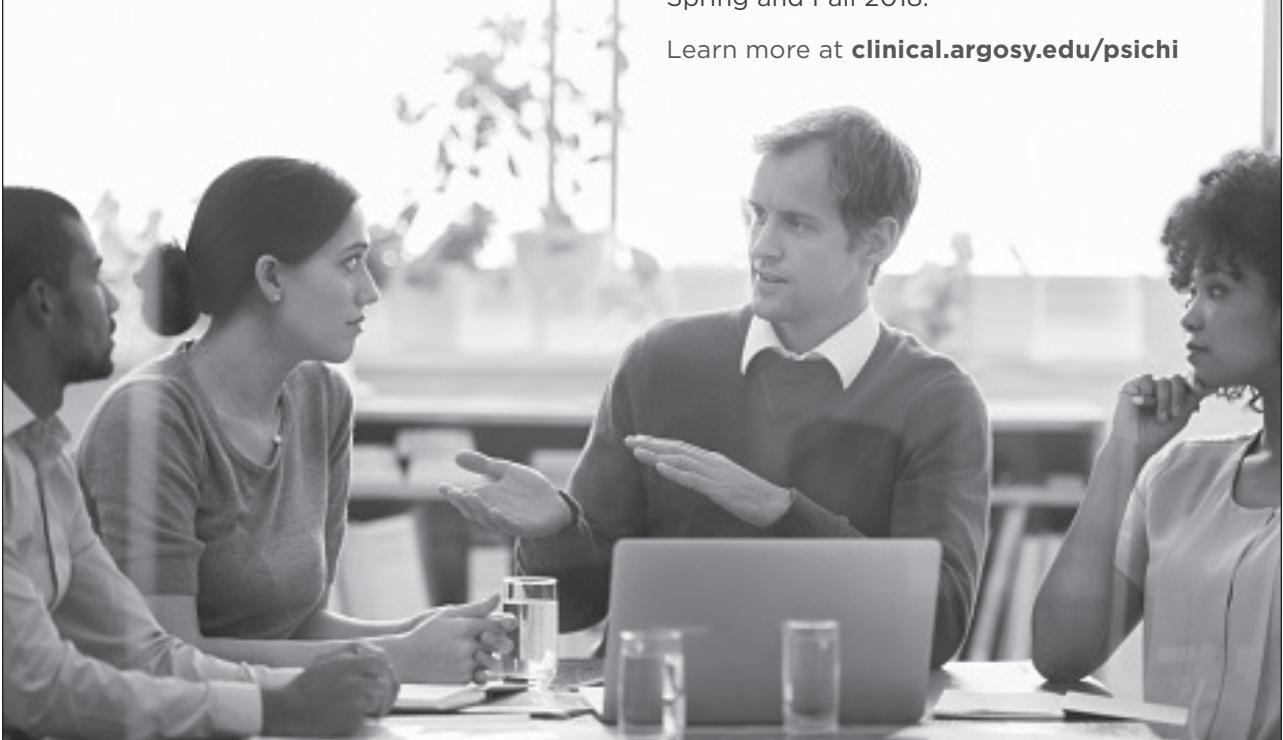
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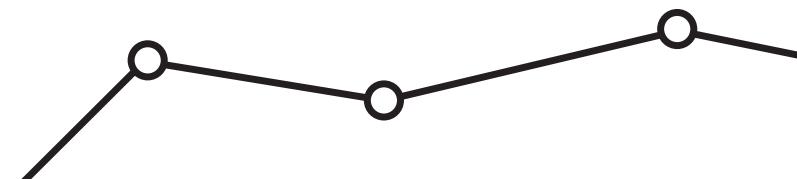
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