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Contextualizing neuroticism in the Hierarchical Taxonomy of Psychopathology

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Abstract

Neuroticism is the personality trait most consistently and strongly connected to psychopathology. The majority of research on the relationship between traits and mental illness has focused on neuroticism's connection with broad psychopathology spectra or discrete disorders. However, both personality and psychopathology are hierarchically-organized domains that may be examined at multiple levels of fidelity and bandwidth from very specific thoughts, feelings, and behaviors (i.e., nuance traits or symptoms) to very broad patterns indexing many interrelated tendencies (i.e., general factors). The Hierarchical Taxonomy of Psychopathology (HiTOP) is a recently proposed nosologic framework for psychopathology symptoms and domains that accounts for this tiered organization. Here, we illustrate how neuroticism-psychopathology relationships—both what is known and unknown—may be elucidated through the HiTOP system.

Keywords: *Hierarchical Taxonomy of Psychopathology, neuroticism, measurement, Five Factor Model*

Contextualizing Neuroticism in the Hierarchical Taxonomy of Psychopathology

Strong concurrent and prospective links between psychopathology and the Five Factor Model (FFM) trait neuroticism have been documented extensively (Kotov, Gamez, Schmidt, & Watson, 2010; Tackett, Quilty, Sellbom, Rector, & Bagby, 2008). The vast majority of this research has focused on connections between trait neuroticism and DSM-defined mental disorder (e.g., neuroticism and Major Depressive Disorder from the *Diagnostic and Statistical Manual of Mental Disorders*; American Psychiatric Association, 2013). However, there is a wealth of evidence within both personality and clinical psychology demonstrating that these domains are most accurately conceptualized as dimensional and hierarchically organized. Specifically, both traits and symptoms may be defined both narrowly and broadly—from very specific individual behaviors (e.g., is afraid of heights) to very broad tendencies (e.g., is avoidance-oriented), and at many levels in between. A more comprehensive understanding of how neuroticism is associated with various types of psychopathology would be best achieved if this hierarchical structure were taken into account. In the current review, we examine the utility of one specific hierarchical framework—the Hierarchical Taxonomy of Psychopathology (HiTOP; Kotov et al., 2017) as it serves to elucidate what we know—and don't—about the relationship neuroticism and psychopathology, broadly conceived.

Neuroticism

Neuroticism is the broad trait within the FFM that captures the tendency to experience negative affect (Caspi, Roberts, & Shiner, 2005). Most typically, this construct is measured as tendencies toward depression and anxiety, and, depending on the measurement tool, often irritability and anger, as well. Neuroticism is associated with numerous consequential life outcomes, including almost all types of psychopathology (Kotov et al., 2010; Tackett et al.,

2008) and—extending beyond mental health problems—physical health, relationship satisfaction and divorce, and mortality (Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014; Tackett & Lahey, 2017). Taken together, the broader literature points to neuroticism as the trait with the most overall public health relevance (Lahey, 2009; Widiger & Oltmanns, 2017), with some even suggesting that physicians screen for neuroticism in the general population (Widiger & Trull, 2007). Thus, its importance cannot be overstated.

Neuroticism's associations with psychopathology—and other life outcomes—is most often reported at the higher-order, trait domain level, and particularly within the Five Factor Model (FFM) of personality (John & Srivastava, 1999). However, like psychopathology, neuroticism fits within a larger hierarchical structure of traits (see Table 1). At the broadest level of individual differences—a 2-factor model—neuroticism is clearly reflected in a highly general domain indexed by negative emotions and behavioral inhibition or avoidance, or in the reverse, sometimes labeled “stability” (DeYoung, 2006; Markon, Krueger, & Watson, 2005). Hierarchically, neuroticism at a 3-factor level breaks apart from self-regulatory traits (agreeableness and conscientiousness), but it shows substantial covariation with these factors. Neuroticism is present as a major trait in virtually every personality model at broad, or 5- or 6-factor levels. However, comparatively little research, and therefore, consensus exists on personality trait structure below the FFM. To date, no large-scale, systematic investigation of neuroticism's subordinate structure has yet been conducted. Proposed intermediate traits (sometimes called aspects) within the neuroticism domain include constructs like withdrawal and volatility (DeYoung, Quilty, & Peterson, 2007). Also commonly studied are even narrower facets, or lower-level traits. Neuroticism's lower-order traits differ widely between measurement instruments, but some common facets include depression/sadness, irritability, anxiety/fear, and

(low) self-confidence (see Table 2). Below these specific traits, at the narrowest level lie the individual items that comprise neuroticism inventories, sometimes referred to as “nuance traits” (McCrae, 2015).

Neuroticism is present in early life from infancy, toddlerhood, and childhood onward, although it is arguably the most difficult personality trait to measure in younger ages (De Pauw, 2017; Tackett, Herzhoff, Kushner, & Rule, 2016; Tackett, Kushner, De Fruyt, & Mervielde, 2013). These measurement challenges may be due to the largely internal nature of neuroticism, exacerbated by the need to rely on informant and observational reports of childhood personality traits (Tackett, 2011; Tackett et al., 2016). Early measures of neuroticism also show different covariation patterns than are typically observed in adult samples. Specifically, child neuroticism appears to hang more tightly with (low) agreeableness in children than it does in adults (Tackett, Kushner, et al., 2013; Tackett et al., 2012). This is likely due to the much more observable nature of antagonistic or irritable features of trait neuroticism than other facets such as sadness and anxiety, such that neuroticism measures may be more strongly weighted with agreeableness-relevant or externalized negative affect at younger ages. These differences are important to consider when examining associations between neuroticism and psychopathology across the lifespan, as changing patterns may well reflect measurement problems rather than true developmental differences. Nonetheless, across the broader literature, it is clear that neuroticism is a central personality trait throughout life, and it is robustly associated with psychopathology at any age.

The Hierarchical Taxonomy of Psychopathology

HiTOP (Kotov et al., 2017) is a nosological framework for psychopathology which attempts to overcome many of the limitations of traditional, categorical diagnostic systems such

as the *Diagnostic and Statistical Manual of Mental Disorders* (DSM; American Psychiatric Association, 2013). HiTOP conceptualizes psychopathology as (1) dimensional and (2) organized hierarchically, such that it may be described at various levels from broad, transdiagnostic clusters of psychopathology down to specific individual signs and symptoms. These levels are delineated based on prior empirical research, using data-driven models of psychopathology measurement (Achenbach, 1966; Krueger & Markon, 2006). From highest to lowest bandwidth (i.e., dimensionality), these levels include superfactors, spectra, subfactors, syndromes/disorders, components, and symptoms (see Table 1). HiTOP also explicitly incorporates personality traits with these dimensions; clinical spectra (with the exception of somatoform) are connected to five dimensions of pathological traits that roughly mirror FFM personality (Kotov et al., 2017). However, this trait-spectrum connection has most often been described in a simple fashion, with each spectrum explicitly connected to just one or two traits. In this model, negative affectivity principally corresponds to internalizing psychopathology, however, this simple structure does not capture the complexity of observed trait-psychopathology relationships. Ample evidence indicates that neuroticism is pervasive at multiple levels of the psychopathology hierarchy—an evidence base we now turn to.

Superfactors. The HiTOP model at its broadest level consists of a superfactor of general psychopathology, or a single transdiagnostic factor often referred to as the *p* factor (Caspi et al., 2014; Kotov et al., 2017). Similar to the *g* factor, or positive manifold that accounts for the covariation in performance on a variety of cognitive ability tasks (i.e., general intelligence; Neisser et al., 1996), a general *p* factor accounts for the covariation among all forms of psychopathology (i.e., broadband comorbidity; Krueger & Markon, 2006; Lahey et al., 2012). The *p* factor has been reliably recovered in research studies using both categorically- and

continuously-based assessments of psychiatric disorders (Laceulle, Vollebergh, & Ormel, 2015; Lahey et al., 2012; Martel et al., 2016) and in samples of children as well as adults (Caspi et al., 2014; Olino, Dougherty, Bufferd, Carlson, & Klein, 2014; Tackett, Lahey, et al., 2013). Indeed, a general factor of psychopathology was found within empirically-derived clinical assessments such as the MMPI-2 even prior to the popularization of the *p* factor in recent years, and a common psychopathology factor was even included in the MMPI-2 Restructured Clinical (RC) scales, labeled “Demoralization” (Tellegen et al., 2003). Structurally, the general factor of psychopathology mirrors the superordinate (i.e., 2-factor model) personality trait stability, which captures common variance in neuroticism, agreeableness, and conscientiousness – traits consistently linked to all forms of psychopathology (Krueger & Markon, 2006; Markon et al., 2005). Theoretically, the general factor of psychopathology captures features and risk factors common to all forms of psychopathology, and thus, an understanding of its dispositional correlates is critical to informing the core definition of psychopathology.

Research on the psychological content of the general factor of psychopathology implicates trait negative affect and its superordinate traits at the 2- and 3-factor levels. Early research on MMPI-2 RC scales indicated that Demoralization and trait negative affectivity overlapped strongly ($r = .62$), though researchers also recovered more moderate (negative) associations between Demoralization and trait positive affect ($r = -.38$; Sellbom, Ben-Porath, & Bagby, 2008). Recently, researchers also extracted a demoralization factor consisting primarily of Neuroticism (as well as Extraversion and Conscientiousness) items from the NEO-PI-R (Costa & McCrae, 1992), a measure of general FFM traits (Uliaszek, Al-Dajani, Sellbom, & Bagby, 2019). While associations between the *p* factor and low positive affectivity have not been consistently recovered in more recent investigations (indicating that demoralization may be more

depression-laden than the broader *p* factor; Caspi et al., 2014), correlations between neuroticism and the *p* factor have been robustly replicated. These findings have come from cross-sectional and longitudinal studies, spanning multiple age groups (Brandes, Herzhoff, Smack, & Tackett, in press; Caspi et al., 2014; Olino et al., 2014; Tackett, Lahey, et al., 2013). Strong positive relationships between trait negative affectivity and the *p* factor are not only recovered among general factor models of common mental disorders, but also among general factor models of personality disorders (Wright, Skodol, Hopwood, & Morey, 2016), indicating that the general psychopathology factor likely captures content beyond “common” forms of mental disorder.

Similar to psychopathology, neuroticism can likewise be modeled using a bifactor approach. Zinbarg and colleagues (2016) showed that, in a bifactor model of neuroticism, the general neuroticism factor nonspecifically predicted the onset of both internalizing and externalizing problems, indicating that the general neuroticism factor captured variance common to internalizing and externalizing. Other research simultaneously examining the bifactor model of psychopathology (*p*) and the bifactor model of neuroticism (*n*) simultaneously indicates that general *n* and *p* factors correlate to a substantial degree in children ($\sim r = .80$), particularly when facets of (dis)agreeableness are included in a general *n* factor model (Brandes et al., in press). Moreover, fear- and irritability-specific facets of neuroticism appear to overlap strongly and specifically with internalizing- and externalizing-specific facets of psychopathology ($r's > .65$). Negative urgency (a superordinate personality factor including common variance in neuroticism and conscientiousness; see Table 1) has also shown notable overlap with the *p* factor (Carver, Johnson, & Timpano, 2017). This research collectively suggests that the psychological content underlying the general psychopathology factor includes not just neuroticism, but possibly its higher-order self-regulatory traits such as negative urgency. Beyond general associations

between neuroticism and psychopathology, negative affectivity appears to be pervasive at the level of spectra, as well.

Spectra. Like FFM neuroticism and its superordinate personality factors, the HiTOP model contains high-bandwidth (i.e., broad) factors that distinguish fundamental forms of psychopathology, called spectra. Spectra are defined as the most basic separable factors of psychopathology beyond a general predisposition to mental disorder (or *p* factor; Kotov et al., 2017). Clinical spectra were first recovered by Thomas Achenbach through factor analyses of children's behavior problems, and these analyses yielded two primary dimensions: Internalizing (including anxious, depressive, and somatic) and externalizing (aggressive and rule breaking) psychopathology (Achenbach, 1966). These two factors have been replicated in a variety of ages and contexts, and a third factor, labeled thought problems, has since been added to this basic model, as well (Krueger & Markon, 2006). HiTOP spectra are somewhat narrower than the factors of Achenbach's early models, however. The HiTOP model includes six proposed dimensions: Internalizing, thought disorder, disinhibited externalizing, antagonistic externalizing, detachment, and a provisional somatoform spectrum (Kotov et al., 2017). Structurally, spectra have parallels in FFM neuroticism, as well as its higher-order traits with agreeableness and conscientiousness. Disinhibited and antagonistic externalizing mirror higher-order traits negative urgency (i.e., neuroticism-conscientiousness) and neuroticism-agreeableness (such as that found among children), while internalizing, somatoform, and thought disorder appear to overlap only with FFM neuroticism. Detachment, by contrast, has fewer clear parallels to neuroticism and its superordinate traits. Despite conceptual parallels at multiple levels of personality and psychopathology domains, spectra have largely been empirically investigated

alongside FFM neuroticism, with less research at higher-order (2- and 3-factor model) or lower-order (facet) levels of this trait.

Empirical associations between neuroticism, internalizing, and somatoform spectra are robust, while connections between neuroticism and thought disorder are studied somewhat less commonly. Research has shown a strong relationship between internalizing psychopathology and neuroticism in longitudinal and cross-sectional study designs, as well as among children, adolescents, and adults, leading to the recognition that neuroticism is a core feature of internalizing problems (Barlow et al., 2014; Clark & Watson, 1991; Griffith et al., 2010). Meta-analytic estimates of the correlation between neuroticism and individual internalizing disorders range from approximately .30 to .60, depending on the method of assessment (Kotov et al., 2010; Malouff, Thorsteinsson, & Schutte, 2005). Despite this, it appears that internalizing psychopathology is not equally well-characterized by all aspects or facets of neuroticism. The internalizing spectrum may be particularly associated with withdrawal and anxiety-related facets, while anger-related facets of negative affectivity do not to characterize these disorders quite so well after accounting for a general neuroticism factor (Brandes et al., in press; Zinbarg et al., 2016). While less research has been conducted on somatoform disorders in comparison to internalizing, one meta-analysis indicated that neuroticism was not a significantly different predictor of somatoform disorders ($r = .51$) than for mood ($r = .61$) and anxiety disorders ($r = .46$; Malouff et al., 2005), indicating shared trait-level features between internalizing and somatoform. However, at the time of this review, research on lower-order neuroticism facets and the somatoform spectrum has not yet been conducted.

The thought disorder spectrum as conceptualized by HiTOP—a dimensional factor including both psychosis- and bipolar-related illness and excluding social withdrawal or

detachment—has only been studied recently alongside personality traits. In one of the few studies that have measured thought disorder in this way, Caspi et al. (2014) showed that neuroticism was strongly correlated with a thought disorder spectrum including bipolar disorder, obsessive-compulsive disorder, and psychosis ($r = .41$); interestingly, this magnitude was as large as neuroticism's association with the internalizing spectrum ($r = .42$). Despite the dearth of studies on relationships between the HiTOP thought disorder dimension and personality traits, there is substantial evidence for relationships between neuroticism and multiple DSM-based syndromes that are characterized by the thought disorder spectrum. Multiple studies now indicate that individuals diagnosed with bipolar disorder are more neurotic than the general population (Jylhä et al., 2010; Tackett et al., 2008). Neuroticism also predicts the severity of both depressive and manic symptoms of bipolar disorder measured dimensionally (Quilty, Sellbom, Tackett, & Bagby, 2009). Meta-analyses have also indicated a strong correlation between neuroticism and schizophrenia ($r = .48$; Lahey, 2009; Malouff et al., 2005). Neuroticism prospectively predicts schizophrenia, risk for psychosis, and non-clinical psychosis, as well as the severity of positive symptoms of schizophrenia (Drvaric, Bagby, Kiang, & Mizrahi, 2018; Myin-Germeys & van Os, 2007). However, like somatoform, research on the relationship between lower-order neuroticism traits and the thought disorder spectrum does not yet exist, to our knowledge. More research on negative affectivity's connection to externalizing disorders has been conducted, however.

Concurrent and prospective links between externalizing psychopathology and neuroticism have been demonstrated for both disinhibited and antagonistic spectra (Eisenberg et al., 2009; Kotov et al., 2010; Tackett & Lahey, 2017). The correlation between externalizing and trait negative affect may be characterized at the level of a superordinate stability trait rather than FFM neuroticism alone, as a broader externalizing factor captures features of (high) neuroticism,

(low) conscientiousness, and (low) agreeableness (see Krueger, 2005 for review). HiTOP disinhibited and antagonistic spectra have not often been often examined separately, particularly in relation to personality traits. However, overwhelming research has indicated that broad externalizing has small to moderate concurrent correlations with neuroticism (Tackett & Lahey, 2017). Meta-analytic estimates of the association between disinhibited externalizing (primarily substance use) and neuroticism are moderate to large and positive (r 's [.26, .46]; Kotov et al., 2010; Malouff et al., 2005; Ruiz, Pincus, & Schinka, 2008). Meanwhile, estimates of the relationship between antagonistic externalizing (primarily antisocial behavior and narcissism) and neuroticism range from moderate and negative (e.g., with grandiose narcissism; Miller, Lynam, Hyatt, & Campbell, 2017) to small and positive (e.g., with antisocial behavior; Ruiz et al., 2008) and even moderate to large and positive (e.g., with vulnerable narcissism; Miller et al., 2017). At the facet level, externalizing spectra stand in contrast to internalizing disorders, as anger-related subordinate traits may be particularly relevant in characterizing negative affectivity's connection to clinical disinhibition and antagonism. After accounting for externalizing's overlap with general neuroticism, specific anger/irritability facets remain strongly correlated with specific externalizing ($r = .88$; Brandes et al., in press), while specific anxiety facets are largely unrelated (Brandes et al., 2019; Zinbarg et al., 2016). Collectively, this research suggests that externalizing psychopathology has important links to negative emotionality, though more research is needed to determine the relative strength of neuroticism's associations with disinhibited vs. antagonistic externalizing spectra within the HiTOP model.

Unlike with many of the other spectra, links between neuroticism and detachment at the spectra level are tenuous. In the HiTOP conceptualization, detachment primarily consists of interpersonal symptoms of social withdrawal and (low) expressiveness. While social anxiety,

depression, and other common mental disorders similarly include symptoms of social withdrawal, factor analytic research suggests that these common mental disorders are better captured by the internalizing spectrum, while HiTOP detachment may be specific to personality disorders and negative symptoms of psychosis (Forbes, Kotov, et al., 2017; Kotov et al., 2017). The primary FFM trait that captures detachment appears to be (low) extraversion, while this spectrum is unrelated to negative emotionality (Wright & Simms, 2015). Together, this research demonstrates that at the level of spectra, dimensions of psychopathology that may be independent of trait negative emotionality or general psychopathology (i.e., residual or specific characteristics) begin to be differentiated from those that are more fundamentally linked to negative emotions; a trend that continues into lower levels of the HiTOP hierarchy.

Subfactors, Syndromes, and Components. Like aspects and facets of the neuroticism hierarchy, at the intermediate level of the HiTOP model are increasingly narrow-bandwidth (i.e., specific) psychopathology factors, labeled subfactors, syndromes, and components. Subfactors have not been comprehensively delineated as of the time of this review, but preliminary HiTOP subfactors include fear, distress, sexual problems, and eating pathology (from internalizing), and substance use and antisocial behavior (from externalizing spectra; Kotov et al., 2017). Below subfactors, syndromes and their subordinate components are in even earlier stages of empirical inquiry, and as such, there is not yet even a preliminary set of empirically-derived HiTOP syndromes or components. Given the lack of agreement in psychopathology's structure between subfactors and symptoms, here we only review evidence for subfactors of psychopathology and their relationship to neuroticism. Structurally, subfactors, syndromes, and components can be compared to the facet level of neuroticism hierarchies. HiTOP fear and distress subfactors of internalizing are highly conceptually related to the anxious and depressive facets of neuroticism

in particular. These two factors, reflecting anxiety and melancholy/sadness are included in nearly every factor analytically-derived psychopathology and neuroticism model, and as demonstrated in Table 1, they are often even assigned the same labels between these two domains (e.g., HiTOP Fear and Inventory of Children's Individual Differences Fearful/Insecure; Halverson et al., 2003; Kotov et al., 2017). Empirical evidence for the relationship between neuroticism and intermediate bandwidth subfactors is more mixed than purely conceptual parallels would suggest, however.

Though HiTOP distress and fear subfactors are associated with all neuroticism facets to some extent vis-à-vis their higher-order internalizing spectrum (Zinbarg et al., 2016), it might be hypothesized that distress/fear dimensions of psychopathology specifically overlap with distress/fear facets of neuroticism. Several studies show that distress-based psychopathology (e.g., generalized anxiety and depression) is particularly well-characterized by trait depression/distress over and above other facets of neuroticism (Naragon-Gainey & Watson, 2018; Naragon-Gainey, Watson, & Markon, 2009). However, other research does not find this level of specificity in subfactor-facet relationships. Bagby and colleagues (2008) examined whether facet-level personality traits predicted treatment response in depression. The researchers showed that while general neuroticism predicted depression treatment trajectories, neuroticism facets did not predict any unique variance in depressive outcomes (Bagby et al., 2008). When Walton and colleagues (2018) investigated facet-level associations between neuroticism and psychopathology, they found that fear and distress subfactors of psychopathology were indistinguishable in their associations with neuroticism facets. Both fear- and distress-related psychopathology were strongly correlated with general neuroticism, though personality facets anxiety and distress (r 's [.41, .51]) appear to have captured both fear and distress disorders better

than impulsivity or angry-hostility (r 's [.19, .26]; Walton et al., 2018). This corroborates earlier findings that anger-related facets of neuroticism show smaller, or even small negative correlations with fear- and distress-based internalizing problems after controlling for general neuroticism (Brandes et al., 2019; Naragon-Gainey et al., 2009; Zinbarg et al., 2016).

Neuroticism's relationships with eating pathology and sexual dysfunction have been studied substantially less than those with other subfactors of internalizing, though initial findings suggest that this is not due to a lack of negative affect among these disorders. Similar to other internalizing subfactors, at the FFM level, the meta-analytic estimate of the correlation between neuroticism and eating pathology is strong ($r = .54$; Malouff et al., 2005). Despite that specific facets of neuroticism—particularly anxiety, depression, vulnerability, and impulsivity—have been found to independently predict body mass index (e.g., under- and overweight; Terracciano et al., 2009), to our knowledge, only one study has examined the relationship between lower-order traits and eating pathology in a dimensional framework. Ellickson-Larew, Naragon-Gainey, and Watson (2013) found that while all facets of NEO PI-R Neuroticism correlated with eating pathology broadly (r 's [.24, .43]), facet-level Depression predicted unique variance in food and body preoccupation (a component of multiple eating disorders) after controlling for other personality factors. Further, they found that negative-affect related impulsivity (i.e., negative urgency) predicted body mass index, while other negative affect facets did not (Ellickson-Larew et al., 2013). Sexual dysfunctions also show strong prospective and concurrent correlations with neuroticism (Forbes, Baillie, Eaton, & Krueger, 2017), though at the time of this review, research on how lower-order neuroticism traits may specifically relate to sexual problems has not yet been conducted. This lack of research on lower-order personality traits and lower-order factors of internalizing is striking, given that neuroticism is at the core of

internalizing psychopathology. Clearly, there is a great need for future research that incorporates multiple levels of internalizing and neuroticism structure to facilitate a better understanding of what underlies intermediate factors of psychopathology.

Research on the relationship between neuroticism and subfactors of externalizing spectra—including antisocial behavior and substance use—is even less straightforward than that of internalizing subfactors. As with its higher-order disinhibition domain, substance use disorders (SUDs) have shown replicable positive correlations with FFM neuroticism, though with varying magnitudes: One meta-analytic estimate of the concurrent correlation between negative affectivity and SUDs calculated by Kotov and colleagues (2010) was .36, with some variation in subordinate clusters for alcohol use ($r = .28$), drug use ($r = .46$), and mixed alcohol-drug use ($r = .42$). However, other meta-analyses have observed lower correlations between neuroticism and SUDs in concurrent ($r = .26$) and prospective ($r = .15$) designs—these magnitudes being approximately half of those that have been recovered for neuroticism and internalizing subfactors (concurrent r 's [.46, .61], prospective r 's [.33, .35]; Malouff et al., 2005; Ormel, Jeronimus, et al., 2013), indicating that the centrality of negative emotionality in conceptualizing substance use disorders is currently unclear. Some facet-level research has indicated that while all lower-order neuroticism traits are associated with substance use, facets related to anger/hostility, vulnerability, and impulsiveness may be particularly strongly related (Ruiz, Pincus, & Dickinson, 2003; Zinbarg et al., 2016). However, other studies have not found the same specificity between neuroticism facets in predicting SUDs (Walton et al., 2018).

The literature on antisocial behavior and neuroticism is also contentious, particularly with reference to psychopathic traits. Meta analyses indicate that psychopathy and antisocial personality disorder total scores are very weakly associated with trait negative emotionality (r 's

[.05, .10]; O’Boyle, Forsyth, Banks, Story, & White, 2015; Ruiz et al., 2008). However, further studies have indicated that this null-to-small relationship likely results from a suppression effect, as two primary subfactors of psychopathy (often called fearless dominance and disinhibition/impulsivity) show opposite associations with neuroticism. Lynam and Miller (2015) reviewed evidence that the overlap between NEO-PI-R Neuroticism and fearless dominance was *negative*, and that its magnitude varied substantially between facets (e.g., $r = -.13$ for Impulsiveness to $r = -.62$ for Anxiety). However, psychopathic disinhibition generally showed small to moderate *positive* correlations with facets Angry Hostility, Impulsiveness, Vulnerability, and Depression, though these relationships also varied notably between assessment instruments (e.g., r ’s [.07, .37] for Depression alone; Lynam & Miller, 2015). These findings collectively suggest that though neuroticism is certainly relevant to conceptualizing externalizing psychopathology at the higher-order or spectra level, at the level of subfactors, features of externalizing psychopathology that are relatively independent of trait negative emotionality begin to emerge.

Symptoms. Like nuance traits or specific items in personality, symptoms are the most specific levels of description in the HiTOP hierarchy. Despite the independent development of clinical and personality assessments, item overlap between psychopathology and neuroticism measures is quite common (see example in Table 1). Item overlap is so frequent that it is identified as a confound in the interpretation of psychopathology-neuroticism correlations (Nicholls, Licht, & Pearl, 1982). However, there are also important conceptual differences between personality and psychopathology domains at the item (i.e., nuance trait or symptom) level, including that psychopathology symptoms often capture more extreme behaviors than most normative personality measures do (Samuel, Carroll, Rounsaville, & Ball, 2013). Further,

psychopathology symptoms are often assessed with time specifiers (e.g., in the past month), while personality items measure general tendencies without explicit time frames. Extremely little research on the connection between neuroticism and specific psychopathology symptoms has been done, so to illustrate the opportunity for research in this area, here we discuss overlap and divergence between neuroticism and one key symptom that crosses internalizing and externalizing spectra.

Suicidality—including desire, intent, plans, and behaviors to purposefully end one’s own life—represents a collection of specific symptoms that has been associated with a wide variety of mental health problems, though most commonly affective and substance use disorders (Arsenault-Lapierre, Kim, & Turecki, 2004). Some specific indicators of suicidality include *ideation* (most common), *attempt*, and *death by suicide* (least common), and despite perceived similarity between these indicators, neuroticism is not associated equally with each. Suicidal ideation has shown consistent, small to moderate positive correlations with neuroticism in both cross-sectional and prospective analyses (Blüml et al., 2013; Chioqueta & Stiles, 2005; Cox, Enns, & Clara, 2004; Fergusson, Beautrais, & Horwood, 2003; Segal, Marty, Meyer, & Coolidge, 2012). However, when suicide attempts are examined, results are much more mixed, with some researchers finding no relationship to neuroticism (Cox et al., 2004) and others finding that neuroticism is associated with decreased suicidal behavior (Rappaport, Flint, & Kendler, 2017), notably within very large samples with sufficient power to detect even small correlations. Still another result was obtained by Peters and colleagues (2018) in examining death by suicide in the UK Biobank population cohort, showing that neuroticism predicted suicide to an even greater degree than risk factors such as unemployment and economic distress did. This inconsistency in suicidality-neuroticism associations highlights possible differences

between the psychological nature of items assessing different forms of suicidality, particularly as the nomological network of suicidal *ideation* here appears to diverge from that of suicidal *behaviors*. These findings highlight the importance of examining clinical and trait hierarchies at multiple levels, as traits relationships with psychopathology symptoms may further elucidate the course and mechanisms of individual presenting problems.

Conclusion

In summary, neuroticism has important and salient connections to psychopathology throughout the levels of HiTOP, but a great deal remains to be learned about how trait negative emotionality is related to intermediate and lower-order factors of psychopathology. While rich descriptive research has been conducted at the level of spectra and, to a lesser degree, superfactors, very little is known about the structure of subfactors, syndromes, components, and symptoms and how this may align with or diverge from personality traits. The incorporation of more specific levels of the personality hierarchy beyond broad Five Factor Model traits is also needed as a preliminary step in understanding why neuroticism is related to different forms of psychopathology. Further, though decades of personality and clinical research have produced reliable estimates of correlations between neuroticism and psychopathology dimensions, a fraction of these studies are causally informative. Existing explanatory models of the psychopathology-personality relationship (see Tackett, 2006 for a review) provide a valuable structure for guiding future incorporation of structural and mechanistic research in clinical psychology. We proceed with hopes for future researchers to more comprehensively integrate research on the hierarchical structure of psychopathology and personality, with particular attention paid to intermediate and lower-order measurements of these constructs and mechanistically informative designs.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

References

- Achenbach, T. M. (1966). The classification of children's psychiatric symptoms: A factor-analytic study. *Psychological Monographs: General and Applied*, 80(7), 1–37.
<http://dx.doi.org/10.1037/h0093906>
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*. American Psychiatric Association.
- Arsenault-Lapierre, G., Kim, C., & Turecki, G. (2004). Psychiatric diagnoses in 3275 suicides: a meta-analysis. *BMC Psychiatry*, 4(1). <https://doi.org/10.1186/1471-244X-4-37>
- Ashton, M. C., Lee, K., & Goldberg, L. R. (2007). The IPIP–HEXACO scales: An alternative, public-domain measure of the personality constructs in the HEXACO model. *Personality and Individual Differences*, 42(8), 1515–1526. <https://doi.org/10.1016/j.paid.2006.10.027>
- Bagby, R. M., Quilty, L. C., Segal, Z. V., McBride, C. C., Kennedy, S. H., & Costa, P. T. (2008). Personality and Differential Treatment Response in Major Depression: A Randomized Controlled Trial Comparing Cognitive-Behavioural Therapy and Pharmacotherapy. *The Canadian Journal of Psychiatry*, 53(6), 361–370.
<https://doi.org/10.1177/070674370805300605>
- Barlow, D. H., Sauer-Zavala, S., Carl, J. R., Bullis, J. R., & Ellard, K. K. (2014). The Nature, Diagnosis, and Treatment of Neuroticism: Back to the Future. *Clinical Psychological Science*, 2(October 2013), 344–365. <https://doi.org/10.1177/2167702613505532>
- Blüml, V., Kapusta, N. D., Doering, S., Brähler, E., Wagner, B., & Kersting, A. (2013). Personality Factors and Suicide Risk in a Representative Sample of the German General Population. *PLoS ONE*, 8(10), e76646. <https://doi.org/10.1371/journal.pone.0076646>

- Brandes, C. M., Herzhoff, K., Smack, A. J., & Tackett, J. L. (in press). The p factor and the n factor: Associations between the general factors of psychopathology and neuroticism in children. *Clinical Psychological Science*.
- Carver, C. S., Johnson, S. L., & Timpano, K. R. (2017). Toward a Functional View of the p Factor in Psychopathology. *Clinical Psychological Science*, 5(5), 880–889.
<https://doi.org/10.1177/2167702617710037>
- Caspi, A., Houts, R. M., Belsky, D. W., Goldman-Mellor, S. J., Harrington, H., Israel, S., ... Moffitt, T. E. (2014). The p factor: One general psychopathology factor in the structure of psychiatric disorders? *Clinical Psychological Science*, 2(2), 119–137.
<https://doi.org/10.1177/2167702613497473>
- Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality development: Stability and change. *Annual Review of Psychology*, 56(1), 453–484.
<https://doi.org/10.1146/annurev.psych.55.090902.141913>
- Chioqueta, A. P., & Stiles, T. C. (2005). Personality traits and the development of depression, hopelessness, and suicide ideation. *Personality and Individual Differences*, 38(6), 1283–1291. <https://doi.org/10.1016/j.paid.2004.08.010>
- Clark, L. A., & Watson, D. (1991). Tripartite Model of Anxiety and Depression: Psychometric Evidence and Taxonomic Implications. *Journal of Abnormal Psychology*, 100(3), 316–336.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO PI-R) and NEO five-factor inventory (NEO-FFI): Professional manual*. Psychological Assessment Resources, Inc.

- Cox, B. J., Enns, M. W., & Clara, I. P. (2004). Psychological Dimensions Associated with Suicidal Ideation and Attempts in the National Comorbidity Survey. *Suicide and Life-Threatening Behavior*, 34(3), 209–219. <https://doi.org/10.1521/suli.34.3.209.42781>
- De Pauw, S. S. W. (2017). Childhood Personality and Temperament. In T. A. Widiger (Ed.), *The Oxford Handbook of the Five Factor Model* (pp. 243–280). New York: Oxford University Press.
- DeYoung, C. G. (2006). Higher-order factors of the Big Five in a multi-informant sample. *Journal of Personality and Social Psychology*, 91(6), 1138–1151. <https://doi.org/10.1037/0022-3514.91.6.1138>
- DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*, 93(5), 880–896. <https://doi.org/10.1037/0022-3514.93.5.880>
- Drvaric, L., Bagby, R. M., Kiang, M., & Mizrahi, R. (2018). Maladaptive personality traits in patients identified at lower-risk and higher-risk for psychosis. *Psychiatry Research*, 268, 348–353. <https://doi.org/10.1016/j.psychres.2018.08.004>
- Eisenberg, N., Valiente, C., Spinrad, T. L., Cumberland, A., Reiser, M., Zhou, Q., & Losoya, S. H. (2009). Longitudinal relations of children's effortful control, impulsivity, and negative emotionality to their externalizing, internalizing, and co-occurring behavior problems. *Developmental Psychology*, 45(4), 988–1008. <https://doi.org/10.1037/a0016213>
- Ellickson-Larew, S., Naragon-Gainey, K., & Watson, D. (2013). Pathological eating behaviors, BMI, and facet-level traits: The roles of Conscientiousness, Neuroticism, and

Impulsivity. *Eating Behaviors*, 14(4), 428–431.

<https://doi.org/10.1016/j.eatbeh.2013.06.015>

Fergusson, D. M., Beautrais, A. L., & Horwood, L. J. (2003). Vulnerability and resiliency to suicidal behaviours in young people. *Psychological Medicine*, 33(01).

<https://doi.org/10.1017/S0033291702006748>

Forbes, M. K., Baillie, A. J., Eaton, N. R., & Krueger, R. F. (2017). A Place for Sexual Dysfunctions in an Empirical Taxonomy of Psychopathology. *The Journal of Sex Research*, 54(4–5), 465–485. <https://doi.org/10.1080/00224499.2016.1269306>

Forbes, M. K., Kotov, R., Ruggero, C. J., Watson, D., Zimmerman, M., & Krueger, R. F. (2017). Delineating the joint hierarchical structure of clinical and personality disorders in an outpatient psychiatric sample. *Comprehensive Psychiatry*, 79, 19–30.

<https://doi.org/10.1016/j.comppsy.2017.04.006>

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality*, 40(1), 84–96.

<https://doi.org/10.1016/j.jrp.2005.08.007>

Griffith, J. W., Zinbarg, R. E., Craske, M. G., Mineka, S., Rose, R. D., Waters, A. M., & Sutton, J. M. (2010). Neuroticism as a common dimension in the internalizing disorders. *Psychological Medicine*, 40(07), 1125–1136.

<https://doi.org/10.1017/S0033291709991449>

Halverson, C. F., Havill, V. L., Deal, J. E., Baker, S. R., Victor, J. B., Pavlopoulos, V., ... Wen, L. (2003). Personality Structure as Derived from Parental Ratings of Free Descriptions of

- Children: The Inventory of Child Individual Differences. *Journal of Personality*, 71(6), 995–1026. <https://doi.org/10.1111/1467-6494.7106005>
- John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In *Handbook of personality: Theory and research* (pp. 102–138).
- Jylhä, P., Mantere, O., Melartin, T., Suominen, K., Vuorilehto, M., Arvilommi, P., ... Isometsä, E. (2010). Differences in neuroticism and extraversion between patients with bipolar I or II and general population subjects or major depressive disorder patients. *Journal of Affective Disorders*, 125(1–3), 42–52. <https://doi.org/10.1016/j.jad.2010.01.068>
- Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking “big” personality traits to anxiety, depressive, and substance use disorders: a meta-analysis. *Psychol Bull*, 136(5), 768–821. <https://doi.org/10.1037/a0020327>
- Kotov, R., Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, R. M., ... Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology*, 126(4), 454–477. <https://doi.org/10.1037/abn0000258>
- Krueger, R. F. (2005). Continuity of Axes I and II: Toward a Unified Model of Personality, Personality Disorders, and Clinical Disorders. *Journal of Personality Disorders*, 19(3), 233–261. <https://doi.org/10.1521/pedi.2005.19.3.233>
- Krueger, R. F., & Markon, K. E. (2006). Reinterpreting Comorbidity: A Model-Based Approach to Understanding and Classifying Psychopathology. *Annual Review of Clinical Psychology*, 2(1), 111–133. <https://doi.org/10.1146/annurev.clinpsy.2.022305.095213>

- Laceulle, O. M., Vollebergh, W. a. M., & Ormel, J. (2015). The Structure of Psychopathology in Adolescence: Replication of a General Psychopathology Factor in the TRAILS Study. *Clinical Psychological Science*, (February), 1–11.
<https://doi.org/10.1177/2167702614560750>
- Lahey, B. B. (2009). Public health significance of neuroticism. *American Psychologist*, 64(4), 241–256. <https://doi.org/10.1037/a0015309>
- Lahey, B. B., Applegate, B., Hakes, J. K., Zald, D. H., Hariri, A. R., & Rathouz, P. J. (2012). Is there a general factor of prevalent psychopathology during adulthood? *Journal of Abnormal Psychology*, 121(4), 971–7. <https://doi.org/10.1037/a0028355>
- Lynam, D. R., & Miller, J. D. (2015). Psychopathy from a Basic Trait Perspective: The Utility of a Five-Factor Model Approach: FFM Psychopathy. *Journal of Personality*, 83(6), 611–626. <https://doi.org/10.1111/jopy.12132>
- Malouff, J. M., Thorsteinsson, E. B., & Schutte, N. S. (2005). The Relationship Between the Five-Factor Model of Personality and Symptoms of Clinical Disorders: A Meta-Analysis. *Journal of Psychopathology and Behavioral Assessment*, 27(2), 101–114.
<https://doi.org/10.1007/s10862-005-5384-y>
- Markon, K. E., Krueger, R. F., & Watson, D. (2005). Delineating the structure of normal and abnormal personality traits: An integrative hierarchical approach. *Journal of Personality and Social Psychology*, 88(1), 139–157. <https://doi.org/10.1037/0022-3514.88.1.139>
- Martel, M. M., Pan, P. M., Hoffmann, M. S., Gadelha, A., do Rosário, M. C., Mari, J. J., ... Salum, G. A. (2016). A General Psychopathology Factor (P Factor) in Children: Structural Model Analysis and External Validation Through Familial Risk and Child

- Global Executive Function. *Journal of Abnormal Psychology*, (October).
<https://doi.org/10.1037/abn0000205>
- McCrae, R. R. (2015). A More Nuanced View of Reliability: Specificity in the Trait Hierarchy. *Personality and Social Psychology Review*, 19(2), 97–112.
<https://doi.org/10.1177/1088868314541857>
- Mervielde, I., & De Fruyt, F. (2002). *Assessing children's traits with the Hierarchical Personality Inventory for Children*.
- Miller, J. D., Lynam, D. R., Hyatt, C. S., & Campbell, W. K. (2017). Controversies in Narcissism. *Annual Review of Clinical Psychology*, 13(1), 291–315.
<https://doi.org/10.1146/annurev-clinpsy-032816-045244>
- Myin-Germeys, I., & van Os, J. (2007). Stress-reactivity in psychosis: Evidence for an affective pathway to psychosis. *Clinical Psychology Review*, 27(4), 409–424.
<https://doi.org/10.1016/j.cpr.2006.09.005>
- Naragon-Gainey, K., & Watson, D. (2018). What Lies Beyond Neuroticism? An Examination of the Unique Contributions of Social-Cognitive Vulnerabilities to Internalizing Disorders. *Assessment*, 25(2), 143–158. <https://doi.org/10.1177/1073191116659741>
- Naragon-Gainey, K., Watson, D., & Markon, K. E. (2009). Differential relations of depression and social anxiety symptoms to the facets of extraversion/positive emotionality. *Journal of Abnormal Psychology*, 118(2), 299–310. <https://doi.org/10.1037/a0015637>
- Neisser, U., Boodoo, G., Bouchard, T. J., Boykin, A. W., Brody, N., Ceci, S. J., ... Urbina, S. (1996). Intelligence: Knowns and Unknowns. *American Psychologist*, 25.
- Nicholls, J. G., Licht, B. G., & Pearl, R. A. (1982). Some Dangers of Using Personality Questionnaires To Study Personality. *Psychological Bulletin*, 92(3), 572–580.

- O'Boyle, E. H., Forsyth, D. R., Banks, G. C., Story, P. A., & White, C. D. (2015). A Meta-Analytic Test of Redundancy and Relative Importance of the Dark Triad and Five-Factor Model of Personality: Dark Triad and the Five-Factor Model. *Journal of Personality*, 83(6), 644–664. <https://doi.org/10.1111/jopy.12126>
- Olino, T. M., Dougherty, L. R., Bufferd, S. J., Carlson, G. A., & Klein, D. N. (2014). Testing models of psychopathology in preschool-aged children using a structured interview-based assessment. *Journal of Abnormal Child Psychology*, 42(7), 1201–1211. <https://doi.org/10.1007/s10802-014-9865-x>
- Ormel, J., Jeronimus, B. F., Kotov, R., Riese, H., Bos, E. H., Hankin, B., ... Oldehinkel, A. J. (2013). Neuroticism and common mental disorders: Meaning and utility of a complex relationship. *Clinical Psychology Review*, 33(5), 686–697. <https://doi.org/10.1016/j.cpr.2013.04.003>
- Peters, E. M., John, A., Bowen, R., Baetz, M., & Balbuena, L. (2018). Neuroticism and suicide in a general population cohort: results from the UK Biobank Project. *BJPsych Open*, 4(02), 62–68. <https://doi.org/10.1192/bjo.2017.12>
- Quilty, L. C., Sellbom, M., Tackett, J. L., & Bagby, R. M. (2009). Personality trait predictors of bipolar disorder symptoms. *Psychiatry Research*, 169(2), 159–163. <https://doi.org/10.1016/j.psychres.2008.07.004>
- Rappaport, L. M., Flint, J., & Kendler, K. S. (2017). Clarifying the role of neuroticism in suicidal ideation and suicide attempt among women with major depressive disorder. *Psychological Medicine*, 47(13), 2334–2344. <https://doi.org/10.1017/S003329171700085X>

- Ruiz, M. A., Pincus, A. L., & Dickinson, K. A. (2003). NEO PI-R Predictors of Alcohol Use and Alcohol-Related Problems. *Journal of Personality Assessment*, 81(3), 226–236.
https://doi.org/10.1207/S15327752JPA8103_05
- Ruiz, M. A., Pincus, A. L., & Schinka, J. A. (2008). Externalizing Pathology and the Five-Factor Model: A Meta-Analysis of Personality Traits Associated with Antisocial Personality Disorder, Substance Use Disorder, and Their Co-Occurrence. *Journal of Personality Disorders*, 22(4), 365–388. <https://doi.org/10.1521/pedi.2008.22.4.365>
- Samuel, D. B., Carroll, K. M., Rounsaville, B. J., & Ball, S. A. (2013). Personality Disorders As Maladaptive, Extreme Variants of Normal Personality: Borderline Personality Disorder and Neuroticism in a Substance Using Sample. *Journal of Personality Disorders*, 27(5), 625–635. <https://doi.org/10.1521/pedi.2013.27.5.625>
- Segal, D. L., Marty, M. A., Meyer, W. J., & Coolidge, F. L. (2012). Personality, Suicidal Ideation, and Reasons for Living among Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67B(2), 159–166.
<https://doi.org/10.1093/geronb/gbr080>
- Sellbom, M., Ben-Porath, Y. S., & Bagby, R. M. (2008). Personality and Psychopathology: Mapping the MMPI-2 Restructured Clinical (RC) Scales onto the Five Factor Model of Personality. *Journal of Personality Disorders*, 22(3), 291–312.
<https://doi.org/10.1521/pedi.2008.22.3.291>
- Soto, C. J., & John, O. P. (2017). The next Big Five Inventory (BFI-2): Developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology*, 113(1), 117–143.
<https://doi.org/10.1037/pspp0000096>

- Tackett, J. L. (2006). Evaluating models of the personality–psychopathology relationship in children and adolescents. *Clinical Psychology Review*, 26(5), 584–599.
<https://doi.org/10.1016/j.cpr.2006.04.003>
- Tackett, J. L. (2011). Parent informants for child personality: Agreement, discrepancies, and clinical utility. *Journal of Personality Assessment*, 93(6), 539–544.
<https://doi.org/10.1080/00223891.2011.608763>
- Tackett, J. L., Herzhoff, K., Kushner, S. C., & Rule, N. (2016). Thin Slices of Child Personality: Perceptual, Situational, and Behavioral Contributions. *Journal of Personality and Social Psychology*, 110(1), 150–166. <https://dx.doi.org/10.1037/pspp0000044>
- Tackett, J. L., Kushner, S. C., De Fruyt, F., & Mervielde, I. (2013). Delineating personality traits in childhood and adolescence: associations across measures, temperament, and behavioral problems. *Assessment*, 20(6), 738–51.
<https://doi.org/10.1177/1073191113509686>
- Tackett, J. L., & Lahey, B. B. (2017). Neuroticism. In T. A. Widiger (Ed.), *The Oxford Handbook of the Five Factor Model* (pp. 39–56). New York, NY: Oxford University Press.
- Tackett, J. L., Lahey, B. B., van Hulle, C., Waldman, I., Krueger, R. F., & Rathouz, P. J. (2013). Common genetic influences on negative emotionality and a general psychopathology factor in childhood and adolescence. *Journal of Abnormal Psychology*, 122(4), 1142–1153. <https://doi.org/10.1037/a0034151>
- Tackett, J. L., Quilty, L. C., Sellbom, M., Rector, N. A., & Bagby, R. M. (2008). Additional evidence for a quantitative hierarchical model of mood and anxiety disorders for DSM-V:

- The context of personality structure. *Journal of Abnormal Psychology*, 117(4), 812–825.
<https://doi.org/10.1037/a0013795>
- Tackett, J. L., Slobodskaya, H. R., Mar, R. A., Deal, J., Halverson, C. F., Baker, S. R., ... Besevegis, E. (2012). The Hierarchical Structure of Childhood Personality in Five Countries: Continuity From Early Childhood to Early Adolescence. *Journal of Personality*, 80(4), 847–879. <https://doi.org/10.1111/j.1467-6494.2011.00748.x>
- Tellegen, A., Ben-Porath, Y. S., McNulty, J. L., Arbisi, P. A., Graham, J. R., & Kaemmer, B. (2003). *MMPI-2 Restructured Clinical (RC) scales: Development, validation, and interpretation*. Minneapolis: University of Minnesota Press.
- Terracciano, A., Sutin, A. R., McCrae, R. R., Deiana, B., Ferrucci, L., Schlessinger, D., ... Costa, P. T. (2009). Facets of Personality Linked to Underweight and Overweight: *Psychosomatic Medicine*, 71(6), 682–689.
<https://doi.org/10.1097/PSY.0b013e3181a2925b>
- Uliaszek, A. A., Al-Dajani, N., Sellbom, M., & Bagby, R. M. (2019). Cross-validation of the demoralization construct in the Revised NEO Personality Inventory. *Psychological Assessment*, 31(2), 159–166. <https://doi.org/10.1037/pas0000655>
- Walton, K. E., Pantoja, G., & McDermut, W. (2018). Associations Between Lower Order Facets of Personality and Dimensions of Mental Disorder. *Journal of Psychopathology and Behavioral Assessment*, 40(3), 465–475. <https://doi.org/10.1007/s10862-017-9633-7>
- Widiger, T. A., & Oltmanns, J. R. (2017). Neuroticism is a fundamental domain of personality with enormous public health implications. *World Psychiatry*, 16(2), 144–145.
<https://doi.org/10.1002/wps.20411>

Widiger, T. A., & Trull, T. J. (2007). Plate tectonics in the classification of personality disorder: Shifting to a dimensional model. *American Psychologist*, 62(2), 71–83.

<https://doi.org/10.1037/0003-066X.62.2.71>

Wright, A. G. C., & Simms, L. J. (2015). A metastructural model of mental disorders and pathological personality traits. *Psychological Medicine*, 45(11), 2309–2319.

<https://doi.org/10.1017/S0033291715000252>

Wright, A. G. C., Skodol, A. E., Hopwood, C. J., & Morey, L. C. (2016). Longitudinal Validation of General and Specific Structural Features of Personality Pathology. *Journal of Abnormal Psychology*, 125(8), 1120–1134.

Zinbarg, R. E., Mineka, S., Bobova, L., Craske, M. G., Vrshek-Schallhorn, S., Griffith, J. W., ...

Anand, D. (2016). Testing a hierarchical model of neuroticism and its cognitive facets:

Latent structure and prospective prediction of first onsets of anxiety and unipolar mood disorders during 3 years in late adolescence. *Clinical Psychological Science*, 4(5), 805–824.

Table 1

The Parallel Hierarchical Structure of Psychopathology and Neuroticism

HiTOP		Neuroticism	
<u>Level of Analysis</u>	<u>Example Dimension</u>	<u>Level of Analysis</u>	<u>Example Dimension</u>
Superspectra	<i>p</i>	Meta-Traits (Two-Factor)	Stability
Spectra	Internalizing	Meta-Traits (Three-Factor)	Negative Urgency
Subfactors	Fear	FFM Traits	Neuroticism
Syndromes	-	Aspects	Withdrawal
Components	-	Facets	Fear
Signs and Symptoms	Frequent Panic Attacks	Nuance Traits	Panics Easily*

Note: As syndromes and components have not yet been empirically delineated within the HiTOP framework, examples are not listed here.

*“Panic[s] easily” is an item drawn from the International Personality Item Pool (IPIP; Goldberg et al., 2006). However, variants of this item exist in other personality inventories, as well (e.g., Mervielde & De Fruyt, 2002).

Table 2

Common Neuroticism Measures and Their Facets

Measure	Adult			Child	
	<u>NEO PI-R</u>	<u>BFI-II</u>	<u>IPIP-HEXACO</u>	<u>ICID</u>	<u>HiPIC</u>
	Anxiety	Anxiety	Anxiety	Fearful/Insecure	Anxiety
	Angry Hostility	Emotional Volatility		Negative Affect	
	Depression	Depression			
	Self-Consciousness		Fearfulness	Shy	Self-Confidence (-)
	Impulsiveness				
	Vulnerability		Dependence		
			Sentimentality		

Note. NEO PI-R = Revised NEO Personality Inventory (Costa & McCrae, 1992); BFI-II = Big Five Inventory II (Soto & John, 2017); IPIP-HEXACO = International Personality Item Pool – HEXACO (Ashton, Lee, & Goldberg, 2007); ICID = Inventory of Children’s Individual Differences (Halverson et al., 2003); HiPIC = Hierarchical Personality Inventory for Children (Mervielde & De Fruyt, 2002).