

# What Is Neuroticism, and Can We Treat It?

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## Abstract

We review the substantive role of neuroticism and related temperaments such as extroversion in the development and maintenance of anxiety, mood, and related disorders subsumed under the term *emotional disorders (EDs)*. We note that splitting these disorders into discrete categories as in the current *Diagnostic and Statistical Manual (DSM-5)* diagnoses may be highlighting relatively superficial differences. Research on the structure of anxiety, mood, and related disorders indicates that neuroticism, emerging from genetic, neurobiological, and psychological factors, is central to the development of these disorders. We make a case for shifting the focus of psychological treatment of EDs to target core temperaments such as neuroticism, and discuss a dimensional approach to assessing EDs that focuses on the underlying temperament. We examine key issues requiring additional research to evaluate this possibility.

## INTRODUCTION

### WHAT IS NEUROTICISM?

The term *temperament* refers to an individual's emotional nature, that is, the typical way that one responds emotionally to his or her environment. Temperament is hypothesized to arise from a combination of genetic and environmental factors. Neuroticism is one trait under the larger umbrella of temperament that refers to the dispositional tendency to experience frequent and intense negative emotions (e.g., fear, anxiety, anger, sadness) in response to internal and external stressors. Neuroticism is also characterized by a view of the world as full of threatening and uncontrollable stressful situations with which one has limited abilities to cope (Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014b). Lastly, neuroticism is considered a risk factor for the development of a variety of mental and physical health problems (Lahey,

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2009), but its role in the development and maintenance of anxiety, mood, and related emotional disorders is most often highlighted.

#### HOW HAS NEUROTICISM BEEN CONCEPTUALIZED IN MENTAL HEALTH?

In the early days of diagnostic classification, most disorders of emotion such as anxiety, depression, and somatic symptom disorders were subsumed under the large but nebulous category of “neurosis.” Since the publication of the third edition of the *Diagnostic and Statistical Manual of Mental Disorder* (DSM-III; APA, 1980) through the most recent edition (DSM-5; APA, 2013), there has been an emphasis on splitting emotional disorders, such as anxiety and depression, into finer categories (e.g., “neurosis” was divided into the diagnostic categories of anxiety and mood such as panic disorder, major depressive disorder, etc . . . ). This approach to diagnosis at first represented an advancement for the field as a more objective and unifying classification system for emotional disorders and symptoms. However, splitting anxiety, depressive, and related disorders into discrete categories seems to exaggerate what may be superficial differences among these disorders. In other words, although these disorders may have different defining symptoms such as panic attacks in panic disorder and exaggerated worry in generalized anxiety disorder, they may share at their core underlying temperaments such as neuroticism that make these disorders fundamentally similar with implications for diagnosis, assessment, and treatment. As such, targeting neuroticism directly (as noted above), instead of the specific disorders, may have implications for improving treatment outcomes by addressing core dysfunctions rather than surface-level symptoms and by providing a streamlined treatment that simultaneously addresses a range of disorders. We will first discuss the foundational research supporting the role of neuroticism and related temperaments in the development of the range of anxiety, depressive, and related disorders, followed by more recent studies highlighting new directions in diagnosis, assessment, and treatment of emotional disorders.

### FOUNDATIONAL RESEARCH

#### WHAT ARE THE SIMILARITIES AMONG ANXIETY, DEPRESSION, AND RELATED DISORDERS?

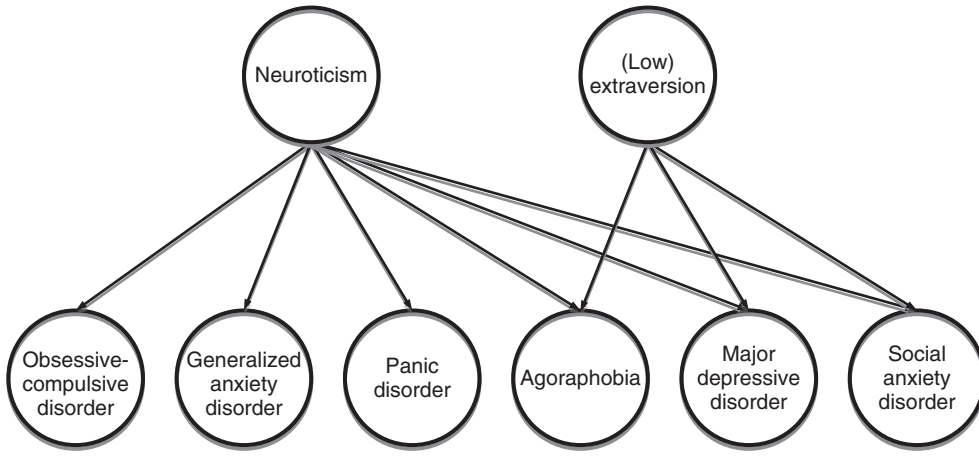
Interest in identifying core features common across the range of anxiety and depressive disorders was influenced by three important findings. First, there are high rates of comorbidity among these disorders, that is, anxiety and depressive disorders often co-occur within the same individual (Brown, Campbell, Lehman, Grisham, & Mancill, 2001). For example, a study of 1127 individuals reported that 55% of the patients with a principal diagnosis of

an anxiety disorder had at least one other anxiety or depressive disorder at the time of the assessment, and 76% of the patients carried an additional diagnosis at some point in their lifetime (Brown *et al.*, 2001). Second, there appears to be a broad and generalized treatment response across disorders such that when a psychological intervention is administered for a specific anxiety disorder, improvement is often seen in the comorbid anxiety or depressive disorders not targeted explicitly by the intervention (Tsao, Mystkowski, & Zucker, 2002). Finally, individuals with a range of anxiety and depressive disorders demonstrate similar biological processes within the nervous system, or neurobiological, abnormalities. Specifically, research on individuals diagnosed with these disorders suggests overactivation in the limbic system (the brain's emotional center) coupled with decreased ability to inhibit emotional responses by cortical structures (the brain's logical center) (Shin & Liberzon, 2010).

Taken together, these findings suggest that there may be common elements across different diagnoses. For example, high rates of comorbidity among anxiety and depressive disorders may be accounted for by shared core dysfunction leading to the development of multiple disorders. Similarly, by directly targeting only surface-level symptoms (e.g., panic attacks) in treatment, we may be indirectly addressing this core problem, explaining improvement in other diagnoses. Finally, the neurobiological similarities described above provide further evidence for shared mechanisms, suggesting that although individual disorders may look different in terms of symptom presentation, this appearance may be more trivial than the fact that emotional disorders are being maintained by the same temperamental functions.

#### HOW IS NEUROTICISM RELATED TO ANXIETY, DEPRESSION, AND RELATED DISORDERS?

Neuroticism has long been theorized as important for the development of anxiety and depressive disorders. More recently, an additional temperamental trait, extraversion or positive affect—the tendency to experience positive emotions—is also thought to influence the development of several of these disorders characterized, in part, by low positive affect (anhedonia). These two traits are included in every modern personality theory, underscoring their fundamental importance for functioning (Eysenck & Eysenck, 1975; McCrae & Costa, 1987). Indeed, high levels of neuroticism are demonstrated in individuals diagnosed with the full range of anxiety and depressive disorders (Weinstock & Whisman, 2006), and low levels of extraversion are prevalent in individuals diagnosed primarily with unipolar depression, social anxiety disorder, and agoraphobia (Rosellini, Lawrence, Meyer, & Brown, 2010). Additionally, studies have shown that these temperamental



**Figure 1** Structural relationships among dimensions of DSM-IV anxiety and mood disorders and dimensions of temperament. *Source:* Adapted with permission from “Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal,” by T. A. Brown, B. F. Chorpita, and D. H. Barlow, 1998, *Journal of Abnormal Psychology*, 107, p. 187. Copyright 1998 by the American Psychological Association.

traits predict the onset of emotional disorders (Lahey, 2009). Further, influential theorists have proposed specific brain functions they believe to be relevant to high neuroticism and low extraversion, specifically overactive nervous system activation and underactive cortical inhibition, that map onto the processes implicated in anxiety and depressive disorders (described above). These findings forward the notion of investigating neuroticism as a potential underlying, core vulnerability across anxiety and depressive disorders as an important undertaking (Gray & McNaughton, 1996).

Recently, advances in statistical techniques have allowed researchers to explore structural relationships among variables of interest. These types of analyses can identify higher-order psychological dimensions that predict or explain observable phenomena. Research on the structure of anxiety and depressive disorders has found that neuroticism and extraversion emerge as higher-order dimensions that explain many similarities among the disorders in these categories (e.g., social anxiety disorder, major depressive disorder). In fact, all of the overlap among these disorders (e.g., comorbidity, temporal covariance) can be accounted for by temperamental variables, largely neuroticism and in part extraversion (Brown, Chorpita, & Barlow, 1998); see Figure 1 for a visual representation of the role of this relationship.

More specifically, how neuroticism develops and how it leads to anxiety and related disorders is explained by three separate but interacting vulnerabilities (Barlow, Ellard, Sauer-Zavala, Bullis, & Carl, 2014a). The first vulnerability is biological, with genetic studies showing that up to 40% of neuroticism can be explained by one's genetic makeup (Shifman *et al.*, 2008). The second vulnerability is psychological and refers to a general sense that stressful situations are uncontrollable and unpredictable. This vulnerability seems to arise from early childhood experiences. Genetic factors (biological vulnerability) and early life experiences (psychological vulnerability) interact in the development of a neurotic temperament. Third, a specific psychological vulnerability, also affected by environmental factors, provides the basis for the emergence of one particular emotional disorder versus another. For example, in addition to a genetic predisposition and a general sense of uncontrollability (neuroticism), an individual with panic disorder may have early experiences with illness, directing the focus of his or her anxiety to unexplained or intense physical symptoms, more so than someone without these experiences.

#### HOW DOES NEUROTICISM LEAD TO EMOTIONAL DISORDERS?

It is important to note that not all individuals demonstrating high levels of negative affect, or neuroticism, go on to develop emotional disorders. In addition to the experience of frequent and intense negative emotions, those suffering from emotional disorders also display a greater aversion toward negative emotions, particularly intense negative emotions, than healthy individuals most likely because of a "neurotic" sense that strong emotions themselves are unpredictable and uncontrollable (Barlow, 2002). Strong negative reactions to emotional experiences, in turn, lead to attempts to suppress emotions (Aldao, Nolen-Hoeksema, & Schweizer, 2010), which have been shown to, paradoxically, increase the intensity and duration of the negative emotional experience (Campbell-Sills, Barlow, Brown, & Hofmann, 2006).

Several psychological processes related to how individuals respond to their emotions have been implicated in the development and maintenance of emotional disorders, beyond the contribution of the tendency to experience negative affect, or neuroticism, although these processes may be a consequence of neuroticism (Sauer-Zavala, Boswell, Gallagher, Bentley, Ametaj, & Barlow, 2012). For example, individuals who demonstrate high levels of anxiety sensitivity, the tendency to believe that symptoms of anxiety will have negative physical consequences, are more likely to develop anxiety disorders (Boswell *et al.*, 2013). Additionally, those who suffer from emotional disorders also tend to show deficits in mindfulness (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), defined as a present-focused nonjudgmental

awareness of experience (Kabat-Zinn, 1982). Research suggests that responding to negative emotions with mindfulness is more important in reducing symptoms of anxiety and depression than the frequency of negative emotion that one experiences (Sauer-Zavala *et al.*, 2012). Another related construct that has been implicated in the development and maintenance of emotional disorders is experiential avoidance, defined as the unwillingness to remain in contact with uncomfortable internal experiences (e.g., thoughts, emotions, sensations, memories, urges; Hayes *et al.*, 1996). Again, this variable has been shown to contribute to the development of emotional disorders beyond the contributions of frequency of negative affect (Pickett, Lodi, Parkhill, & Orcutt, 2012). Taken together, these findings suggest that emotional disorder symptoms are not simply a product of high levels of negative affect; instead, the combination of strong negative emotions *and* how one relates to them when they occur appears to be important for the development of these disorders.

It is believed that the aversive responses to emotions described above lead to attempts to avoid or escape emotional experiences. Avoidance can take the form of overt behaviors that include evading social situations in social anxiety disorder, avoiding reminders of traumatic events in posttraumatic stress disorder, or refraining from engaging in activities in unipolar depression. More subtle forms of avoidance can include avoiding eye contact in social situations for those with social anxiety disorder or avoiding exercise, and thereby an increased heart rate and potential panic attack, for those diagnosed with panic disorder. Patients also engage in mental forms of avoidance, such as emotion suppression, defined as deliberately pushing emotion-related stimuli (e.g., thoughts) out of awareness (Campbell-Sills *et al.*, 2006). There is ample research to suggest that engaging in avoidant strategies backfires, paradoxically leading to increased frequency and intensity of negative emotions (Rassin, Muris, Schmidt, & Merkelbach, 2000).

## CUTTING-EDGE RESEARCH

### NEW DIMENSIONAL SYSTEM OF DIAGNOSING DISORDERS

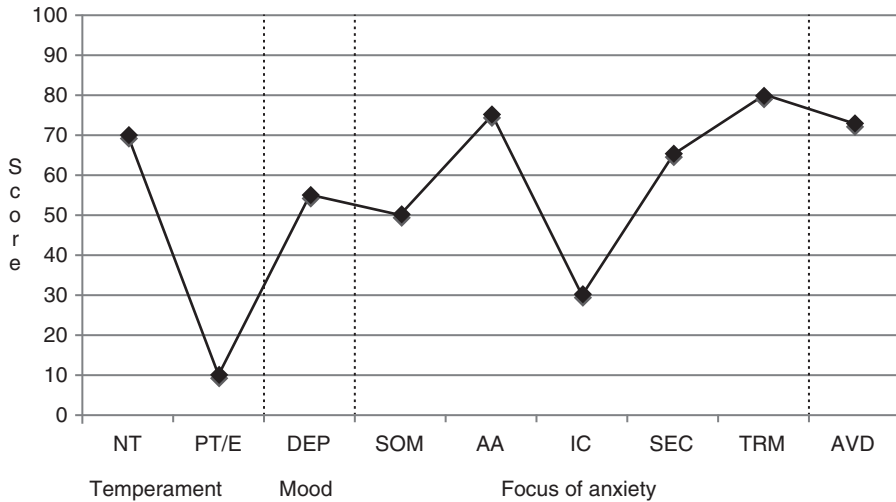
As noted above, the current classification system for mental disorders (e.g., DSM-5) splits anxiety, depressive, and related disorders into finer categories. Although this has helped clinicians and scientists reliably diagnose disorders regardless of theoretical orientation, emerging research suggests that these categories may be emphasizing relatively trivial symptom-level differences, while ignoring important commonalities. Rosellini and colleagues (2014), updating Brown and Barlow (2009), propose a dimensional system for

diagnosing anxiety and depressive disorders that provides a profile, specifying levels of important characteristics that may be relevant across disorders, rather than a specific diagnosis. This profile includes, in addition to ratings of neuroticism and extraversion, specific and overlapping features seen among emotional disorders that would help clinicians understand patients' presenting problems and thus plan treatment accordingly to address the following:

1. Depressed mood represents excessive sadness and loss of pleasure in activities, which is highly comorbid with emotional disorders (Brown *et al.*, 2001).
2. Autonomic arousal reflects the experience of panic that can occur in the "context of any mental disorder," such as flashbacks in posttraumatic stress disorder (APA, 2013, p. 215).
3. Somatic anxiety consists of anxiety focused on one's experience of bodily symptoms found across several emotional disorders (such as illness anxiety disorder, panic disorder, generalized anxiety, etc.).
4. Social evaluation concerns represent anxiety focused on performance situations and social interactions, which are at the core of social anxiety disorder but span the spectrum of anxiety disorders (e.g., highlighted in *DSM-5* (APA, 2013, pp. 206–207)).
5. Intrusive cognitions reflect the experience of unwanted nonsensical thoughts, images, and impulses (seen particularly in obsessive compulsive spectrum disorders and trauma spectrum disorders, and also in other emotional disorders (APA, 2013, pp. 202, 225, 241).
6. Traumatic reexperiencing and dissociation not only consist of the experience of negative emotions triggered by past traumatic events, but also include experiences of dissociating from reality (see *DSM-5*; APA, 2013 pp. 291, 296, 301 for an extensive discussion of the overlap of these disorders)
7. Avoidance, including experiential avoidance discussed above, is crucial in assessing and treating emotional disorders and is included as a criterion for several diagnoses in *DSM-5* (e.g., agoraphobia, specific phobia, social anxiety disorder, posttraumatic stress disorder).

The advantages of this dimensional approach versus the current categorical system of diagnosis can be seen in the context of a hypothetical patient meeting criteria for a single *DSM-5* diagnosis of social anxiety disorder. The dimensional profile includes high levels of neuroticism, low levels of extraversion, situational avoidance, fear of social evaluation, trauma, and panic symptoms. See Figure 2 for illustration of this hypothetical profile. Under the current diagnostic system, unless a patient meets full diagnostic criteria for a comorbid disorder, information on the dimensions





**Figure 2** Example profile of patient evaluated with a dimensional classification system. NT = neurotic temperament; PT/E = positive temperament/extraversion; DEP = unipolar depression; SOM = somatic anxiety; AA = autonomic arousal/panic; IC = intrusive cognitions; SEC = social evaluation concerns; TRM = traumatic reexperiencing and dissociation; AVD = avoidance. Higher scores on the y-axis (0–100) indicate higher levels of the x-axis dimension, but otherwise the y-axis metric is arbitrary and is used for illustrative purposes. *Source:* Adapted with permission from “Example profile of patient evaluated with a dimensional classification system” by T. A. Brown, and D. H. Barlow, 2009, *Psychological Assessment*, 21, p. 267. Copyright 2009 by the American Psychological Association.

not associated with the primary diagnosis are discarded. In this case, clinicians would not readily receive information about this patient’s anxiety regarding trauma-related cues, as these symptoms are not associated with a DSM-5 diagnosis of social anxiety disorder. Recently, a new measure, the Multidimensional Emotional Disorder Inventory (MEDDI), was developed to assess these important characteristics of emotional disorders with a single self-report assessment tool (Rosellini, 2013).

#### CAN WE TREAT NEUROTICISM?

*Malleability of Neuroticism* Although neuroticism, as a temperamental trait, is thought to be relatively stable, several studies have shown that it may be more malleable than originally thought. In the general population, studies spanning across individuals’ lives show decreases in neuroticism with age (Roberts, Walton, & Viechtbauer, 2006), with some individuals changing a great deal and others remaining at relatively stable levels (Helson, Jones, &



Kwan, 2002). In clinical settings, research suggests that patients with higher initial levels of neuroticism tend to show less change in this dimension over time than those with lower initial levels of neuroticism, who tend to evidence greater change (Brown, 2007).

Several studies have also examined treatment-related change in neuroticism in individuals receiving interventions for anxiety or depressive disorders. For example, one study of 41 patients receiving treatment for major depressive disorder found that, despite substantial improvements in depressive symptoms, levels of neuroticism were remarkably stable (Eaton, Krueger, & Oltmanns, 2011). Other studies, however, have found shifts in neuroticism as a function of treatment. Brown (2007) found that, in a sample of individuals diagnosed with a range of emotional disorders, neuroticism evidenced a large degree of change that was highly predictive of improvements on emotional disorder symptoms. Interestingly, the reverse did not appear to be true, that is, change in DSM disorder symptoms did not predict change in neuroticism (Naragon-Gainey, Gallagher, & Brown, 2013). In summary, evidence suggesting that neuroticism can be addressed in treatment is mixed. One proposed explanation for these mixed findings is that the treatments described above were not designed to address neuroticism specifically, but rather were developed to address presenting anxiety and depressive symptoms.

*Treating Neuroticism.* More recently, several interventions directly targeting temperament, specifically neuroticism, have emerged with promising results. Some psychopharmacology approaches seem to influence temperament (for review, see Soskin, Carl, Alpert, & Fava, 2012). For example, drug agents that increase levels of the neurotransmitter serotonin (e.g., SSRIs-selective serotonin reuptake inhibitors) are associated with decreases in neuroticism. Explanations for why these medications seem to influence temperament have been based on neurobiological properties. For example, SSRIs have been shown to decrease overactivation of the amygdala and to inhibit dopamine neurotransmitters in the prefrontal cortex, regions of the brain that have been implicated in the maintenance of anxiety (Soskin *et al.*, 2012).

Currently, there are a few behavioral (nonmedication) treatments designed to address temperamental vulnerabilities. One such treatment was developed by Rapee and colleagues (2010) for children identified as behaviorally inhibited, a similar construct to neuroticism, to prevent the onset of anxiety and related disorders. The program targets parents by teaching them about the nature of anxiety, as well as cognitive-behavioral strategies for addressing personal concerns, and behavior management techniques to prevent

overprotective parenting (a condition that reduces the child's sense of control or self-efficacy). Results from controlled trials show that the program is successful at preventing anxiety disorders and affecting temperament. An intensive format with higher risk children resulted in reductions in the measures of temperament for these children when compared to a group that did not receive the treatment (Kennedy, Rapee, & Edwards, 2009). A briefer version of the program prevented anxiety and related disorders, but did not seem to impact temperament in the short-term, although more long-term differences emerged, suggesting that interventions in childhood might produce an increasing trajectory of change in temperament over the years (Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2010).

Given the clinical promise of addressing temperament, Barlow and colleagues (2011) developed a cognitive-behavioral intervention targeting neuroticism as a means to address anxiety and mood disorders. This treatment, the Unified Protocol (UP) for Transdiagnostic Treatment of Emotional Disorders, described in detail elsewhere (Barlow *et al.*, 2011), encourages patients to develop a more accepting relationship with their emotional experiences. Patients learn to tolerate and engage with their emotional experience without judging it helping them to resist urges to engage in avoidant coping strategies (Ellard, Fairholme, Boisseau, Farchione, & Barlow, 2010). In turn, reduced avoidance changes the frequency and intensity of future emotional experiences presumably through an extinction process, and thereby impacts temperamental dimensions. The UP has been shown as efficacious in improving the symptoms of a range of anxiety disorders (Ellard *et al.*, 2010; Farchione *et al.*, 2012) with stable improvements, 18 months following treatment (Bullis, Fortune, Farchione, & Barlow, in press). Further, this treatment has been shown to produce moderate changes on the levels of neuroticism compared with a wait-list group. These changes in neuroticism are associated with improvements in symptoms, daily functioning, and quality of life (Carl, Gallagher, Sauer-Zavala, Bentley, & Barlow, 2013). Although preliminary, these results highlight the importance of how changes in temperament may influence patients' response to treatment.

#### KEY ISSUES FOR FUTURE RESEARCH

In summary, temperaments, particularly neuroticism, has emerged as an important factor in the development of many psychological disorders. There is preliminary evidence to suggest that this trait can be addressed directly with psychological interventions and that treating neuroticism addresses the core of symptoms of emotional disorders. It is important to note, however, that the treatment of temperament is in its early stages and that continued work in this area is necessary.

Several key issues arise from the foundational research reviewed above. First, we have proposed a theory of how emotional disorders arise, implicating neuroticism as one of the core dimensions for the development and maintenance of emotional disorders accompanied in some cases by decreases in extraversion. However, some have argued that neuroticism is not much more than an indicator of distress and a tautological descriptor of psychopathology (McNally, 2011; Ormel, Rosmalen, & Farmer, 2004). At the heart of these issues is the question of how emotional disorders develop and are maintained. The answers to these issues are pursued by several disciplines exploring the role of genes (e.g., geneticists), neurobiological processes (e.g., neuroscientists), the environment (e.g., behaviorists), and combinations of these domains (e.g., developmental psychologists and clinical psychologists), and are contentiously debated. Studies that could further answer the questions about the development and maintenance of emotional disorders would include those that span longer periods of time and include explorations of gene–environment interactions in the development of temperament and emotional disorders.

Other key issues for future research include whether temperament can change with treatment or over time. Some of the research we have reviewed seems to indicate that neuroticism can change with treatment. However, considering the complexity of temperament, more research is needed on possible range restrictions on the malleability of temperament (e.g., age, intensity level). Developmental psychology is a discipline that could aid in answering questions about the malleability of temperament and possible prevention of neuroticism or closely related traits such as behavioral inhibition (Kagan, 1994). Identification of early indicators of neuroticism in infants and children may be important since it may be possible to intervene on a public health scale before this trait is fully formed and negative consequences have not yet emerged (Barlow *et al.*, 2014a). Another important question is whether treating neuroticism, rather than symptoms of a specific diagnosis (e.g., social anxiety disorder), indeed leads to better outcomes for emotional disorders than treating these disorders with an intervention specifically developed for a particular disorder. Finally, it will be important to explore the clinical utility of the dimensional scheme for classifying emotional disorders described above.

## REFERENCES

- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*, 217–237.
- American Psychiatric Association (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York, NY: Guilford Press.
- Barlow, D. H., Ellard, K. K., Fairholme, C., Farchione, T. J., Boisseau, C., Allen, L., & Ehrenreich-May, J. (2011). *Unified protocol for the transdiagnostic treatment of emotional disorders*. New York, NY: Oxford University Press.
- Barlow, D. H., Ellard, K. K., Sauer-Zavala, S., Bullis, J. R., & Carl, J. R. (2014a). *The origins of neuroticism*. Manuscript submitted for publication.
- Barlow, D. H., Sauer-Zavala, S. E., Carl, J. R., Bullis, J. R., & Ellard, K. K. (2014b). The nature, diagnosis, and treatment of neuroticism: Back to the future. *Clinical Psychological Science*, 2(3), 344–365.
- Boswell, J. F., Farchione, T. J., Sauer-Zavala, S. E., Murray, H. W., Fortune, M., & Barlow, D. H. (2013). Anxiety sensitivity and interoceptive exposure: A transdiagnostic construct and change strategy. *Behavior Therapy*, 44, 417–431.
- Brown, T. A. (2007). Temporal course and structural relationships among dimensions of temperament and DSM-IV anxiety and mood disorder constructs. *Journal of Abnormal Psychology*, 116, 313–328.
- Brown, T. A., & Barlow, D. H. (2009). A proposal for a dimensional classification system based on the shared features of the DSM-IV anxiety and mood disorders: Implications for assessment and treatment. *Psychological Assessment*, 21(3), 256–271.
- Brown, T. A., Campbell, L. A., Lehman, C. L., Grisham, J. R., & Mancill, R. B. (2001). Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology*, 110, 49–58.
- Brown, T. A., Chorpita, B. F., & Barlow, D. H. (1998). Structural relationships among dimensions of the DSM-IV anxiety and mood disorders and dimensions of negative affect, positive affect, and autonomic arousal. *Journal of Abnormal Psychology*, 107, 179–192.
- Bullis, J. R., Fortune, M. R., Farchione, T. J., & Barlow, D. H. (in press). A preliminary investigation of the long-term outcome of the Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders. *Comprehensive Psychiatry*.
- Campbell-Sills, L., Barlow, D. H., Brown, T. A., & Hofmann, S. G. (2006). Effects of suppression and acceptance on emotional responses of individuals with anxiety and mood disorders. *Behaviour Research and Therapy*, 44(9), 1251–1263.
- Carl, J. R., Gallagher, M. W., Sauer-Zavala, S. E., Bentley, K. H., & Barlow, D. H. (2013). A preliminary examination of the effects of the Unified Protocol on temperament. Manuscript under review.
- Eaton, N., Krueger, R., & Oltmanns, T. (2011). Aging and the structure and long-term stability of the internalizing spectrum of personality and psychopathology. *Psychology and Aging*, 26, 987–993.
- Ellard, K. K., Fairholme, C. P., Boisseau, C. L., Farchione, T. J., & Barlow, D. H. (2010). Unified protocol for the transdiagnostic treatment of emotional disorders: Protocol development and initial outcome data. *Cognitive and Behavioral Practice*, 17, 88–101. doi:10.1016/j.cbpra.2009.06.002

- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck personality questionnaire (adult and junior)*. London, England: Hodder & Stoughton.
- Farchione, T. J., Fairholme, C. P., Ellard, K. K., Boisseau, C. L., Thompson-Hollands, J., Carl, J., . . . , Barlow, D. H. (2012) The unified protocol for the transdiagnostic treatment of emotional disorders: A randomized controlled trial. *Behavior Therapy, 43*, 666–678.
- Gray, J. A., & McNaughton, N. (1996). The neuropsychology of anxiety: A reprise. In D. A. Hope (Ed.), *Nebraska symposium on motivation: Vol. 43: Perspectives on anxiety, panic, and fear* (pp. 61–134). Lincoln, NE: University of Nebraska Press.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*, 1152–1168.
- Helson, R., Jones, C., & Kwan, V. S. (2002). Personality change over 40 years of adulthood: Hierarchical linear modeling analyses of two longitudinal samples. *Journal of Personality and Social Psychology, 83*, 752–766.
- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 1*, 33–47.
- Kagan, J. (1994). *Galen's prophecy: Temperament in human nature*. New York, NY: Basic Books.
- Kennedy, S. J., Rapee, R. M., & Edwards, S. L. (2009). A selective intervention program for inhibited preschool-aged children of parents with an anxiety disorder: Effects on current anxiety disorders and temperament. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*, 602–609. doi:10.1097/CHI.0b013e31819f6fa9
- Lahey, B. B. (2009). Public health significance of neuroticism. *American Psychologist, 64*, 241–256.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*, 81–90.
- McNally, R. J. (2011). *What is mental illness?* Cambridge, MA: Harvard University Press.
- Naragon-Gainey, K., Gallagher, M. W., & Brown, T. A. (2013). Stable “trait” variance of temperament as a predictor of the temporal course of depression and social phobia. *Journal of Abnormal Psychology, 122*, 611–623.
- Ormel, J., Rosmalen, J., & Farmer, A. (2004). Neuroticism: A non-informative marker of vulnerability to psychopathology. *Social Psychiatry and Psychiatric Epidemiology, 39*, 906–912.
- Pickett, S. M., Lodi, C. S., Parkhill, M. R., & Orcutt, H. K. (2012). Personality and experiential avoidance: A model of anxiety sensitivity. *Personality and Individual Differences, 53*, 246–250.
- Rapee, R. M., Kennedy, S. J., Ingram, M., Edwards, S. L., & Sweeney, L. (2010). Altering the trajectory of anxiety in at-risk young children. *The American Journal of Psychiatry, 167*, 1518–1525. doi:10.1176/appi.ajp.2010.09111619

- Rassin, E., Muris, P., Schmidt, H., & Merkelbach, H. (2000). Relationship between thought action fusion, thought suppression, and obsessive-compulsive symptoms: A structural equation model approach. *Behaviour Research and Therapy*, 38, 889–897.
- Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*, 132, 1–25.
- Rosellini, A. J. (2013). *Initial development and validation of a dimensional classification system for the emotional disorders* (Unpublished doctoral dissertation). Boston University, Boston, MA.
- Rosellini, A. J., Boettcher, H., Brown, T. A., & Barlow, D. H. (2014). *The development, validation, and assessment of a profile approach to emotional disorder classification*. Manuscript submitted for publication.
- Rosellini, A. J., Lawrence, A. E., Meyer, J. F., & Brown, T. A. (2010). The effects of extraverted temperament on agoraphobia in panic disorder. *Journal of Abnormal Psychology*, 119, 420–426.
- Sauer-Zavala, S., Boswell, J. F., Gallagher, M. W., Bentley, K. H., Ametaj, A., & Barlow, D. H. (2012). The role of negative affectivity and negative reactivity to emotions in predicting outcomes in the unified protocol for the transdiagnostic treatment of emotional disorders. *Behaviour Research and Therapy*, 50, 551–557.
- Shifman, S., Bhomra, A., Smiley, S., Wray, N. R., James, M. R., Martin, N. G., ... , Flint, J. (2008). A whole genome association study of neuroticism using DNA pooling. *Molecular Psychiatry*, 13, 302–312.
- Shin, L. M., & Liberzon, I. (2010). The neurocircuitry of fear, stress, and anxiety disorders. *Neuropsychopharmacology*, 35, 169–191.
- Soskin, D. P., Carl, J. R., Alpert, J., & Fava, M. (2012). Antidepressant effects on emotional temperament: Toward a biobehavioral research paradigm for major depressive disorder. *CNS Neuroscience & Therapeutics*, 18, 441–451.
- Tsao, J. C. I., Mystkowski, J. L., & Zucker, B. G. (2002). Effects of cognitive-behavioral therapy for panic disorder on comorbid conditions: Replication and extension. *Behavior Therapy*, 33, 493–509.
- Weinstock, L. M., & Whisman, M. A. (2006). Neuroticism as a common feature of the depressive and anxiety disorders: A test of the revised integrative hierarchical model in a national sample. *Journal of Abnormal Psychology*, 115(1), 68–74.

#### FURTHER READING

- Amazon web-link [http://www.amazon.com/gp/product/0199772673/ref=pd\\_lpo\\_k2\\_dp\\_sr\\_1?pf\\_rd\\_p=1535523722&pf\\_rd\\_s=lpo-top-stripe\\_1&pf\\_rd\\_t=201&pf\\_rd\\_i=0199772665&pf\\_rd\\_m=ATVPDKIKX0DER&pf\\_rd\\_r=0X6P6WSH7279R8S5Y6KS](http://www.amazon.com/gp/product/0199772673/ref=pd_lpo_k2_dp_sr_1?pf_rd_p=1535523722&pf_rd_s=lpo-top-stripe_1&pf_rd_t=201&pf_rd_i=0199772665&pf_rd_m=ATVPDKIKX0DER&pf_rd_r=0X6P6WSH7279R8S5Y6KS))
- Barlow, D. H., Ellard, K. K., Fairholme, C., Farchione, T. J., Boisseau, C., Allen, L., & Ehrenreich-May, J. (2011). *Unified protocol for the transdiagnostic treatment of emotional disorders*. New York, NY: Oxford University Press.



- 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*(3), 344–365.
- Brown, T. A., & Barlow, D. H. (2009). A proposal for a dimensional classification system based on the shared features of the DSM-IV anxiety and mood disorders: Implications for assessment and treatment. *Psychological Assessment, 21*(3), 256–271.
- Campbell-Sills, L., Ellard, K. K., & Barlow, D. H. (2014). Incorporating emotion regulation into conceptualizations and treatments of anxiety and mood disorders. In J. J. Gross (Ed.), *Handbook of emotion regulation* (2nd ed., pp. 393–412). New York, NY: Guilford Press.
- Farchione, T. J., Fairholme, C. P., Ellard, K. K., Boisseau, C. L., Thompson-Hollands, J., Carl, J., ... , Barlow, D. H. (2012). The unified protocol for the transdiagnostic treatment of emotional disorders: A randomized controlled trial. *Behavior Therapy, 43*, 666–678.

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Web sites:

<http://www.bu.edu/card/profile/david-h-barlow-ph-d/>

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