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## Personality, Emotions, and the Emotional Disorders

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### Abstract

We examined symptom-level relations between the *emotional disorders* and general traits within the five-factor model of personality. Neuroticism correlated strongly with the general distress/negative affectivity symptoms (depressed mood, anxious mood, worry) that are central to these disorders; more moderately with symptoms of social phobia, affective lability, panic, posttraumatic stress disorder, lassitude, checking, and obsessive intrusions; and more modestly with agoraphobia, specific phobia, and other symptoms of depression and obsessive-compulsive disorder. Extraversion was negatively correlated with symptoms of social anxiety/social phobia and was positively related to scales assessing expansive positive mood and increased social engagement in bipolar disorder. Conscientiousness, agreeableness, and openness showed weaker associations and generally added little to the prediction of these symptoms. It is noteworthy, moreover, that our key findings replicated well across (a) self-rated versus (b) interview-based symptom measures. We conclude by discussing the diagnostic and assessment implications of these data.

### Keywords

five-factor model of personality; depression; generalized anxiety disorder; social phobia; panic disorder; posttraumatic stress disorder; obsessive-compulsive disorder; bipolar disorder

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Personality and psychopathology represented largely disconnected areas of research for several decades (see Watson & Clark, 1994). Starting in the 1980s, however, psychopathology researchers showed increased interest in the role played by basic personality processes in clinical disorders. This interest was further stimulated by the publication of a 1994 Special Issue on Personality and Psychopathology in the *Journal of Abnormal Psychology*. In the years following the publication of this Special Issue, interest in this topic has exploded. A PsycINFO database survey (conducted on 8/14/13) covering the period from 1995 to 2013 generated a total of 8,557 references using the keywords *personality* and *psychopathology*. In fact, the concepts now are so intertwined that Section III of the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*; American Psychiatric Association, 2013) includes a trait dimensional scheme that

was largely derived from—and overlaps strongly with—the five-factor model of normal personality (Krueger, Derringer, Markon, Watson, & Skodol, 2012; Watson, Stasik, Ro & Clark, 2013). Thus, as we enter the *DSM-5* era, it is clear that personality processes are essential for any complete understanding of psychopathology.

Our goal in this paper is to explicate the general dispositional component of the *emotional disorders*. Watson (2005) used this term to characterize the symptoms and diagnoses classified within two key diagnostic classes—namely, the Mood Disorders and Anxiety Disorders—in the Fourth Edition of the *DSM (DSM-IV; American Psychiatric Association, 2000)*. In the revised framework of *DSM-5 (American Psychiatric Association, 2013)*, these disorders now fall into five adjacent diagnostic classes: Bipolar and Related Disorders, Depressive Disorders, Anxiety Disorders, Obsessive-Compulsive and Related Disorders, and Trauma- and Stressor-Related Disorders. Although most forms of psychopathology are associated with emotional dysfunction and dysregulation (Mineka, Watson, & Clark, 1998; Watson, 2009), these disorders are characterized by a particularly strong component of affective disturbance (e.g., sad mood in the Depressive Disorders, fearful, apprehensive mood in the Anxiety Disorders; see Watson, 2005; Watson, Clark, & Stasik, 2011), a point we develop in greater detail later.

Any consideration of the relations between personality and psychopathology is complicated by the enormous amount of nonspecific variance that characterizes both domains. Suppose, for instance, that individuals diagnosed with posttraumatic stress disorder (PTSD) are found to have elevated scores on trait measures of anger and hostility. At first glance, this finding might seem to suggest that individual differences in anger and hostility play a significant role in the development and/or course of PTSD. However, individuals who experience elevated levels of anger/hostility also report higher levels of other negative affects, such as sadness/depression and fear/anxiety (Watson 2005; Watson & Clark, 1997). Moreover, PTSD is strongly comorbid with many other diagnoses, including major depression, generalized anxiety disorder (GAD), and obsessive-compulsive disorder (OCD; Watson, 2005, 2009). Thus, it is unclear whether these findings actually are interesting and important—in the sense of telling us something unique about the relation between this particular trait and this specific disorder—or simply reflect the influence of these large nonspecific forces.

Two methodological features are essential in establishing the specificity of trait-disorder relations. First, it is necessary to examine multiple traits and disorders in the same integrated analysis, rather than studying individual associations in isolation. Second, researchers need to use the available structural evidence (a) to select the most informative set of variables for inclusion in these analyses and (b) to model these nonspecific influences properly. This is the basic approach we take in this paper. That is, we will examine how symptoms and diagnoses within the emotional disorders relate to the general higher-order traits—neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness—included in the prominent five-factor or “Big Five” model of personality (Costa & McCrae, 1992; Markon, Krueger & Watson, 2005, Watson, Clark, & Harkness, 1994).

In order to place this evidence in its proper framework, however, we first must briefly review three key areas of research: (a) the structure of affective experience, (b) associations

between the emotional disorders and basic dimensions of affect, and (c) relations between these basic dimensions of affect and personality. We examine these issues in the following sections.

## Affective Structure

An explosion of research in the 1980s established the basic hierarchical structure of emotional experience. Most notably, extensive evidence demonstrated the existence of two dominant higher order dimensions: Negative Affect and Positive Affect (Watson & Tellegen, 1985; Watson, Wiese, Vaidya, & Tellegen, 1999). Negative Affect is a general dimension of subjective distress and dissatisfaction that subsumes a broad range of specific lower-order negative mood states, including fear, sadness, anger, and guilt. Its emergence in structural analyses indicates that these various negative emotions significantly co-occur both within and across individuals. Thus, someone who is feeling sad also is likely to report significant levels of fear, anger, guilt, and so on. In parallel fashion, the general Positive Affect dimension reflects important co-occurrences among specific positive mood states; for example, someone who is happy also will report feeling interested, energetic, confident, and alert. These two higher order factors have been identified in both intra- and interindividual analyses, and they emerge consistently across diverse sets of descriptors, time frames, response formats, and languages (Watson & Clark, 1997; Watson et al., 1999).

## Emotions and the Emotional Disorders

Both of these higher-order dimensions have important links to the emotional disorders (Clark & Watson, 1991; Kotov, Gámez, Schmidt, & Watson, 2010; Mineka et al., 1998; Watson et al., 2011; Watson & Naragon-Gainey, 2010). Virtually all of the symptoms and disorders subsumed within this domain contain a shared component of elevated Negative Affect, which helps to account for the substantial overlap/comorbidity between them (Clark & Watson, 1991; Mineka et al., 1998; Watson, 2005). For example, based on an extensive review of the literature, Mineka et al. (1998) concluded that the *DSM-IV* Mood and Anxiety Disorders contain a shared component representing “broad individual differences in general distress and Negative Affect; it is a pervasive higher order factor that is common to both the mood and anxiety disorders and is primarily responsible for the overlap among these disorders.” (p. 397)

Mineka et al. (1998) also summarized a range of evidence indicating that the size of this general Negative Affect component differs markedly across disorders. Specifically, major depression and GAD both are distress-based disorders that clearly contain an enormous amount of variance attributable to this general factor; in contrast, other emotional disorders (such as OCD and specific phobia) contain a more modest component of nonspecific negative affectivity (see also Watson, Gamez, & Simms, 2005).

The evidence related to Positive Affect differs in two important ways. First, in contrast to the pervasiveness of negative emotional disturbance in psychopathology, positive mood dysfunction shows much greater specificity: That is, although many syndromes show substantial links to Positive Affect, others do not, such that individuals with these disorders report relatively normal levels of positive mood. Within the emotional disorders, deficits in

Positive Affect have been most strongly and clearly linked to major depression and social anxiety/social phobia (see Watson et al., 2011; Watson & Naragon-Gainey, 2010). Second, unlike Negative Affect—which is consistently elevated in clinical populations—Positive Affect does not display a consistent directional trend: Whereas most emotional disorders are associated with low levels of positive mood, the bipolar disorders have been linked to excessive Positive Affect (Gruber, Mauss, & Tamir, 2011; Watson & Naragon-Gainey, 2010; Watson, Clark, Chmielewski, & Kotov, 2013; Watson et al., 2012). As we will see, this unusual affective signature has important implications for how bipolar symptoms and disorders relate to general traits of personality.

## Personality and Affect

Finally, we briefly summarize the extensive literature relating the Big Five to basic dimensions of affect (see Watson & Clark, 1992; Watson & Naragon, 2009; Watson et al., 1999). First, neuroticism is the strongest and broadest predictor of negative emotional experience: It correlates strongly with the general Negative Affect factor, as well as a wide range of specific negative emotional states, including fear/anxiety, sadness/depression, guilt/dissatisfaction, and (to a lesser extent) anger/hostility. Conversely, extraversion has the strongest and broadest links to positive emotional experience: It correlates strongly with the general Positive Affect factor and with scales assessing cheerfulness, enthusiasm, excitement, joy, and energy; in addition, it is more moderately associated with feelings of boldness and confidence. Next, conscientiousness and agreeableness also show systematic associations with affect, but these largely reflect specific lower-order relations: The former primarily is related to feelings of alertness, attention, and concentration, whereas the latter is inversely linked to anger and hostility. Finally, unlike the rest of the Big Five, openness is weakly related to affective experience.

## Disorder-Based Analyses

### Basic Predictions

On the basis of these considerations, we can outline some general predictions regarding how the Big Five traits should be related to emotional disorder diagnoses (for a related discussion, see Kotov et al., 2010). First, one would predict that neuroticism—which is broadly related to negative emotional experience—is significantly linked to all of these disorders. As was discussed earlier, however, the size of the general distress/negative emotional component differs markedly across disorders (Mineka et al., 1998; Watson, 2005; Watson et al., 2005); one therefore would expect that neuroticism would correlate more strongly with disorders containing a strong general distress component (e.g., major depression, GAD, PTSD) than with those having a more modest component of nonspecific negative affectivity (e.g., OCD, specific phobia). Second, extraversion—which is broadly associated with positive emotional experience—should be inversely related to depression and social phobia, but positively related to bipolar disorder. Third, openness—which essentially is unrelated to affect—should be weakly related to these diagnoses. Finally, it is difficult to make specific predictions regarding agreeableness and conscientiousness, although one generally would expect that individuals with these disorders would report relatively low levels of these traits.

### Kotov et al. (2010) Meta-Analysis

**Basic associations**—Kotov et al. (2010) conducted a meta-analysis in which they compared the mean Big Five scores of individuals with and without 10 unipolar Mood and Anxiety Disorder diagnoses (e.g., the mean neuroticism scores of individuals with and without GAD). Specifically, they examined three *DSM-IV* Mood Disorder (major depression, dysthymic disorder, unspecified unipolar depression) and seven Anxiety Disorder (GAD, PTSD, panic disorder, agoraphobia, social phobia, specific phobia, OCD) diagnoses. The mean differences between diagnostic cases versus non-cases were divided by their pooled standard deviations to yield effect sizes expressed as Cohen's  $d$  (Cohen, 1992).

Their meta-analytic results only partially supported these predictions. As expected, neuroticism was significantly related to every diagnosis. Contrary to prediction, however, it produced large effect sizes (Cohen, 1992) with every disorder and displayed very little diagnostic specificity ( $d$ s ranged from 0.92 to 2.25, mean  $d = 1.72$ ); moreover, there was very little support for the prediction that it would be more strongly associated with disorders containing particularly large components of nonspecific general distress.

Extraversion displayed considerably weaker associations with these disorders (mean  $d = -0.95$ ), although it was significantly negatively related to most of them. Consistent with prediction, it was most strongly related to dysthymic disorder ( $d = -1.47$ ) and social phobia ( $d = -1.31$ ). Contrary to expectation, however, it showed one of its smallest associations with major depression ( $d = -0.62$ ) and actually was more strongly related to OCD ( $d = -1.12$ ), panic disorder ( $d = -1.07$ ), and GAD ( $d = -1.02$ ).

As expected, openness generally was weakly related to these diagnoses (mean  $d = -0.34$ ). It yielded only two medium effect sizes, displaying inverse associations with agoraphobia ( $d = -0.70$ ) and dysthymic disorder ( $d = -0.57$ ).

Finally, the results for agreeableness and conscientiousness were quite striking. Agreeableness showed weak, non-significant associations with all 10 disorders (mean  $d = 0.03$ ). Unexpectedly, however, conscientiousness consistently displayed negative associations of medium to large magnitude ( $d$ s ranged from -0.67 to -1.13; mean  $d = -1.01$ ). Moreover, similar to neuroticism, it displayed very little diagnostic specificity.

Overall, Kotov et al. (2010) emphasized that “there was little specificity in personality profiles among the disorders” and that “in particular, all conditions were associated with both high neuroticism and low conscientiousness” (p. 805). In fact, among the Big Five, only extraversion showed any real evidence of diagnostic specificity: Neuroticism was strongly positively related to every disorder, conscientiousness was substantially negatively associated with every disorder, and agreeableness and openness were largely unrelated to these diagnoses.

**Relations controlling for Neuroticism**—The Big Five traits are not completely independent of one another; for example, self-ratings on neuroticism typically are moderately negatively correlated with scores on extraversion, agreeableness, and conscientiousness (Digman, 1997; Markon et al., 2005). It therefore is possible that other

trait-disorder associations actually are attributable to the overlapping variance that these traits share with neuroticism, which easily is the strongest predictor of these diagnoses.

Kotov et al. (2010) therefore conducted a second set of analyses that controlled for neuroticism. Conscientiousness (six significant effects), extraversion (four effects), and openness (two effects) all continued to show significant relations of medium to large magnitude with various diagnoses, even after removing variance they share with neuroticism. Consequently, these other traits do exhibit some independent predictive power in relation to several disorders.

### **Bipolar Disorder**

Kotov et al. (2010) did not examine bipolar disorder diagnoses in their meta-analysis. In fact, relatively few studies have examined the associations between personality and bipolar diagnoses. The available evidence, however, is broadly consistent with the general predictions outlined earlier. In particular, individuals with bipolar disorder tend to report elevated levels of both neuroticism and extraversion; they also have relatively high scores on openness. In contrast, the findings for agreeableness and conscientiousness are less clear and consistent (Akiskal et al., 2006; Bagby et al., 1996, 1997; Barnett et al., 2011; Tackett, Quilty, Sellbom, Rector, & Bagby, 2008). Thus, similar to patients with other emotional disorders, individuals with bipolar disorder generally have high neuroticism scores; in contrast to these other disorders, however, they also tend to display elevations in extraversion and openness.

### **Problems with Diagnosis-Based Analyses**

Although they are informative, disorder-based analyses are limited in several ways (for a more detailed discussion, see Watson, 2005, 2009). For example, the unipolar Mood and Anxiety Disorders are strongly comorbid with one another (Watson, 2005, 2009), such that they tend to co-occur in the same individuals; this may have played an important role in producing the non-specific meta-analytic associations reported by Kotov et al. (2010). Disorder-based analyses also are hampered by periodic changes in diagnostic criteria, the inconsistent application of hierarchical exclusion rules, the low prevalence rates of some disorders (e.g., OCD, bipolar disorders), and the unimpressive reliability of many *DSM* diagnoses (Kraemer, Kupfer, Narrow, & Regier, 2012; Spitzer, Williams, & Endicott, 2012; Watson, 2005, 2009).

One particularly important problem is that diagnosis-based analyses fail to capture the marked heterogeneity of many *DSM* disorders. For example, as we discuss in greater detail subsequently, structural analyses have identified replicable symptom dimensions within several of the emotional disorders, including major depression, PTSD, OCD, specific phobia, and bipolar disorder (Watson, 2005, 2009; Watson et al., 2007, 2012; Watson & Wu, 2005); moreover, these symptom dimensions often are highly distinctive and correlate differently with other variables. Consequently, symptom-based analyses provide a clearer, more nuanced view of the associations between personality and psychopathology. As we will see, they also show much greater evidence of specificity, particularly in the case of neuroticism.

In the following sections, we report data examining personality in relation to symptoms of (a) depression, (b) *DSM-IV* anxiety disorders (thereby also including symptom dimensions within PTSD and OCD), and (c) bipolar disorder. In addition to considering these relations at the general syndromal level (e.g., overall symptoms of PTSD), we also take advantage of the extensive structural work in this area to examine the replicable symptom dimensions that have been identified within several disorders (e.g., PTSD, OCD, major depression).

Watson et al. (2005) previously examined relations between basic personality traits and various *DSM-IV* Mood and Anxiety Disorder symptoms. The data we report here extend these earlier results in five important ways.<sup>1</sup> First, the current results draw on an expanded and improved set of symptom measures. For instance, Watson et al. (2005) present analyses based on preliminary versions of scales that subsequently were included in the Inventory of Depression and Anxiety Symptoms (IDAS; Watson et al., 2007), whereas we present results here based on both the finalized and Expanded versions (IDAS-II; Watson et al., 2012) of the instrument. Second, we report extensive evidence related to openness, agreeableness, and conscientiousness; in contrast, Watson et al. (2005) included these traits only in their analyses of OCD symptoms. Third, the findings reported in Watson et al. (2005) were based primarily on the responses of college students; in the current analyses, we are able to examine relations across a much broader range of participants, including clinical outpatients and community adults. Fourth, unlike Watson et al. (2005), we report analyses of bipolar symptoms; as we will see, these new data are particularly important in explicating how extraversion relates to psychopathology. Finally, the Watson et al. (2005) findings were largely confined to self-report measures of both personality and psychopathology; consequently, these earlier associations were derived from a single rater and are inflated by a monomethod bias (Johnson, Rosen & Djurdjevic, 2010; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In contrast, we report extensive symptom data derived from clinical interviews and, therefore, are able to examine the generality of these relations across methods.

## Depression Symptoms

### A Measurement Model for Depression

Depression symptoms are characterized by a strong general factor (Beck, Steer, & Garbin, 1988; Watson et al., 2007), a point we return to shortly. Consequently, these symptoms typically are summed into a single score to create an overall index of general depression. Nevertheless, Watson et al. (2007) were able to differentiate several meaningful and replicable symptom dimensions within depression; scales assessing these specific types of symptoms were included in the IDAS.

Watson et al. (2007) developed these scales based on data collected from large college student, psychiatric patient, and community adult samples. Responses from these three groups were subjected to separate series of factor analyses. These analyses yielded several important findings that explicate the structure of depression symptoms. First, as expected,

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<sup>1</sup>We also should emphasize that the data presented in Tables 1 through 5 are entirely new and do not overlap with those reported earlier in Watson et al. (2005).

these analyses revealed a very large, non-specific factor that was defined by the core affective/cognitive symptoms of both depression and anxiety. It is particularly noteworthy that items assessing five of the nine *DSM-IV/DSM-5* symptom criteria for a major depressive episode—Criterion 1 (depressed mood), Criterion 2 (anhedonia/loss of interest), Criterion 5 (psychomotor problems), Criterion 7 (worthlessness/guilt) and Criterion 8 (cognitive problems)—were highly interrelated and defined a single common factor. Items assessing anxious mood and worry also were strong markers of this dimension. Thus, these data demonstrate the existence of a broad factor that is strongly saturated with general distress/negative affectivity and that lies at the very core of the emotional disorders (see also Watson, 2005, 2009): It subsumes more than half of the *DSM-IV/DSM-5* symptom criteria for a major depressive episode, as well as the central features of GAD. To capture the content encompassed within this broad factor, Watson et al. (2007) created the 10-item IDAS Dysphoria scale, which contains symptoms assessing depressed mood, loss of interest, worry, worthlessness, guilt, hopelessness, cognitive disturbance and psychomotor problems. Given its affectively-laden content, this scale should correlate strongly with neuroticism.

Beyond this general factor, however, several specific symptom dimensions consistently emerged in these structural analyses and were used to create corresponding IDAS scales. Five scales assess classic manifestations of depression. The IDAS Suicidality scale (6 items) essentially represents *DSM-IV/DSM-5* criterion 9 for a major depressive episode; the Insomnia scale (6 items) taps the corresponding portion of Criterion 4 (sleep disturbance); and Appetite Loss (3 items) and Appetite Gain (3 items) jointly define Criterion 3 (appetite disturbance). The final scale—Lassitude (6 items)—includes content related to both fatigue/nergia (Criterion 6) and the hypersomnia portion of Criterion 4.

Consequently, six IDAS scales—Dysphoria, Insomnia, Lassitude, Suicidality, Appetite Loss and Appetite Gain—jointly capture all of the symptom content included in the *DSM-IV/DSM-5* diagnostic criteria for a major depressive episode. We examine the trait correlates of these scales in subsequent analyses.

### Self-Reported Symptoms

**Previous evidence**—As suggested earlier, symptom-based analyses tend to show much greater specificity than disorder-based results. Watson et al. (2005) reported associations between (a) neuroticism and extraversion and (b) preliminary versions of several IDAS depression scales in a large student sample ( $N = 672$ ). As in disorder-based analyses, neuroticism emerged as a consistent predictor of psychopathology. Nevertheless, it also displayed substantial specificity in these analyses: It was strongly correlated with a preliminary version of Dysphoria ( $r = .62$ ), moderately associated with Lassitude ( $r = .42$ ), and modestly related to early versions of Insomnia, Suicidality, and Appetite Loss ( $r$ s ranged from .27 to .33). Extraversion also displayed some specificity in these analyses: It had a stronger negative association with Dysphoria ( $r = -.31$ ) than with other depression symptoms ( $r$ s ranged from  $-.13$  to  $-.19$ ).

**Sample 1**—We have replicated and extended these findings in subsequent samples. Table 1 presents correlations between the final versions of these IDAS depression scales and the



higher-order Big Five traits—as assessed by the 44-item version of the Big Five Inventory (BFI; John & Srivastava, 1999)—in a large combined sample (Sample 1;  $N = 3,714$ ); in addition to the zero-order coefficients, the final column of Table 1 displays multiple correlations that demonstrate the combined ability of the Big Five to predict each symptom. The sample used in these analyses includes 635 clinical outpatients, 732 community adults, 1,863 college students, 271 young adults, and 213 older adults ( $M$  age = 73.5; range = 57-92 years). To eliminate mean-level differences in symptom and trait levels across these five populations (e.g., patients generally report higher levels of symptoms than community adults), we standardized the scores on a within-population basis and then combined them to permit a single overall analysis.

These results differ in some important ways from the diagnosis-based findings reviewed earlier. Three aspects of these data are noteworthy. First, the BFI Neuroticism scale clearly has the strongest and broadest associations with depression symptoms. Indeed, Neuroticism had the strongest individual association with every type of symptom; moreover, its mean correlation (.38) was substantially higher than that for any other trait (mean  $r$ s ranged from -.05 [Openness] to -.25 [Conscientiousness]).

Second, Neuroticism shows considerable specificity in these analyses. Replicating the findings of Watson et al. (2005), Neuroticism correlated strongly with Dysphoria ( $r = .64$ ), moderately with Lassitude ( $r = .44$ ), and more modestly with the other symptoms ( $r$ s ranged from .25 to .33). These data clearly demonstrate that Neuroticism is very strongly linked to the general distress/negative affectivity dimension that lies at the core of the emotional disorders and is more weakly related to specific types of depression symptoms.

Third, the other four traits generally provide little incremental information beyond that attributable to Neuroticism. We quantified this observation formally by conducting a series of hierarchical regressions using each of the IDAS scales as criteria; in these analyses, BFI Neuroticism was entered in Step 1, followed by the other four traits in Step 2. By itself, Neuroticism contributed from 6.2% (Appetite Gain) to 40.9% (Dysphoria) of the variance in these depression symptoms ( $M = 15.8%$ ); in sharp contrast, the four remaining trait scales contributed an additional 0.5% (Insomnia) to 4.8% (Lassitude) of the variance in these criteria ( $M = 2.7%$ ). These results are somewhat surprising, given that Kotov et al. (2010) found that conscientiousness and extraversion both contributed significantly to depression diagnoses even after controlling for the influence of neuroticism.

### Interview-Based Symptoms

**IDAS-CR**—As noted earlier, it is important to establish that these findings generalize across measures and methods. Consequently, we present results based on two parallel interview measures: the Clinician Rating version of the IDAS (IDAS-CR; Koffel, 2011; Watson, 2009, Watson et al., 2008, 2012) and the Interview for Mood and Anxiety Symptoms (IMAS; Gamez, Kotov, & Watson, 2010; Watson et al., 2007, 2012; Watson & Stasik, in press). First, a subset of the Sample 1 participants ( $N = 891$ ) was assessed using the IDAS-CR. This subsample included 589 clinical outpatients and 302 college students (for details regarding these participants, see Watson et al., 2008). Once again, to eliminate mean-level differences

across these two populations, we standardized the scores on a within-population basis and then combined them in a single overall analysis.

The IDAS-CR consists of a series of single-item ratings representing each of the IDAS scales. Each rating is made on a 3-point scale (*absent, subthreshold, present*). To rate each symptom, the clinicians asked a standard initial probe question, as well as several standard follow up questions. Watson et al. (2008) established strong interrater reliability for the IDAS-CR in both students (intraclass correlations ranged from .65 to .95, median = .87) and patients (range = .74 to .99, median = .89); these ratings also show impressive convergent and discriminant validity vis-à-vis the self-report IDAS scales (Watson et al., 2008; Watson & Stasik, in press).

Correlations between the BFI and IDAS-CR ratings are presented in the middle portion of Table 1. These results replicate three key findings from the self-report data. First, Neuroticism clearly is the strongest, broadest predictor of clinician-rated depressive symptoms. It had the strongest individual association with five of the six symptoms (the single exception being Appetite Gain), with an overall mean correlation of .26. In contrast, the other four traits had correlations ranging from only .01 to -.22 (mean  $r_s = -.12$  [Conscientiousness], -.11 [Extraversion], -.07 [Agreeableness], -.04 [Openness]).

Second, BFI Neuroticism again showed considerable specificity in these data. Thus, it correlated more strongly with Dysphoria ( $r = .44$ ) and Lassitude ( $r = .35$ ) than with any other type of symptom ( $r_s$  ranged from .11 to .28). We further quantified these relations by conducting significance tests, using the Williams modification of the Hotelling test for two correlations involving a common variable (Kenny, 1987). Consistent with the self-report data, Neuroticism had a significantly stronger correlation with Dysphoria than with any other IDAS-CR rating ( $z_s$  ranged from 2.56 to 8.14, all  $p_s < .05$ , 1-tailed). It also had a significantly higher correlation with Lassitude than with the four remaining symptoms ( $z_s$  ranged from 1.93 to 5.94, all  $p_s < .05$ , 1-tailed).

Third, the other four traits again provide little incremental information beyond that attributable to Neuroticism. As before, we quantified this observation by conducting a series of hierarchical regressions using each of the IDAS-CR ratings as criteria. By itself, Neuroticism contributed from 1.2% (Appetite Gain) to 19.2% (Dysphoria) of the variance in these depression symptoms ( $M = 7.9\%$ ); in contrast, the four remaining BFI scales contributed an additional 0.2% (Insomnia) to 1.7% (Lassitude) of the variance in these criteria ( $M = 0.9\%$ ).

**IMAS**—We report IMAS data on a subsample of 263 outpatients (for a description of this sample, see Watson et al., 2012). The IMAS assesses current (i.e., past month) symptoms; individual items are scored on a 3-point rating scale (*absent, subthreshold, above threshold*). Items were derived from the Mood and Anxiety Disorder modules of the Composite International Diagnostic Interview (CIDI; Kessler & Üstün, 2004) and were designed to cover all *DSM-IV* Mood and Anxiety Disorder symptom criteria. Based on data from prior studies (Watson et al., 2007; Gamez et al., 2010), the IMAS was revised to improve its

symptom coverage. The revised version includes 5-item measures of Dysphoria and Lassitude, 4-item Insomnia and Suicidality scales, and a 3-item measure of Appetite Loss.

Extensively trained lay interviewers administered the IMAS. All interviews were recorded; a randomly selected interviewer rescored 34 tapes. Interrater reliability consistently was excellent, with ICCs ranging from .97 to .99 across the various scales (see Watson et al., 2012). Similar to the IDAS-CR, the IMAS scales show excellent convergent and discriminant validity in relation to their self-report counterparts in the IDAS (Watson & Stasik, in press).

The bottom portion of Table 1 presents correlations between the BFI and the IMAS depression scales (note that Openness was not assessed in this sample). Replicating previous results, Neuroticism clearly is the strongest predictor of interview-based depression symptoms in these data, showing the strongest individual association in four of five analyses (the one exception was Appetite Loss); furthermore, its mean correlation (.32) was considerably higher than those for Conscientiousness (-.19), Extraversion (-.18), and Agreeableness (-.12).

Neuroticism again shows considerable specificity in these data, but the pattern here differs somewhat from that seen earlier with the IDAS and IDAS-CR. Once again, BFI Neuroticism had stronger correlations with Dysphoria ( $r = .37$ ) and Lassitude ( $r = .45$ ) than with Insomnia ( $r = .24$ ) and Appetite Loss ( $r = .19$ ); unlike previous results, however, it had its strongest association with Lassitude—not Dysphoria—in these analyses. Follow-up tests indicated that Neuroticism had significantly stronger correlations with Lassitude and Dysphoria than with Insomnia and Appetite Loss ( $z$ s ranged from 1.95 to 4.47; all  $ps < .05$ , 1-tailed); however, the differences with Suicidality ( $r = .35$ ) were not significant (for Lassitude,  $z = 1.53$ ; for Dysphoria,  $z = 0.27$ ).

Finally, hierarchical regression analyses revealed that Extraversion, Agreeableness, and Conscientiousness added little to the prediction of Suicidality (an additional 0.2%), Insomnia (0.7%), and Dysphoria (2.2%). They did contribute more substantially, however, to the prediction of both Appetite Loss (7.6%) and Lassitude (4.8%), reflecting the incremental explanatory power of Conscientiousness ( $\beta = -.22$  and  $-.18$ , respectively) and Extraversion ( $\beta = -.20$  and  $-.15$ , respectively).

## Summary

These data—based on both self-reported and interview-based symptom measures—yield three broad conclusions. First, neuroticism is the strongest and broadest predictor of depression symptoms; this pattern clearly emerged in all three analyses, with overall mean correlations of .38 (IDAS), .26 (IDAS-CR), and .32 (IMAS). Second, neuroticism shows considerable specificity at the symptom level and is most strongly linked to the general distress/negative affectivity dimension (modeled in the IDAS by the Dysphoria scale) that lies at the core of the emotional disorders; it also correlates relatively strongly with symptoms of fatigue and anergia (modeled in the IDAS by the Lassitude scale). Third, with a few exceptions, the remaining Big Five traits generally provide only modest incremental information beyond that attributable to neuroticism.

## Anxiety Symptoms

### Self-Reported Symptoms

**Previous evidence**—Analyses of anxiety symptoms also tend to show greater specificity than results based on diagnosed disorders. Watson et al. (2005) examined relations between neuroticism and extraversion and the basic symptom dimensions associated with several anxiety disorders. Neuroticism again emerged as a consistently strong predictor of psychopathology, but also displayed significant specificity in these analyses: It was strongly correlated with indicators of subjective distress (e.g., the anxious mood that is the core feature of GAD), moderately related to symptoms associated with more limited forms of distress (e.g., panic, social anxiety), and weakly related to symptoms characterized primarily by behavioral avoidance of specific stimuli (e.g., phobias). Extraversion also displayed considerable specificity in these analyses: It showed consistent negative associations with indicators of social/interpersonal anxiety (the core feature of social phobia) and correlated more weakly with other types of anxiety symptoms.

**Measurement model**—We have replicated and extended these findings in a group of participants (Sample 2,  $N = 669$ ) who completed multiple measures of various types of anxiety symptoms. These multiple indicators then were aggregated into composite scores for each construct. The use of these multi-measure composites allows us to eliminate idiosyncratic aspects of specific assessment instruments. This sample included 296 psychiatric outpatients and 373 college students (for details regarding these samples, see Watson et al., 2012). Once again, we standardized scale scores on a within-population basis and then combined them in a single overall analysis. The standardized measures of each construct then were averaged to produce an overall composite score for each symptom.

Participants completed three measures of GAD symptoms: (1) the 7-item IDAS Anxious Mood scale (Watson et al., 2007); (2) the 9-item Generalized Anxiety Disorder Questionnaire-IV (Newman et al., 2002); and (3) the 10-item Worry Domains Questionnaire-Short Form (Stöber & Joormann, 2001). Correlations among these measures ranged from .56 to .72 (mean  $r = .62$ ) in this sample.

The battery included three indicators of social phobia: (1) the 5-item Social Phobia scale from the Fear Questionnaire (Marks & Mathews, 1979); (2) the 10-item Social Phobia scale from the Albany Panic and Phobia Questionnaire (Rapee, Craske, & Barlow, 1994/1995); and (3) the 6-item Social Anxiety scale from the IDAS-II (Watson et al., 2012). Correlations among these measures ranged from .55 to .70 (mean  $r = .65$ ).

Participants were assessed on two measures of PTSD symptoms: (1) the 17-item PTSD Checklist-Civilian Version (Weathers, Litz, Herman, Huska, & Keane, 1993); and (2) an aggregate score based on the Traumatic Intrusions (4 items) and Traumatic Avoidance (4 items) scales of the IDAS-II. These indicators correlated .72 with one another.

The battery contained two indicators of panic: (1) the 17-item Anxious Arousal scale of the Mood and Anxiety Symptom Questionnaire (Watson et al., 1995) and (2) the 13-item Panic

Attack Symptoms Questionnaire (Watson, 2000). These scales correlated .70 with one another.

Finally, participants completed three measures of OCD: (1) the 18-item Obsessive-Compulsive Inventory-Revised (Foa et al., 2002); (2) a total score based on the Obsessive Checking (14 items), Obsessive Cleanliness (12 items), Compulsive Rituals (8 items), and Hoarding (5 items) scales from the Schedule of Compulsions, Obsessions, and Pathological Impulses (SCOPI; Watson & Wu, 2005); and (3) a combined score based on the IDAS-II Checking (3 items), Ordering (5 items), and Cleaning (7 items) scales. Correlations among these scales ranged from .62 to .72 (mean  $r = .69$ ).

In addition to these overall scores, we modeled specific symptom dimensions within both PTSD and OCD. With regard to the former, the accumulated evidence has provided extensive support for two different four-factor models of PTSD symptoms (for a meta-analytic review of 40 studies, see Yufik & Simms, 2010). The first model—which initially was identified by King, Leskin, King, and Weathers (1998)—consists of Intrusions (5 symptoms), Avoidance (2 symptoms), Numbing (5 symptoms) and Hyperarousal (5 symptoms); this model now has been adopted as the basic structural framework for PTSD in *DSM-5*. The second model—which was proposed by Simms, Watson and Doebbeling (2002)—contains Intrusions and Avoidance factors that are identical to those specified in the King et al. (1998) scheme. However, it reassigns the remaining symptoms to yield a smaller 2-item Hyperarousal factor and a broad, nonspecific Dysphoria factor (eight items). We adopt the Simms et al. (2002) model here because it more cleanly divides PTSD symptoms into specific and general factors, thereby providing stronger, more precise tests of symptom specificity (for a meta-analytic review of this point, see Gootzeit & Markon, 2011). In our battery, we had two markers of Intrusions (PCL Intrusions, IDAS-II Traumatic Intrusions;  $r = .74$ ), two indicators of Avoidance (PCL Avoidance, IDAS-II Traumatic Avoidance;  $r = .69$ ), and single markers of both Dysphoria (PCL Dysphoria) and Hyperarousal (PCL Hyperarousal).

OCD also can be decomposed into several distinguishable symptom clusters (Leckman et al., 2010). Mataix-Cols, Rosario-Campos, and Leckman (2005) reviewed 12 major factor analytic studies and established the existence of four highly replicable symptom dimensions: (1) Ordering and symmetry, (2) Cleaning and contamination, (3) Checking and related obsessions, and (4) Hoarding. These same four symptom factors also have emerged consistently in item-level analyses of various OCD measures, including both the OCI-R and the SCOPI (see Foa et al., 2002; Watson & Wu, 2005; Wu and Watson, 2003). We modeled these symptom dimensions using three indicators of Checking (OCI-R Checking, SCOPI Obsessive Checking, IDAS-II Checking;  $r$ s ranged from .67 to .76, mean  $r = .72$ ), three indicators of Ordering (OCI-R Ordering, SCOPI Compulsive Rituals, IDAS-II Ordering;  $r$ s ranged from .68 to .72, mean  $r = .70$ ), three indicators of Cleaning (OCI-R Washing, SCOPI Obsessive Cleanliness, IDAS-II Cleaning;  $r$ s ranged from .69 to .73, mean  $r = .70$ ), and two indicators of Hoarding (OCI-R Hoarding, SCOPI Hoarding;  $r = .78$ ).<sup>2</sup>

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<sup>2</sup>Some OCD measures (e.g., the SCOPI) collapse indicators of checking and obsessive intrusions into a single scale, whereas others (e.g., the OCI-R) assess them separately. We report data on separate measures of obsessive intrusions in subsequent analyses.

**Basic Results**—Table 2 presents correlations between the BFI scales and these symptom composites; the final column of Table 2 displays multiple correlations that demonstrate the combined ability of the traits to predict each symptom. We first consider associations with the five overall symptom composites (GAD, Social Phobia, Panic, PTSD, OCD). Consistent with previous results, Neuroticism was moderately to strongly correlated with every symptom ( $r$ s ranged from .39 to .72, mean  $r = .54$ ). Nevertheless, replicating the findings of Watson et al. (2005), it had a significantly stronger correlation with GAD ( $r = .72$ ) than with the other four composite scores ( $r$ s ranged from .39 to .52,  $z$ s ranged from 8.59 to 11.87; all  $p$ s < .01). These data again demonstrate that neuroticism is strongly correlated with core indicators of subjective distress/negative affectivity and more moderately related to other types of symptoms.

As expected, Extraversion had a significantly stronger correlation with Social Phobia ( $r = -.54$ ) than with all other symptoms ( $r$ s ranged from  $-.14$  to  $-.34$ ,  $z$ s ranged from  $-7.06$  to  $-11.20$ ; all  $p$ s < .01). It is interesting to note that Conscientiousness showed the same basic pattern as Neuroticism, but at a much lower level: That is, it had a significantly stronger correlation with GAD ( $r = -.36$ ) than with the other four symptom composites ( $r$ s ranged from  $-.10$  to  $-.28$ ,  $z$ s ranged from  $-2.85$  to  $-7.19$ ; all  $p$ s < .01). Agreeableness displayed a nonspecific pattern of moderate correlations with all types of symptoms ( $r$ s ranged from  $-.26$  to  $-.32$ ). Finally, Openness again had very weak links to psychopathology ( $r$ s ranged from  $.01$  to  $-.03$ ), except for a modest inverse association with Social Phobia ( $r = -.21$ ).

Consistent with the depression results, the other traits generally provide little incremental information beyond that attributable to Neuroticism in these analyses; the one clear exception involves Social Phobia, which had a strong negative correlation with Extraversion. Once again, we quantified this observation formally by conducting a series of hierarchical regressions using the five composite scores as criteria. By itself, Neuroticism contributed from 15.5% (OCD) to 52.3% (GAD) of the variance in these composites ( $M = 29.8\%$ ). The four remaining trait scales contributed only modestly to the prediction of GAD (an additional 3.2% of the variance), Panic (2.6%), PTSD (2.0%), and OCD (1.5%) ( $M$  incremental variance = 2.3%). However, they did contribute substantially to the prediction of Social Phobia (an additional 13.0% of the variance). This essentially was due to the predictive power of Extraversion: Once Neuroticism and Extraversion both were entered into the regression equation, the three remaining traits contributed only 0.3% additional variance. As with depression, it is particularly noteworthy that Conscientiousness fails to emerge as a strong, independent predictor of psychopathology at the symptom level.

**PTSD symptoms**—Previous research has established that PTSD symptoms differ markedly in their specificity. In particular, Dysphoria symptoms show much greater non-specificity than do other types of PTSD symptoms. For example, aggregating results across several large studies (overall  $N = 7,771$ ), Watson (2009) found that depression symptoms correlated .76 with Dysphoria, .52 with Hyperarousal, .50 with Intrusions, and .44 with Avoidance. Similarly, in their meta-analytic review, Gootzeit and Markon (2011) reported that anxiety symptoms correlated .58 with Dysphoria, .49 with Hyperarousal, .40 with Intrusions, and .33 with Avoidance.

Dysphoria symptoms clearly contain more non-specific, general distress variance than do other types of PTSD symptoms. As we have seen, neuroticism is a particularly strong predictor of subjective distress at the symptom level. This, then, leads to the prediction that neuroticism should correlate more strongly with Dysphoria than with other PTSD symptoms. Consistent with this expectation, Watson et al. (2005) reported that neuroticism correlated significantly more strongly with Dysphoria ( $r = .45$ ) than with Intrusions ( $r = .32$ ), Hyperarousal ( $r = .30$ ), and Avoidance ( $r = .28$ ) in a sample of 573 Gulf War veterans.

As can be seen in Table 2, the Sample 2 participants show the same basic pattern. Most notably, BFI Neuroticism correlated significantly more strongly with Dysphoria ( $r = .55$ ) than with other PTSD symptoms ( $r$ s ranged from .42 to .47,  $z$ s ranged from 3.15 to 4.49; all  $ps < .01$ ). Agreeableness ( $r = -.41$ ) and Conscientiousness ( $r = -.37$ ) also had moderate negative correlations with Dysphoria.

Once again, we examined the incremental predictive power of the other four traits via hierarchical multiple regression. When entered in Step 1, Neuroticism contributed from 18.4% (Avoidance) to 30.3% (Dysphoria) of the variance in these PTSD symptoms ( $M = 22.2\%$ ). The four remaining traits contributed moderately to the prediction of Dysphoria (an additional 6.6% of the variance) and modestly to Hyperarousal (3.3%), but added little to the prediction of Intrusions (0.7%) and Avoidance (0.6%). As with other symptoms, the bulk of the predictive power is attributable to Neuroticism.

**OCD symptoms**—OCD symptoms also show different levels of specificity, although the observed pattern varies somewhat across measures. Watson (2009) summarized data demonstrating that indicators of depression correlated more strongly with checking and obsessive intrusions than with other types of OCD symptoms. More specifically, in analyses based on the SCOPI, depression symptoms correlated .43 with Obsessive Checking, .25 with Hoarding, .24 with Compulsive Rituals, and .24 with Obsessive Cleanliness (Watson, 2009, Table 4). In analyses based on the OCI-R, however, depression symptoms correlated more strongly with Obsessions ( $r = .42$ ) than with all other types of OCD symptoms, including Checking ( $r$ s ranged from .26 to .27).

These data suggest that checking scales contain a somewhat stronger general distress component than indicators of ordering, cleaning, and hoarding (see also Stasik, Naragon-Gainey, Chmielewski, & Watson, 2012). This, then, leads to the straightforward hypothesis that neuroticism should correlate more strongly with checking than with other OCD symptoms. Supporting this prediction, in a sample of 1,815 undergraduate students, Watson et al. (2005) reported that neuroticism correlated significantly more strongly with a composite measure of Checking ( $r = .39$ ) than with composite indicators of Hoarding (.26), Ordering ( $r = .26$ ), and Cleaning ( $r = .22$ ). The remaining Big Five traits all had consistently weak associations with these OCD symptom composites ( $r$ s ranged from only  $-.18$  to  $.16$ ; Watson et al., 2005, Table 5).

Replicating the findings of Watson et al. (2005), Neuroticism had a significantly stronger association with Checking ( $r = .42$ ) than with the other OCD symptoms ( $r$ s ranged from .24 to .32,  $z$ s ranged from 3.46 to 5.09; all  $ps < .01$ , 1-tailed) in the Sample 2 participants (see

Table 2). Another noteworthy finding in Table 2 was that Hoarding symptoms actually had a slightly stronger link to Conscientiousness ( $r = -.29$ ) than to Neuroticism ( $r = .25$ ).

Hierarchical multiple regression analyses indicated that Neuroticism accounted for 5.8% (Cleaning) to 17.3% (Checking) of the variance in OCD symptoms ( $M = 10.0\%$ ). The remaining traits contributed moderately to Hoarding (5.8% additional variance), but only modestly to the prediction of Cleaning (2.2%), Ordering (2.1%), and Checking (1.3%).

### Interview-Based Symptoms

**IDAS-CR**—The Sample 2 participants were interviewed and rated using the IDAS-CR and a companion instrument, the Personality, Cognitions, Consciousness, and Perceptions Interview (PCCP; Koffel, 2011; Watson et al., 2012). Interview data were available on 625 participants (252 patients, 373 students). As before, we standardized the scores on a within-population basis and then combined them in a single overall analysis.

We obtained IDAS-CR ratings on six specific anxiety symptoms: the assessed variables included Generalized Anxiety, Social Anxiety and Panic, as well as three types of PTSD symptoms (Hyperarousal, Intrusions, Avoidance), which also were summed to create an overall PTSD composite. In addition, the PCCP was used to obtain OCD symptom ratings. The PCCP is modeled after the IDAS-CR and uses the same 3-point rating scale (*absent, subthreshold, present*). To assess each symptom, the interviewer asks a standard probe question and three to five follow-up questions. We obtained PCCP ratings on five specific types of OCD symptoms: Checking, Cleaning, Ordering, Rituals, and Obsessive Intrusions; these ratings also were summed to create a general OCD composite. Overall, we report data on 13 interview-based symptom ratings in the Sample 2 participants; this includes 5 overall scores (Generalized Anxiety, Social Anxiety, Panic, PTSD, OCD), three specific types of PTSD symptoms, and five types of OCD symptoms.

Correlations between the BFI scales and these IDAS-CR/PCCP ratings are presented in Table 3. Four aspects of these data are noteworthy. First, consistent with the self-report data, Neuroticism clearly is the strongest, broadest predictor of clinician-rated anxiety symptoms. It had the strongest individual association with 11 of the 13 symptoms (the two exceptions involved Ordering and Hoarding), with an overall mean correlation of .28. In contrast, the other four traits had mean correlations of only -.18 (Agreeableness), -.13 (Conscientiousness), -.12 (Extraversion), and .03 (Openness).

Second, Neuroticism again shows considerable specificity in these data; note that its Table 3 correlations range from .11 to .45. Replicating the pattern observed in the self-ratings, Neuroticism correlated more strongly with Generalized Anxiety ( $r = .45$ ) than with other anxiety symptoms ( $r$ s ranged from .11 to .39). Follow-up tests indicated that Neuroticism had a significantly stronger correlation with Generalized Anxiety than with other anxiety symptoms in 11 of 12 comparisons ( $z$ s ranged from 2.22 to 7.04, all  $ps < .05$ , 1-tailed); the one exception involved Social Anxiety ( $r = .39$ ,  $z = 1.60$ , n.s.). Moreover, as would be expected based on the findings of Watson (2009), Neuroticism had a significantly stronger correlation with Obsessive Intrusions ( $r = .37$ ) than with other OCD symptoms ( $r$ s ranged from .11 to .22;  $z$ s ranged from 3.05 to 5.03, all  $ps < .01$ , 1-tailed).



Third, consistent with the self-report data, Extraversion had a significantly stronger inverse association with Social Anxiety ( $r = -.36$ ) than with any other type of anxiety symptom ( $r$ s ranged from .00 to  $-.21$ ;  $z$ s ranged from  $-3.74$  to  $-7.76$ , all  $p$ s  $< .01$ , 1-tailed). It should be noted, moreover, that this was the only non-Neuroticism correlation to exceed  $|.30|$  in these data.

Fourth, with a few exceptions, the other four traits again provide relatively little incremental information. As before, we quantified this observation in a series of hierarchical regressions using each of the IDAS-CR/PCCP ratings as criteria. By itself, Neuroticism contributed from 1.1% (Cleaning) to 20.2% (Generalized Anxiety) of the variance in these symptoms ( $M = 8.5\%$ ). The other BFI scales added little predictive power in 8 of the 13 analyses (range = 0.5% to 2.1%, mean = 1.1% incremental variance). Prominent exceptions were that Extraversion ( $\beta = -.24$ ) contributed to the prediction of Social Anxiety; Agreeableness added incremental variance to both the OCD composite ( $\beta = -.16$ ) and Ordering ( $\beta = -.18$ ); Conscientiousness was a substantial predictor of Hoarding ( $\beta = -.22$ ); and Openness enhanced the prediction of Obsessive Intrusions ( $\beta = .20$ ).

**IMAS**—Finally, Table 4 reports correlations between the BFI (minus Openness) and IMAS anxiety scales in the same subsample of 263 outpatients described earlier. Table 4 presents results for 16 anxiety scores: GAD (12 items), Social Phobia (15 items), Panic (23 items), four types of PTSD symptoms (overall PTSD [25 items], Hyperarousal [6 items], Intrusions [4 items], Avoidance [3 items]), Agoraphobia (15 items), four indicators of specific phobia (overall Specific Phobia [13 items], Animal Phobia [3 items], Situational Phobia [4 items], Blood-Injection-Injury Phobia [4 items]), and four measures of OCD symptoms (overall OCD [19 items], Checking [4 items], Ordering [6 items], Cleaning [5 items]).

These results further replicate several key findings. First, Neuroticism again is the strongest, broadest predictor of anxiety symptoms. It had the strongest individual association with 13 of 16 symptoms (the exceptions were Social Phobia, Situational Phobia, and Cleaning, which all were more highly related to Extraversion), with an overall mean correlation of .28. Extraversion (mean  $r = -.21$ ) also was moderately linked to several types of symptoms, but Conscientiousness (mean  $r = -.08$ ) and Agreeableness (mean  $r = -.07$ ) were only weakly related to anxiety.

Second, Neuroticism again shows substantial specificity, with correlations ranging from .13 to .53 in these data. Replicating previous results, Neuroticism correlated more strongly with GAD ( $r = .53$ ) than with other anxiety symptoms ( $r$ s ranged from .13 to .38). Follow-up tests indicated that Neuroticism had a significantly stronger correlation with GAD than with other symptoms in all 15 comparisons ( $z$ s ranged from 2.87 to 6.50, all  $p$ s  $< .01$ , 1-tailed). Within PTSD, Neuroticism correlated significantly more strongly with Hyperarousal (.40) than with Intrusions ( $r = .22$ ,  $z = 3.07$ ,  $p < .01$ , 1-tailed) and Avoidance ( $r = .22$ ,  $z = 2.90$ ,  $p < .01$ , 1-tailed). Within OCD, Neuroticism correlated more strongly with Checking ( $r = .24$ ) than with Cleaning ( $r = .13$ ;  $z = 1.86$ ,  $p < .05$ , 1-tailed); however, the difference with Ordering ( $r = .16$ ) was not significant ( $z = 1.63$ ).

Third, consistent with other results, Extraversion had a significantly stronger inverse association with Social Anxiety ( $r = -.51$ ) than with any other type of anxiety symptom ( $r$ s ranged from  $-.08$  to  $-.28$ ;  $z$ s ranged from  $-4.16$  to  $-6.52$ , all  $p$ s  $< .01$ , 1-tailed). Furthermore, replicating the Table 3 findings, this was the only non-Neuroticism correlation to exceed  $|.30|$  in these analyses.

Finally, we conducted a series of hierarchical regression analyses using each of the IMAS scales as criteria. By itself, Neuroticism contributed from 1.6% (Cleaning) to 27.9% (GAD) of the variance in these symptoms ( $M = 8.7\%$ ). Extraversion added substantially to the prediction of Social Phobia ( $\beta = -.42$ ), Agoraphobia ( $\beta = -.21$ ), and Cleaning ( $\beta = -.19$ ). Once Neuroticism and Extraversion both had been forced into the equation, Agreeableness and Conscientiousness jointly contributed only 0.2% (Checking, Situational Phobia) to 2.9% (Panic) additional variance (mean = 0.9% incremental variance) across the 16 analyses. Thus, with a few exceptions, we again see that traits other than neuroticism provide relatively little incremental information to the prediction of anxiety symptoms.

## Summary

These data yield four broad conclusions. First, as was the case with depression, neuroticism clearly is the strongest and broadest predictor of anxiety symptoms. Second, neuroticism shows considerable specificity at the symptom level: In fact, it had correlations ranging from  $.24$  to  $.72$  in the self-report analyses; from  $.11$  to  $.45$  in the IDAS-CR/PCCP data; and from  $.13$  to  $.53$  in the IMAS analyses. Consistent with previous results (see especially Watson et al., 2005), it was strongly linked to the anxious mood/worry that is the core feature of GAD; moderately associated with symptoms of social phobia, panic, and PTSD; and more modestly related to symptoms of agoraphobia, specific phobia, and OCD. Third, neuroticism also shows significant specificity at the within-disorder level: That is, it is most strongly associated with the Dysphoria symptoms of PTSD and indicators of checking and obsessive intrusions within OCD. Fourth, with a few exceptions, the remaining Big Five traits generally provide little incremental information beyond that attributable to neuroticism; the most noteworthy exception is that extraversion consistently correlates negatively with symptoms of social anxiety/social phobia.

## Bipolar Symptoms

### Previous Evidence

Relatively few studies have examined the relations between bipolar symptoms and general personality traits. The results have varied considerably as a function of the measure that was used to assess these symptoms. Murray, Goldstone, and Cunningham (2007) reported correlations between the Big Five and the Mania scale<sup>3</sup> of the General Behavior Inventory (GBI; Depue, Krauss, Spont, & Arbisi, 1989; Depue et al., 1981) in a sample of 175 students. GBI Mania was strongly correlated with neuroticism ( $r = .51$ ), more moderately negatively related to both agreeableness ( $r = -.36$ ) and conscientiousness ( $r = -.36$ ), and weakly associated with extraversion ( $r = .10$ ) and openness ( $r = .14$ ). In marked contrast,

<sup>3</sup>This measure combines scores on the GBI Hypomania and Biphasic scales. We subsequently report results analyzing these two scales separately.

three studies (Furnham, Batey, Anand, & Manfield, 2008; Schalet, Durbin, & Revelle, 2011; Walsh, Royal, Brown, Barrantes-Vidal, & Kwapil, 2012) have examined relations between the Big Five and overall scores on the Hypomanic Personality Scale (HPS; Eckblad & Chapman, 1986). HPS scores were moderately positively associated with both extraversion ( $r$ s ranged from .40 to .51) and openness ( $r$ s ranged from .32 to .45), weakly linked to neuroticism ( $r$ s ranged from only .07 to .18) and conscientiousness ( $r$ s ranged from -.04 to -.22), and inconsistently related to agreeableness ( $r$ s ranged from .08 to -.36).

These inconsistent results are not surprising, as one would expect specific types of bipolar symptoms to correlate quite differently with personality. For instance, mood variability is a core feature of neuroticism (Watson et al., 1994). In fact, Watson et al. (1994) included emotional lability as a facet within neuroticism in their hierarchical model of personality (see their Table 3); similarly, it has been included as a component of the higher-order negative affectivity domain in the *DSM-5* trait dimensional model (Krueger et al., 2012; Watson et al., 2013). Consequently, scales that contain substantial item content related to mood variability—such as the GBI Biphasic scale—should correlate strongly with neuroticism. Conversely, scales that focus more on positive emotional content (e.g., feelings of excitement and euphoria)—such as the HPS—would be expected to correlate more strongly with extraversion.

In this regard, it is noteworthy that Schalet et al. (2011) recently created three HPS subscales that reflect distinctly different types of content: Mood Volatility (e.g., “When I feel an emotion, I usually feel it with extreme intensity”), Social Vitality (e.g., “In unfamiliar surroundings, I am often so assertive and sociable that I surprise myself”), and Excitement (e.g., “I often feel excited and happy for no apparent reason”). Not surprisingly, these subscales showed rather different patterns of associations with the Big Five. Social Vitality was strongly correlated with extraversion ( $r = .58$ ), moderately related to openness ( $r = .43$ ), and weakly associated with the other traits ( $r$ s ranged from -.08 to .09). Excitement was moderately correlated with extraversion ( $r = .41$ ) and modestly related to all of the other traits ( $r$ s ranged from -.08 to .22). Finally, Mood Volatility was most strongly linked to conscientiousness ( $r = -.32$ ) and neuroticism ( $r = .29$ ). These results demonstrate the importance of examining different types of bipolar symptoms separately.

### Sample 1 Data

**Participants**—A subset of the Sample 1 participants ( $N = 698$ ) completed four instruments that include measures of bipolar symptoms. This subsample included 359 community adults and 339 college students. Once again, we standardized the scores on a within-population basis and then combined them in a single overall analysis.

**Measures**—First, the 48-item HPS (Eckblad & Chapman, 1986) measures long-term manic/hypomanic tendencies, rather than current symptoms. The items are rated using a true-false format. Given their distinctive associations with personality, we examined the three Schalet et al. (2011) subscales—Mood Volatility (13 items), Social Vitality (19 items) and Excitement (7 items)—rather than the HPS total score.

Second, participants completed the GBI Hypomania and Biphasic scales (Depue et al., 1981, 1989). Similar to the HPS, the GBI was designed to assess an individual's likelihood of risk for bipolar disorder (Depue et al., 1981). The 21-item Hypomania scale taps a broad range of bipolar symptoms (e.g., distractibility, reduced need for sleep, pressure of speech), whereas the 7-item Biphasic scale focuses more narrowly on affective lability (e.g., rapid shifts in mood or energy) and behavioral volatility (e.g., changes in eating patterns). Respondents rate how often they experience each item on a 4-point scale ranging from *never or hardly* to *very often or almost constantly*.

Third, the Hypomania Checklist-32 (HCL-32; Angst et al., 2005) consists of 32 items that are rated using a dichotomous yes/no format. Respondents are asked to indicate how they felt during “a period when you were in a ‘high’ state.” Sample items include “I am more self-confident,” “I am less shy or inhibited”, and “I think faster.”

Finally, the IDAS-II (Watson et al., 2012) contains two scales assessing current bipolar symptoms; respondents indicated the extent to which they experienced each symptom “during the past two weeks, including today” on a 5-point scale ranging from *not at all* to *extremely*. The 5-item Mania scale assesses such bipolar symptoms as talkativeness/pressure of speech, flight of ideas, and restlessness/agitation (e.g., “It felt like my mind was moving ‘a mile a minute’”). The 5-item Euphoria scale taps content reflecting an elated and expansive mood, heightened energy, and grandiosity/excessive self-esteem (e.g., “I felt like I was ‘on top of the world’”). Watson et al. (2013) present evidence establishing that these scales are associated with elevated levels of both general distress/negative affect and energy/positive emotionality. However, Mania contains a much stronger component of general distress, whereas Euphoria contains a much larger element of energy/positive emotionality (see also Watson et al., 2012). Consequently, they should show different patterns of association with personality.

**Structural analysis of the symptom scales**—As noted earlier, bipolar symptom measures differ in the extent to which they assess negative versus positive emotional content; those emphasizing the former should be substantially linked to neuroticism, whereas those focusing on the latter should be related more to extraversion. To explicate the nature of the content tapped by individual scales, we subjected them to a principal factor analysis (using squared multiple correlations as initial communality estimates) with an orthogonal varimax rotation.

Two factors emerged in this analysis; the loadings are presented in supplemental Table S1, which is available online. Factor 1 was defined by the GBI Biphasic, GBI Hypomania, HPS Mood Volatility, and IDAS-II Mania scales; it appears to tap individual differences in affective lability, restlessness, and cognitive manifestations of mania (e.g., pressure of speech), and would be expected to correlate substantially with neuroticism. Conversely, IDAS-II Euphoria, HPS Excitement, HPS Social Vitality, and HCL-32 marked Factor 2. This dimension appears to reflect individual differences in elation, excitement, and manic energy/activation, and should relate more strongly to extraversion. We computed regression-based factor scores to model these dimensions in subsequent analyses.

**Relations with personality**—Table 5 presents correlations between the BFI scales and these bipolar symptom measures. Consistent with previous research, the associations differ dramatically across different types of symptoms; the results for the two factor scores are particularly striking. As expected, Factor 1 correlated strongly with Neuroticism ( $r = .55$ ); it had moderate negative associations with Agreeableness ( $r = -.34$ ) and Conscientiousness ( $r = -.28$ ), and was largely unrelated to both Openness ( $r = .14$ ) and Extraversion ( $r = -.02$ ). In marked contrast, Factor 2 correlated strongly with Extraversion ( $r = .52$ ); it had moderate links to both Openness ( $r = .25$ ) and Neuroticism ( $r = -.22$ ), but basically was unrelated to Agreeableness ( $r = -.07$ ) and Conscientiousness ( $r = -.02$ ).

In terms of individual measures, it is noteworthy that scales assessing affective lability and emotional intensity—namely, GBI Biphasic ( $r = .55$ ) and HPS Mood Volatility ( $r = .43$ )—had the strongest links to Neuroticism. Conversely—and consistent with expectation—scales tapping content related to elevated positive mood and increased social engagement—such as HPS Social Vitality ( $r = .59$ ), HPS Excitement ( $r = .40$ ), and IDAS-II Euphoria ( $r = .31$ )—had the strongest associations with Extraversion.

One important implication of these results is that they demonstrate that the use of global scores potentially can lead to misleading findings and conclusions in relation to personality. This can be seen most dramatically in the relation between Neuroticism and the HPS. Neuroticism correlated .10 with the HPS Total Score in this sample. However, this overall score masks the fact that the instrument contains distinctive types of content that correlate quite differently with Neuroticism: As shown in Table 5, Neuroticism was moderately positively correlated ( $r = .43$ ) with the Mood Volatility items, unrelated ( $r = .02$ ) to the Excitement items, and significantly negatively associated ( $r = -.19$ ) with the Social Vitality items. Given these very different patterns, we strongly recommend that these subscales be used in future personality-related work.

## Discussion

### Summary of Findings

**Neuroticism**—Our symptom-based analyses have helped to clarify the nature of the associations between personality and the emotional disorders. First, neuroticism is the strongest predictor of emotional disorder diagnoses (Kotov et al., 2010). It also clearly showed the strongest symptom-level associations in our analyses; moreover, this pattern replicated across both self-rated and interview-based symptom measures, and across different types of respondents. Across the 69 individual analyses reported in Tables 1 through 5, neuroticism had the single highest association with a symptom score in 54 cases (78.3%). Overall, it had 35 correlations (50.7%)  $|\geq .30|$ , and 19 correlations (27.5%)  $|\geq .40|$ .

Nevertheless, it also showed impressive specificity at the symptom level, with correlations ranging from  $-.22$  to  $.72$ . Consistent with previous results (Watson et al., 2005), neuroticism is most strongly linked to indicators of the general distress/negative affectivity dimension (e.g., depressed mood, anxious mood, worry) that lies at the core of the emotional disorders. In the current analyses, it correlated most strongly with self-reported and interview-based GAD symptoms ( $r$ s ranged from  $.45$  to  $.72$ ), IDAS and IDAS-CR Dysphoria ( $r = .64$  and .

44, respectively), the Dysphoria symptoms of PTSD ( $r = .55$ ), and the affective lability symptoms of bipolar disorder (e.g.,  $r = .55$  with GBI Biphasic,  $r = .55$  with bipolar Factor 1).

To some extent, this specificity reflects the influence of similar, even overlapping, content. That is, neuroticism tends to correlate most strongly with symptom measures that also are heavily laden with negative emotional content. For example, the BFI Neuroticism scale contains the item “is depressed, blue”, whereas the IDAS Dysphoria scale includes the item “I felt depressed.” It is hardly surprising that these scales correlate .64 with one another (see Table 1). Having said that, however, it is important to note that neuroticism remains substantially related to anxiety and depression symptoms even after eliminating the influence of overlapping content (Uliaszek et al., 2009). Moreover, our data establish the existence of specificity even among measures that do not directly share content with neuroticism. For instance, BFI neuroticism correlated more strongly with indicators of social anxiety/social phobia ( $r$ s ranged from .38 to .52) and panic ( $r$ s ranged from .31 to .52) than with measures of cleaning ( $r$ s ranged from .11 to .24), even in the absence of any directly overlapping content.

**Extraversion**—Extraversion showed a particularly striking pattern of associations in our data. Consistent with previous findings (Watson et al., 2005; Naragon-Gainey, Watson, & Markon, 2009), it had its strongest negative associations with symptoms of social anxiety/social phobia ( $r$ s ranged from -.36 to -.54). In contrast, it essentially was unrelated to several types of symptoms, including insomnia ( $r$ s ranged from -.03 to -.10) and ordering ( $r$ s ranged from .00 to -.10). Finally, it was moderately to strongly *positively* associated with bipolar symptom scales tapping content related to elevated positive mood and increased social engagement (e.g.,  $r = .59$  with HPS Social Vitality, .52 with bipolar Factor 2).

**Openness**—Consistent with results observed at the diagnostic level, openness basically was unrelated to anxiety and depression symptoms. In fact, it had correlations exceeding  $|\cdot 10|$  in only one of 38 analyses (2.6%) involving these symptoms ( $r = -.21$  with self-rated social phobia). However, it did correlate moderately with both HPS Social Vitality ( $r = .38$ ) and bipolar Factor 2 ( $r = .25$ ); these findings are consistent with diagnostic data indicating that openness scores are elevated in individuals with bipolar disorder (e.g., Barnett et al., 2011; Tackett et al., 2008).

**Agreeableness and conscientiousness**—Finally, agreeableness and conscientiousness both tended to show moderate—and relatively nonspecific—associations with psychopathology. Agreeableness had 22 correlations in the  $|\cdot 20|$  to  $|\cdot 35|$  range, and its highest association was only -.41 with PTSD Dysphoria. Similarly, Conscientiousness had 25 correlations in the  $|\cdot 20|$  to  $|\cdot 35|$  range, and its strongest association was only -.37 (with both IDAS Dysphoria and PCL Dysphoria).

The results we obtained for agreeableness are not very surprising, given that this trait generally has weak associations with emotional disorder diagnoses (Kotov et al., 2010). In contrast, the data for conscientiousness are puzzling and difficult to interpret. In their meta-analysis, Kotov et al. (2010) reported that all 10 Mood and Anxiety Disorder diagnoses were

associated with substantially lower levels of conscientiousness ( $d$ s ranged from  $-0.67$  to  $-1.13$ ); in many cases, moreover, these associations were independent of shared variance with neuroticism. In our data, however, conscientiousness did not display particularly strong or striking associations with specific types of symptoms. As noted, its strongest symptom-level association was only  $|.37|$  in our analyses; in contrast, neuroticism had 24 correlations  $|.38|$  in these data. Moreover, conscientiousness exhibited little incremental predictive power in our analyses. It will be important for future work to explicate the basis for the relatively strong associations observed with conscientiousness at the diagnostic level. It is possible, for instance, that facet-level data will reveal stronger and more specific associations with various types of symptoms.

### Implications of the Findings

**Explicating the nature of the emotional disorders**—Personality traits represent potential vulnerability factors that may contribute etiologically to the development of psychopathology (Clark, 2005; Clark, Watson, & Mineka, 1994; Kotov et al., 2010). Consequently, the data we have reviewed can help to identify dispositional factors that may play a significant etiological role in certain aspects of the emotional disorders (although there are other possible interpretations of these associations, a point we return to later). For example, neuroticism potentially represents a nonspecific etiological factor that is implicated in a wide range of psychopathology.

In a related vein, personality traits offer a potential organizing framework for psychopathology. In this regard, a series of articles in a 2009 Special Section of *Psychological Medicine* considered the merits of a proposed *meta-structure*—that is, a revised, empirically-driven approach to classifying psychopathology based on shared criteria, including common risk factors—in the *DSM* (Andrews et al., 2009; Goldberg, Krueger, Andrews, & Hobbs, 2009). This proposed scheme argued for the allocation of most *DSM* disorders into one of five superclusters: Neurocognitive, Neurodevelopmental, Psychosis, Emotional, and Externalizing. According to Andrews et al. (2009), the disorders subsumed within the Emotional cluster (e.g., depression, GAD, PTSD, panic disorder, OCD) all “share elevated scores on the temperament of negative emotionality.” (p. 1996) Conversely, the broad trait of disinhibition was seen as the common temperamental basis for the Externalizing cluster (Andrews et al., 2009; Krueger & South, 2009). Thus, basic personality dimensions such as neuroticism and disinhibition can help to identify common mechanisms underlying different types of psychopathology.

**Diagnostic implications**—Personality-psychopathology data also have potentially important implications for improving the differential diagnosis of certain disorders. As we have seen, neuroticism has broad and relatively nonspecific associations with emotional disorder diagnoses. This, in turn, means that certain of these disorders may co-occur beyond chance in individuals (i.e., show significant comorbidity) due, in part, to their shared component of neuroticism (see Kotov et al., 2010).

A strong neuroticism component would seem to be inherent in the definition of distress-based disorders such as GAD and major depression. Put differently, it is difficult to

conceptualize these disorders without including a strong element of distress/negative affectivity. But what about other disorders that show substantial links to neuroticism, such as PTSD? Consistent with other data (Gootzeit & Markon, 2011; Watson, 2009; Watson et al., 2005), our results indicated that PTSD symptoms are differentially related to neuroticism, with Dysphoria symptoms showing the strongest links to the trait (see Tables 3 and 4). This raises an important question: Are these Dysphoria symptoms necessary for a valid diagnosis of PTSD?

Watson and Stasik (in press) reviewed extensive evidence establishing that these Dysphoria symptoms display much poorer specificity than other PTSD symptoms: They correlate more strongly with indicators of depression and anxiety (Gootzeit & Markon, 2011; Watson, 2009) and fail to show diagnostic specificity to PTSD (in fact, some symptoms actually had stronger associations with diagnoses of major depression than with PTSD). Finally, a logistic regression analysis indicated that Dysphoria symptoms failed to provide significant incremental information to the prediction of PTSD. Taken together, these data tentatively suggest that we can enhance the differential diagnosis of PTSD by eliminating these Dysphoria symptoms from its criteria (for other views of this issue, see Grubaugh, Long, Elhai, Frueh, & Magruder, 2010; Spitzer, First, & Wakefield, 2007). This issue warrants careful attention in future research.

**Assessment implications**—Our data highlight the distinctive nature of the symptom dimensions within depression, PTSD, OCD, and bipolar disorder. The distinctive qualities of these symptoms have significant implications for assessment. For example, focusing assessment on symptoms that have a strong element of negative affectivity (e.g., Dysphoria symptoms of PTSD) can be expected to build in more substantial associations with neuroticism, as well as stronger links to other measures with a prominent distress component (e.g., GAD symptoms). Conversely, deemphasizing these types of symptoms generally will serve to weaken these associations.

These personality data also can help to identify potential validity problems in specific symptom instruments. For example, we predicted—and found—that extraversion would correlate positively with certain types of bipolar symptoms. Nevertheless, the very strong correlation ( $r = .59$ ) we obtained between BFI Extraversion and HPS Social Vitality is suspiciously high and raises concerns about the construct validity of this scale (see also Schalet et al., 2011, who reported a .58 correlation between Social Vitality and extraversion). These concerns are exacerbated by the fact that Social Vitality actually correlated significantly more strongly with BFI Extraversion than with any of the other bipolar scales reported in Table 5 ( $r$ s ranged from .19 to .40,  $z$ s ranged from 5.15 to 9.53, all  $p$ s < .01).<sup>4</sup> This striking pattern suggests that Social Vitality might be better viewed as a measure of extraversion than of bipolar symptomatology per se.

A complete discussion of this issue is beyond the scope of our paper. It is noteworthy, however, that in the original HPS scale development article, Eckblad and Chapman (1986) stated: “A trait specification was written describing the hypomanic personality. Such

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<sup>4</sup>These analyses exclude the factor scores, with which Social Vitality has a part-whole relation.



persons were characterized as upbeat, gregarious, confident, and energetic people who sometimes display these attributes to a maladaptive extreme, becoming euphoric, hypersociable, grandiose, and overactive, with occasional episodic hypomanic symptoms.” (p. 216) The first part of this statement provides an excellent description of an extravert; this suggests that extraversion-related content (such as gregariousness, confidence, and energy) may have been included in the final scale. In fact, several HPS items (e.g., “In unfamiliar surroundings, I am often so assertive and sociable that I surprise myself”; “At social gatherings, I am usually the ‘life of the party’”) appear to assess extraversion, rather than hypomania per se. Future research is needed to explicate the construct validity of this scale.

### Limitations and Future Directions

**Moving beyond self-report**—We need to acknowledge three important limitations of the reviewed evidence. First, although we replicated many key results across methods and measures, the data we presented are based heavily on self-report, either directly or indirectly through the filter of clinical interviews. It will be important for future work to examine the generality of these findings across a broader range of methods, including both (a) informant ratings of personality and (b) biological markers of psychopathology.

**Paucity of lower-order evidence**—Second, our review is limited to general, higher-order traits of personality, such as neuroticism and extraversion. Unfortunately, we still lack sufficient data at the specific lower-order level. A major part of the problem here is that we currently lack consensus regarding the specific facets that fall within the broad, higher order domains. For example, the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) divides each domain into six facets, whereas the HEXACO Personality Inventory (Lee & Ashton, 2004) includes only four component traits per domain. Consequently, progress in this area will require (a) clarifying the composition of the traits that make up each higher order domain and then (b) relating multiple indicators of these traits to symptoms and diagnoses of the emotional disorders. Analyses of this type will play a key role in explicating personality-psychopathology relations (see, for example, Naragon-Gainey et al., 2009). As suggested previously, facet-level analyses of this type may play a particularly valuable role in clarifying associations with conscientiousness.

**Lack of longitudinal data**—Third, most of the existing evidence is cross-sectional in nature (Kotov et al., 2010). Longitudinal data are needed to clarify the etiological basis of these relations. Researchers in this area (Clark, 2005; Clark et al., 1994; Klein, Kotov, & Bufferd, 2011; Kotov et al., 2010; Watson et al., 2005) have described several possible etiological explanations for the associations between personality and psychopathology: (1) Personality may cause psychopathology (vulnerability model) or influence its course and expression (pathoplasty model); (2) Psychopathology may influence personality traits either temporarily (complication model) or permanently (scar model); or (3) Both personality and psychopathology may have the same etiology (common cause model) or be part of the same underlying continuum (spectrum model).

All of these models have received at least some empirical support in the literature (Clark et al., 1994; Fanous, Neale, Aggen, & Kendler, 2007; Kendler & Gardner, 2011; Kotov et al.,

2010; Watson et al., 2005), which indicates that the mechanisms underlying these relations are extremely complex. Indeed, the operative processes likely vary across traits and disorders, and across different levels of analyses (i.e., symptoms vs. diagnoses). A thorough examination of this issue is beyond the scope of this paper. It seems plausible to suggest, however, that the nature of these relations varies systematically as a function of their specificity. For example, in symptom-level analyses, neuroticism is most strongly linked to indicators of general distress/negative affectivity (e.g., depressed mood, anxious mood, worry). These strong, specific associations—which, as noted earlier, partly reflect similar, even overlapping, content—would seem to be most congruent with a common cause or spectrum model. Consistent with this argument, substantial evidence indicates that a common genetic factor is responsible for much of the observed overlap between neuroticism and symptoms of depression and GAD (Jardine, Martin, & Henderson, 1984; Kendler & Gardner, 2011; Watson et al., 2005; see also Kendler, Gardner, Gatz, & Pedersen, 2007).

But how do we explain the fact that conscientiousness (a) is weakly related to anxiety and depression symptoms but (b) shows strong, nonspecific associations with mood and anxiety disorder diagnoses (Kotov et al., 2010)? In light of these relatively low symptom correlations, the diagnostic data seem most compatible with a complication or scar model—that is, clinically significant forms of psychopathology are associated with attentional, motivational, and behavioral problems that make it difficult to maintain normal levels of discipline and self-control (i.e., high levels of conscientiousness). This is a crucial issue for future research.

## Conclusion

This review has helped to clarify how specific symptom dimensions are linked to basic traits of personality. Our results emphasize the highly distinctive nature of different types of symptoms and illustrate the value of assessing and analyzing them separately. Future work can build on these data to develop a more complete framework for understanding the complex associations between personality and the emotional disorders.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Table 1**

Correlations between the BFI Scales and Depression Symptoms in Sample 1

Symptom Score	Neur	Extra	Open	Agree	Con	Overall <i>R</i>
<i>IDAS</i>						
Dysphoria	<b>.64</b>	-.30	-.09	-.29	<b>-.37</b>	<b>.67</b>
Lassitude	<b>.44</b>	-.22	-.07	-.21	-.34	<b>.49</b>
Suicidality	.33	-.18	-.04	-.25	-.26	<b>.39</b>
Insomnia	.31	-.10	-.03	-.18	-.18	.33
Appetite Loss	.28	-.11	-.01	-.12	-.15	.29
Appetite Gain	.25	-.08	-.07	-.16	-.21	.29
<i>IDAS-CR</i>						
Dysphoria	<b>.44</b>	-.22	-.10	-.11	-.16	<b>.45</b>
Lassitude	<b>.35</b>	-.14	-.08	-.11	-.22	<b>.38</b>
Suicidality	.28	-.16	.00	-.14	-.13	.30
Insomnia	.22	-.06	-.03	-.04	-.07	.22
Appetite Loss	.15	-.04	-.00	.01	-.05	.17
Appetite Gain	.11	-.04	-.06	-.06	-.11	.14
<i>IMAS</i>						
Dysphoria	<b>.37</b>	-.18	–	-.20	-.22	<b>.40</b>
Lassitude	<b>.45</b>	-.30	–	-.11	-.27	<b>.50</b>
Suicidality	<b>.35</b>	-.13	–	-.13	-.11	<b>.35</b>
Insomnia	.24	-.03	–	-.07	-.11	.25
Appetite Loss	.19	-.24	–	-.08	-.24	.33

Note.  $N = 3,714$  (IDAS), 891 (IDAS-CR), 263 (IMAS). Correlations  $|.04|$  (IDAS),  $|.08|$  (IDAS-CR), and  $|.13|$  (IMAS) are significant at  $p < .05$ . Correlations  $|.35|$  are highlighted. BFI = Big Five Inventory. Neur = Neuroticism. Extra = Extraversion. Open = Openness. Agree = Agreeableness. Con = Conscientiousness. IDAS = Inventory of Depression and Anxiety Symptoms. IDAS-CR = Clinician Rating Version of the Inventory of Depression and Anxiety Symptoms. IMAS = Interview for Mood and Anxiety Symptoms.

**Table 2**

Correlations between the BFI Scales and Self-Rated Anxiety Symptoms in Sample 2

Symptom Score	Neur	Extra	Open	Agree	Con	Overall <i>R</i>
GAD	<b>.72</b>	-.34	.01	-.32	<b>-.36</b>	<b>.74</b>
Social Phobia	<b>.52</b>	<b>-.54</b>	-.21	-.30	-.27	<b>.64</b>
Panic	<b>.52</b>	-.25	.01	-.32	-.25	<b>.54</b>
PTSD	<b>.52</b>	-.24	-.03	-.33	-.28	<b>.54</b>
Dysphoria	<b>.55</b>	-.30	-.01	<b>-.41</b>	<b>-.37</b>	<b>.61</b>
Hyperarousal	<b>.47</b>	-.19	-.01	<b>-.35</b>	-.25	<b>.50</b>
Intrusions	<b>.43</b>	-.16	-.04	-.25	-.20	<b>.44</b>
Avoidance	<b>.42</b>	-.21	-.04	-.23	-.20	<b>.43</b>
OCD	<b>.39</b>	-.14	-.02	-.26	-.10	<b>.41</b>
Checking	<b>.42</b>	-.20	-.01	-.26	-.15	<b>.43</b>
Ordering	.32	-.09	-.02	-.21	-.03	<b>.35</b>
Hoarding	.25	-.15	.01	-.21	-.29	<b>.35</b>
Cleaning	.24	-.08	-.03	-.19	-.01	.28

Note.  $N = 669$ . Correlations  $> .09$  are significant at  $p < .05$ . Correlations  $> .35$  are highlighted. BFI = Big Five Inventory. Neur = Neuroticism. Extra = Extraversion. Open = Openness. Agree = Agreeableness. Con = Conscientiousness. GAD = generalized anxiety disorder. PTSD = posttraumatic stress disorder. OCD = obsessive-compulsive disorder.



**Table 3**

Correlations between the BFI Scales and IDAS-CR/PCCP Anxiety Ratings in Sample 2

Symptom Rating	Neur	Extra	Open	Agree	Con	Overall <i>R</i>
Generalized Anxiety	<b>.45</b>	-.15	.06	-.18	-.19	<b>.47</b>
Social Anxiety	<b>.39</b>	<b>-.36</b>	-.05	-.27	-.22	<b>.46</b>
Panic	.31	-.12	.07	-.16	-.11	.34
PTSD	.30	-.10	.02	-.17	-.14	.32
Hyperarousal	.25	-.09	.03	-.18	-.12	.28
Intrusions	.26	-.08	.01	-.12	-.12	.27
Avoidance	.26	-.09	.01	-.14	-.11	.27
OCD	<b>.35</b>	-.15	.06	-.27	-.18	<b>.40</b>
Obsessive Intrusions	<b>.37</b>	-.21	.09	-.23	-.19	<b>.42</b>
Checking	.22	-.09	.02	-.16	-.09	.24
Ordering	.17	.00	.00	-.17	.02	.25
Hoarding	.15	-.09	.04	-.16	-.25	.28
Cleaning	.11	-.05	.01	-.08	-.00	.13

Note.  $N = 625$ . Correlations  $> |.09|$  are significant at  $p < .05$ . Correlations  $> |.35|$  are highlighted. BFI = Big Five Inventory. IDAS-CR = Clinician Rating Version of the Inventory of Depression and Anxiety Symptoms. PCCP = Personality, Cognitions, Consciousness, and Perceptions Interview. Neur = Neuroticism. Extra = Extraversion. Open = Openness. Agree = Agreeableness. Con = Conscientiousness. GAD = generalized anxiety disorder. PTSD = posttraumatic stress disorder. OCD = obsessive-compulsive disorder.

**Table 4**

Correlations between the BFI Scales and IMAS Anxiety Scales in Sample 1

FMAS Scale	Neur	Extra	Agree	Con	Overall <i>R</i>
GAD	<b>.53</b>	-.24	-.18	-.19	<b>.53</b>
Social Phobia	<b>.38</b>	<b>-.51</b>	-.14	-.22	<b>.56</b>
Panic	<b>.38</b>	-.19	-.10	-.26	<b>.42</b>
PTSD	<b>.40</b>	-.28	-.16	-.23	<b>.44</b>
Hyperarousal	<b>.40</b>	-.26	-.17	-.21	<b>.43</b>
Intrusions	.22	-.08	-.01	-.07	.23
Avoidance	.22	-.15	-.00	-.11	.25
Agoraphobia	.30	-.29	-.10	-.14	<b>.36</b>
Specific Phobia	.24	-.22	-.06	-.01	.28
Animal Phobia	.22	-.21	-.02	.02	.27
Situational Phobia	.20	-.21	-.10	-.07	.25
BII Phobia	.17	-.12	-.03	.04	.21
OCD	.22	-.19	-.03	.04	.27
Checking	.24	-.14	-.02	-.06	.25
Ordering	.16	-.10	-.02	.07	.20
Cleaning	.13	-.21	-.00	.06	.24

Note. *N* = 263. Correlations  $|\geq .13|$  are significant at  $p < .05$ . Correlations  $|\geq .35|$  are highlighted. BFI = Big Five Inventory. IMAS = Interview for Mood and Anxiety Symptoms. Neur = Neuroticism. Extra = Extraversion. Agree = Agreeableness. Con = Conscientiousness. GAD = generalized anxiety disorder. PTSD = posttraumatic stress disorder. BII = blood-injection-injury. OCD = obsessive-compulsive disorder.

**Table 5**

Correlations between the BFI Scales and Bipolar Symptom Scales in Sample 1

Symptom Scale	Neur	Extra	Open	Agree	Con	Overall <i>R</i>
<i>Factor 1</i>	<b>.55</b>	-.02	.14	-.34	-.28	<b>.63</b>
GBI Biphasic	<b>.55</b>	-.02	.15	-.31	-.24	<b>.62</b>
HPS Mood Volatility	<b>.43</b>	.13	.17	-.32	-.24	<b>.57</b>
IDAS-II Mania	.24	.09	.09	-.15	-.14	.32
GBI Hypomania	.23	.15	.19	-.28	-.23	<b>.44</b>
<i>Factor 2</i>	-.22	<b>.52</b>	.25	-.07	-.02	<b>.57</b>
HPS Social Vitality	-.19	<b>.59</b>	<b>.38</b>	-.14	-.02	<b>.62</b>
HPS Excitement	.02	<b>.40</b>	.16	-.05	-.07	<b>.45</b>
IDAS-II Euphoria	-.22	.31	.16	-.02	.06	.33
HCL-32	.05	.25	.13	-.14	-.12	.34

Note.  $N = 698$ . Correlations  $|\geq .09|$  are significant at  $p < .05$ . Correlations  $|\geq .35|$  are highlighted. BFI = Big Five Inventory. Neur = Neuroticism. Extra = Extraversion. Open = Openness. Agree = Agreeableness. Con = Conscientiousness. GBI = General Behavior Inventory. HPS = Hypomanic Personality Scale. IDAS-II = Expanded Version of the Inventory of Depression and Anxiety Symptoms. HCL-32 = Hypomania Checklist-32.

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