Criterion A of the AMPD in HiTOP

Thomas A. Widiger[1]
Bo Bach[2]
Michael Chmielewski[3]
Lee Anna Clark[4]
Colin DeYoung[5]
Christopher J. Hopwood[6]
Roman Kotov[7]
Robert F. Krueger[5]
Joshua D. Miller[8]
Leslie C. Morey[9]
Stephanie N. Mullins-Sweatt[10]
Christopher J. Patrick[11]
Aaron L. Pincus[12]
Douglas B. Samuel[13]
Martin Sellbom[14]
Susan C. South[13]
Jennifer L. Tackett[15]
David Watson[4]
Mark H. Waugh[16]
Aidan G. C. Wright[17]
Johannes Zimmermann[18]
R. Michael Bagby[19]
David C. Cicero[20]
Christopher C. Conway[21]
Barbara De Clercq[22]
Anna R. Docherty[23]
Nicholas R. Eaton[24]

Kelsie T. Forbush[25]
J. D. Haltigan[26]
Masha Y. Ivanova[27]
Robert D. Latzman[28]
Donald R. Lynam[13]
Kristian E. Markon[29]
Ulrich Reininghaus[30]
Katherine M. Thomas[13]

[1]University of Kentucky, Department of Psychology, Lexington, KY
[2] Psychiatric Research Unit, Slagelse Psychiatric Hospital, Denmark
[3]Sourthern Methodist University, Department of Psychology, Dallas, Texas
[4]University of Notre Dame, Department of Psychology, Notre Dame, IN
[5]University of Minnesota, Department of Psychology, Minneapolis, MN
[6]University of California at Davis, Department of Psychology, Davis, CA
[7]Stony Brook University, Department of Psychiatry, Stony Brook, NY
[8]University of Georgia, Department of Psychology, Athens, GA
[9]Texas A&M University, Department of Psychology, College Station, TX
[10]Oklahoma State University, Department of Psychology, Stillwater, OK
[11]Florida State University, Department of Psychology, Tallahassee, FL
[12]Pennsylvania State University, Department of Psychology, University Park, PA
[13]Purdue University, Department of Psychological Sciences, West Lafayette, IN
[14]University of Otago, Department of Psychology, Dunedin, New Zealand
[15]Northwestern University, Department of Psychology, Evanston, IL
[16]University of Tennessee, Department of Psychology, Knoxville, TN
[17]University of Pittsburgh, Department of Psychology, Pittsburgh, PA
[18]Psychologische Hochschule Berlin, Berlin, Germany
[19]University of Toronto. Departments of Psychology and Psychiatry, Toronto, Canada
[20]University of Hawaii at Manoa, Department of Psychology, Manoa, HI

[21]College of William & Mary, Department of Psychological Sciences, Williamsburg, VA
[22]Ghent University, Department of Developmental, Personality, and Social Psychology, Gent, Belgium
[23]University of Utah, Department of Psychiatry, Salt Lake City, UT
[24]Stony Brook University, Department of Psychology, Stony Brook, NY
[25]University of Kansas, Department of Psychology, Lawrence, KS
[26]University of Toronto, Department of Psychiatry, Toronto, Canada
[27]University of Vermont, Department of Psychiatry, Burlington, VT
[28]Georgia State University, Department of Psychology, Atlanta, GA
[29]University of Iowa, Department of Psychology, Iowa City, IA
[30]Masstricht University, Department of Psychiatry and Psychology, Maastricht, The Netherlands, and Institute of Psychiatry, Psychology, and Neuroscience, King's College, London

Authors' note: All of the authors of this manuscript are members of the HiTOP Consortium (albeit not all HiTOP members are co-authors). Correspondence concerning this paper should be addressed to Thomas A. Widiger, Ph.D., Department of Psychology, University of Kentucky, Lexington, KY, 40506-0044; email: widiger@uky.edu.

Abstract

The categorical model of personality disorder classification in the American Psychiatric Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; APA, 2013) is highly and fundamentally problematic. Proposed for *DSM*-5 and provided within Section III (for Emerging Measures and Models) was an Alternative Model of Personality Disorder (AMPD) classification, consisting of Criterion A (self-interpersonal deficits) and Criterion B (maladaptive personality traits). A proposed alternative to the DSM-5 more generally is an empirically-based dimensional organization of psychopathology identified as the Hierarchical Taxonomy Of Psychopathology (HiTOP; Kotov et al., 2017). HiTOP currently includes, at the highest level, a general factor of psychopathology. Further down are the five domains of detachment, antagonistic externalizing, disinhibited externalizing, thought disorder, and internalizing (along with a provisional sixth somatoform dimension) that align with Criterion B. The purpose of the current paper is to discuss the potential inclusion and placement of the self-interpersonal deficits of the DSM-5 Section III Criterion A within HiTOP.

Key words: Criterion A, DSM-5 Section III, AMPD, HiTOP, dimensional, personality disorder

Criterion A of the AMPD in HiTOP

An Alternative Model of Personality Disorder (AMPD) was included in Section III of the fifth edition of the American Psychiatric Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; APA, 2013). The many problems with the *DSM-IV* personality disorder (PD) diagnostic categories, such as excessive diagnostic co-occurrence, heterogeneity among persons sharing the same diagnosis, and lack of treatment specificity, have been well documented (Clark, 2007; Krueger & Eaton, 2010; Livesley, 2001; Verheul, 2005; Widiger & Trull, 2007). The development of the AMPD was in recognition of these apparent failings (Krueger & Markon, 2014; Skodol, 2012). The AMPD consists of two primary components: Criterion A and Criterion B. Criterion A concerns deficits (or impairments) in the sense of self (more specifically, problems with identity and self-direction) and interpersonal relatedness (empathy and intimacy; Skodol, 2012). Criterion B consists of 25 maladaptive personality traits (e.g., callousness and impulsivity) organized within five broad domains of negative affectivity, detachment, antagonism, disinhibition, and psychoticism (Krueger et al., 2011, 2012).

The problems and limitations of the categorical model of classification are not, of course, confined to the personality disorders. A primary goal for the authors of *DSM-5* was to begin shifting the entire classification toward dimensions (Kupfer, First, & Regier, 2002). *DSM-5* Research Planning Work Groups were formed to set an effective research agenda for this next edition of the diagnostic manual with a move toward dimensional systems in mind. The Nomenclature Work Group, charged with addressing

fundamental assumptions of the diagnostic system, concluded that it would 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)

An empirically-based, dimensional organization of psychopathology has been developed concurrently with the *DSM-5* AMPD (e.g., Achenbach & Rescorla, 2001; Clark & Watson, 2008; Forbush & Watson, 2013; Kotov et al., 2011; Krueger & Markon, 2006; Lahey et al., 2008). This quantitative nosology is emerging from multiple research groups working together to identify the natural organization of psychopathology (Kotov, 2016). Indeed, a consortium of 40 investigators co-authored an initial Hierarchical Taxonomy Of Psychopathology (HiTOP), as an alternative to the traditional categorical classification (Kotov et al., 2017).

HiTOP currently includes, at the highest level, a general factor of psychopathology, beneath which are the broad domains of internalizing, externalizing, and thought disorder (Caspi et al., 2014; Forbes et al., 2017; Kotov et al., 2017; Lahey et al., 2011, 2012). This organizational structure received formal recognition within *DSM-5*, wherein the categorical diagnoses are clustered in a manner consistent with the HiTOP structural model: "Clustering of disorders according to what has been termed internalizing and externalizing factors represents an empirically supported framework" (APA, 2013, p. 13). Further down within this initial version of the HiTOP structural model are the five domains of detachment, antagonistic externalizing, disinhibited externalizing, thought disorder, and internalizing (along with somatoform). These five domains are not equivalent or confined to personality disorder (e.g., internalization

includes mood and anxiety disorders), but they do clearly align with the domains of the *DSM-5* Section III dimensional trait model (i.e., Criterion B), consisting of detachment, antagonism, disinhibition, psychoticism, and negative affectivity (Kotov et al., 2017).

Although the *DSM-5* AMPD dimensional trait model closely aligns with the current HiTOP structural model (Kotov et al., 2017) there is currently no explicit reference within HiTOP to the AMPD Criterion A deficits (or impairments). Indeed, if Criterion A deficits (or impairments) are considered to be independent of the Criterion B maladaptive personality traits, their placement within HiTOP is perhaps unclear. The purpose of the current paper is to review relevant research with respect to the potential inclusion and placement of Criterion A within HiTOP.

Criterion A and Criterion B

Criterion A consists of deficits or impairments in self-functioning (identity and self-direction) and interpersonal relatedness (empathy and intimacy). These deficits appear in two locations of the AMPD. First, they define the Level of Personality Functioning (LPF; Bender, Morey, & Skodol, 2011). The LPF is used to assess the severity of PD dysfunction or impairment, which in turn identifies the presence of PD. “The [LPF] rating is necessary for the diagnosis of a personality disorder (moderate or greater impairment) and can be used to specify the severity of impairment present” (APA, 2013, p. 772). Five levels of impairment (little to none, some, moderate, severe, and extreme) are specified for each of the areas (i.e., identity, self-direction, empathy, and intimacy). For example, at the severe level of identity impairment the boundaries with others are said to be confused or lacking, significant distortion and confusion in self-appraisal are

present, and hatred and aggression are dominant affects (APA, 2013). The severe level of impairment in empathy is defined by a pronounced inability to consider and understand others' motivations, an absence of attention to others' perspectives, as well as confusing and disorienting social interactions.

In addition, the self-other deficits constitute half of the diagnostic criteria for six personality disorders (identified therein as Criterion A), with two or more required for the disorder to be considered present. For example, for narcissistic PD, there are specified deficits in identity (e.g., exaggerated self-appraisal either as inflated or deflated), self-direction (e.g., goal setting based on gaining approval from others), empathy (e.g., inability to recognize or identify with the feelings or needs of others), and intimacy (e.g., relationships are largely superficial and exist to serve one's own self-esteem).

The A and B diagnostic criteria are derived from distinguishable scholarly traditions (Bender, Morey, & Skodol, 2011; Krueger & Markon, 2014; Waugh et al., 2017) and are intended to represent distinct components of personality (APA, 2013). However, in some cases, it is difficult to distinguish the deficits of Criterion A from the maladaptive traits of Criterion B. For example, the Criterion A deficit in empathy for antisocial PD is a "lack of concern for feelings, needs, or suffering of others; lack of remorse after hurting or mistreating another" (APA 2013, p. 764). Criterion B includes the maladaptive trait of callousness, which is similarly defined as a "lack of concern for feelings or problems of others; lack of guilt or remorse about the negative or harmful effects of one's actions on others" (APA, 2013, p. 764). For obsessive-compulsive PD (OCPD) , the Criterion A self-direction deficit involves "rigid and unreasonably high and inflexible internal

standards of behavior; overly conscientious" (APA, 2013, p. 768). Criterion B maladaptive traits for OCPD include rigid perfectionism as "an aspect of extreme conscientiousness" that includes a "rigid insistence on everything being flawless, perfect, and without errors or faults" (APA, 2013, p. 768).

In most other cases, there is not as much explicit redundancy, albeit some overlap is still apparent. For example, narcissistic PD Criterion B includes attention-seeking, which involves "excessive attempts to attract and be the focus of the attention of others; admiration seeking" (APA, 2013, p. 768), whereas for Criterion A the identity deficit involves an "excessive reference to others for self-definition and self-esteem regulation" (APA, 2013, p. 767). There is also an "exaggerated self-appraisal inflated" (APA, 2013, p. 767) as part of Criterion A, which would appear to mirror closely the grandiosity of Criterion B.

In other cases, there is no explicit overlap. For example, for borderline PD, none of the Criterion B maladaptive traits refer explicitly to an instability or uncertainty of self-image, whereas instability and uncertainty in self-image is a predominant feature of the Criterion A deficits and the LPF. The fact that this instability in self-image appears nowhere within the Criterion B trait model would suggest an important and fundamental distinction. On the other hand, this could also reflect simply a difference in coverage rather than a fundamental distinction between functional deficits (or impairments) and maladaptive traits. Instability or uncertainty in self-image is not included anywhere within the *DSM-5* dimensional trait model, but it is not the case that the *DSM-5* AMPD trait model is necessarily providing or covering all possible maladaptive traits. For example,

the Computerized Adaptive Test of Personality Disorder (CAT-PD; Simms et al., 2011), includes a number of traits not included within the *DSM-5* trait model, such as health anxiety, domineering, hostile aggression, norm violation, rigidity, rudeness, and workaholism. Indeed, other measures of maladaptive personality traits do include scales specifically assessing instability or uncertainty in self-image. For example, included within the Five Factor Borderline Inventory (FFBI; Mullins-Sweatt et al., 2012), a measure of maladaptive personality traits (aligned with domains of the Five Factor Model), is a Self-Disturbance scale (including such items as, “I sometimes wonder who I really am” and “I can be so different with different people that I wonder who I am”). Similarly, the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2009), a commonly used measure of a longstanding dimensional trait model of personality disorder (Livesley, 2001), includes a scale of “Identity Problems,” which again assesses for unstable sense of self or identity.

In sum, a consideration of the content of Criterion A and Criterion B would appear to suggest considerable overlap, but the degree of overlap and distinctiveness is an empirical question. If these were distinguishable empirically from one another, it would suggest that Criterion A would need to be added to the HiTOP model. If there were considerable overlap then it would suggest that Criterion A is already within HiTOP by virtue of the Criterion B traits. To address this question, we consider research concerning the relations between Criterion A and the general factor of PD as well as the traits of Criterion B.

General Factors of Personality Disorder and Psychopathology

As noted earlier, a general factor of psychopathology forms the highest level of HiTOP (Caspi et al., 2014; Kotov et al., 2017; Lahey et al., 2012; Lahey, Krueger, Rathouz, Waldman, & Zald, in press). There are compelling reasons to consider that this general factor of psychopathology, often referred to as the p-factor (Caspi et al., 2014), will align closely with the AMPD Criterion A deficits.

The Criterion A deficits are not only conjoined with the Criterion B traits to provide the diagnostic criteria for six PDs within the *DSM-5* AMPD (APA, 2013, pp. 764-769); they are also used to define the overall level of personality functioning to be considered when identifying the presence of a PD. “Disturbances in self and interpersonal functioning constitute the core of personality psychopathology” (APA, 2013, p. 762).

Consistent with this understanding, studies have suggested that the general factor of personality disorder, often referred to as g-PD, is defined largely by these deficits. Sharp and colleagues (2015) considered the covariation among interview-rated diagnostic criteria for the six DSM-IV PDs included within the DSM-5 Section III AMPD (i.e., they did not consider the diagnostic criteria for the dependent, histrionic, paranoid, or schizoid personality disorders). An exploratory bifactor analysis yielded a *g*-PD factor, along with six specific factors. They noted that all the borderline personality disorder (BPD) criteria loaded solely on the *g*-PD factor. Additional personality disorder criteria loaded on this factor (e.g., obsessive-compulsive, avoidant, and antisocial), but with only a few exceptions, these criteria also loaded on one of the additional specific factors. Sharp and colleagues therefore suggested that the *g*-PD factor was a substantive representation of the *DSM-5* Section III AMPD Criterion A. “Although we do

not yet know the exact nature of the general factor, to stimulate further research, we speculate on some intriguing interpretative possibilities . . . One answer may lie in Criterion A of the new *DSM-5*-III General Criteria of Personality Disorder" (p. 394). BPD is the only personality disorder that includes explicitly the more severe Criterion A deficits in identity within its *DSM-IV* criterion set. "BPD is unique in that impairment in the ability to maintain and use benign and coherent internal images of self and others are integrated into one disorder" (Sharp et al., 2015, p. 394). It is then perhaps consistent with the centrality of these deficits to BPD and to personality disorder that BPD loads heavily and specifically on the *g*-PD.

Wright, Hopwood, Skodol, and Morey (2016) used a bifactor modeling approach to characterize the covariation among interview-rated PD criteria (using the diagnostic criteria for all of the *DSM-IV* PDs) and found a *g*-PD factor along with five more specific factors. They, too, found that the BPD criteria loaded uniquely on the *g*-PD factor and not on any of the specific factors. The *g*-PD factor also correlated with all but one of the maladaptive personality trait scales of the Schedule for Nonadaptive and Adaptive Personality Inventory-2 (Clark, Simms, Wu, & Casillas, 2014); the exception was Exhibitionism. In comparison to the specific factors, *g*-PD had the highest concurrent and longitudinal associations with worsening in social, occupational, and leisurely functioning across several years, consistent with the findings obtained for the p-factor (Caspi et al., 2014; Lahey et al., 2012). In line with the Sharp et al. (2015) understanding of the g-PD factor, Wright et al. (2016) suggested that "one possible interpretation is that it reflects borderline personality organization (Kernberg, 1984), with

core impairments involving maladaptive self and other representations and identity formation" (p. 1129). Kernberg (1984) had proposed a broad continuum of dysfunction that would cover all of psychopathology, consisting of a neurotic level, a borderline level (including most personality disorders), and a psychotic level (including the severe forms of psychopathology, such as schizophrenia). Indeed, Kernberg (2012) has also suggested that *DSM-5* AMPD Criterion A is aligned well with his understanding of borderline personality organization.

It should be acknowledged, however, that not all g-PD studies have reported that the BPD criteria largely defined the general factor. Jahng et al. (2011) delineated a bifactor model of personality disorder and substance abuse syndromes. They reported that the personality disorders with the highest loadings were paranoid, schizoid, avoidant, and dependent (i.e., not borderline) and interpreted the g-PD as reflecting interpersonal dysfunction. "These disorders' symptoms have in common interpersonal distance or interpersonal problems" (Jahng et al., 2011, p. 665).

Muñoz-Champel, Gutierrez, Peri, and Torrubia (in press) used Goldberg's exploratory "bass-ackwards" method of factor analysis to delineate a hierarchical structure of personality pathology from self-reported PD symptom criteria. Their general factor of personality pathology correlated highly (e.g., $r > .50$) with nine DSM-IV personality disorders, as well as 13 of 22 scales of the DAPP-BQ (Livesley & Jackson, 2009). They did not provide a substantive interpretation of the *g*-PD, but they did explicitly suggest that their findings did "not portray borderline as a general factor" (p. 11). They noted that in the multi-factor exploratory analyses, most of the BPD criteria

loaded on multiple factors. BPD did correlate highly with the general factor, but it was just one of nine PDs that obtained large effect size relationships with the general factor.

Nevertheless, perhaps it should not be surprising that g-PD would align with the p-factor, and that these would in turn be highly related to BPD. The p-factor has correlated strongly with FFM neuroticism, antagonism, and low conscientiousness (Caspi et al., 2014; Tackett et al., 2013) as has the g-PD (Wright et al., 2016). In fact, this might also help to explain why BPD would be highly related to g-PD, as both are defined primarily by the same domains (e.g., high neuroticism, low conscientiousness, and high antagonism). In addition, PDs have been included within some p-factor studies and "Axis I" syndromes have been included in some g-PD studies. For example, antisocial PD was included within the p-factor study of Lahey et al. (2012), and substance use disorders were included within the g-PD study of Jahng et al. (2011).

General factors of personality (GFP) studies, albeit at times controversial with respect to the validity of a GFP (Hopwood, Wright, & Donnellan, 2011; Pettersson, Turkheimer, Horn, & Menatti, 2012), have also included measures of personality disorder and even psychopathology more generally. Irwing, Booth, Nyborg, and Rushton (2012) extracted a GFP from the clinical scales of the Minnesota Multiphasic Personality Inventory-2 (e.g., scales assessing for schizophrenia, mania, depression, and hypochondriasis, along with psychopathic deviate and social introversion). Rushton and Irwing (2009) extracted a GFP from the scales of the Millon Clinical Multiaxial Inventory-III (Millon, Millon, Davis, & Grossman, 2009; scales assessing for both "Axis I" and "Axis II" syndromes), the Personality Assessment Inventory (Morey, 2007; scales

assessing for Axis I syndromes, treatment consideration, and maladaptive interpersonal relatedness), and the DAPP-BQ (Livesley & Jackson, 2009; scales assessing for maladaptive personality traits). Rushton and Irwing understood these to be GFP studies, but they could also be understood to be g-PD and/or p-factor studies. Oltmanns, Smith, Oltmanns, and Widiger (in press) obtained g-PD, p-factor, and GFP general factors with commonly used measures for each, and reported substantial correlations of all three with one another (ranging from .70 to .92). In sum, to the extent that the Criterion A deficits are in fact central or common to all of the personality disorders, one would expect that they would be predominant within the general factor of personality disorder (Sharp et al., 2015; Wright et al., 2016) and thereby as well within the general factor of psychopathology more generally.

Criterion A and B Studies

There is now a substantial body of research concerning the DSM-5 AMPD Criterion B traits, with a number of studies documenting the ability of the Criterion B traits to account for variance in the *DSM-IV* personality disorder symptomatology (Bagby, 2013; Krueger & Markon, 2014; Rojas & Widiger, 2017). There are fewer studies concerning Criterion A, due perhaps in part to the initial absence of an explicit or direct self-report measure for their assessment, albeit the number of such studies is clearly growing.

Studies Comparing Criterion A versus B

One of the first explicit Criterion A studies was provided by Berghuis, Kamphuis, and Verheul (2012) in a study sampling 261 psychiatric patients. They reported evidence that the self-deficits of Criterion A lie outside of general personality structure, and

suggested that this is consistent with the *DSM-5* AMPD providing an explicit distinction between Criterion A and B. “Our findings support the distinction between personality traits and personality dysfunction laid down in the recent proposal by the Personality and Personality Disorders Work Group of the DSM-5 Task Force” (Berghuis et al., 2012, p. 704). Criterion B traits were assessed by the NEO Personality Inventory-Revised (NEO PI-R; Costa & McCrae, 1992), whose domain of neuroticism is closely aligned with DSM-5 Section III Criterion B negative affectivity (Krueger et al., 2012). For the assessment of Criterion A, they used (a) the 19 scales of the General Assessment of Personality Disorders (GAPD), which includes 15 scales of self-identity dysfunction and 4 scales of interpersonal dysfunction (Livesley, 2006) and (b) the 16 scales from the Severity Indices for Personality Problems (SIPP-118; Verheul et al., 2008). The scales from the GAPD and SIPP-118 clearly assess constructs closely comparable to the Criterion A deficits, including (for instance) lack of self-clarity, self-state disjunctions, fragmentary self-other representations, defective sense of self, and poorly differentiated images of others. It is also perhaps noteworthy that these measures were developed by members of the *DSM*-5 Personality and Personality Disorders Work Group.

Berghuis et al. (2012) submitted the correlations among the NEO PI-R, GAPD, and SIPP-118 scales to a Principal Components Analysis. The NEO PI-R scales did load substantially on and helped to define six of the seven factors. However, the first (Self-Identity) factor was not at all defined by any NEO PI-R scales. It was confined simply to 19 scales of self-pathology (15 from the GAPD and 4 from the SIPP-118). Berghuis et al. therefore concluded that the core components of personality disorder (i.e., self-

pathology) and the FFM involved “clearly distinct components of personality” (Berghuis et al., 2012, p. 704).

Oltmanns and Widiger (2016), however, subsequently suggested that the results of Berghuis et al. (2012) might simply have reflected the phenomenon of a bloated specific factor (Cattell & Tsujioka, 1964; Wright, 2017). Berghuis et al. (2012) had included a large number of scales assessing alternative forms of self-pathology (i.e., 15 from the GAPD and 4 from the SIPP-118). Even if these scales are validly understood as components of neuroticism, they would likely correlate much more highly with one another than with other facets of neuroticism, such as angry hostility, vulnerability, self-consciousness, and impulsivity. If one facet of neuroticism is much more heavily represented than the other facets of neuroticism, it will likely yield a factor independent of the other facets of neuroticism (DeYoung, 2011). Indeed, Oltmanns and Widiger (2016) demonstrated that self-pathology scales from the GAPD loaded within neuroticism when the representation of this potential facet of neuroticism was not represented excessively relative to other facets of neuroticism.

Berghuis, Kamphuis, and Verheul (2014) used the same data set of Berguis et al. (2012) to provide a more direct test of the distinction between Criterion A and Criterion B. Their original data set had included not only the GAPD and SIPP-118, but also a reasonable proxy measure of the Criterion B traits, provided by the DAPP-BQ (Livesley & Jackson, 2009). The DAPP-BQ assesses for such maladaptive traits as affective lability, callousness, and anxiousness, which are closely congruent with DSM-5 Criterion B. Berghuis et al. also administered the Structured Clinical Interview for DSM-

IV Axis II Personality Disorders (SCID-II; First & Gibbon, 2004) as an assessment of the DSM-IV personality disorders.

Berghuis et al. (2014) reported substantial correlations of the GAPD and SIPP-118 with the DAPP-BQ. For example, GAPD Self-Pathology and SIPP-118 Identity Integration correlated .88 and -.82 (respectively) with DAPP-BQ Emotional Dysregulation. The GAPD and SIPP-118 accounted for 34% and 32% (respectively) of the variance within total PD. The DAPP-BQ accounted for 42%. With respect to incremental validity, the GAPD had no incremental validity over the DAPP-BQ, and the SIPP-118 had only 1%. The DAPP-BQ had 7% over the GAPD and 4% over the SIPP-118. With respect to the individual PDs, the GAPD had incremental validity over the DAPP-BQ ranging from 1% to 2%, whereas the DAPP-BQ incremental validity ranged from 4% (paranoid) to 15% (avoidant). The SIPP-118 evidenced incremental validity over the DAPP-BQ ranging from 3% (avoidant) to 7% (borderline), whereas incremental validity of the DAPP-BQ over the SIPP-118 ranged from 4% (paranoid) to 12% (avoidant).

Berghuis et al. (2014) emphasized the positive results for the SIPP-118 relative to the DAPP-BQ. “The SIPP-118 significantly added to the prediction provided by the DAPP-BQ for every specific PD dimension analyzed” (p. 415). More generally, they concluded that the results supported the AMPD distinction between Criterion A and Criterion B because both accounted for unique variance within PDs. “The combination of general personality dysfunction models and personality traits models provided incremental information about the presence and severity of personality disorders,

suggesting that an integrative approach of multiple perspectives might serve comprehensive assessment of personality disorders" (Berghuis et al., 2014, p. 410).

Bastiaansen, De Fruyt, Rossi, Schotte, and Hofmans (2013) administered the NEO PI-R (Costa & McCrae, 1992) and the SIPP-118 (Verheul et al., 2008), along with the Assessment of DSM-IV Personality Disorders (Schotte et al., 2004), to 159 psychiatric patients. They reported substantial convergence of the NEO PI-R and SIPP-118 scales (e.g., Neuroticism correlated -.79 with SIPP-II8 Identity Integration and Agreeableness correlated .61 with Responsibility), but each also demonstrated incremental validity. SIPP-118 explained from 3% (avoidant) to 10% (schizoid and narcissistic) additional variance, and the NEO PI-R explained from 6% (dependent) to 18% (avoidant) additional variance. Bastiannsen et al. (2013) suggested that their findings "can be interpreted as initial support for the two-component PD description . . . in the alternative DSM-5 proposal" (p. 301), although they acknowledged that the NEO PI-R may not be understood as a direct measure of the DSM-5 maladaptive traits.

Few et al. (2013) administered the SCID-II (First & Gibbon, 2004) to 109 persons currently within psychological-psychiatric treatment. To assess Criterion A, the interviewers, after conducting the *DSM-IV* PD interviews, completed the *DSM-5* AMPD LPF Scale (APA, 2013), which assesses the four components of Criterion A. To assess Criterion B, the interviews also completed the *DSM-5* Clinicians' Personality Trait Rating Form (PTRF; APA, 2011), which assesses each of the 25 AMPD Criterion B traits. Few et al. also administered the Personality Inventory for *DSM-5* (PID-5; Krueger et al., 2012), which provides a self-report assessment of the *DSM-5* AMPD Criterion B

maladaptive traits. The LPF Criterion A Identity score correlated .69 with PID-5 Negative Affectivity; Self-Directedness, though, correlated only .33 with Disinhibition (albeit .51 with Negative Affectivity); Empathy correlated .43 with Antagonism; Intimacy correlated .54 with Detachment. The four Criterion A scores each related strongly with the sum of the *DSM-IV* PDs (ranging from .53 to .59). However, the PTRF Criterion B assessments accounted for 14% (avoidant) to 50% (antisocial) additional variance over and above the LPF Criterion A assessments. The LPF Criterion A assessments did not account for any significant additional variance for any *DSM-IV* PD (ranging from 0% to 5%), over and above the PTRF Criterion B assessments. Few et al. (2013) concluded, “the impairment ratings may have limited clinical utility in that they did not provide incremental information beyond pathological personality traits in the explanation of PD constructs” (p. 1068).

Hentschel and Pukrop (2014) administered the GAPD and DAPP-BQ, along with the SCID-II (First & Gibbon, 2004), to 149 psychiatric patients (inpatient and outpatient). The DAPP-BQ and GAPD again correlated substantially. DAPP-BQ Emotional Dysregulation correlated .86 with GAPD Self-Pathology; DAPP-BQ Inhibitedness and Dissocial correlated .64 and .42 (respectively) with GAPD Interpersonal Pathology (DAPP-BQ Emotional Dysregulation correlated .54). With respect to incremental validity, the GAPD accounted for 51% of the total PD variance, with the DAPP-BQ accounting for 7.5% additional variance. The DAPP-BQ accounted for 57% of the variance in total PD, with the GAPD explaining only 1.5% additional variance, a nonsignificant finding. Hentschel and Pukrop (2014) concluded, “Criterion B shows incremental validity over

criterion A but criterion A only in part over criterion B" (p. 412). Perhaps most importantly for the purposes of the current review, they emphasized that there is substantial overlap of Criterion A and B.

Clark and Ro (2014) administered a large number of measures of impaired functioning and maladaptive traits to a mixed sample of community adults and outpatients. The measures of personality impairment included scales from the SIPP-Short Form, a 60-item version of the SIPP-118 (Verheul et al., 2008), Livesley's GAPD, and Parker and colleague's (2004) Measure of Disordered Personality Functioning (MDPF), which also has scales for self and interpersonal impairment. They extracted five factors and found that measures of personality impairment and maladaptive traits were intermixed in each of the first two factors: The first factor was marked by measures of self-impairment and multiple scales tapping negative affectivity, whereas the second factor was marked by measures of interpersonal impairment and scales tapping the maladaptive traits of detachment and antagonism. Given this intertwining of personality impairment and maladaptive traits, they concluded "there remains the empirical challenge of showing that we can assess traits and functioning distinctly and reliably" (p. 67).

Fossati, Borroni, Somma, Markon, and Krueger (2017) similarly used the Parker et al. (2004) MDPF as a measure of the Criterion A impairments in a sample of 333 community participants, with the MDPF Noncoping scales aligning with Criterion A self-impairments and the MDPF Noncooperativeness scale aligning with Criterion B. They reported substantial correlations of the MDPF scales with PID-5 domain and facet

scales, concluding that there is perhaps little distinction. “The majority of pathological traits imply dysfunctions in self and interpersonal functioning“ (Fossati et al., 2017, p. 279).

Zimmermann et al. (2015) had 145 therapists rate a patient who had personality problems, and 515 lay persons describe someone they knew (one third of whom were considered to be “psychologically healthy” and two-thirds had “mental health or interpersonal problems”), with respect to the DSM-5 Section III LPF, as well as with the informant version of the PID-5 (Markon, Quilty, Bagby, & Krueger, 2013). Participants also provided a single-item assessment of overall level of personality functioning. Zimmermann et al. reported that, in both samples, only the self-pathology rating obtained incremental validity with respect to global level of functioning (Criterion B traits obtained no incremental validity). They also reported substantial covariation and apparent overlap across Criterion A and B. Most importantly for the current review, perhaps, is that they conducted a joint factor analysis of the four LPF scales with the 25 trait scales, yielding a seven-factor solution. Zimmermann et al. indicated that “the first two factors resembled the self- and interpersonal functioning factors [of the LPF] but were also saturated with specific content from the Criterion B trait facets” (p. 540). The first factor was identified as a Self-Pathology factor, which had a high primary loading for Criterion B Depressivity and moderate loadings for Separation Insecurity, Anhedonia, and Rigid Perfectionism (which loaded negatively on this dimension). The second factor was said to capture Criterion A Interpersonal Pathology, but also had strong primary loadings for Criterion B Grandiosity and Callousness, as well as

moderate cross-loadings for Hostility. The additional five factors were defined by Criterion B traits. Zimmermann et al. concluded that “our findings point to the fact that the distinction between Criteria A and B is not as clear cut as the model suggests” (p. 544).

Creswell, Bachrach, Wright, Pinto, and Ansell (2016) administered the PID-5 and GAPD to a sample of 877 persons recruited on Craigslist. They related the two measures of personality to alcohol use. They reported that “despite a significant zero-order association between [GAPD] general personality pathology and [alcohol use] scores, general personality pathology no longer predicted hazardous alcohol use once Antagonism and Disinhibition were added into the models” (p 108).

Rossi, Debast, and Van Alphen (2017) administered the PID-5 and SIPP-Short Form (SIPP-SF; Verheul et al., 2008) to a sample of younger (N=210) and older (N=171) adults. They reported considerable convergence of the PID-5 scales with the SIPP-SF scales (e.g., PID-5 Disinhibition correlated .68 with SIPP-SF Self-Control and .70 with SIPP-SF Responsibility; PID-5 Negative Affectivity correlated .55 with Identity Integration; and PID-5 Antagonism correlated .53 with Social Concordance). Rossi et al. though did not speak to their potential overlap and/or distinctiveness, as the focus of the study was concerned instead with the validity of the SIPP-SF within older adults. The results of Rossi et al. were subsequently replicated by Debast, Rossi, and van Alphen (2017) with an abbreviated measure of the PID-5, again administered to an older adult (over 65) community sample.

Roche (in press) conducted a 14-day electronic diary study, assessing both daily

levels of Criterion A and B along with daily levels of personality dysfunction across several domains in a sample of 175 college students. The shared variance was substantial, but Criterion A and B both evidenced a degree of incremental validity in accounting for different aspects of dysfunction. They concluded that “Both Criterion A and B are uniquely predictive of several outcomes, suggesting both Criterion A and B are useful to retain in the AMPD model moving forward” (p. 21). Comparable results were provided in an earlier study by Roche, Jacobson, and Pincus (2016).

Studies Concerning Specific Personality Disorders

Two recent studies have examined OCPD specifically (Liggett & Sellbom, in press; Liggett, Sellbom, & Carmichael, 2017). Liggett, Sellbom et al. (2017) administered the PID-5, the SCID-II-Personality Questionnaire and Personality Diagnostic Questionnaire (PDQ-4; Bagby & Farvolden, 2004) OCPD scales, and several impairment measures, one which was specifically designed to assess Criterion A OCPD-specific impairment (Liggett, Carmichael, Smith, & Sellbom, 2017) to 313 community/university student adults. Liggett, Sellbom et al. (2017) found that the OCPD-specific Criterion A measure correlated moderately with a latent factor representation of OCPD, and added a statistically significant increment above and beyond Criterion B personality traits in a hierarchical regression model. Liggett and Sellbom (in press) replicated these general findings using a sample of 212 community-dwelling individuals who reported being in mental health treatment currently or within the past 12 months. They also had informants who knew them well rate them on informant versions of the PID-5, SCID-II-PQ OCPD scale, and the OCPD-specific Criterion A measure mentioned earlier. In both

the self-report and the informant analysis, Criterion A impairment was observed to statistically increment Criterion B personality traits in the prediction of SCID-II-PQ OCPD symptom scores. Liggett and Sellbom (in press) concluded that “the alternative model’s reliance on disorder-specific impairment was strongly supported by the study’s results” (p. 23).

Wygant et al. (2016) administered the SCID-II (First & Gibbon, 2004) and the Psychopathy Checklist-Revised (PCL-R; Hare, 2003) to 200 male inmates, along with the PID-5 (Krueger et al., 2012) and the *DSM-5* PTRF (APA, 2011) to assess Criterion B traits; and 14 interview-based items developed to assess for the Criterion A impairments specified for antisocial personality disorder (ASPD). In a hierarchical regression, the seven PTRF ASPD traits were entered first, followed by the four impairment-deficit scales to account for variance in *DSM-IV* ASPD and PCL-R psychopathy. The authors noted that, “In the regression analyses, the four impairment scores significantly augmented the seven PTRF ASPD traits in all analyses” (p. 236), with increments in variance ranging from 3 to 6 percent (although a reverse comparison, evaluating whether the traits had incremental validity over the impairment-deficits, was not conducted). They concluded that, “Our analyses yielded consistent evidence that impairment scores indeed augmented prediction for the trait profile in all instances, with specific impairment facets mapping onto conceptually relevant psychopathy domains” (p. 237). They suggested that their findings were more encouraging than the results reported by Few et al. (2013) because their assessment included items (questions) written explicitly with respect to the deficits specified for ASPD Criterion A.

Sleep, Wygant, and Miller (in press) compared the ability of Criterion A and Criterion B to account for the variance within ASPD, BPD, and narcissistic personality disorder (NPD) in a sample of 200 female inmates. They reported substantial convergence of Criterion A and B for ASPD (r = .57) and BPD (.68) but not for NPD (.19). To examine the unique variance that Criterion A and B were able to capture in each target PD, regression analyses were conducted in which each PD was regressed simultaneously on the impairment and trait composites. In all cases, the trait composites accounted for a substantial proportion of the variance, ranging from 18% (NPD) to 27% (BPD) of unique variance in the PDs. Conversely, the impairment ratings only accounted for significant (and modest) amount of variance in two of these PDs (NPD and BPD), with semi-partial squared values ranging from 0% (ASPD) to 7% (NPD).

Criterion A Studies Not Involving Criterion B

Additional studies concerning Criterion A have been conducted, but these studies have not directly compared or related Criterion A with Criterion B. For example, Hentschel and Livesley (2013) reported a strong relationship of GAPD Criterion A scales with the *DSM-IV* personality disorders (with the self-scales showing incremental validity over the interpersonal scales) but made no comparisons with Criterion B traits. Morey, Bender, and Skodol (2013) indicated that the AMPD LPF had incremental validity over DSM-IV PD symptomatology in accounting for clinical judgments of psychosocial functioning, short-term risk, estimated prognosis, and optimal level of treatment intensity.

Recently Developed LPF and Criterion A Measures

More recently, a number of self-report measures have been developed that assess explicitly *DSM-5* Section III AMPD Criterion A: the *DSM-5* Levels of Personality Functioning Questionnaire (DLOPFQ; Huprich et al., in press), the Level of Personality Functioning Scale-Brief Form (LPFS-BF; Hutsebaut, Feenstra, & Kamphuis, 2016), and the Level of Personality Functioning Scale-Self Report (LPFS-SR; Morey, 2017). Each of these self-report measures assess for the LPF of Section III. Anderson and Sellbom (2018) have also developed a self-report measure of the Criterion A deficits specific to each personality disorder (two of the scales were used in a study by Liggett, Carmichael, Smith, & Sellbom, 2017), but no title was provided for this measure. In some studies, these measures have been compared with or related to the *DSM-5* Section III Criterion B traits. This was not the case though in other studies. Hutsebaut et al. (2016) correlated the LPFS-BF with the *DSM-IV* personality disorders; Liggett et al. (2017) correlated the Criterion A scales for the obsessive-compulsive and avoidant personality disorders with general measures of dysfunction and impairment; and Morey (2017) correlated his LPFS-SR with the DAPP-BQ and SIPP-118 scales.

In three of the studies using these measures, the Criterion A measures have been related to DSM-5 Section III Criterion B traits. The LPFS-SR (Morey, 2017) is an 80-item measure developed to assess the four components of the *DSM-5* Section III LPF (i.e., Identity, Self-Direction, Intimacy, and Empathy). Hopwood, Good and Morey (in press) administered the LPFS-SR, the CAT-PD (Simms et al., 2011), the PID-5 (Krueger et al., 2012), the PDQ-4 ((Bagby & Farvolden, 2004), and the Big Five Inventory-2 (Soto & John, 2017), along with additional measures, to multiple samples

obtained from Amazon's Mechanical Turk. They reported substantial correlations for all of the LPFS-SR scales with the FFM (e.g., .67 for Self with Neuroticism, -.60 for Self-Direction with Conscientiousness, -.56 for Intimacy with Agreeableness, and -.55 for Empathy with Agreeableness). Correlations, not surprisingly, were even higher with the CAT-PD and PID-5 scales. LPFS-SR Identity correlated .70 with CAT-PD Affective Lability, Self-Direction correlated .67 with Irresponsibility, Empathy correlated .60 with Hostile Aggression, and Intimacy correlated .65 with Relationship Insecurity. With respect to the PID-5, LPFS-SR Identity correlated .66 with Emotional Lability and .74 with Depressivity; Self-Direction correlated .70 with Irresponsibility; Empathy correlated .70 with Callousness; and Intimacy correlated .61 with Hostility (.50 with Separation Insecurity). The LPFS-SR scales also correlated substantially with the DSM-IV personality disorders, but no direct comparisons or incremental validity analyses with respect to the CAT-PD or PID-5 scales were provided (the study focused more on discriminant validity). They concluded that "this paper supports the validity of a new self-report measure that corresponds directly to the DSM-5 alternative model Criterion A," and in the discussion section suggest alternative models for potentially distinguishing between Criterion A and B.

The DLOPFQ (Huprich et al., in press) includes four scales (Identity, Self-Directedness, Empathy, and Intimacy), with each including two subscales, one for the assessment of the deficits (or impairments)for within personal relationships and the other assessing the deficits within work or school. In a sample of 140 patients (83 from outpatient psychiatry and 57 from internal medicine), they reported substantial

correlations of some DLOPFQ scales with respective scales from the PID-5-Brief Form (PID-5-BF; Krueger et al., 2012), such as .68 for DLOPFQ Identity with PID-5 Negative Affectivity, and .66 for DLOPFQ Intimacy with PID-5 Detachment. However, DLOPFQ Self-Directedness correlated “only” .45 with PID-5 Disinhibition (DLOPFQ Self-Directedness did correlate .64 with PID-5 Negative Affectivity), and DLOPFQ Empathy correlated only .39 with PID-5 Antagonism (DLOPFQ Empathy correlated .56 with PID-5 Negative Affectivity). Huprich et al. also compared the DLOPFQ impairment and PID-5-BF domain scales with respect to their ability to account for unique variance in a variety of measures of relationship quality (i.e., attachment, dependency) and overall functioning (i.e., well-being, health status). They reported that both obtained incremental validity over one another, albeit the DLOPFQ typically accounted for more unique variance than the PID-5. In sum, they acknowledged that although the “DLOPFQ shares substantial amounts of variance with the PID-5-BF” (p. 16) the DLOPFQ did appear to account up to 14% more variance within a respective criterion measure. They concluded that “we believe our findings contradict those of Few et al. (2013) who suggested that assessing LPF may not be necessary when simultaneously assessing traits” (p. 21).

Bach and Hutsebaut (in press) administered an updated version of the LPFS-BF to 120 psychiatric outpatient (N=121) and prison treatment (N=107) units, along with an abbreviated version of the PID-5 (Maples et al., 2015) and measures of social and clinical dysfunction. Similar perhaps to the results of Huprich et al. (in press), they suggested that the LPFS-BF is “specifically useful for capturing lack of psychological

health and fulfillment over and above PID-5 traits" (p. 7). They also reported though that the PID-5 total score obtained comparable incremental validity over the LPFS-BF, and that the incremental validity that was obtained was relatively small in comparison to the shared variance.

Anderson and Sellbom (2018) constructed scales to assess the self-interpersonal deficits that are specified within Criterion A for each respective Section III PD. They correlated their Criterion A scales for each of the six *DSM-5* Section III Pds with a measure of the *DSM-5* Section II (DSM-IV) PDs, as well as with the PID-5 trait scales specified for each respective PD (e.g., the sum of the PID-5 scales of Grandiosity and Attention-Seeking for narcissistic PD) in a sample of 347 undergraduates. The correlations were often quite substantial (e.g., .78 for avoidant, .75 for borderline, .60 for obsessive-compulsive, and .67 for schizotypal, albeit "only" .48 for antisocial and .45 for narcissistic). They further compared the incremental validity of the Criterion A deficits and Criterion B traits with respect to accounting for variance within the respective DSM-IV PDs, considering only the PID-5 trait scales that were specified for each respective DSM-5 Section III PD (e.g., again only the traits of grandiosity and attention-seeking for narcissistic PD). The Section III Criterion B traits obtained incremental validity over the Criterion A traits for five of the six PDs (the exception occurred for avoidant). The Section III Criterion A deficits obtained incremental validity only for avoidant PD. Anderson and Sellbom (in press) concluded that "our results continue to call into question the utility of the measurement of impairment as a necessary component in assessing and diagnosing PDs" (p. 10).

Conclusions

Many of the Criterion A and B studies have been concerned with the question of whether Criterion A is really necessary; or more specifically, whether Criterion A deficits have incremental validity over Criterion B traits. However, incremental validity is not the specific or precise concern of the current paper. The current paper is concerned with the questions of whether Criterion A can be included within the HiTOP model and, if so, where. On the other hand, to the extent that Criterion A and B are independent of one another, this would have an impact on the location of Criterion A within HiTOP -- or whether it needs to be included at all.

The results of this review would suggest that the self-interpersonal deficits (or impairments) of Criterion A can to an appreciable extent be included within the HiTOP framework. There is even reason to expect that perhaps they would provide a predominant component of the general factor (Sharp et al., 2015; Wright et al., 2016). However, it must be acknowledged that how the general factor is to be understood remains open to debate (Caspi et al., 2014; Jahng et al., 2011; Lahey et al., 2012; Oltmanns et al., in press; Sharp et al., 2015; Wright et al., 2016) and will need to be clarified through further systematic research.

An additional question is whether the Criterion A self-other deficits would fall within one or more of the five (of six) domains of internalizing, antagonistic externalizing, disinhibited externalizing, detachment, and thought disorder (along with somatoform) or instead form their own independent factor. Based on the considerable overlap (APA, 2013) and covariation of the Criterion A deficits and Criterion B traits (e.g., Anderson &

Sellbom, 2018; Bach & Hutsebaut, in press; Berghuis et al., 2014; Clark & Ro, 2014; Few et al., 2013; Fossati et al., 2017; Hentschel & Pukrop; 2014; Huprich et al., in press; Hopwood et al., in press; Sleep et al., in press), one might expect that they will comfortably load on the same factors (e.g., perhaps Identity on internalization [along with neuroticism], Self-Direction on disinhibited externalizing, Empathy on antagonistic externalizing, and Intimacy on Detachment), consistent with the factor analytic results of Berghuis et al. (2012) and Zimmermann et al. (2015). However, if the factor analysis includes a large number of self and/or interpersonal deficit (or impairment) scales relative to the maladaptive personality trait scales (and other Axis I components of these domains), they might instead bind together to form their own distinct factor (Oltmanns & Widiger, 2016; Wright, 2017). In any case, one clear recommendation of this paper is for future studies to explore this question empirically. With the presence now of multiple measures of the Criterion A deficits (i.e., the DLOPFQ; Huprich et al., in press; the LPFS-BF; Hutsebaut, Feenstra, & Kamphuis, 2016; and the LPFS-SR; Morey, 2017), such studies are quite feasible.

It is also conceivable that further refinement in the construct specification and assessment will lead to better differentiation. Current research has also been confined largely to self-report, and it would clearly be useful to expand the method of assessment (e.g., including informants and behavioral outcomes). In any case, what is clearly evident is that the overlap and potential distinctions of Criterion A and B will likely remain a matter of continued empirical exploration and debate.

References

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington, VA: University of Vermont Research Center for Children, Youth, and Families.

American Psychiatric Association. (2011). *Changes to the reformulation of personality disorders for DSM-5*. Retrieved from www.dsm5.org/ProposedRevisions/Pages/PersonalityandPersonalityDisorders.aspx

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders.* (5th ed.). Washington, DC: American Psychiatric Association.

Anderson, J. L., & Sellbom, M. (2018). Evaluating the DSM–5 Section III personality disorder impairment criteria. *Personality Disorders: Theory, Research, and Treatment, 9,* 51-61.

Bach, B., & Hutsebaut, J. (in press). Level of Personality Functioning Scale-Brief Form 2.0: Utility in capturing personality problems in psychiatric outpatients and incarcerated addicts. *Journal of Personality Assessment*.

Bagby, R. M. (2013). Introduction to special issue on the Personality Inventory for DSM-5 (PID-5). *Assessment, 20*, 267-268.

Bagby, R. M., & Farvolden, P. (2004). The Personality Diagnostic Questionnaire-4 (PDQ-4). In M. J. Hilsenroth, D. L. Segal, & M. Hersen (Eds.), *Comprehensive handbook of psychological assessment, Volume 2. Personality assessment* (pp. 122-133). NY: John Wiley.

Bastiaansen, L., De Fruyt, F., Rossi, G., Schotte, C., & Hofmans, J. (2013). Personality

disorder dysfunction versus traits: Structural and conceptual issues. *Personality Disorders: Theory, Research, and Treatment*, *4*(4), 293-303.

Bender, D. S., Morey, L. C., & Skodol, A. E. (2011). Toward a model for assessing level of personality functioning in *DSM–5*, part I: A review of theory and methods. *Journal of Personality Assessment*, *93*, 332-346.

Berghuis, H., Kamphuis, J. H., & Verheul, R. (2012). Core features of personality disorder: Differentiating general personality dysfunctioning from personality traits. *Journal of Personality Disorders, 26,* 704-716.

Berghuis, H., Kamphuis, J. H., & Verheul, R. (2014). Specific personality traits and general personality dysfunction as predictors of the presence and severity of personality disorders in a clinical sample. *Journal of Personality Assessment*, *96*, 410-416.

Caspi, A., Houts, R. M., Belsky, D. W., Goldman-Mellor, C. J., Harrington, H., Israel, S., … Moffitt, T. E. (2014). The p factor: One general psychopathology factor in the structure of psychiatric disorders? *Clinical Psychological Science, 2*, 119-137.

Cattell, R. B., & Tsujioka, B. (1964). The importance of factor-trueness and validity, versus homogeneity and orthogonality, in test scales. *Educational and Psychological Measurement, 1,* 3-30.

Clark, L. A. (2007). Assessment and diagnosis of personality disorder: Perennial issues and an emerging reconceptualization. *Annual Review of Psychology, 57*, 277-257.

Clark, L. A., & Ro, E. (2014). Three-pronged assessment and diagnosis of personality disorder and its consequences: Personality functioning, pathological traits, and psychosocial disability*. Personality Disorders: Theory, Research, & Treatment*, 5, 55-69.

Clark, L. A., Simms, L. J., Wu, Kevin, D., & Casillas, A. (2014). *Schedule for Nonadapt-ve and Adaptive Personality-2nd Edition* (SNAP-2): *Manual for Administration, Scoring, and Interpretation*. Notre Dame, IN: University of Notre Dame.

Clark, L. A., & Watson, D. (2008). Temperament: An organizing paradigm for trait psychology. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed., pp. 265–286). NY: Guilford Press.

Costa, P. T., & McCrae, R. R. (1992). *Professional manual for the NEO Personality Inventory (NEO-PI-R) and NEO Five Factor Inventory (NEO-FFI).* Odessa, FL : Psychological Assessment Resources.

Creswell, K. G., Bachrach, R. L., Wright, A. G. C., Pinto, A., & Ansell, E. (2016). Predicting problematic alcohol use with the DSM-5 alternative model of personality pathology. *Personality Disorders: Theory, Research, and Treatment, 7*, 103-111.

Debast, I., Rossi, G., & van Alphen, S. P. J. (2017). Construct validity of the DSM-5 Section III maladaptive trait domains in older adults. *Journal of Personality Disorders, 31*, 671-688.

DeYoung, C. G. (2011). Intelligence and personality. In R. J. Sternberg & S. B. Kaufman (Eds.), *The Cambridge handbook of intelligence* (711-737). New York, NY: Cambridge University Press.

Few, L. R., Miller, J. D., Rothbaum, A. O., Meller, S., Maples, S., Terry, J., Collins, B. & Mackillop, J. (2013). Examination of the Section III *DSM-5* diagnostic system to personality disorders in an outpatient clinical sample. *Journal of Abnormal Psychology, 122,* 1057-1069

First, M. B., & Gibbon, M. (2004). The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) and the Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II). In M. J., Hilsenroth, D. L. Segal, & M. Hersen (Eds.). *Comprehensive handbook of psychological assessment*, *Volume 2. Personality assessment* (pp. 134-143). NY: John Wiley.

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

Forbush, K. T., & Watson, D. (2013). The structure of common and uncommon mental disorders. *Psychological Medicine, 43*, 97-108.

Fossati, A., Borroni, S., Somma, A., Markon, K. E., & Krueger, R. F. (2017). Testing relationships between DSM-5 Section III maladaptive traits and measures of self and interpersonal impairment in Italian community dwelling adults. *Personality Disorders: Theory, Research, and Treatment, 8*, 275–280.

Hare, R. D. (2003). Hare Psychopathy Checklist Revised (PCL-R). Technical manual. North Tomawanda, NY: Multi-Health Systems.

Hentschel, A. G., & Livesley, W. J. (2013). The General Assessment of Personality Disorder (GAPD): Factor structure, incremental validity of self-pathology, and relations to *DSM-IV* personality disorders. *Journal of Personality Assessment*, *95*, 479-485.

Hentschel, A. G., & Pukrop, R. (2014). The essential features of personality disorder in DSM-5: The relationship between criteria A and B. *Journal of Nervous and Mental Disease*, *202*, 412-418.

Hopwood, C. J., Good, E. W., & Morey, L. C. (in press). Validity of the DSM-5 Levels of Personality Functioning Scale-Self Report. *Journal of Personality Assessment*.

Hopwood, C. J., Wright, A. G., & Donnellan, M. B. (2011). Evaluating the evidence for the general factor of personality across multiple inventories. *Journal of Research in Personality*, *45*, 468-478.

Huprich, S. K., Nelson, S. M., Meehan, K. B., Siefert, C. J., Haggerty, G., Sexton, J., …, & Blade, L. (in press). Introduction of the DSM-5 Levels of Personality Functioning Questionnaire (DLOPFQ). *Personality Disorders: Theory, Research, and Treatment*.

Hutsebaut, J., Feenstra, D. J., & Kamphuis, J. H. (2016). Development and preliminary psychometric evaluation of a brief self-report questionnaire for the assessment of the *DSM-5* level of personality functioning scale: The LPFS Brief Form (LPFS-BF). *Personality Disorders: Theory, Research, and Treatment, 7(2)*, 192-197.

Irwing, PJ., Booth, T., Nyborg, H., & Rushton, J. P. (2012). Are g and the General Factor of Personality (GFP) correlated? *Intelligence, 40*, 296-305.

Jahng, S., Trull, T. J., Wood, P. K., Tragesser, S. L., Tomko, R., Grant, J. D., ... & Sher, K. J. (2011). Distinguishing general and specific personality disorder features and implications for substance dependence comorbidity. *Journal of Abnormal Psychology*, *120*, 656-669.

Kernberg, O. F. (1984). *Severe personality disorders: Psychotherapeutic strategies.* New Haven, CT: Yale University Press.

Kernberg, O. F. (2012). Overview and critique of the classification of personality disorders proposed for DSM-V. *Swiss Archives of Neurology and Psychiatry, 163*, 234-238.

Kotov, R. (2016). The quantitative classification of mental illness: Emerging solution to boundary problems. In E. Bromet (Ed.), *Long-Term Outcomes in Psychopathology Research: Rethinking the Scientific Agenda* (pp. 140-157). New York, NY: Oxford University Press.

Kotov, R., Krueger, R.F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, M., . . . Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology: A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology*, *126*, 454-477.

Kotov, R., Ruggero, C. J., Krueger, R. F., Watson, D., Yuan, Q., & Zimmerman, M. (2011). New dimensions in the quantitative classification of mental illness. *Archives of General Psychiatry, 68*, 1003-1011.

Krueger, R. F., Derringer, J., Markon, K. F., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for *DSM-5*. *Psychological Medicine, 42,* 1879-1890.

Krueger, R. F., & Eaton, N. R. (2010). Personality traits and the classification of mental disorders: toward a complete integration in *DSM-V* and an empirical model of psychopathology. *Personality Disorders: Theory, Research, and Treatment*, *1*, 97-118.

Krueger R. F., Eaton, N. R., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2011). Personality in *DSM-5*: Helping delineate personality disorder content and framing the meta-structure. *Journal of Personality Assessment*, *93,* 325-331.

Krueger, R. F., & Markon, K. E. (2006). Reinterpreting comorbidity: A model-based approach to understanding and classifying psychopathology. *Annual Review of Clinical Psychology, 2*, 111-133.

Krueger, R. F., & Markon, K. E. (2014). The role of the *DSM-5* personality trait model in moving toward a quantitative and empirically based approach to classifying personality and psychopathology. *Annual Review of Clinical Psychology, 10*, 477-501.

Kupfer, D. J., First, M. B. & Regier, D. A. (Eds.). (2002). Introduction. In D. J. Kupfer, M. B. First, & D. A. Regier (Eds.), *A research agenda for DSM-V* (pp. xv-xxiii). Washington, DC: American Psychiatric Association.

Lahey, B. B., Applegate, B., Hakes, J. K., Zald, D. H., Hariri, A. R., & Rathouz, P. J. (2012). Is there a general factor of prevalent psychopathology during adulthood? *Journal of Abnormal Psychology, 121*, 971-977.

Lahey, B. B., Krueger, R. F., Rathouz, P. J., Waldman, I. D., & Zald, D. H. (2017). A hierarchical causal taxonomy of psychopathology across the life span. *Psychological Bulletin*, *143,* 142-186.

Lahey, B. B., Rathouz, P. J., Van Hulle, C., Urbano, R. C., Krueger, R. F., Applegate, B., . . . Waldman, I. D. (2008). Testing structural models of *DSM-IV* symptoms of common forms of child and adolescent psychopathology. *Journal of Abnormal Child Psychology, 36*, 187-206.

Lahey, B. B., Van Hulle, C. A., Singh, A. L., Waldman, I. D., & Rathouz, P. J. (2011). Higher-order genetic and environmental structure of prevalent forms of child and adolescent psychopathology. *Archives of General Psychiatry, 68*, 181-189.

Liggett, J., Carmichael, K. C., Smith, A., & Sellbom, M. (2017). Validation of self-report impairment measures for Section III obsessive–compulsive and avoidant personality disorders. *Journal of Personality Assessment*, *99*, 1-14.

Liggett, J., & Sellbom, M. (in press). Examining the DSM-5 Alternative Model of Personality Disorders Operationalisation of Obsessive-Compulsive Personality Disorder in a Mental Health Sample. *Personality Disorders: Theory, Research, and Treatment*.

Liggett, J., Sellbom, M., & Carmichael, K.L.C. (2017). Examining the DSM-5 Section III Criteria for Obsessive-Compulsive Personality Disorder in a Community Sample. *Journal of Personality Disorders, 31*, 790-809.

Livesley, W. J. (2001). Conceptual and taxonomic issues. In W. J. Livesley (Ed.), *Handbook of personality disorders: Theory, research, and treatment* (pp. 3-38). NY: Guilford.

Livesley, W. J. (2006). *General Assessment of Personality Disorder (GAPD)*. Unpublished manuscript, Department of Psychiatry, University of British Columbia, Vancouver, BC, Canada.

Livesley, W. J., & Jackson, D. (2009). *Manual for the Dimensional Assessment of Personality Pathology-Basic Questionnaire.* Port Huron, MI: Sigma.

Markon, K. E., Quilty, L. C., Bagby, R. M., & Krueger, R. F. (2013). The development and psychometric properties of an informant-report form of the personality inventory for *DSM–5* (PID–5). *Assessment, 20,* 370–383.

Millon, T., Millon, C., Davis, R., & Grossman, S. (2009). *MCMI-III Manual* (4th ed.). Minneapolis, MN: Pearson.

Morey, L. C. (2007). *Personality Assessment Inventory (PAI): Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Morey, L. C. (2017). Development and initial evaluation of a self-report form of the *DSM-5* level of personality functioning scale. *Psychological Assessment*, *29*, 1302-1308

Morey, L. C., Bender, D. S., & Skodol, A. E. (2013). Validating the proposed diagnostic and statistical manual of mental disorders, severity indicator for personality disorder. *Journal of Nervous and Mental Disease*, *201*, 729-735.

Muñoz-Champel, A., Gutiérrez, F., Peri, J. M., & Torrubia, R. (in press). Personality disorders are not as we thought: Hierarchical factor structure at the criterion level. *Journal of Personality Assessment*.

Mullins-Sweatt, S. N., Edmundson, M., Sauer-Zavala, S., Lynam, D. R., Miller, J. D., & Widiger, T. A. (2012). Five-factor measure of borderline personality traits. *Journal of Personality Assessment*, *94*, 475-487.

Oltmanns, J. R., Smith, G. T., Oltmanns, T. F., & Widiger, T. A. (in press). General factors of psychopathology, personality, and personality disorder: Across domain comparisons. *Clinical Psychological Science*.

Oltmanns, J. R., & Widiger, T. A. (2016). Self-pathology, the five-factor model, and bloated specific factors: A cautionary tale. *Journal of Abnormal Psychology, 125,* 423-434.

Parker, G., Hadzi-Pavlovic, D., Both, L., Kumar, S., Wilhelm, K., & Olley, A. (2004). Measuring disordered personality functioning: To love and to work reprised. *Acta Psychiatrica Scandinavica, 110*, 230-239.

Pettersson, E., Turkheimer, E., Horn, E. E., & Menatti, A. R. (2012). The general factor of personality and evaluation. *European Journal of Personality*, *26*, 292-302.

Roche, M. (in press). Examining the Alternative Model of Personality Disorder in daily life: Evidence for incremental validity. *Personality Disorders: Theory, Research, and Treatment*.

Roche, M. J., Jacobson, N. C., & Pincus, A. L. (2016). Using repeated daily assessments to uncover oscillating patterns and temporally-dynamic triggers in structures of psychopathology: Applications to the DSM-5 alternative model of personality disorders. *Journal of Abnormal Psychology, 125*, 1090–1102.

Rojas, S. L., & Widiger, T. A. (2017). Coverage of the DSM-IV-TR/DSM-5 Section II personality disorders with the DSM-5 dimensional trait model. *Journal of Personality Disorders*, 31, 462-482.

Rossi, G., Debast, I., & Van Alphen, S. P. J. (2017). Measuring personality functioning in older adults: construct validity of the Severity Indices of Personality Functioning–Short Form (SIPP-SF). *Aging & Mental Health, 21*, 703-711.

Rounsaville, B. J., Alarcon, R. D., Andrews, G., Jackson, J. S., Kendell, R. E., Kendler, K. S., & Kirmayer, L. J. (2002). Toward *DSM-V*: Basic nomenclature issues. In D. J. Kupfer, M. B. First, & D. A. Regier (Eds.), *A research agenda for DSM-V* (pp. 1-30). Washington, DC: American Psychiatric Press.

Rushton, J. P., & Irwing, P. (2009). A general factor of personality in the Millon Clinical Multiaxial Inventory-III, the Dimensional Assessment of Personality Pathology, and the Personality Assessment Inventory. *Journal of Research in Personality, 43*, 1091-1095.

Schotte, C. K. W., De Doncker, D., Dmitruk, D., Van Mulders, I., D'Haenen, H., & Cosyns, P. (2004). The ADP-IV questionnaire: Differential validity and concordance with the semi-structured interview. *Journal of Personality Disorders, 18*, 405-419.

Sharp, C., Wright, A. G., Fowler, J. C., Frueh, B. C., Allen, J. G., Oldham, J., & Clark, L. A. (2015). The structure of personality pathology: Both general ('g') and specific ('s')

factors? *Journal of Abnormal Psychology*, *124*(2), 387-398.

Simms, L. J., Goldberg, L. R., Roberts, J. E., Watson, D., Welte, J., & Rotterman, J. H. (2011). Computerized adaptive assessment of personality disorder: Introducing the CAT-PD project. *Journal of Personality Assessment, 93*, 380-389

Skodol, A. E. (2012). Personality disorders in *DSM-5*. *Annual Review of Clinical Psychology, 8*, 317-344.

Skodol, A. E., Morey, L. C., Bender, D. S., & Oldham, J. M. (2013). The ironic fate of the personality disorders in DSM-5. *Personality Disorders: Theory, Research, & Treatment*, *4*, 342-349.

Sleep, C. E., Wygant, D. B., & Miller, J. D. (in press). Examining the incremental utility of DSM-5 Section III traits and impairment in relation to traditional personality disorder scores in a female correctional sample. *Journal of Personality Disorders*.

Soto, C. J., & John, O. P. (2017). The next Big Five Inventory (BFI-2): Developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology, 113,* 117-143.

Tackett, J. L., Lahey, B. B., Van Hulle, C., Waldman, I., Krueger, R. F., & Rathouz, P. J. (2013). Common genetic influences on negative emotionality and a general psychopathology factor in childhood and adolescence. *Journal of Abnormal Psychology, 122*, 1142-1153.

Verheul, R. (2005). Clinical utility for dimensional models of personality pathology. *Journal of Personality Disorders, 19*, 283-302.

Verheul, R., Andrea, H., Berghout, C., Dolan, C.C., Busschbach, J.J.V., Van der Kroft, P. J.

A., Bateman, A. W., & Fonagy, P. (2008). Severity indices of personality problems (SIPP-118): Development, factor structure, reliability and validity. *Psychological Assessment, 20*, 23–34.

Waugh, M. H., Hopwood, C. J., Krueger, R. F., Morey, L. C., Pincus, A. L., & Wright, A. G. (2017). Psychological assessment with the DSM–5 Alternative Model for Personality Disorders: Tradition and innovation. *Professional Psychology: Research and Practice*, *48*, 79-89.

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

Wright, A. G. C. (2017). Factor analytic support for the Five Factor Model. In T. A. Widiger (Ed.), *The Oxford handbook of the five factor model* (pp. 217-242). New York: Oxford University Press

Wright, A. G. (2017). Factor analytic support for the Five Factor Model. In T. A. Widiger (Ed.), *The Oxford handbook of the five factor model* (pp. 217-242). New York: Oxford University Press.

Wright, A. G., Hopwood, C. J., Skodol, A. E., & Morey, L. C. (2016). Longitudinal validation of general and specific structural features of personality pathology. *Journal of Abnormal Psychology*, *125*, 1120-1134.

Wygant, D. B., Sellbom, M., Sleep, C. E., Wall, T. D., Applegate, K. C., Krueger, R. F., & Patrick, C. J. (2016). Examining the *DSM–5* alternative personality disorder model operationalization of antisocial personality disorder and psychopathy in a male correctional sample. *Personality Disorders: Theory, Research, and Treatment*, *7*, 229.

Zimmermann, J., Böhnke, J.R., Eschstruth, A., Mathews, A., Wenzel, K., & Leising, D. (2015). The latent structure of personality functioning: Investigating Criterion A from the alternative model for personality disorders in *DSM-5*. *Journal of Abnormal Psychology, 124,* 532-548.