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THE BORDERLINE DIAGNOSIS I: PSYCHOPATHOLOGY, COMORBIDITY, AND PERSONALITY STRUCTURE

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ABSTRACT

Borderline personality disorder (BPD) is a complex and serious mental disorder associated with severe functional impairment, substantial treatment utilization, and a high rate of mortality by suicide. Recently, borderline personality disorder has become a focus of intensifying study. In Part I of this three-part article meant to provide a foundation to researchers on the current status of the borderline diagnosis and prospects for its future development, we examine the psychopathology, comorbidity, and personality structure of BPD. Although the descriptive characteristics of BPD are well-represented by DSM-IV diagnostic criteria, other important aspects of BPD psychopathology are not included. The descriptive criteria in conjunction with semistructured interviews have, however, increased the ability of investigators to diagnose BPD as reliably as many Axis I disorders. Frequent comorbidity of BPD with Axis I disorders necessitates a broad assessment of psychopathology to help account for clinical heterogeneity. Because of the absence of evidence of the validity of the diagnostic threshold for a categorical diagnosis of BPD, and because of the heterogeneity within the diagnosis, investigators should also supplement their DSM-IV diagnoses with assessments of underlying personality trait structures. Although there are a number of competing models of personality structure, they have remarkable convergence on a set of three to five basic personality dimensions.

Borderline personality disorder (BPD) is a complex and serious mental disorder characterized by a pervasive pattern of instability in regulation of emotion, interpersonal relationships, self-image, and impulse control. It is estimated to occur in 1-2% of the general population (Torgersen et al 2001) and is the most common personality disorder in clinical settings, affecting 10% of all psychiatric outpatients and 15-20% of inpatients (Widiger & Frances 1989). BPD is characterized by severe functional impairment, substantial treatment utilization, and a mortality rate by suicide of almost 10% -- 50 times higher than the rate in the general population (Work Group on Borderline Personality Disorder 2001).

Recently, through the efforts of the NIMH, the Borderline Personality Disorder Research Foundation, and family advocacy groups, borderline personality disorder is becoming a focus of intensifying study. This three part article is meant to provide a foundation and to offer guidance to researchers on important aspects of the borderline diagnosis. In Part I, we examine the psychopathology, comorbidity, and personality structure of BPD. In Part II, we review its biology, genetics, and clinical course. In part III, an endophenotypic approach to the genetics of BPD is described.

PSYCHOPATHOLOGY

Origins and Evolution of the Borderline Diagnosis

Following the seminal clinical accounts of "borderline" patients by Stern (1938) and Knight (1953), Kernberg (1967) made an effort to define their intrapsychic features. Kernberg described borderline personality organization (BPO) as an intermediary level of internal personality organization, framed on one side by more severe psychotic personality organization and on the other by less severe neurotic organization. The BPO construct encompassed all serious forms of personality disorder (PD) and was characterized by three intrapsychic characteristics: 1) identity diffusion; 2) primitive defenses, e.g., splitting (devaluation and

idealization), denial, projection, action, and projective identification; and 3) reality testing that was generally intact, but vulnerable to alterations and failures.

The DSM-III definition of borderline personality disorder (BPD) arose from a widely cited review (Gunderson & Singer 1975) that identified putative descriptors in areas of dysphoric affects, impulsive action, interpersonal relationships, psychotic-like cognitions, and social maladaptation. From this literature review, a semistructured instrument, the Diagnostic Interview for Borderlines (DIB), was developed that reliably assessed 29 descriptive characteristics (Gunderson et al 1981). A discriminant function analysis of a sample with 33 borderline patients identified by the DIB found 7 criteria that could differentiate them from comparison groups with 81% success (Gunderson & Kolb 1978).

Spitzer et al (1979) combined these seven "unstable" characteristics with a few others, including characteristics thought to characterize non-psychotic relatives of patients with schizophrenia (i.e., schizotypal personality traits). He then conducted a survey of psychiatrists to ascertain their potential clinical utility. The results supported the concept of BPD as an identifiable syndrome using a restricted eight-item criteria set. All were from the earlier Gunderson and Kolb (1978) study, plus the addition of unstable identity, as suggested by Kernberg (1967) and Grinker (Grinker et al 1968). These eight criteria were used to define DSM-III BPD in 1980.

Table 1 shows the DSM-III criteria and how they have subsequently been altered. By 1994, when DSM-IV was completed, over 300 studies on DSM-III or DSM-III-R BPD had been conducted. Most of the revisions in criteria have been refinements intended to increase the distinction of BPD from neighboring disorders, such as affective disorders and narcissistic PD. The criterion for unstable identity, which had poor reliability and specificity, was altered to emphasize severe distortions in self-image.

The most significant revision made in DSM-IV was the addition of a ninth criterion, "transient, stress-related severe dissociative symptoms or paranoid ideation". Dissociative symptoms and paranoid ideation have proved to be the most common of a range of cognitive/perceptual symptoms in BPD; they occur in about 75% of borderline patients and have excellent specificity, i.e., rarely occur in other diagnostic groups (Frances et al 1984; Chopra & Beatson 1986; Pope et al 1985; George & Soloff 1986; Jacobsberg et al 1986; Widiger et al 1987; Links et al 1988; Silk et al 1989; Zanarini et al 1990).

Phenotypic Characterization of BPD

The polythetic criteria set for BPD (any 5 of 9 criteria) results in 151 different possible combinations of criteria for a BPD diagnosis. Such clinical heterogeneity has led to a search for latent variables within the diagnosis by empirical methods, such as factor analysis. Five factor analytic studies of BPD diagnostic criteria have been published (Rosenberg & Miller 1989; Clarkin et al 1993; Fossati et al 1999; Sanislow et al 2000; Sanislow et al in press). The Fossati et al (1999) analysis was consistent with a unidimensional construct, but the others suggested either a two-factor structure consisting of interpersonal and identity disturbance and dysregulation of behavior and affect (Rosenberg & Miller 1989) or, more commonly, a three-factor structure consisting of disturbed relatedness, affective or emotional dysregulation, and behavioral dyscontrol or impulsivity (Clarkin et al 1993; Sanislow et al 2000; Sanislow et al in press). These factors are thought to reflect core dimensions of borderline psychopathology.

Alternative Approaches or Criteria

The DSMs' focus on phenomena that can be observed overlooks manifestations derived from other approaches to diagnosis, such as psychological test performance, social functioning, and defense mechanisms. In addition, research since DSM-IV has identified other potentially valuable descriptors.

Regression Proneness

Perhaps the most notable omission from the DSM borderline criteria is proneness to regression (i.e., to adopt childish behaviors and expectations) when placed in unstructured situations. This characteristic brought the disorder to the attention of clinicians such as Stern (1938), Knight (1953), and Hoch and Polatin (1949) — all of whom had expected their depressed or neurotic patients to have more strength and maturity than they showed when in psychoanalytic treatment. Regression proneness has been supported by studies of patients' performance on unstructured psychological tests like the Rorshach (Singer & Larsen 1981) and it is a central reason for many of the treatment problems patients with BPD can create. The addition of the ninth criterion in DSM-IV, noting phenomena that reflect lapses in reality sense or reality testing, is only a very indirect and unsatisfactory means of addressing this trait.

Primitive Defenses

Pursuing Kernberg's characterization of primitive defenses, Perry and Cooper (1986) compared patients with BPD to those with antisocial personality disorder (ASPD) or bipolar II. Defense ratings did not discriminate the diagnoses, but splitting and projective identification were more strongly associated with BPD. Using Bond's Defense Style Questionnaire (DSQ), Bond et al (1994) found that patients with BPD used the defenses of splitting and acting out more, and the defenses of suppression, sublimation, and humor less, than did non-borderline patients. More recently, also using the DSQ, Zanarini et al (in press) found hypochondriasis, projection, acting out, and undoing discriminated patients with BPD from those with other PDs.

The DSM criteria are only partly successful in capturing borderline patients' defenses. Cognitive problems that may serve defensive functions (dissociation and paranoid ideation) are evident in the newest ninth criterion. The phenomena associated with the defense of splitting are represented in the interpersonal criterion (#2), which reflects vacillation from idealized to devalued views of self and others.

Cognitive Schemata

Notably absent from the unstable relationships criterion is that aspect of splitting that involves all-or-nothing, black-or-white, or what Beck and Freeman (1990) called "dichotomous" thinking. In addition, Beck and Freeman (1990) proposed three disturbed cognitive schemata for BPD: 1) The world is dangerous and malevolent; 2) I am powerless and vulnerable; 3) I am inherently unacceptable. More recently, Zanarini et al (1998) identified common and discriminating beliefs in patients with BPD: a) I am endangered, b) I am like a small child, and c) I feel uncared for.

Major Conflicts

In the same study noted above, Perry and Cooper (1986) found good discrimination of patients with BPD from those with either ASPD and bipolar II on major conflicts. Borderline patients were clearly distinguished by greater separation-abandonment conflicts and by their greater conflict about the expression of emotional needs and anger. The first of these is well represented by the DSM abandonment criterion (# 6). The conflict about expression of needs and anger is only very indirectly represented—requiring dynamic inferences—in criteria #3 (anger) and #5 (affective instability).

Transitional Object Relatedness

Object relatedness reflects a way of relating to the external world that was first described by Winnicott (1953) and first applied to borderline patients by Modell (1963). Reliance on transitional objects is thought to reflect the borderline patient's failed early attachment experiences, probably of the anxious/ambivalent subtype (Gunderson 1996; Fonagy 1995). At least seven studies have demonstrated that patients with BPD have extremely insecure attachment characterized by alternating fear of involvement and intense neediness (Bartholomew et al 2001). In the area of interpersonal relationships, a borderline type of relatedness (checking for proximity, pleading for attention, clinging behaviors) is reflected in intolerance of being

alone (criterion #6), included in the original DSM-III criteria set. Many other phenomena could be said to reflect this characteristic, but the most concrete and most well-documented involves the reliance upon transitional objects (TOs) per se (Arkema 1981; Morris et al 1986; Cardasis et al 1997). Though studies indicate that TOs are evident in only about 30% of adult patients with BPD, their presence is very specific—virtually pathonomonic of the diagnosis.

Assessment of BPD Criteria and Diagnoses

At present, researchers often use questionnaires or semistructured interviews designed to assess all of the DSM personality disorders to collect samples with BPD (see Skodol & Oldham 1991; Kaye & Shea 2000). Interrater and test-retest reliabilities of BPD by semistructured clinical interviews, such as the Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV) (Zanarini et al 1987; 2000), the International Personality Disorder Examination (IPDE) (Loranger et al 1994; 1999), the Structured Interview for DSM-IV Personality (SIDP-IV) (Pfohl et al 1997), the Personality Disorder Interview – IV (PDI-IV) (Widiger et al 1989; 1995), and the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) (First et al 1995a, 1995b), are substantially better than those obtained by clinical judgment alone (i.e., by unstructured clinical interviews). The reliabilities obtained for BPD diagnoses generally have been in the good to excellent range (k= .68 to .96 for interrater; k= .40 to .85 for test-retest). Since achieving good diagnostic reliability is more a function of interviewer training and experience than of the interview itself, the choice of a semistructured interview cannot be based on its reliability alone. Other considerations, such as the amount of clinical experience needed to administer the interview, and its organization by personality disorder versus by topical theme (e.g., work, social or interpersonal relationships, etc.), will influence the choice. It is currently unclear whether any of the interviews provides the most valid assessment and none is considered to be clearly superior to the others (Kaye and Shea, 2000).

In the early 1980s, several investigators developed instruments specifically designed to assess borderline psychopathology only. Kernberg (1977, 1984) developed a "structural interview" to assess the defenses, reality testing, and identity issues that define BPO, based on here-and-now interactions, but its reliability is unreported. The first and most widely utilized borderline-specific instrument has been the previously mentioned DIB (Gunderson et al 1981). Unlike most other structured interviews, the DIB inquires about historical information, as well as symptom presence. Even the more symptom-oriented sections on affects and psychosis include inquiries about enduring behavioral patterns, which extend into the past history. The DIB has undergone revisions to reflect knowledge gained in the 1980s and to sharpen the contrast between BPD and other PDs (Zanarini et al 1989). Questions on social functioning have been deleted from the revised version (DIB-R) and more detail in areas of reality testing, cognitions, dysphoric affects, and types of impulse dyscontrol have been added.

AXIS I COMORBIDITY

The importance of comorbidity in the study of borderline personality disorder is highlighted by the number of publications identified by literature searches. As of June 2000, a Medline search of the literature for the last 35 years identified only 3 personality disorders for which there are more than 1000 published studies: schizotypal PD (N=1030), antisocial PD (N=3876), and borderline PD (N=2182). One hundred nineteen studies on comorbidity were identified for borderline personality, a higher number than identified for any other personality disorder except antisocial (N=217).

Mechanisms of Comorbidity

The term "comorbid" implies two separate disease processes that occur in the same individual. The term may imply more than we know. For this reason, some prefer the more neutral term "co-occurrence." Part of the complexity arises from the DSM-IV criteria for BPD, which include substance abuse, disordered eating behavior, abnormalities in mood state, and

psychotic-like phenomena -- all of which predispose toward the co-occurrence of Axis I disorders of the corresponding type.

Several investigators (Akiskal et al 1983; Gunderson & Elliot 1985; Gunderson & Phillips 1991) have suggested hypotheses to explain why BPD and certain Axis I disorders may be observed to frequently co-occur. Axis I disorders, such as major depression, may be primary and lead to the development of traits and behaviors found in BPD as secondary complications. Conversely, BPD psychopathology may be primary and predispose patients to the development of superimposed Axis I disorders. BPD and certain Axis I disorders may be unrelated, but because they occur commonly in patient populations, tend to co-occur and influence each other's symptom expression or course. Finally, BPD and certain Axis I disorders may share some common etiologic factors that increase their co-occurrence.

The above alternative explanations are not mutually exclusive. A combination of relationships may exist behind any observed comorbidity. While the current data cannot explain which of the above factors are operative in the case of BPD, they provide directions for future research.

Rates of Axis I Disorders in Patients with BPD.

There are a several large studies of comorbidity in patients with BPD that rely on chart review. For example, Fabrega et al (1992) conducted a chart review of 2344 patients who received a diagnosis of one or more personality disorders during a standard psychiatric evaluation at the Western Psychiatric Institute and Clinic. Of the 390 persons diagnosed with BPD, about two-thirds (267) received a concurrent Axis I diagnosis.

Because of the difficulties inherent in achieving reliable and comprehensive diagnostic assessments, the remainder of this review will focus on studies that used semistructured diagnostic interviews for both Axis I and Axis II. Sixteen studies were identified and are summarized in Table 2. Several are highlighted below.

Skodol et al (1999b) reported on a series of 200 patients seeking mental health treatment. Compared to patients without BPD, patients with BPD had 4.3 times the odds of having abused alcohol and 8.7 times the odds of having abused substances other than alcohol or cannabis. In this same sample, patients with BPD were also found have 8.2 times the odds of non-BPD patients of having a current comorbid panic disorder (Skodol et al 1995) and 5.2 times the odds of having current bulimia (Skodol et al 1993).

In a series of 409 nonpsychotic outpatients, Zimmerman and Mattia (1999) reported that, of 59 cases who met criteria for borderline personality disorder, all but 1 had a concurrent Axis I diagnosis and 69.5% had 3 or more Axis I diagnoses. Sixty-one percent of the BPD cases met criteria for MDD, 29% had panic disorder with agoraphobia, and 13% had alcohol or other substance abuse.

Skodol et al (1999a) have published the largest series of subjects with personality disorder (mostly outpatients) who have been comprehensively assessed for both Axis I and Axis II disorders using semistructured interviews and self-report rating scales. Exclusion criteria included psychosis, current intoxication, or confusional states. Of the 571 PD cases, 240 had DIPD-IV diagnoses of BPD. Of the BPD cases, 39.2% met criteria for at least one mood disorder: 31.3% were diagnosed with major depression, 16% with dysthymia, 9.2% with bipolar I, and 4.1% with bipolar II.

While BPD can exist as the sole diagnosis, it is fair to conclude that any patient sample that is limited to such cases cannot be considered representative of BPD as it is diagnosed and treated in either inpatient or outpatient clinical settings. It could be argued that individuals with BPD and no Axis I disorder may be less likely to present for a psychiatric evaluation. While treatment seeking undoubtedly accounts for some of the increased comorbidity, symptoms of BPD itself are sufficiently disturbing to the patients and their families that additional diagnoses are hardly a prerequisite for seeking professional help.

BPD and the Course and Treatment Response of Axis I Disorders

Borderline personality disorder is not only commonly associated with a wide variety of Axis I diagnoses, but also has important implications for the treatment of many Axis I disorders. Even when patients are matched on severity of Axis I symptoms at intake, poor short- and long-term outcome of an Axis I disorder is still predicted by the presence of a personality disorder at intake.

Sullivan et al (1994) reported on a series of 103 patients with major depression who were assessed with a semistructured interview for Axis II. He found that 19% met criteria for BPD. Other studies report that as many as a quarter of patients with major depression meet criteria for borderline personality disorder. Pfohl et al (1987) found in a series 78 inpatients with major depression that 18 (23%) met criteria for BPD according to a semistructured interview. Similar findings have been reported by Pilkonis and Frank (1988), Shea et al (1990), and Ilardi et al (1997). In all of these studies, depressed patients who had comorbid BPD had poorer responses to treatment than noncomorbid patients.

This finding is not limited to patients with major depression. Many studies have demonstrated that comorbid personality disorders portend a worse prognosis for patients with a variety of Axis I disorders, including panic disorder (Noyes et al 1990), eating disorders (Gartner et al 1989), obsessive compulsive disorder (Baer et al 1992), and alcohol abuse (Verheul et al 1998).

Most investigators have assessed patients for Axis II while they had significant or even maximal levels of Axis I symptoms. It has been demonstrated on a number of occasions that the severity of abnormal personality traits may show some regression towards normality when an Axis I disorder remits (Noyes et al 1990; Hirschfeld et al 1983; Reich & Noyes 1987). However, the results of personality assessment during episodes of Axis I disorders are not

invalid. Even if an Axis I disorder completely remits, personality problems exist at a level higher than is seen in individuals who have never had an Axis I disorder.

The study of panic disorder by Noyes et al (1990) is a particularly good illustration of this point. Eighty-nine subjects received personality assessment by semistructured interview at index while they were fully symptomatic for panic disorder. There was a significant drop in the severity of personality scores after successful treatment of the panic disorder, yet personality scores remained higher than normal. Even more telling, personality abnormalities measured while patients were suffering from panic disorder were highly predictive of the severity of anxiety symptoms and social adjustment at follow-up three years later. This prediction held true even when the severity of the panic disorder at intake was statistically controlled.

Assessment of Comorbid Axis I Disorders in BPD

Because comorbid Axis I disorders are so common in BPD, and because they represent a wide range of DSM classes of disorders, a thorough assessment of BPD Axis I comorbidity requires an evaluation guided by a semistructured diagnostic interview. Although a variety of interview schedules for the evaluation of Axis I disorders exist (Skodol & Bender, 2000), if DSM-IV diagnoses are required, the most commonly used instrument is the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First et al 1995). The full research version of the SCID-I for patients yields 44 specific DSM-IV Axis I diagnoses from six DSM-IV diagnostic classes. Adequate reliability has been demonstrated for most, but not all, DSM-IV disorders when the SCID-I has been employed.

PERSONALITY STRUCTURE

Categorical Versus Dimensional Models

The question of whether mental disorders are optimally classified categorically or dimensionally has been a long-standing issue and one of particular relevance for personality disorders (Livesley 1985; Widiger & Frances 1985). Many arguments favoring a dimensional

model have been presented thoroughly in a number of prior papers (e.g., Clark et al 1997; Gunderson et al 1991; Livesley, 1985, 1998; Oldham & Skodol, 2000; Widiger, 1993; Widiger & Frances, 1985). Critics of categorical diagnosis point to the lack of empirical support for the arbitrary thresholds for diagnosis for most personality disorders (Morey 1988), the loss of potentially important clinical information by the use of all-or-nothing diagnostic categories (Kass et al 1985), the considerable heterogeneity within categories (Clarkin et al 1983; Widiger & Sanderson, 1995), the extensive overlap or comorbidity between categories (Oldham et al 1992), the lack of clear distinctions between normal and abnormal personality (Nestadt et al 1990, Livesley et al 1994) and the limited coverage of personality psychopathology (Koenigsberg et al 1985; Westen & Arkowitz-Westen, 1998) as weaknesses. On the other hand, diagnostic categories are familiar to clinicians, promote clear communication by summarizing complex sets of clinically meaningful information into simple terms, and are consistent with the nature of clinical decision-making (Gunderson et al 1991; Millon 1991). Two points of particular relevance to the diagnosis of borderline personality disorder will be discussed here: the absence of a clinically meaningful threshold for the diagnosis, and the heterogeneity of membership within the diagnostic category.

Empirical Support for Diagnostic Thresholds

The empirical support for a qualitative or categorical distinction between normal and abnormal personality functioning is problematic, at best. Researchers who have attempted to identify or validate the presence of a nonarbitrary distinction between normal and abnormal personality functioning have concluded that no such distinction is evident (Livesley, 1985, 1998; Oldham & Skodol, 2000; Widiger, 1993).

In the absence of any clear distinction between the presence versus absence of a personality disorder, one might ask on what basis diagnostic thresholds were set for DSM-III, DSM-III-R, or DSM-IV (APA 1980, 1987, 1994). For nine of the 11 personality disorders

included in each of three recent editions of the DSM, the decision for the threshold number of diagnostic criteria required for a diagnosis has been based on the subjective impressions of an advisory committee. No conceptual rationale or empirical support has been provided (Frances 1980; Gunderson 1998; Widiger et al 1988). It is stated in DSM-IV that "only when personality traits are inflexible and maladaptive and cause significant functional impairment or subjective distress do they constitute Personality Disorders" (APA 1994, p. 630), but no study has ever indicated that any one of the diagnostic thresholds provided in any of the editions of the DSM identifies a point at which the respective personality traits are sufficiently or significantly maladaptive, impairing, or distressing to result in a valid, meaningful, or clinically useful distinction from normal personality functioning (Perry 1990; Widiger & Corbitt 1994).

Borderline and schizotypal personality disorders (STPD) are the two exceptions to the absence of attention to diagnostic thresholds, as their original DSM-III diagnostic thresholds were based in part on empirical data (Spitzer et al 1979). Spitzer et al developed nine draft criteria for BPD based on a review of the literature and consultations with leading borderline theorists and researchers. However, an ironic aspect of this effort is that the criterion group used to establish the diagnostic threshold for DSM-III BPD was the 234 patients given clinical diagnoses of borderline personality organization rather than the 315 patients given clinical diagnoses of borderline personality disorder.

In any case, the sensitivity and specificity rates for the BPD diagnosis have likely changed since the original study by Spitzer et al (1979), given the multiple changes to the diagnostic criteria set provided by DSM-III-R (APA 1987) and DSM-IV (APA 1994). The arbitrary nature of the DSM-III, DSM-III-R, and DSM-IV diagnostic thresholds is evident in part by the substantial change in the prevalence rates of the personality disorders across each edition of the manual (Blashfield et al 1992; Morey 1988).

The effect on research of the absence of clinically meaningful diagnostic thresholds was demonstrated in a study by McGlashan (1987) on the comorbidity of BPD with depression. McGlashan needed a comparison group of depressives without BPD. He, therefore, obtained depressed persons who did not meet the DSM-III borderline criteria. However, these "nonborderlines" still had on average three of the borderline diagnostic criteria. "In short, the 'pure' . . . cohort was not pure . . . . The result is that our comparison groups, although defined to be categorically exclusive, may not have been all that different, a fact which, in turn, may account for some of the similarities" (p. 472) between the supposedly pure depressives and the borderlines. Many of the persons who were diagnosed as not having BPD did in fact have clinically significant borderline personality disorder pathology, weakening the ability of their research team to indicate the contribution of the borderline psychopathology to predicted correlates. McGlashan (1987) concluded that the borderline personality diagnostic category "emerges as poorly constructed for the study of comorbidity" (p. 473).

A comparable point was made by Skodol (1989) in his overview of the decisions made for DSM-III-R. He indicated that the diagnostic thresholds provided in DSM-III-R failed to demarcate that point at which the presence versus absence of the respective personality traits would have a clinically significant impact on treatment decisions. Therefore, the staff at the Columbia-Presbyterian Medical Center implemented a more quantitative scaling system that provided much more differentiation among persons below the diagnostic threshold for each respective personality disorder (i.e., 1=no or very few traits; 2=some traits present; 3=almost meeting the DSM diagnostic threshold; 4=meeting the DSM diagnostic threshold) (Kass et al 1985). "Using this system, we found that, in addition to the approximately 50% of clinic patients who meet criteria for a personality disorder, another 35% warrant information descriptive of their personality styles on Axis II" (Skodol 1989, p. 386).

Heterogeneity of the Borderline Diagnostic Category

The DSM-IV diagnosis of BPD is in a polythetic format in which a set of optional diagnostic criteria are provided (i.e., any 5 of 9). A polythetic format is consistent with clinical reality, but it also provides formal recognition to the substantial heterogeneity among the persons with each disorder. Clarkin et al (1983) indicated that there were 93 different ways a person could meet the DSM-III (and DSM-III-R) polythetic diagnostic criteria for BPD (i.e., any combination of 5 of 8, 6 of 8, 7 of 8, or 8 of 8 diagnostic criteria). DSM-IV added an additional diagnostic criterion without changing the threshold for the diagnosis, contributing to even further heterogeneity. There are now 151 different ways of meeting the DSM-IV criteria for BPD. Some combinations of diagnostic criteria are more likely than others, but it is evident that there can be substantial diversity among persons who are given the BPD diagnosis. In fact, any two particular persons with a DSM-IV BPD diagnosis are required to share only one of the nine diagnostic criteria.

One need not distinguish among all of the 151 different possible combinations of borderline criteria to provide a useful or informative differentiation among patients, but many of the differences will be of considerable importance to clinical practice and research. Therefore, some instruments for the assessment of BPD include subscales to differentiate between various components or facets of this personality disorder. For example, Morey's (1996) borderline scale within his Personality Assessment Inventory (PAI) includes four subscales: affective instability, identity problems, negative relationships, and self-harm. Different interpretations and expectations are provided for the most common combinations of elevations among these four subscales (Morey 1996). The influential and commonly used Diagnostic Interview for Borderlines (DIB) (Gunderson et al 1981) differentiates between five components of the disorder (i.e., social maladaptation, impulsivity, affectivity, psychosis, and interpersonal relationships).

Dimensional Models of Personality

The limitations and fallibilities of the categorical diagnosis of personality disorders have led some to suggest that they are best conceptualized as maladaptive variants of common personality traits (Livesley 1998; Widiger & Sanderson 1995). As acknowledged by Paris (1998), "the best way of understanding these conditions [i.e., personality disorders] is as amplifications of normal personality traits" (p. 289).

A variety of alternative dimensional models have been proposed for the DSM-IV personality disorders (APA 1994; Widiger & Sanderson 1995). The dimensions identified within the DSM-IV text discussion of dimensional models are those within the Five Factor Model (FFM) (Costa & Widiger 1994), the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ) (Livesley et al 1998), the Schedule for Nonadapative and Adaptive Personality (SNAP) (Clark 1993), the Temperament and Character Inventory (TCI) (Cloninger et al 1993), the Interpersonal Circumplex (IPC) (Wiggins 1982), and the polarities identified by Millon (1981). An additional dimensional model published subsequently to DSM-IV is the Shedler-Westen Assessment Procedure (SWAP-200) (Westen & Shedler 1999a, 1999b).

Table 3 provides the dimensions contained within the SNAP, DAPP-BQ, TCI, FFM, and SWAP-200 dimensional models. The TCI and FFM are organized explicitly with respect to seven and five higher order factors (respectively), with each broad domain further differentiated into more specific facets or subscales. Higher order factor structures have also been provided for the SNAP and DAPP-BQ. For example, the SNAP includes three additional temperament scales (positive emotionality, negative emotionality, and disinhibition or constraint) that assess the three dimensional model of general personality functioning also assessed by the Multidimensional Personality Questionnaire (MPQ) (Tellegen & Waller in press). The 12 SNAP scales are hypothesized to be lower order variants of these three broader dimensions, although

analyses to date have not yet clearly placed eccentric perceptions, exhibitionism, or entitlement within a respective domain (Clark 1993). Analyses of the 18 DAPP-BQ scales have suggested the presence of four higher order factors of emotional dysregulation, dissocial, inhibition, and compulsivity (Livesley et al 1998).

It is apparent from a visual inspection of the constructs assessed by the alternative dimensional models provided in Table 3 that there is likely to be substantial convergence. The domains of functioning that they cover overlap substantially and the manner in which these models cover these domains are quite comparable. The DAPP-BQ, SNAP, and SWAP-200, for example, were developed through similar, systematic and reasonably comprehensive searches of the clinical and empirical literature for virtually every personality disorder trait concept, followed by extensive analyses of the correlations among the traits to reduce them to a manageable set of fundamental dimensions of personality disorder symptomatology (Clark et al 1991; Livesley et al 1989, 1992; Westen & Shedler 1999a, 1999b). In a direct comparison of the SNAP and DAPP-BQ, Clark et al (1996) indicated considerable convergence and compatibility, with only a few, relatively minor differences (e.g., DAPP-BQ intimacy problems may not be well represented within the SNAP, and SNAP workaholism may not be well represented within the DAPP-BQ). Clark et al (1996) indicated further that the higher order factor structure of the joint set of instruments yielded four factors "which corresponded to the well-established dimensions of neuroticism, introversion, (dis)agreeableness (aggression-hostility), and (low) conscientiousness (impulsive sensation seeking)" (p. 300) provided by the FFM.

The correspondence of the SNAP, DAPP-BQ, and FFM have been demonstrated in a number of studies. Clark et al (1994) reported that the SNAP "scales that assess maladaptive personality traits were shown to be related to measures of all five factors, which indicates the general relevance of the FFM for Axis II phenomena" (p. 109) and "the same underlying personality trait structure has been shown to emerge from analyses of normal and maladaptive

personality traits" (p. 110). Schroeder et al (1992) concluded that a joint factor analysis of the DAPP-BQ and FFM yielded a stable and meaningful five factor solution. "The results of the factor analysis suggest that the domain of personality pathology can be explained reasonably well within the five-factor model of normal personality" (Schroeder et al 1992, p. 51). "The evidence suggests that personality disorders are not characterized by functioning that differs in quality from normal functioning; rather, personality disorder can be described with traits or dimensions that are descriptive of personality, both disordered and normal" (Schroeder et al 1992, p. 52).

Livesley et al (1998) did emphasize that their subsequent analyses of the DAPP-BQ did not obtain a factor that would correspond to FFM openness but, as noted in an accompanying commentary, "four out of five ain't bad" (Widiger 1998, p. 865). The absence of a factor representing openness reflects in part the fact that openness (or unconventionality) is the smallest of the FFM domains and was the last domain extracted from the trait term analyses of the English language that were the original basis for the development of the FFM (Goldberg 1993). As the DAPP-BQ was based on analyses of a comprehensive sampling of maladaptive traits (Livesley et al 1989, 1992a, 1992b), the FFM was based on analyses of a comprehensive sampling of adaptive and maladaptive traits (Goldberg 1982, 1993). DAPP-BQ emotional dysregulation corresponds closely to FFM neuroticism, DAPP-BQ dissocial behavior (defined by interpersonal hostility, judgmental attitudes, callousness, & conduct problems) coordinates well with FFM antagonism (which includes exploitation, callousness, deception, cynicism, and aggression), DAPP-BQ inhibition (characterized by intimacy problems and restricted affect) is essentially equivalent to FFM introversion, and compulsivity corresponds closely to conscientiousness (Widiger 1998). Clark and Livesley (1994) explored in more detail the convergence of the DAPP-BQ, SNAP, and FFM within common data sets and concluded that "these data thus provide further support for the notion that the personality trait dimensional

structure defined by the FFM is very robust and will emerge reliably as long as a broad range of personality traits are assessed" (p. 275).

Assessment of Personality Dimensions in BPD

Despite their substantial convergence, there may also be relative advantages and disadvantages for each respective dimensional model. The FFM and TCI are perhaps the two models that will provide relatively more comprehensive assessments of the normal range of personality functioning. The TCI is based on a rich neurocognitive and developmental model of personality functioning that has quickly established substantial empirical support (Cloninger & Svrakic 1997; Cloninger et al 1999); the FFM is a well established model of general personality functioning with considerable empirical support for temporal stability, cross-cultural replication, multimethod convergent and discriminant validity, and heritability (Digman 1990; John & Srivastava 1999; McCrae & Costa 1999; Wiggins & Pincus 1992). Direct comparisons of the ability of the TCI and FFM to account for personality disorder symptomatology have produced inconsistent results (Ball et al 1997; Svrakic et al 1993). Relative to the TCI and FFM assessment of general personality functioning, the SWAP-200 includes only one broad scale for the assessment of psychological health, and the SNAP and DAPP-BQ are confined largely to the assessment of maladaptive personality functioning.

On the other hand, the DAPP-BQ, SNAP, and SWAP-200 would provide more specific assessments of the maladaptive personality traits that might be of most interest to a particular researcher. Both the TCI and the NEO Personality Inventory-Revised (NEO PI-R; Costa & McCrae 1992) include scales for the assessment of maladaptive personality functioning (e.g., impulsiveness, extravagence, attachment, dependence, and fear of uncertainty from the TCI; anxiousness, depressiveness, angry hostility, vulnerability, impulsivity, mistrust, and oppositionalism from the NEO PI-R), but relatively more emphasis is placed within these instruments on adaptive personality functioning. (The Semistructured Interview for the

Assessment of the Five Factor Model [SIFFM] [Trull & Widiger 1997] attempts to provide a more equal, balanced coverage of maladaptive and adaptive components of the FFM). The DAPP-BQ, SNAP, and SWAP-200 scales, in contrast, were derived largely from analyses of personality disorder symptomatology and provide scales hypothesized to represent the fundamental domains of maladaptive personality functioning. For example, the DAPP-BQ scales for identity problems, insecure attachment, affective lability, and self-harm behaviors appear to capture the major components of borderline personality disorder, matching well conceptually with the four borderline subscales of identity problems, negative relationships, affectivity instability, and self-harm included within the PAI (Morey 1996).

CONCLUSIONS

Modern diagnostic criteria to describe patients with borderline personality disorder have evolved over the past 35 years. Although the descriptive characteristics of BPD are well-represented by the criteria, other important aspects of BPD psychopathology are not included. The descriptive criteria have the advantage, however, of having increased the ability of investigators to diagnose BPD reliably -- as reliably, in fact, as many more widely studied Axis I disorders.

Semistructured interviews are needed for the reliable assessment of BPD and co-occurring Axis I and other Axis II disorders. Because of the absence of evidence of the validity of the diagnostic threshold for a categorical diagnosis of BPD, and because of the heterogeneity within the diagnosis, investigators should supplement their DSM-IV diagnoses with assessments of underlying personality trait structures. Although there are a number of competing models for describing personality structure, they have remarkable convergence on a set of three to five basic personality dimensions. Complementary dimensional assessments of patients with BPD can be accomplished with well-developed self-report questionnaires.

A core phenotype consisting of affective dysregulation, behavioral dyscontrol, and disturbed interpersonal relatedness appears to characterize the borderline diagnosis. These dimensions may reflect abnormal neurobiological processes underlying BPD, some of which may have genetic bases and represent fundamental pathophysiology. These topics will be discussed in Part II.

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Table 1. Evolution of Diagnostic Criteria and Essential Features of Borderline Personality Disorder

DSM-III	DSM-IIIR	DSM-IV
Essential Features Instability in a variety of areas, including interpersonal behavior, mood and self-image.	*[Instability in a variety of areas, including interpersonal behavior]* **A pervasive pattern of** instability of mood, interpersonal **relationships** and self-image.	A pervasive pattern of instability of *[mood]*, interpersonal relationships, self-image, **and affects; and marked impulsivity.**
Diagnostic Criteria A. At least five of the following are required:	*[A]*	
(1) impulsivity or unpredictability in at least two areas that are potentially-self damaging, e.g., spending, sex, gambling, substance use, shoplifting, overeating, physically self-damaging acts.	*[or unpredictability] [gambling]* **reckless driving**, **binge eating** [overeating] [physically self damaging acts] **(do not include suicidal or self-mutilating behavior covered in (5)*)**	substance **abuse** [substance *use*]
(2) a pattern of unstable and intense interpersonal relationships, e.g., marked shifts of attitude, idealization, devaluation, manipulation (consistently using others for one's own ends).	*[e.g., marked shifts of attitude, idealization, devaluation, manipulation (consistently using others for one's own ends)]* **characterized by alternating between extremes of over-idealization and devaluation**	*[over-]* idealization
(3) inappropriate, intense anger or lack of control of anger, e.g., frequent displays of temper, constant anger.	**recurrent physical fights**	**difficulty controlling anger** [*lack of control of anger*]
(4) identity disturbance manifested by uncertainty about several issues related to identity, such as self-image, gender identity, long-term goals or career choice, friendship patterns, values, and loyalties, e.g., "Who am I?", "I feel like I am my sister when I am good".	**marked and persistent** identity disturbance, **about at least two of the following** [*about several issues related to identity*]**: sexual orientation**, *[gender identity]*, **type of friends desired,** *[friendship patterns]* **preferred** *values [and loyalties, e.g., "Who am I?", "I feel like I am my sister when I am good"]*	*[marked and persistent identity disturbance manifested by uncertainty about at least two of the following: self-image, sexual orientation, long-terms goals or career choice, type of friends desired, preferred values]* **identity disturbance: markedly and persistently unstable self-image or sense of self**
(5) affective instability: marked shifts from normal mood to depression, irritability, or anxiety, usually lasting a few hours and only rarely more than a few days, with a return to normal mood.	***baseline mood***, *[*normal mood*]*, [with a return to normal mood]	*[marked shifts from baseline mood to depression, irritability, or anxiety]* **marked reactivity of mood, e.g., intense episodic dysphoria, irritability, and anxiety.**
(6) intolerance of being alone, e.g., frantic efforts to avoid being alone, depressed when alone.	*[intolerance of being alone, e.g., frantic efforts to avoid being alone, depressed when alone]* **frantic efforts to avoid real or imagined abandonment (do not include suicidal or self-mutilating behavior covered in (5)*)**	--no changes
7) physically self-damaging acts, e.g., suicidal gestures, self-mutilation, recurrent accidents or physical fights.	*[physically self-damaging acts]* **recurrent** suicidal **threats,** ~~gestures~~**, or behavior**, or **self-mutilating behavior ***[*self mutilation]* **("5")** *[recurrent accidents or physical fights]*	--no changes
(8) chronic feelings of emptiness or boredom.	--no changes	*[or boredom]*
B. If under 18, does not meet the criteria for Identity Disorder.	[B. dropped]	**(9) transient, stress-related paranoid ideation or severe dissociative symptoms**

KEY: *[discontinued]*
New item

Table 2. Personality Disorder Comorbidity in Studies with Semi-structured Interview Assessments of Axis I and Axis II Disorders.

Author(s)	Patients Studied	N (%) with PD	N (%) with BPD
Nace et al 1983	94 inpatients treated for alcohol abuse (abstaining)	---	20 (21.2)
Reich & Noyes 1987	83 outpatients with panic disorder	38 (43.2)	5 (6.1)
Reich & Noyes 1987	24 outpatients with MDD	12 (50.0)	5 (20.8)
Pilkonis & Frank 1988	119 Patients with treatment responsive MDD	49 (48.0)	Excluded
Nace et al 1991	100 inpatients with substance abuse	57 (57.0)	17 (17.0)
Black et al 1993	32 Patients with obsessive-compulsive disorder	28 (87.5)	6 (18.8)
Nurnberg et al 1993	50 outpatients with alcohol abuse (abstaining)	32 (64.0)	8 (16.0)
Sullivan et al 1994	103 mainly outpatients with MDD	52 (51.0)	35 (34.0)
Grilo et al 1997	70 consecutive young adult inpatients with substance abuse	55 (78.6)	43 (61.4)
Driessen et al 1998	250 inpatients with alcohol dependence	84 (33.6)	---
Skodol et al 1999a	571 patients with personality disorders	---	240 (42.0)
Skodol et al 1999b	200 combination outpatients/inpatients	92 (46.0)	57 (28.5)
Kay et al 1999	61 euthymic bipolar I patients	23 (37.7)	---

Zimmerman & Mattia 1999	Outpatients with private insurance or Medicare		
	268 with MDD	---	42 (15.7)
	70 with panic disorder with agoraphobia	---	19 (27.1)
	89 with PTSD	---	27 (30.3)
	142 with alcohol abuse	---	33 (23.2)
	95 with drug abuse	---	26 (27.3)
Benazzi 2000	63 outpatients with MDD	---	1 (1.5)
	50 with bipolar type II	---	6 (12)
Matsunaga et al 2000	54 women recovered from an eating disorder	14 (26.0)	4 (7.4)

Abbreviations: MDD = major depressive disorder; PTSD = posttraumatic stress disorder

Table 3. Dimensional Models of Personality Disorder

SNAP[1]	DAPP-BQ[2]	TCI[3]	FFM[4]	SWAP-200[5]
Mistrust	Compulsivity	Novelty Seeking	Neuroticism	Psychological Health
		Explortry Excitability	Anxiousness	
Manipulation	Conduct Problems	Impulsivness	Angry Hostility	Psychopathy
		Extravagence	Depressiveness	
Aggression	Diffidence	Disorderliness	Self-Conscious	Hostility
			Impulsiveness	
Self-Harm	Identity Problems	Harm Avoidance	Vulnerabilty	Narcissism
		Anticipatory Worry		
Ecc Percepts	Insecure Attachment	Fear of Uncertainty	Extraversion	Emotional Dysregulation
		Shyness	Warmth	
Dependency	Intimacy Problems	Fatigability	Gregariousness	Dysphoria
			Assertiveness	
Exhibitionism	Narcissism	Reward Dependence	Activity	Schizoid Orientation
		Sentimentality	Exc-Seeking	
Entitlement	Suspiciousness	Attachment	Pos Emotion	Obsessionality
		Dependence		
Detachment	Affective Lability		Openness	Thought Disorder
		Persistence	Fantasy	
Impulsivity	Passive Opp		Aesthetics	Oedipal Conflict
		Self Directedness	Feelings	
Propriety	Cognitive Distortion	Responsibility	Actions	Dissociated
		Purposefulness	Consciousness	
Workaholism	Rejection	Resourcefulness	Ideas	Sexual Conflict
		Self-Acceptance	Values	
	Self-Harm Behaviors	Congruency		
			Agreeableness	
	Restricted Expression	Cooperativeness	Trust	
		Social Acceptance	Straightforwardness	
	Social Avoidance	Empathy	Altruism	
		Helpfulness	Compliance	
			Modesty	

Table 3. Dimensional Models of Personality Disorder

SNAP[1]	DAPP-BQ[2]	TCI[3]	FFM[4]	SWAP-200[5]
	Stimulus Seeking	Compassion	Tendermindedness	
		Pure-Heartedness		
	Interpers Disesteem		Conscientiousness	
		Self-Transcendence	Competence	
	Anxiousness	Self-Forgetfulness	Order	
		Trans-Identification	Dutifulness	
		Spiritual Acceptance	Achievement Striving	
			Self-Discipline	
			Deliberation	

[1]Schedule for Nonadaptive and Adaptive Personality (Clark 1993).
[2]Dinensional Assessment of Personality Pathology-Basic Questionnaire (Livesley et al 1998).
[3]Temperament and Character Inventory (Cloninger et al 1993).
[4]Five Factor Model. (Costa & Widiger 1994).
[5]Schedler-Westen Assessment Procedure. (Westen & Schedler 1999a).