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AFFECTIVE INSTABILITY ACROSS DIAGNOSTIC MODELS

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AFFECTIVE INSTABILITY ACROSS DIAGNOSTIC MODELS

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy
in the College of Arts and Sciences at the University of Kentucky

By
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2015

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ABSTRACT OF DISSERTATION

AFFECTIVE INSTABILITY ACROSS DIAGNOSTIC MODELS

The National Institute of Mental Health's (NIMH) Research Domain Criteria (RDoC; Insel et al., 2010; Sanislow et al., 2010) were established in an effort to explore underlying dimensions that cut across many existing disorders as well as to provide an alternative to the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013)*. The present dissertation aimed to study one major component of the RDoC model, negative valence, as compared to other models hypothesized to be closely related, as well as its relationship to a key component of psychopathology, affective instability. Participants were adult community residents (N=90) currently in mental health treatment. Participants received self-report measures of RDoC negative valence, five-factor model (FFM) neuroticism, and *DSM-5* Section 3 negative affectivity, along with measures of affective instability, borderline personality disorder, and social-occupational impairment. Through this investigation, a better understanding and potential expansion of this new model of diagnosis for clinicians and researchers is provided. In particular, it is suggested that RDoC negative valence is commensurate with FFM neuroticism and *DSM-5* negative affectivity, and it would be beneficial if it was expanded to include affective instability.

KEYWORDS: affective instability, negative emotionality, Research Domain Criteria, Five Factor Model, neuroticism

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Chapter One: Introduction

The diagnosis of mental disorders is undergoing a substantial shift, in recognition of the fundamental limitations of the existing categorical model, including excessive diagnostic comorbidity, inadequate coverage, arbitrary boundaries with normal psychological functioning, and heterogeneity among persons sharing the same categorical diagnosis (Kupfer, First, & Regier, 2002; Widiger & Samuel, 2005). The head of the National Institute of Mental Health (NIMH) proclaimed that “It is critical to realize that we cannot succeed if we use *DSM* categories” (Insel, 2013). NIMH is shifting away from the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013)* and toward its own nomenclature, identified as the RDoC. The RDoC was established in part as an effort to explore underlying dimensions that cut across many of the existing diagnostic categories within *DSM-5* (Insel et al., 2010; Sanislow et al., 2010). The RDoC consists of five broad dimensions of psychopathology, including negative valence systems, positive valence systems, cognitive systems, systems for social processes, and arousal/modulatory systems (Sanislow et al., 2010). Since the RDoC is a novel model, it is weakly studied at this time.

It was also the intention of the authors of *DSM-5* to shift the APA diagnostic manual toward a dimensional classification. As expressed by the Chair and Vice Chair of *DSM-5*, “We have decided that one, if not the major difference, between *DSM-IV* and *DSM-V* will be the more prominent use of dimensional measures” (Regier et al., 2009, p. 649). As stated in the introduction to *DSM-5*, “the once plausible goal of identifying homogeneous populations for treatment and research resulted in narrow diagnostic

categories that did not capture clinical reality, symptom heterogeneity within disorders, and significant sharing of symptoms across multiple disorders” (APA, 2013, p. 12). It is further asserted that dimensional approaches will “supersede current categorical approaches in coming years” (p. 13).

It was not, though the intention of the authors of *DSM-5* to actually make the shift to a dimensional model in *DSM-5*. “What [was] being proposed for *DSM-V* is not to substitute dimensional scales for categorical diagnoses, but to add a dimensional option to the usual categorical diagnoses for *DSM-V*” (Kraemer, 2008, p. 9). Nevertheless, one can identify a number of examples wherein substantive shifts toward a dimensional model were in fact implemented. For example, autism and schizophrenia are now explicitly conceptualized in *DSM-5* as spectrum disorders, with different variants existing along a common spectrum of underlying pathology (APA, 2013). The problematic distinction between substance abuse and dependence was abandoned in favor of a level of severity.

The section of the diagnostic manual wherein this shift was most likely to occur was the personality disorders. The development of *DSM-5* was preceded by a series of preparatory conferences. The first conference, held in 2001, included a Nomenclature Work Group, charged with addressing fundamental assumptions of the diagnostic system. This work group concluded that it will be "important that consideration be given to advantages and disadvantages of basing part or all of *DSM-V* on dimensions rather than categories" (Rounsaville et al., 2002, p. 12). They suggested that a dimensional model be developed in particular for the personality disorders. “If a dimensional system of personality performs well and is acceptable to clinicians, it might then be appropriate to

explore dimensional approaches in other domains” (Rounsaville et al. 2002, p. 13). This initial conference was followed by a series of international conferences, each devoted to a different section of the diagnostic manual. The first of these conferences was devoted to the personality disorders, and its entire focus was on shifting this section of the manual to a dimensional model (Widiger & Simonsen, 2005b).

However, in the end, none of the proposals for the personality disorders section of *DSM-5* were approved, the reasons for which are a matter of debate (Widiger & Krueger, 2013). *DSM-5* though does include within Section 3 for “emerging measures and models” (APA, 2013, p. 729) a dimensional trait model for the classification of personality disorders consisting of the five domains of negative affectivity, detachment, psychoticism, antagonism, and disinhibition.

A third alternative to the traditional categorical classification of personality disorders is provided by the five-factor model (FFM) of personality developed within psychology (Widiger & Costa, 2012). Support for the FFM as a model of personality has been shown in a broad range of studies addressing such concerns as multivariate behavior genetics, childhood antecedents, temporal stability across the life span, and cross-cultural replication (John, Naumann, & Soto, 2008; Widiger, Samuel, Mullins-Sweatt, Gore, & Crego, 2012). The FFM traits are also predictive of both positive and negative real-life outcomes such as subjective well-being, spirituality, identity, social acceptance, relationship conflict, community involvement, criminality, unemployment, physical health, mortality, and occupational choice and satisfaction (Ozer & Benet-Martinez, 2006), as well as impairment (Mullins-Sweatt & Widiger, 2010).

The FFM is supported by a wealth of basic science personality research; however, the Section 3 *DSM-5* was only recently just proposed and the RDoC project is virtually unstudied at this time with respect to individual differences. All three of these dimensional models include five broad domains constructed from multiple smaller-order scales. The Section 3 *DSM-5* model and the FFM are strikingly similar. Their domains have been said to align conceptually and empirically (Gore & Widiger, 2013; Morey, Krueger, & Skodol, 2013; Wright et al., 2012). As expressed in *DSM-5*, the “five broad domains [of *DSM-5*] are maladaptive variants of the five domains of the extensively validated and replicated personality model known as the ‘Big Five,’ or the Five Factor Model of personality” (APA, 2013, p. 773).

All three models, RDoC, *DSM-5* Section 3, and the FFM, include a domain involving negative emotionality conceptualized in remarkably similar ways: RDoC negative valence systems, Section 3 *DSM-5* negative affectivity, and FFM neuroticism. FFM neuroticism is defined as “the general tendency to experience negative affects such as fear, sadness, embarrassment, anger, guilt, and disgust” (Costa & McCrae, 1992, p. 14); *DSM-5* Section 3 negative affectivity is defined as “frequent and intense experiences of high levels of a wide range of negative emotions (e.g., anxiety, depression, guilt/shame, worry, anger)” (APA, 2013, p. 779); and RDoC negative valence is referred to as “negative affect,” encapsulating such constructs as “fear, distress, and aggression” (Sanislow et al., 2010, p. 634). All three constructs encapsulate emotional reactivity and strong negative mood. Since so little is known about the RDoC model and the Section 3 *DSM-5* model is still relatively nascent, both models could benefit from being informed by research conducted with the conceptually similar FFM. This would bring to this RDoC

domain of negative valence a vast base of basic science research, including behavior and molecular genetics, course, cross-cultural application, and the prediction of wide array of important life outcomes (Lahey, 2009; Widiger, 2009).

The integration of these alternative models would demonstrate their converging perspectives on psychopathology and likely result in empirically supported and clinically useful methods for the description of psychopathology. It is also possible that an integration of these models could shed light on potential areas for increased coverage. For example, surprisingly absent from RDoC negative valence (and any other RDoC domains) is affective instability. RDoC negative valence includes 5 subdomains (i.e., acute fear [“fear”], potential threat [“anxiety”], sustained threat, loss, and frustrative nonreward). Affective instability is not a part of any one of these components.

NIMH has provided a list of suggested measures to assess each domain. However, at this point, some RDoC negative valence constructs contain very few suggestions (e.g., the subcategory of frustrative nonreward) and some provide none (e.g., potential threat [“anxiety”] and sustained threat). The suggested measures for RDoC emphasize neurobiological measures and genetic markers rather than individual differences measures. While progress towards understanding the neurobiological aspects of psychopathology is much-needed, perhaps this emphasis should not be at the expense of individual differences measures which enjoy a long history of empirical support and clinical value (Lahey, 2009; Ozer & Benet-Martinez, 2006). Examining this RDoC domain’s convergence with other similar domains (i.e., FFM neuroticism and Section 3 *DSM-5* negative affectivity) could provide empirical support for the RDoC domain as well as suggesting areas for further enrichment.

Because the RDoC model is proposed to encapsulate psychopathology and eventually to replace the current diagnostic system, it is essential to examine its coverage. As mentioned previously, one construct that appears to be missing is affective instability. Affective instability can be defined as “a predisposition to marked, rapidly reversible shifts in affective state that are extremely sensitive to meaningful environmental events which might induce more modest emotional responses in other people, such as separation, frustration of expectations, or criticism” (Siever & Davis, 1991, p. 1651). Siever and Davis (1991) identified affective instability as one of four “core psychobiological predispositions” (p. 1648) which can be used to describe mental disorders across what was previously described as Axis I and Axis II (APA, 1994). Emotional dysregulation (similar to affective instability) is also one of the four fundamental dimensions of personality disorder within the model developed by Livesley (2007). Affective instability has also long been one of the primary criteria used to diagnose the heavily researched borderline personality disorder (APA, 2000, 2013) and is a good predictor of other borderline personality disorder features (Tragesser, Solhan, Schwartz-Mette, & Trull, 2007). It is also strongly associated with bipolar disorder (Henry et al., 2001) and other maladaptive behaviors such as binge-eating (Greenberg & Harvey, 1987). To a lesser extent, affective instability is also integral to depression, posttraumatic stress disorder, eating disorders in general and alcohol abuse (Renaud & Zacchia, 2012). The present study focused in particular on affective instability as a personality trait in the context of borderline personality disorder (BPD) because the dimensional models examined are, for the most part, individual differences models designed to assess personality and personality pathology.

Persons diagnosed with disorders involving affective instability are frequently seen in mental health treatment as it is associated with a great deal of impairment. Those persons diagnosed with borderline personality disorder (who are therefore likely to be high in affective instability) have higher treatment utilization rates than individuals diagnosed with other mental disorders (Goodman et al., 2010). Further, those individuals diagnosed with borderline personality disorder are 50 times more likely to complete suicide than the general population (Skodol et al., 2002). In particular, affective instability has been associated with suicide (Yen et al., 2004) and impulsivity (Tragesser & Robinson, 2009).

The absence of affective instability from the RDoC is paralleled by its debatable inclusion within FFM neuroticism. The debate with regard to the placement of affective instability continues in part because some major measures of the FFM have not included affective instability. For example, Costa and McCrae (1992) did not include a scale to assess emotional lability/affective instability within the NEO Personality Inventory-Revised (NEO PI-R), the predominant measure of the FFM. The NEO PI-R includes six facet scales for neuroticism (i.e., Anxiety, Depression, Angry Hostility, Self-Consciousness, Impulsivity, and Vulnerability). Anxiety, depression, and angry hostility obviously occur within persons suffering from emotional instability but within the NEO PI-R the scales refer to a consistent or characteristic level of these respective affects rather than an instability or fluctuation in their level.

Several researchers have suggested that affective instability lies outside of FFM neuroticism. For example, Shedler and Westen (2004) presented the Shedler-Western Assessment Procedure (SWAP-200) as an “alternative to the five-factor model” (p.

1743). More specifically, the SWAP-200 includes a scale for the assessment of emotional dysregulation, which they suggest is not present within FFM neuroticism. As expressed by Shedler and Westen (2004), “emotional dysregulation refers to a deficiency in the capacity to modulate and regulate affect, so that affect tends to spiral out of control, change rapidly, get expressed in intense and unmodified form” (p. 1747). Indeed, several studies have indicated clear distinctions between neuroticism or negative affectivity and emotional dysregulation (Bradley et al., 2011; Westen, Muderrisoglu, Fowler, Shedler, & Koren, 1997). Shedler and Westen (2004) therefore concluded that “this construct is crucial to an understanding of borderline personality disorder and has no five-factor model equivalent” (p. 1747).

Miller and Pilkonis (2006) similarly reported only a “small but significant” (p. 841) correlation between neuroticism and affective lability. They also found differences between affective instability and neuroticism in terms of their relationships with other variables, similar to Bradley et al. (2011) and Westen et al. (1997). From these findings, Miller and Pilkonis (2006) concluded that these two variables are “distinct constructs with significantly different correlates and consequences” (p. 844), consistent with the view of Shedler and Westen (2004) that affective instability lies outside of the FFM. Kamen, Pryor, Gaughan, and Miller (2010) replicated this result in another clinical sample, again showing only a “small . . . positive correlation” (p. 202) between affective instability and neuroticism and different patterns of correlations with other variables. Kamen et al. (2010) concluded that, while the FFM was able to account for some of the variance in measures of affective instability, “a dimensional model of personality like the FFM, as assessed by the NEO PI-R, might require some supplementing if it were to be

used to replace the current diagnostic taxonomy for the PDs in which affective instability is an important and prominent component” (p. 206).

It is possible, however, that these findings are due in large part to how neuroticism is being assessed; more specifically with the NEO PI-R (Costa & McCrae, 1992). As mentioned previously, the construct of FFM affective instability is not captured by this measure. Costa and McCrae (1980) began with just a three-factor model, assessed by the NEO Inventory (e.g., McCrae & Costa, 1983). Their model was presented in contrast to Eysenck’s (1970) three-factor model, consisting of psychoticism, extraversion, and neuroticism (PEN; Eysenck & Eysenck, 1975). NEO Inventory Neuroticism aligned closely with PEN Neuroticism (McCrae & Costa, 1983). However, soon after developing the NEO Inventory, Costa and McCrae became aware of the Big Five (Goldberg, 1980, 1983). They extended their instrument to include Big Five agreeableness and conscientiousness (Costa & McCrae, 1985), but they did not revise their scales for neuroticism, extraversion, or openness. This would not appear to have been an issue for extraversion, but it has been problematic for openness (Gore & Widiger, 2013) and perhaps as well for neuroticism.

Other researchers do place affective instability within the domain of neuroticism. “Emotional instability” was in fact the term used to describe the broad neuroticism domain of the Big Five by Goldberg (1993). Widiger and Simonsen (2005a) examined many existing dimensional models and also identified a domain of emotional dysregulation versus emotional stability as being common to them, including the trait of affective instability. Simms et al. (2011) developed a measure designed to assess maladaptive variants of the FFM and identified a domain of negative emotionality

including within a scale for affective instability. Further, the *DSM-5* trait dimensional model, the structure of which was developed based on empirical factor analyses, includes a facet-level scale titled “Emotional Lability” within the broader domain of negative affectivity, a domain which aligns with FFM neuroticism both conceptually (Krueger & Markon, 2014) and empirically (Gore & Widiger, 2013). DeYoung, Quilty, and Peterson (2007) created a measure assessing two factors at each domain of the FFM and found, after factor analyzing the results of 75 scales from two Big Five inventories, that neuroticism is comprised of two factors: volatility and withdrawal. Based on these analyses, they developed the Big Five Aspects Scales (BFAS; DeYoung et al., 2007), which includes within its assessment of neuroticism, affective instability.

Finally, Maples, Miller, Hoffman, and Johnson (2013) conducted a study concerned directly with this question in which they obtained self and informant (i.e., parent and peer) reports of five factor model traits and affective instability with college students utilizing multiple measures of affective instability. In contrast to the previous research from this lab (i.e., Kamen et al., 2010; Miller & Pilkonis, 2006), they executed an exploratory factor analysis yielding an affective instability factor which demonstrated a compelling convergence across methods of assessment. Most importantly, Maples and colleagues found “parallel patterns of correlations” (p. 8) of affective instability and neuroticism with outcome variables, concluding that the two constructs “may be far more similar than suggested in previous research” (p. 8).

The current dissertation aimed to address some of these concerns by investigating the RDoC negative valence systems, Section 3 *DSM-5* negative affectivity, and FFM neuroticism. First, the present study investigated the convergence of the negative

emotionality domains of the three dimensional models (i.e., RDoC negative valence systems, Section 3 *DSM-5* negative affectivity, and FFM neuroticism). It was hypothesized that the three models would show strong convergent correlations across respective measures. It was also hypothesized that the three domains would show similar patterns of impairment. Finally, the study investigated the question of the relationship between affective instability with RDoC negative valence and FFM neuroticism. It was predicted that affective instability would be related with FFM neuroticism, RDoC negative valence systems, and Section 3 *DSM-5* negative affectivity, but more so with *DSM-5* negative affectivity and with FFM neuroticism when it is assessed by the BFAS. It was further predicted that measures of affective instability would provide incremental variance above and beyond negative valence systems and NEO PI-R Neuroticism when predicting for borderline personality disorder (but not when the BFAS was used to assess for neuroticism).

Chapter Two: Method

Participants

Participants (n=107) currently in mental health treatment were recruited from Lexington, Kentucky. Flyers were posted on local Craigslist.com, in the online portal where introductory psychology undergraduates sign up to complete research for credit, in clinics, on campuses, and in public posting areas in the community. The flyers indicated that adults currently involved in mental health treatment were invited to participate in a research study about personality and mood through the University of Kentucky.

Participants interested in participating were offered monetary compensation or course credit (if enrolled in an introductory psychology course) for their participation.

Approximately 41% of participants were students currently in mental health treatment.

Participants received either \$15 or class credit to complete the self-report measures.

Participants who completed the self-report measures were required to be (a) 18 years old or older, (b) currently engaged in some form of mental health treatment, and (c) have the ability to read, write, and understand English.

Five participants were deleted due to a failure to complete a significant portion (i.e., more than 25%) of any given questionnaire included in the packet. An additional 12 participants were deleted due to elevated validity scores. Some of the remaining 90 participants failed to respond to a few scattered items. Estimated values were obtained for these via imputation using the expected maximization procedures, which has been shown to produce more accurate estimates of population parameters than other methods, such as deletion of missing cases or mean substitution (Enders, 2006).

Of the remaining 90 participants, the majority identified as female (79%), 18% as male and 2% as “other.” One participant did not identify his/her gender. Ages ranged from 18 years to 61 years old ($M = 28$ years, $SD = 11.56$ years). Most participants identified as White/Caucasian (80%) with other participants identifying as Black/African American (8%), Asian (3%), American Indian/Alaskan Native (2%) or as Other/Unknown (7%). With respect to marital status, most participants were single (58%) and the rest reporting their status as married (17%), cohabitating (12%), divorced (11%) and 2 participants noting more than one marital status. A significant portion of participants were unemployed (41%) at the time of the study while others were employed full-time (16%), part-time (30%), were stay at home caregivers (4%) or were on disability (10%). All participants reported that they had at least graduated high school (17%) or obtained their GED (8%) with many seeking higher education and attending college (71%) or going to technical school (4%).

Many participants were engaged in more than one form of mental health treatment. Across participants, 69% reported that they were engaged in individual therapy, 16% were in group therapy, 3% were in couples therapy, and 67% were receiving psychotropic medication. Approximately 87% of participants indicated a known psychiatric diagnosis. Over half of participants reported having an anxiety disorder (57%; generalized anxiety disorder, social anxiety, obsessive-compulsive disorder and panic attacks or disorder were all collapsed in this category), 48% reported depression or dysthymia, 26% reported bipolar disorder, 21% reported post-traumatic stress disorder, 17% reported attention deficit hyperactivity disorder, 7% reported a personality disorder, and 16% reported other miscellaneous diagnoses including but not

limited to substance use disorders, eating disorder, unspecified mood disorders and adjustment disorder.

Measures

Demographic questionnaire. The demographic questionnaire inquired about age, sex, treatment history, ethnicity, marital status, education, and employment status.

Measures of RDoC negative valence systems. The RDoC negative valence systems domain was assessed via self-report measures suggested on the NIMH website (<http://www.nimh.nih.gov/research-priorities/rdoc/research-domain-criteria-matrix.shtml>). The RDoC negative valence domain consists of five subareas: “acute threat [“fear”], potential threat [“anxiety”], sustained threat, loss, frustrative nonreward.” No self-report measures were suggested to assess RDoC potential threat (“anxiety”) or RDoC sustained threat so measures to assess these constructs were not included.

Beck Anxiety Inventory (BAI; Beck & Steer, 1993). The BAI is a 21-item self-report measure designed to assess anxiety. It is rated on a 4-point scale from 0 (*not at all*) to 3 (*severely*). It is included in order to assess RDoC acute threat (“fear”) as suggested by NIMH.

Hopelessness Depression Symptom Questionnaire (HDSQ; Metalsky & Joiner, 1997). NIMH includes “Hopelessness” as a suggested self-report measure for loss but does not specify any particular measure. The HDSQ was selected to assess for RDoC loss. The HDSQ is a 32-item self-report measure designed to assess hopelessness depression. Each item includes four responses varying in intensity from which the participant may chose. For example, one items responses range from “0=My motivation

to get things done is as good as usual” to “3=In all situations my motivate to get things done is lower than usual.”

Buss-Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957). The BDHI is a 75-item true/false questionnaire designed to assess 8 subscales including assault, indirect hostility, irritability, negativism, resentment, verbal hostility, and guilt. It is included in order to assess RDoC frustrative nonreward as suggested by NIMH.

Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1999). The PANAS is a 20-item scale designed to assess positive and negative affect. In the present dissertation, only the 10-item Negative Affect scale was administered. Participants were asked to rate how often they tended to feel each emotion (e.g., hostile) on a scale of 1 (*very slightly or not at all*) to 5 (*extremely*) over the past few weeks. Although the PANAS Negative Affect scale was not included within the list of suggested self-report measures for RDoC negative valence systems (it is in fact included to assess initial responsiveness to reward attainment within the domain of positive valence systems), it was included in this study as a supplemental measure to assess RDoC negative valence.

Measures of FFM neuroticism. FFM neuroticism was assessed by the following two measures.

NEO Personality Inventory-Revised (NEO PI-R; Costa & McCrae, 1992). The NEO PI-R is a 240-item self-report measure designed to assess the five domains (i.e., neuroticism, extraversion, openness, agreeableness and conscientiousness) of the five-factor model of general personality. The 48-item neuroticism scale was included within the present dissertation. It was rated on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Big Five Aspects Scales (BFAS; DeYoung, Quilty, & Peterson, 2007). The BFAS is a 100-item scale designed to assess aspects within each domain of the Big Five personality domains. The 20-item neuroticism scale (including the two subscales of Volatility and Withdrawal) was administered in the present dissertation. Items were rated on a 1 to 5 Likert scale.

Measure of Section 3 DSM-5 negative affectivity. The Personality Inventory for DSM-5 (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012) was developed by one of the work group members for DSM-5 as a 220-item self-report measure of the Section 3 DSM-5 dimensional trait model. The 53-item Negative Affectivity scale from this measure was included within the present dissertation. DSM-5 negative affectivity includes the following subscales: Anxiousness, Emotional Lability, Hostility, Perseveration, (lack of) Restricted Affectivity, Separation Insecurity, and Submissiveness. Items were rated on a 4-point scale from 0 (*very false or often false*) to 3 (*very true or often true*).

Measures of borderline personality disorder. Borderline personality disorder symptoms were assessed from both the DSM-5 Section 2 perspective and the Section 3 DSM-5 dimensional trait perspective.

DSM-5 Section 2 borderline personality disorder. Borderline personality disorder symptoms were assessed using the 24-item borderline personality disorder scale from the self-report Personality Assessment Inventory (PAI-BPD; Morey, 1991) which includes scales to assess four aspects of BPD pathology: affective instability, identity problems, negative relationships, and self-harm. Items were rated on a 4-point scale ranging from False/not at all true to Very True.

DSM-5 Section 3 dimensional trait perspective. Borderline personality pathology was assessed from this perspective through the assigned PID-5 (mentioned previously) traits indicated in *DSM-5* (APA, 2013). Some of the scales proposed to measure BPD by the PID-5 are included within Negative Affectivity (i.e., the scales of Emotional Lability, Separation Insecurity, and Anxiousness). Obtained from other domains of the PID-5 are the scales of Depressivity, Impulsivity, and Risk Taking. These additional scales were administered as well in order to assess Section 3 *DSM-5* borderline personality disorder.

Measures of affective instability. Affective instability was assessed through the following self-report measures. However, it is worthwhile to note that the BFAS Neuroticism scale includes a subscale called Volatility, the PID-5 Negative Affectivity scale includes a subscale titled Emotional Lability, and PAI-BOR includes an Affective Instability subscale so these additional measures were also available as additional assessments of affective instability.

Affective Lability Scales (ALS; Harvey, Greenberg, & Serper, 1989). The ALS is a 54-item self-report scale consisting of six subscales (i.e., Depression, Anger, Anxiety, Elation, and two biphasic scales measuring variability between affect: Depression-elation and Anxiety-depression). Items are rated on a 4-point scale ranging from 0 (*very undescriptive*) to 3 (*very descriptive*).

Five-Factor Measure of Borderline Personality Inventory (FFBI; Mullins-Sweatt et al., 2012). The FFBI is a 120-item self-report measure designed to assess borderline personality disorder from the perspective of the FFM. The 10-item Affective Dysregulation scale was designed to assess a borderline personality maladaptive variant

of FFM vulnerability. Items are rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Computerized Adaptive Assessment of Personality Disorder (CAT-PD; Simms et al., 2011). The CAT-PD is a computerized-adaptive measure designed to assess five overarching domains of personality pathology. A 216-item static (i.e., not computerized-adaptive) version was also created to assess the same domains. Items are rated on a scale from 1 (*very untrue of me*) to (*very true of me*). The static 6-item Affective Lability scale from the static CAT-PD was included within this dissertation.

Measures of impairment. Two measures of impairment were included in order to examine the patterns of impairment across different assessments of negative emotionality.

Temperament and Personality Questionnaire (T & P; Parker, Manicavasagar, Crawford, Tully, & Gladstone, 2006). The T & P is a 109-item self-report measure that assesses personality constructs and personality function. The T & P is a modification of the Measure of Disordered Personality and Functioning Questionnaire, often used as a measure of personality dysfunction (Ro & Clark, 2009), assessing interpersonal and social relationships, self-mastery and well-being. The T & P is the current version of this questionnaire assessing personality functioning from the same group of investigators. The two 10-item scales assessing personality functioning are titled Cooperativeness and Effectiveness. Items were rated on a 4-point scale from 0 (*Not true at all*) to 3 (*Very true*).

WHO Disability Assessment Schedule (WHODAS 2.0; World Health Organization, 2012). The WHODAS 2.0 is a 36-item self-report scale. The previous

version of the measure (i.e., the WHODAS II; World Health Organization, 2000) was found to assess more basic functioning as compared to the MDPF in a recent study (Ro & Clark, 2009). Items are broken up into various sections (e.g., understanding and communicating) and are rated on a scale from 1 (*none*) to 5 (*extreme or cannot do*).

Procedure

Once participants contacted study staff via telephone in response to the flyers, the study rationale and study procedures were explained and initial verbal informed consent was obtained over the phone. At this time, they were also screened for the inclusion and exclusion criteria. After participants were telephone screened and deemed to meet inclusion criteria, their address was obtained and study staff mailed them the packet of questionnaires, two copies of an informed consent form (one to keep for their records and one to sign and return), along with a self-addressed and stamped return envelope. Participants were instructed to mail back the questionnaires at their earliest convenience. The entire battery took no longer than 2 hours to complete. Following the return of the packet of questionnaires, the study staff sent an explanation of the study to each participant. Student participants were awarded credit at this time and community participants enclosed \$15 with the study explanation and mailed it to their specified address.

Chapter Three: Results

First, descriptive statistics were calculated for all relevant scales and are now reported in Table 1. The mean item score for the Negative Affectivity scale in a clinically relevant sample published by Krueger and colleagues (2012) was relatively consistent with the mean found in this study once converted to a mean item score, albeit somewhat higher as expected for a sample of individuals currently in treatment. The mean and standard deviations of both the PAI Borderline Total scale and the PAI Borderline Affective Instability subscale were remarkably consistent with the values reported for a clinical sample in the manual (Morey, 1991). Consistency with past reported descriptive statistics demonstrates the clinical value of this sample.

Table 1

Means and Standard Deviations of Scales

	<i>M</i>	<i>SD</i>
Research Domain Criteria Measures		
BAI: Scale Total	26.98	14.92
HDSQ: Scale Total	26.18	12.81
BDHI: Scale Total	96.80	11.48
PANAS: Negative Affect Scale	29.20	9.42
Five-Factor Model Neuroticism Measures		
NEO PI-R: Neuroticism	159.33	25.82
BFAS: Neuroticism	69.98	13.07
Section 3 <i>DSM-5</i> Measures		
PID-5: Negative Affectivity	90.11	25.27
Measures of Borderline Personality Disorder		
PID-5: BPD Measures	79.91	27.87
PAI: Borderline Affective Instability	9.77	4.47
PAI: Borderline Total	39.31	13.11
Measures of Affective Instability		
ALS: Depression	31.22	6.29
ALS: Elation	30.67	7.27
ALS: Anxiety	19.10	5.17
ALS: Anger	16.20	6.30
ALS: Depression/Elation	23.34	6.04
ALS: Depression/Anxiety	23.39	6.19
ALS: Total	143.92	30.28
FFBI: Affective Dysregulation	31.09	9.39
CAT-PD: Affective Lability	18.68	5.75
Measures of Impairment		
T & P: Cooperativeness	32.72	4.69
T & P: Effectiveness	27.59	5.74
WHODAS: Understanding and Communicating	13.93	4.09
WHODAS: Getting around	9.71	4.77
WHODAS: Self-care	6.81	3.00
WHODAS: Getting along with people	11.54	4.33
WHODAS: Life activities – Household	9.81	4.69
WHODAS: Life activities – School/Work	11.11	4.54
WHODAS: Participation in society	20.92	7.12

Notes. N= 90, BAI = Beck Anxiety Inventory (Beck & Steer, 1993), HDSQ = Hopelessness Depression Symptom Questionnaire (Metalsky & Joiner, 1997), BDHI = Buss-Durkee Hostility Inventory (Buss & Durkee, 1957), PANAS = Positive and Negative Affect Schedule (Watson & Clark, 1999), NEO PI-R = NEO Personality Inventory-Revised (Costa & McCrae, 1992), BFAS = Big Five Aspects Scales (DeYoung, Quilty & Peterson, 2007), PID-5 = Personality Inventory for *DSM-5* (Krueger et al., 2012), PAI = Personality Assessment Inventory (Morey, 1991), ALS = Affective Lability Scales (Harvey, Greenberg & Serper, 1989), FFBI = Five-Factor Measure of

Borderline Personality Inventory, Mullins-Sweatt et al., 2012), CAT-PD = Computerized Adaptive Assessment of Personality Disorder (Simms et al., 2011), T & P = Temperament and Personality Questionnaire (Parker et al., 2006), WHODAS 2.0 = WHO Disability Assessment Schedule 2.0 (World Health Organization, 2012).

Convergence of Negative Emotionality Domains

A major aim of this dissertation was to examine the convergence of the three dimensional models (RDoC, Section 3 *DSM-5*, and FFM). In order to execute analyses to address hypotheses regarding the RDoC negative valence systems domain in comparison to the other models, each of the scales included to assess RDoC negative valence (i.e., BAI, HDSQ, BDHI, PANAS Negative Affect Scale) was first z-score transformed. Then, the four z-score transformed variables (i.e., BAI, HDSQ, BDHI, and PANAS) were averaged to create the RDoC negative valence aggregate variable.

The first hypothesis was that the RDoC negative valence aggregate variable would be strongly related with the two other negative emotionality domains (i.e., Section 3 *DSM-5* negative affectivity as measured by PID-5 Negative Affectivity, FFM neuroticism as measured by NEO PI-R Neuroticism and BFAS Neuroticism). Table 2 presents correlations of the respective measures. The strongest relationships were among the *DSM-5* and FFM measures, but there were also clearly large effect size relationships (i.e., equal to or larger than .50, as defined by Cohen [1992]) for the RDoC with the *DSM-5* and FFM measures.

Table 2

Correlations of Negative Emotionality Domains

	1	2	3	4
1. Aggregate RDoC	-			
2. PID-5 Negative Affectivity	.52**	-		
3. NEO PI-R Neuroticism	.65**	.78**	-	
4. BFAS Neuroticism	.57**	.80**	.83**	-

Notes. N = 90, RDoC = Research Domain Criteria, PID-5 = Personality Inventory for DSM-5 (Krueger et al., 2012), NEO PI-R = NEO Personality Inventory-Revised (Costa & McCrae, 1992), BFAS = Big Five Aspects Scales (DeYoung, Quilty & Peterson, 2007).

** $p < .01$

Patterns of Impairment

Additionally, it was hypothesized that RDoC negative valence systems, Section 3 *DSM-5* negative affectivity and FFM neuroticism would show similar patterns of impairment. In order to investigate this hypothesis, the RDoC aggregate negative valence systems variable, PID-5 Negative Affectivity, NEO PI-R neuroticism, and BFAS neuroticism were correlated with the following impairment scales: the T & P personality functioning scales and the WHODAS scales. Table 3 presents these correlations. Overall, the measures of negative emotionality did demonstrate similar patterns of relationship with the impairment scales. Each negative emotionality measure related significantly and positively with the WHODAS Understanding and Communicating, Getting along with people, Life activities – School/Work, and Participation in society scales as well as the T & P Cooperativeness scale. The RDoC aggregate negative valence systems variable was related with all measures of impairment except the T & P Effectiveness scale. However, the relationships of the negative emotionality domains with the T & P Effectiveness scale were generally inconsistent across measures. In addition, although the RDoC negative valence systems variable did relate with WHODAS Getting around and Self-care, the other three negative emotionality scales did not (i.e., PID-5 negative affectivity, NEO PI-R neuroticism and BFAS neuroticism).

Table 3

Correlations of Measures of Impairment with Measures of Negative Emotionality

Impairment	RDoC	PID-5	NEO PI-R	BFAS
WHODAS Scales				
Understanding and Communicating	.40**	.33**	.35**	.37**
Getting Around	.31**	.05	.10	.13
Self-Care	.25*	.11	.08	.07
Getting Along with People	.36**	.29**	.28**	.22*
Life Activities – Household	.37**	.17	.29**	.26*
Life Activities – School/Work	.47**	.24*	.31**	.33**
Participation in Society	.51**	.41**	.37**	.35**
T & P Personality Functioning Scales				
Cooperativeness	-.56**	-.60**	-.72**	-.62**
Effectiveness	-.09	-.23*	-.18	-.31**

Notes. N = 90, RDoC = Research Domain Criteria, PID-5 = Personality Inventory for DSM-5 (Krueger et al., 2012), NEO PI-R = NEO Personality Inventory-Revised (Costa & McCrae, 1992), BFAS = Big Five Aspects Scales (DeYoung, Quilty & Peterson, 2007), WHODAS 2.0 = WHO Disability Assessment Schedule 2.0 (World Health Organization, 2012), T & P = Temperament and Personality Questionnaire (Parker et al., 2006).

The correlations of the correlations between the negative emotionality domains and the impairment scales are reported in Table 4. Despite the few minor differences, Table 4 demonstrates that the patterns of correlations of the respective negative emotionality domains (i.e., RDoC negative valence systems, Section 3 *DSM-5* negative emotionality, FFM neuroticism) with impairment were highly convergent with a few minor differences noted previously.

Table 4

Correlations of the Correlations between the Negative Emotionality Domains and the Impairment Scales

	1	2	3	4
1. Aggregate RDoC	-			
2. PID-5 Negative Affectivity	.98**	-		
3. NEO PI-R Neuroticism	.99**	.98**	-	
4. BFAS Neuroticism	.98**	.98**	.98**	-

Notes. N = 90, RDoC = Research Domain Criteria, PID-5 = Personality Inventory for DSM-5 (Krueger et al., 2012), NEO PI-R = NEO Personality Inventory-Revised (Costa & McCrae, 1992), BFAS = Big Five Aspects Scales (DeYoung, Quilty & Peterson, 2007).

** $p < .01$

Affective Instability

An additional focus was to investigate the relationship of the three negative emotionality domains (RDoC, Section 3 *DSM-5*, and FFM) with affective instability. It was hypothesized that affective instability would be related with FFM neuroticism, RDoC negative valence systems, and Section 3 *DSM-5* negative affectivity, but more so with *DSM-5* negative affectivity and with FFM neuroticism when it is assessed by the BFAS. Overall, the domains of negative emotionality were significantly related with the measures of affective instability (see Table 5) with some minor exceptions (i.e., RDoC with ALS elation, RDoC with ALS anger, NEO PI-R with ALS elation), confirming expectations. The further hypothesis that the measures assessing affective instability would be more strongly related with *PID-5* Negative Affectivity and BFAS Neuroticism than with RDoC negative valence systems was confirmed in several instances (albeit not all). For ALS Anger, FFBI Affective Dysregulation, CAT-PD Affective Lability and PAI Affective Instability; *PID-5* Negative Affectivity was found to be more strongly related than was the RDoC negative valence systems aggregate variable per a t-test of difference in correlations. This pattern was replicated with the BFAS, demonstrating that the relationship between the same measures of affective instability (i.e., ALS Anger, FFBI Affective Dysregulation, CAT-PD Affective Lability and PAI Affective Instability) as well as the ALS total score, ALS Depression and ALS Elation scales were more strongly related with the BFAS than the RDoC aggregate. Although it was not predicted, this pattern was replicated for a third time with the NEO PI-R for ALS Anger, FFBI Affective Dysregulation, CAT-PD Affective Lability, and PAI Affective Instability. *PID-5* Negative Affectivity and BFAS Neuroticism were also expected to have a stronger

relationship with affective instability than NEO PI-R neuroticism. For the BFAS, this was demonstrated for the ALS Elation, ALS Anger, ALS Depression/Elation, ALS Total, CAT-PD Affective Lability and PAI Affective Lability scales. However, in the case of the PID-5, this was demonstrated for only one affective instability scale (i.e., ALS Anger).

Table 5

Correlations of Measures of Negative Emotionality with Measures of Affective Instability

Affective Instability	RDoC	PID-5	NEO	BFAS	<i>t</i> PID, RDoC (<i>df</i> = 87)	<i>t</i> NEO, RDoC (<i>df</i> = 87)	<i>t</i> BFAS, RDoC (<i>df</i> = 87)	<i>t</i> PID, NEO (<i>df</i> = 87)	<i>t</i> BFAS, NEO (<i>df</i> = 87)
ALS: Depression	.43**	.47**	.51**	.60**	.45	1.04	2.16*	-.66	1.79
ALS: Elation	.07	.24*	.13	.28**	1.67	.67	2.22*	1.60	2.53*
ALS: Anxiety	.44**	.42**	.43**	.49**	-.22	-.13	.59	-.16	1.10
ALS: Anger	.14	.60**	.38**	.59**	5.66**	2.91**	5.90**	3.92**	4.26**
ALS: Depression/Anxiety	.63**	.65**	.66**	.72**	.28	.47	1.42	-.20	1.39
ALS: Depression/Elation	.32**	.36**	.32**	.48**	.41	0.00	1.84	.60	2.94**
ALS: Total	.40**	.56**	.49**	.64**	1.86	1.16	3.16**	1.19	3.12**
FFBI: Affective Dysregulation	.36**	.69**	.66**	.74**	4.34**	4.46**	5.74**	.60	1.91
CAT-PD: Affective Lability	.40**	.74**	.67**	.79**	4.81**	4.04**	6.46**	1.50	3.12**
PAI: Affective Instability	.52**	.80**	.73**	.80**	4.54**	3.43**	4.75**	1.71	1.89

Notes. N = 90, RDoC = Research Domain Criteria, PID-5 = Personality Inventory for *DSM-5* (Krueger et al., 2012), NEO = NEO Personality Inventory-Revised (Costa & McCrae, 1992), BFAS = Big Five Aspects Scales (DeYoung, Quilty & Peterson, 2007), ALS = Affective Lability Scales (Harvey, Greenberg & Serper, 1989), FFBI = Five-Factor Measure of Borderline Personality Inventory, Mullins-Sweatt et al., 2012), CAT-PD = Computerized Adaptive Assessment of Personality Disorder (Simms et al., 2011), PAI = Personality Assessment Inventory (Morey, 1991).

* $p < .05$, ** $p < .01$

It was also predicted that the measures of affective instability (i.e., ALS, FFBI Affective Dysregulation, and CAT-PD Affective Lability) would provide incremental variance above and beyond RDoC negative valence systems (and NEO PI-R Neuroticism) when accounting for variance within borderline personality disorder (i.e., PAI-BPD and PID-5 BPD), a disorder strongly associated with affective instability. This hypothesis was tested via a series of hierarchical regressions wherein PAI-BPD and the PID-5 assessment of BPD were used as criterion variables. For findings presented in Table 6, the RDoC negative valence aggregate variable (and in Table 7, NEO PI-R Neuroticism) were entered into step one and then, in each analysis, a different measure of affective instability (ALS total score, FFBI Affective Dysregulation, CAT-PD Affective Lability) were entered into step two. Tables 6 and 7 both indicate that each measure of affective instability provided incremental variance above and beyond RDoC negative valence systems and NEO PI-R Neuroticism, respectively, when accounting for variance within each measure of BPD, consistent with predictions.

Table 6

Incremental Validity of Affective Instability Over RDoC in Accounting for Variance in Measures of BPD

Predictor	Criterion Measures			
	PAI BPD		PID-5 BPD	
	ΔR^2	β	ΔR^2	β
Step 1	.28**		.30**	
Aggregate RDoC		.53**		.55**
Step 2	.24**		.14**	
Aggregate RDoC		.31**		.39**
ALS Total		.54**		.41**
Total R ²	.52**		.44**	
Step 1	.28**		.30**	
Aggregate RDoC		.53**		.55**
Step 2	.38**		.28**	
Aggregate RDoC		.29**		.35**
FFBI Affective Dysregulation		.66**		.57**
Total R ²	.66**		.58**	
Step 1	.28**		.30**	
Aggregate RDoC		.53**		.55**
Step 2	.32**		.26**	
Aggregate RDoC		.28**		.33**
CAT-PD Affective Liability		.62**		.55**
Total R ²	.60**		.56**	

Notes. N = 90, PAI BPD = Personality Assessment Inventory Borderline Personality Disorder Scale (Morey, 1991), PID-5 = Personality Inventory for *DSM-5* (Krueger et al., 2012), BPD = Borderline Personality Disorder, RDoC = Research Domain Criteria, ALS = Affective Liability Scales (Harvey, Greenberg & Serper, 1989), FFBI = Five-Factor Measure of Borderline Personality Inventory, Mullins-Sweatt et al., 2012), CAT-PD = Computerized Adaptive Assessment of Personality Disorder (Simms et al., 2011).

** $p < .01$.

Table 7

Incremental Validity of Affective Instability Over NEO Neuroticism in Predicting for Measures of BPD

Predictor	Criterion Measures			
	PAI BPD		PID BPD	
	ΔR^2	β	ΔR^2	β
Step 1	.55**		.52**	
NEO Neuroticism		.74**		.72**
Step 2	.12**		.06**	
NEO Neuroticism		.55**		.59**
ALS Total		.40**		.27**
Total R ²	.67**		.58**	
Step 1	.55**		.52**	
NEO Neuroticism		.74**		.72**
Step 2	.14**		.08**	
NEO Neuroticism		.41**		.48**
FFBI Affective Dysregulation		.49**		.37**
Total R ²	.68**		.60**	
Step 1	.55**		.52**	
NEO Neuroticism		.74**		.72**
Step 2	.10**		.07**	
NEO Neuroticism		.45**		.48**
CAT-PD Affective Lability		.43**		.36**
Total R ²	.65**		.59**	

Notes. N = 90, NEO = NEO Personality Inventory-Revised (Costa & McCrae, 1992), BPD = Borderline Personality Disorder, PAI BPD = Personality Assessment Inventory Borderline Scale (Morey, 1991), PID = Personality Inventory for *DSM-5* (Krueger et al., 2012), ALS = Affective Lability Scales (Harvey, Greenberg & Serper, 1989), FFBI = Five-Factor Measure of Borderline Personality Inventory, Mullins-Sweatt et al., 2012), CAT-PD = Computerized Adaptive Assessment of Personality Disorder (Simms et al., 2011).

** $p < .01$.

Because BFAS Neuroticism includes the Volatility facet-level scale, it was conversely predicted that the measures of affective instability (i.e., ALS Total, FFBI Affective Dysregulation, and CAT-PD Affective Lability scales) would not provide incremental validity above and beyond the BFAS Neuroticism scale when predicting for variance in BPD as assessed by the PAI BPD and PID-5 BPD scales. However, in each case (i.e., for each measure of affective instability and for each criterion measure of BPD), affective instability did provide incremental variance beyond BFAS Neuroticism as demonstrated in Table 8.

Table 8

Incremental Validity of Affective Instability Over BFAS Neuroticism in Predicting for Measures of BPD

Predictor	Criterion Measures			
	PAI BPD		PID BPD	
	ΔR^2	β	ΔR^2	β
Step 1	.55**		.49**	
BFAS Neuroticism		.74**		.70**
Step 2	.06**		.02*	
BFAS Neuroticism		.53**		.58**
ALS Total		.32**		.19*
Total R ²	.61**		.51**	
Step 1	.55**		.49**	
BFAS Neuroticism		.74**		.70**
Step 2	.11**		.07**	
BFAS Neuroticism		.38**		.42**
FFBI Affective Dysregulation		.49**		.38**
Total R ²	.65**		.55**	
Step 1	.55**		.49**	
BFAS Neuroticism		.74**		.70**
Step 2	.06**		.05**	
BFAS Neuroticism		.42**		.42**
CAT-PD Affective Lability		.40**		.35**
Total R ²	.61**		.54**	

Notes. N = 90, BFAS = Big Five Aspects Scales (DeYoung, Quilty & Peterson, 2007), BPD = Borderline Personality Disorder, PAI BPD = Personality Assessment Inventory Borderline Scale (Morey, 1991), PID = Personality Inventory for *DSM-5* (Krueger et al., 2012), ALS = Affective Lability Scales (Harvey, Greenberg & Serper, 1989), FFBI = Five-Factor Measure of Borderline Personality Inventory, Mullins-Sweatt et al., 2012), CAT-PD = Computerized Adaptive Assessment of Personality Disorder (Simms et al., 2011).

** $p < .01$.

Chapter Four: Discussion

The purpose of this study was to investigate the relationship among domains of negative emotionality from three alternative models (i.e., the RDoC, *DSM-5* Section 3, and FFM) as well as their relationship with and role of affective instability. Finally, the study examined the importance of affective instability with respect to its assessment of BPD.

Convergence of Negative Emotionality Domains

One primary finding of the current study was the substantial convergence among the three negative emotionality domains, as well as sharing a consistent relationship with respect to implications for impairment. These findings were consistent with the hypothesis that these domains would align. Given their remarkable similarity across operational definitions, the convergence across domains is perhaps unsurprising. The subareas across RDoC negative valence systems (i.e., acute threat [“fear”], potential threat [“anxiety”], sustained threat, loss, and frustrative nonreward; <http://www.nimh.nih.gov/research-priorities/rdoc/research-domain-criteria-matrix.shtml>), Section 3 *DSM-5* negative affectivity (i.e., anxiousness, emotional lability, hostility, perseveration, [lack of] restricted affectivity, separation insecurity, and submissiveness; Krueger et al., 2012) and FFM neuroticism (i.e., anxiety, hostility, depression, self-consciousness, impulsivity, and vulnerability to stress; Costa & McCrae, 1992) very closely resemble one another. In fact, before RDoC negative valence system was bestowed its current title, it was previously referred to as “negative affect” and described as assessing “fear, distress and aggression” (Sanislow et al., 2010, p. 634). Lahey (2009)

in turn described neuroticism as referring to “relatively stable tendencies to respond with negative emotions to threat, frustration, or loss” (p. 241).

It is unclear why the personality domain of neuroticism is not acknowledged for the RDoC domain of negative valence given an apparent congruence, as well as relevance to the intent of the NIMH shift to the RDoC classification. The RDoC was developed as a means of facilitating “the incorporation of behavioral neuroscience in the study of psychopathology” (Sanislow et al., 2010, p. 631). Considerable progress has in fact already been made towards the integration of these fields with respect to the construct of neuroticism. Research on neuroticism has demonstrated that neuroticism is heritable, explored its relationship with particular gene polymorphisms, found possible relationships with physiological stress reactivity, identified potential brain mechanisms and pathways, and found hypothesized causal links with mental disorders and physical health problems (DeYoung et al., 2010; Lahey, 2009). The alignment of RDoC negative valence systems with FFM neuroticism would bring a depth of understanding and a breadth of past research to this relatively nascent construct. In fact, the Section 3 *DSM-5* Personality and Personality Disorders Work Group transitioned from distancing their model from the FFM (Widiger, 2013) to aligning their model with the FFM (APA, 2013), possibly due to the significant body of research that helped to provide support for their proposed model.

The wide range of psychological research on the topic of neuroticism, and more broadly, negative emotionality domains, proves how essential this construct’s presence is within a dimensional model of personality pathology. Research has shown that FFM traits (including neuroticism) are heritable (Yamagata et al., 2006), have clear childhood

antecedents (Caspi, Roberts, & Shiner, 2005; Mervielde et al., 2005), show temporal stability across the lifespan (Roberts & Del Vecchio, 2000; Soto, John, Golsing, & Potter, 2011), and are universal across cultures (Allik, 2005). The domain of FFM neuroticism is involved (at least in part) in most every personality disorder (Widiger, Costa, Gore & Crego, 2013). Neuroticism is related with individual mental health outcomes (e.g., subjective well-being, coping, and Axis I psychopathology) and interpersonal outcomes (e.g., abuse in romantic relationships, family satisfaction) (Ozer & Benet-Martinez, 2006). More generally, neuroticism is fundamentally related to general distress and social impairment (Mullins-Sweatt & Widiger, 2010). Due to neuroticism's close relationship to physical and mental health outcomes, as well as its links to neurobiological markers, Lahey (2009) concluded that neuroticism "is a psychological trait of profound public health significance" and recommended large-scale screening by primary care physicians of individuals for neuroticism as a means of preventative care.

Patterns of Impairment

Despite the overall similar patterns of impairment across domains, there were though some minor differences for individual impairment scales. RDoC negative valence systems was significantly correlated with each WHODAS scale as well as the T & P Cooperativeness scale whereas none of the other negative emotionality measures correlated with WHODAS Getting Around or Self-Care. The RDoC therefore appears to be associated with a great deal of impairment. While this result is unsurprising for a model designed to assess for a broad domain of psychopathology; the PID-5 negative affectivity scale, a measure specifically designed to assess a core domain of personality pathology, was significantly related with fewer scales of impairment. In contrast, NEO

PI-R Neuroticism and BFAS Neuroticism represent scales from measures of general personality and, while they are maladaptive domains, were not designed to assess for psychopathology in general and were therefore not expected to demonstrate as strong of a relationship with impairment measures, especially such measures as the WHODAS disability scales. The lack of relationship of the PID-5, NEO PI-R and BFAS with the WHODAS Self-Care and Getting Around scales could simply reflect the fact that such personality domains, while related with other types of impairment, may not be associated with basic levels of impairment such as ability to take care of oneself on a basic level. For example, a Self-Care item assessed for difficulty in “washing your whole body” while a Getting Around item inquired about difficulty in “Standing up from sitting down” (World Health Organization, 2012). These basic self-care concerns are not well understood to be matters of personality dysfunction. Ro and Clark (2009) factor-analyzed several measures of psychosocial functioning and found that the scales from the WHODAS II (World Health Organization, 2000; an earlier version of the WHODAS 2.0), loaded on a factor they called “basic functioning,” whereas other measures associated with personality functioning loaded on a separate factor they referred to as “self-mastery” and “interpersonal and social relationships.”

Affective Instability

With regard to the relationship between the domains of negative emotionality with affective instability, it was hypothesized that affective instability would be related with all three domains of negative emotionality but would be more strongly related with Section 3 *DSM-5* negative affectivity and BFAS Neuroticism than with RDoC negative valence systems and NEO PI-R Neuroticism. It was further predicted that the measures of

affective instability would provide incremental variance above and beyond RDoC negative valences systems and NEO PI-R Neuroticism in predicting for BPD (although not when the BFAS was used to assess for neuroticism).

As expected, general convergence was observed among RDoC negative valence systems, PID-5 negative affectivity, NEO PI-R Neuroticism and BFAS Neuroticism with the measures of affective instability. As hypothesized, RDoC negative valence systems demonstrated moderate to strong relationships with most measures of affective instability. The BFAS and the PID-5 were more strongly related with several measures of affective instability (i.e., seven measures for the BFAS, four measures for the PID-5) than the RDoC. Consistent with expectations, the BFAS was also more strongly related with affective instability than NEO PI-R Neuroticism. However, unexpectedly, correlations among PID-5 Negative Affectivity and affective instability were only significantly higher than NEO PI-R Neuroticism in one instance.

Overall, these findings indicate, consistent with Maples et al. (2013), that affective instability is strongly related with FFM neuroticism and there may be a significant degree of overlap between the two constructs. This study further extends the findings of Maples et al. by also demonstrating that two other negative emotionality domains (i.e., RDoC negative valence systems and Section 3 *DSM-5* negative affectivity) have similar relationships with measures of affective instability. However, some studies have not evidenced such relationships (Kamen et al., 2010; Miller & Pilkonis, 2006). In the case of Miller and Pilkonis (2006), it is possible that the weak relationship between FFM neuroticism and affective instability was due to their measure of affective instability

(i.e., a four-item measure derived from a review of *DSM-III-R* criteria assessing affective instability).

These findings suggest that, although the RDoC was related with measures of affective instability, it did not assess this construct to the extent of the other negative emotionality domains. Contrary to expectations, although NEO PI-R Neuroticism does not include a dedicated affective instability subscale, even NEO PI-R Neuroticism was more strongly related with four measures of affective instability than the RDoC. This may suggest a failure on the part of the RDoC negative valence to adequately assess a construct of considerable relevance to negative emotionality. Indeed, the RDoC, although strongly related with the other negative emotionality domains, appeared to be less strongly related with the other domains than they were to each other. Therefore, in order to be able to assess relevant personality pathology, measures to assess affective instability, and possibly an increased coverage of negative affect, should perhaps be added to RDoC negative valence systems to extend its breadth and clinical significance.

For example, affective instability is integral to the assessment of BPD, one of the most clinically relevant personality disorders (Goodman et al., 2010). Consistent with predictions, it was demonstrated using three measures of affective instability and two alternative measures of BPD, that affective instability measures explain incremental variance above and beyond RDoC negative valence systems and NEO PI-R Neuroticism in each case, demonstrating that affective instability is essential to include within dimensional models of personality pathology. These findings provide support for the significance that others have placed on the construct of affective instability in general

(Livesley, 2007, Siever & Davis, 1992) and in particular, its status as a core feature of BPD (APA, 2000, 2013; Tragesser et al., 2007).

Inconsistent with expectations, measures of affective instability explained incremental variance when predicting for BPD above and beyond BFAS Neuroticism, despite the BFAS' inclusion of the Volatility scale. It is possible that this finding reflects that the BFAS Volatility scale does not include the breadth or severity of coverage of the other measures of affective instability (i.e., the ALS, FFBI Affective Dysregulation, CAT-PD Affective Lability). The latter scales concern the magnitude of affective stability that is evident within clinical populations, whereas the BFAS was constructed to assess for an emotional volatility that is evident within the general population.

Limitations and Future Directions

One possible limitation of this study is the method of measurement of the RDoC. Some may disagree with the measures chosen to represent the facets of the RDoC, such as the HDSQ to assess “loss” or having no dedicated measure to assess “sustained threat.” However, the suggested method of measurement of the RDoC using self-report measures has been unclear. Although some measures are suggested via the NIMH website (<http://www.nimh.nih.gov/research-priorities/rdoc/research-domain-criteria-matrix.shtml>), the measures are often not cited or well-explained. As mentioned previously, the NIMH website suggested “Hopelessness” for a self-report measure to assess for “loss” but did not specify which measure of hopelessness they were referring to. In addition, some of the constructs lack clear and updated operational definitions. Given the information provided, the measures that were chosen to assess RDoC negative valence were either clearly consistent with the recommendation of NIMH and/or mirror

the suggested measures as closely as possible. In fact, the PANAS Negative Affect scale was added to the RDoC negative valence systems in this study even though it was not suggested by NIMH as an effort to provide even more coverage than the limited scales listed for the RDoC.

Future studies though should address this further by examining other self-report and individual difference measures suggested to assess the RDoC by NIMH as well as their relationships to the neurobiological measures listed within the NIMH website. This study only addressed one component of the RDoC but the four other domains (i.e., positive valence systems, cognitive systems, systems for social processes and arousal and regulatory systems) should be studied further, especially in reference to pre-existing models, such as the FFM and the DSM-5 dimensional trait model.

In sum, this dissertation investigated the convergence of negative emotionality domains from three models (i.e., the FFM, Section 3 *DSM-5* and NIMH's RDoC), their relationship to affective instability, and the potential inclusion of affective instability. The findings indicated convergence across domains, a moderate to strong relationship with affective instability, and suggested further that affective instability, integral to the assessment of borderline personality disorder, should receive stronger recognition within RDoC negative valence. Although these models do appear to include affective instability to a degree already, it does appear worthwhile to include it more specifically within such models in order to encapsulate the variance associated with such important and clinical significant disorders as BPD.

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EDUCATION

Clinical Psychology Predoctoral Intern – Trauma Recovery Center 2015–2016
Cincinnati VA Medical Center; Cincinnati, OH

M.S. in Clinical Psychology 2013
University of Kentucky; Lexington, KY
Thesis: The DSM-5 Dimensional Trait Model and the Five Factor Model
Chair: Thomas A. Widiger, Ph.D.

B.A. in Psychology, *Magna Cum Laude* 2009
University of Kentucky; Lexington, KY
Honors Thesis: Cognitive Schemas, Personality Disorders and the Five Factor Model
Mentor: Thomas A. Widiger, Ph.D.

HONORS & AWARDS

Award for Excellent Clinical Performance	2015
Predocctoral Research Award	2014
Kentucky Opportunity Fellowship (full tuition/stipend)	2010-2011
University of Kentucky Psychology Departmental Honors	2009
James Miller Award, for poster on Cognitive schemas, personality disorders and the five-factor model	2009
Undergraduate Research and Creativity Award	2008
University of Kentucky Dean’s List	2006-2009
University of Kentucky Honors Program	2005-2009
Psi Chi National Honors Society	2007-2009

PEER-REVIEWED PUBLICATIONS

Maples, J. L., Carter, N. T., Few, L. R., Crego, C., **Gore, W. L.**, Samuel, D. B., . . . Miller, J. D. (in press). Testing whether the DSM-5 personality disorder trait model can be measured with a reduced set of items: An item response theory investigation of the Personality Inventory for DSM-5. *Psychological Assessment*.

Crego, C., **Gore, W. L.**, Rojas, S., & Widiger, T. A. (in press). The discriminant (and convergent) validity of the Personality Inventory for DSM-5. *Personality Disorders: Theory, Research and Treatment*.

Gore, W. L. & Widiger, T. A. (2013). The DSM-5 dimensional trait model and five-factor models of general personality. *Journal of Abnormal Psychology, 122*, 816-821.

Samuel, D. B., & **Gore, W. L.** (2012). Maladaptive variants of conscientiousness and agreeableness. *Journal of Personality, 6*, 1669-1696.

Gore, W. L., Presnall, J. R., Miller, J. D., Lynam, D. R., & Widiger, T. A. (2012). A five factor measure of dependent personality traits. *Journal of Personality Assessment, 94*, 488-499.

Edmundson, M., Lynam, D. R., Miller, J. D., **Gore, W. L.**, & Widiger, T. A. (2011). A five-factor measure of schizotypal personality traits. *Assessment*, *18*, 321-334.

Gore, W. L., Tomiatti, M., & Widiger, T. A. (2011). The home for histrionism. *Personality and Mental Health*, *5*, 57-72.

BOOK CHAPTERS

Widiger, T. A., & Gore, W. L. (in press). Personality disorders. In H. Friedman (Ed.). *Encyclopedia of mental health* (2nd ed.). Kidlington, Oxford: Elsevier.

Widiger, T. A., & **Gore, W. L.** (in press). Dimensions vs. categorical models of psychopathology. In R. Cautin & S. Lilienfeld (Eds.), *The encyclopedia of clinical psychology*. NY: Wiley-Blackwell.

Widiger, T. A., & **Gore, W. L.** (2014). Diagnostic and Statistical Manual (DSM). In S. Richards, & M. O'Hara (Eds.), *Oxford handbook of depression and comorbidity* (pp. 11-28). New York: Oxford University Press.

Widiger, T. A., & **Gore, W. L.** (2014). Mental disorders as discrete clinical conditions: Dimensional versus categorical classification. In D. Beidel, & C. Frueh (Eds.), *Adult psychopathology and diagnosis, 7th edition* (pp. 3-32). NY: Wiley.

Gore, W. L., & Widiger, T. A. (2013). Assessing personality disorders. In G. P. Koocher, J. C. Norcross, & B. A. Greene (Eds.), *Psychologists' desk reference, 3rd edition* (pp. 87-91). Washington, DC: American Psychological Association.

Widiger, T. A., Costa, P. T., **Gore, W. L.**, & Crego, C. (2013). FFM personality disorder research. In T. A. Widiger & P. T. Costa (Eds.), *Personality disorders and the five-factor model of personality, 3rd Ed* (pp. 75-100). Washington DC: American Psychological Association.

Gore, W. L., & Pincus, A. L. (2013). Dependency and the five factor model. In T. A. Widiger & P.T. Costa (Eds.), *Personality disorders and the five-factor model of personality, 3rd Ed* (pp. 163-177). Washington DC: American Psychological Association.

Widiger, T. A., Samuel, D. B., Mullins-Sweatt, S., **Gore, W. L.**, & Crego, C. (2012). An integration of normal and abnormal personality structure: The five factor model. In T. A. Widiger (Ed.), *Oxford handbook of personality disorders* (pp. 82-107). New York, NY: Oxford University Press.

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Tomiatti, M., **Gore, W. L.**, Lynam, D. R., Miller, J. D., & Widiger, T. A. (2012). A five-factor measure of histrionic personality traits. In Alexandra M. Columbus (Ed.), *Advances in Psychology Research* (Vol. 87, pp. 113-138). Hauppauge, NY: Nova Science Publishers.

RESEARCH APPOINTMENTS & POSITIONS

Graduate Student Researcher Widiger Lab; University of Kentucky, Lexington, KY Lab Director: Thomas Widiger, PhD	2010–present
Research Assistant Center on Drug and Alcohol Research; University of Kentucky, Lexington, KY Lab Director: TK Logan, PhD	2009-2010
Undergraduate Research Assistant Widiger Lab; University of Kentucky, Lexington, KY Lab Director: Thomas Widiger, PhD	2008–2009
Undergraduate Research Assistant Infant Development Lab; University of Kentucky, Lexington, KY Lab Director: Ramesh Bhatt, PhD	2007–2008

CLINICAL POSITIONS

Clinical Psychology Predoctoral Intern, Trauma Recovery Center Track Cincinnati VA Medical Center	begin July 2015
Clinical Psychology Practicum Student Cardinal Hill Rehabilitation Hospital Inpatient Rehabilitation Hospital	2014-2015
Graduate Student Therapist; Assessment/Therapy Coordinator Jesse G. Harris Psychological Services Center	2010–2015
Peer Supervisor University of Kentucky Clinical Psychology Program	2013–2014
Primary Therapist Chrysalis House Rehabilitation Center Women’s Residential Treatment Center for Substance Abuse	2013-2014
Student Therapist University of Kentucky Counseling Center for Students	2011-2012

TEACHING & MENTORING EXPERIENCE

Laboratory Instructor , University of Kentucky	
<i>Graduate Level</i>	
Cognitive Assessment Practicum	Fall 2011
Personality Assessment Practicum	Spring 2013, Spring 2014
<i>Undergraduate Level</i>	
Personality and Individual Differences	Summer 2013
Processes of Psychological Development	Summer 2012
Research in Personality	Spring 2012, Fall 2012, Fall 2013
Experimental Psychology	Summer 2011
Statistics in Psychology	Spring 2011

PROFESSIONAL ACTIVITIES

Ad Hoc Reviewer: *Journal of Personality Disorders*

Founding Member: Diversity Task Force
Clinical Psychology Program, University of Kentucky
Authored Health Literacy section of Diversity Manual

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