A PROTOTYPE MATCHING APPROACH TO DIAGNOSING PERSONALITY DISORDERS: TOWARD DSM-V

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The current diagnostic system for personality disorders (PD) has a number of problems that may require a thorough revision for DSM-V. This article (a) outlines problems with the current taxonomy that suggest the need for a different approach to PD diagnosis that preserves the strengths of the current system while addressing some inherent weaknesses; (b) discusses key issues that must be addressed in moving toward DSM-V, such as revising the distinction between Axis I and Axis II and combining categorical and dimensional diagnosis; and (c) describes a prototype matching approach to diagnosis, which we believe has the potential to be both psychometrically sound and faithful to the clinical data.

Treating psychopathology requires an understanding of personality. Research on Axis I syndromes is making it increasingly clear that (a) anxiety, depression, eating disorders, substance abuse, sexual disorders, and other Axis I syndromes occur more often in the context of personality disorders (PDs) (Shea, Widiger, & Klein, 1992); (b) patients with multiple Axis I diagnoses often have PDs (Newman, Moffitt, Caspi, & Silva, 1998); and (c) even those patients who lack personality disturbances severe enough to warrant an Axis II diagnosis often have *clinically significant* personality pathology, such as difficulties with intimacy, management of aggression or self-assertion, rejection-sensitivity, etc. (Skodol, 1989; Westen, 1997; Westen & Arkowitz-Westen, 1998; Westen & Morrison, 1999).

For two decades, Axis II has provided clinicians with an opportunity to record their observations about this crucial aspect of psychopathology. Yet Axis II in its current form may no longer be adequate to this task. In this article, we (a) outline some problems in Axis II that suggest the need for a thorough revision for DSM-V, (b) review issues that need to be addressed as we move toward DSM-V, and (c) describe a prototype matching approach to diagnosing PDs that may prove useful in enhancing both the psychometric rigor and the clinical fidelity of Axis II.

PROBLEMS WITH AXIS II

There is little question that inclusion of a PD Axis in DSM-III, and its refine-
ment through two decades of research, has been a crucial step in the evolu-
tion of a more clinically and empirically useful diagnostic manual. Knowing
that a patient has major depression is certainly important, but adding the
"qualifier" that the patient also has borderline PD is equally important be-
cause it has significant implications for prognosis and treatment.

Yet the increasing consensus among PD researchers is that Axis II does
not rest on a firm enough foundation. We may do well to rebuild it from the
basement up rather than trying to plug the leaks, or replace the roof. In tele-
graphic form, some major concerns include the following (Clark, 1992;
Grove & Tellegen, 1991; Jackson & Livesley, 1995; Livesley, 1995; Livesley
and Jackson, 1992; Westen, 1999; Westen & Shedler, 1999a,b; Widiger &
Frances, 1985):

1. The Axis II categories and criteria often disagree with empirical findings
   from factor and cluster analyses (see Blais & Norman, 1997; Livesley &
   Jackson, 1992; Morey, 1988).
2. In trying to maximize internal consistency of criterion sets and mini-
   mize comorbidity between PDs, the work groups charged with refining
   the DSM have had no choice but to gerrymander criteria in ways that
   are based neither on clinical observation nor on empirical data (e.g.,
   deleting lack of empathy from the criterion set for antisocial PD be-
   cause its presence inflated comorbidity with narcissistic PD). These re-
   visions appear, in some instances, to have rendered the taxonomy less
   faithful to empirical reality (Westen & Shedler, 1999b).
3. Comorbidity between Axis II diagnoses is high. With current research
   instruments, patients who receive any PD diagnosis typically receive
   several (Oldham et al., 1992; Pilkonis et al., 1995). Stated differently,
   research does not support the notion that the current Axis II disorders
   are discrete.
4. The diagnostic criteria do not follow from any theoretically meaningful
   model of the domains of functioning that constitute personality
   (Millon, 1986). DSM-IV includes a preamble to Axis II that defines PDs
   in terms of enduring, maladaptive, inflexible patterns of experience
   that can involve cognition, emotion, interpersonal functioning, and
   impulse control. Yet the criterion sets do not encompass these do-
   mains of functioning, and, with only eight or nine criteria per disorder,
   cannot do so in any but a perfunctory way.
5. The criterion sets have narrowed over time; diagnostic criteria for some
   PDs have evolved into multiple behavioral indicators of a single trait,
   not descriptions of multifaceted personality syndromes. For example,
   the criterion set for paranoid PD includes six criteria that are redun-
   dant measures of one trait, chronic mistrust. Establishing relative cer-
   tainty that a patient is mistrustful, however, says little about the
   domains of functioning relevant to understanding the individual's per-
   sonality, such as how the patient thinks (e.g., how disordered can
   thought become?), the emotions the patient characteristically experi-

ences (e.g., anger, sadness, anxiety), the ways the patient deals with those feelings (e.g., substance abuse? blaming others for misfortunes?), one's characteristic motives, etc. Clinically, the criteria set does not provide many essential elements of a case formulation and hence divorces case formulation from diagnosis (Westen, 1998).

6. The task with which Axis II work groups have been charged may be psychometrically impossible. The goal has been to maximize the internal consistency of criterion sets (i.e., maximize correlations between criteria) and minimize correlations with criteria for other PDs, while limiting criteria to only seven to nine per disorder. However, it is psychometrically very difficult for such a small number of items (criteria) to describe a complex and multifaceted personality syndrome and also have high internal consistency because nonredundant criteria cannot correlate highly enough. Moreover, a diagnostic "instrument" (diagnostic system) that attempts to assess 10 disorders with so few items cannot attain adequate discriminant validity, no matter how well the items are selected because any conceptual overlap in items across disorders (such as lack of empathy, which is characteristic of several PDs) will produce unacceptably high comorbidity among the disorders.

7. Axis II is not comprehensive enough. Approximatey 60% of patients currently receiving treatment in clinical practice for personality pathology (defined as enduring maladaptive patterns of thought, feeling, motivation, or behavior that lead to dysfunction or distress) cannot now be diagnosed on Axis II (Westen & Arkowitz-Westen, 1998). These and other data suggest that we may want to expand the taxonomy to encompass the range of personality syndromes that clinicians treat.

8. Whereas Axis II commits to a categorical approach to diagnosis, it may be more useful to view personality pathology (e.g., borderline pathology) on a continuum ranging from none to moderate to severe instead of, or in addition to, diagnosing borderline PD as present or absent (Frances, 1982; Widiger, 1992). In addition, Axis II relies on categorical (dichotomous) diagnostic criteria. This is neither statistically nor conceptually optimal for variables that are continuously distributed in nature, which most Axis II criteria appear to be (see Clark, Livesley, and Morey, 1997).

9. Related to the above, the algorithm used to combine diagnostic criteria to make a diagnosis (i.e., counting symptoms) may not be the best available because it imposes thresholds that can be arbitrary and lead to poor reliability (Pilkonis et al., 1995; Widiger, 1992).

10. Valid PD research instruments have been difficult to develop. Validity coefficients are weak by psychometric standards (Perry, 1992; Pilkonis et al., 1995). Additionally, current instruments (questionnaires and structured interviews) rely heavily on direct questions about Axis II criteria, and thus rest on the assumption that patients with PDs can report accurately on their own personality processes (e.g., asking the patients to report on diagnostic criteria such as shallow emotions and sense of entitlement). In fact, many personality processes are implicit rather than explicit and may not be accessible via self-report (Shedler, Mayman, & Manis, 1993). This is all the more true for patients with

PDs for whom lack of insight, self-awareness, and perspective is often diagnostic. Not surprisingly, practicing clinicians do not rely heavily on direct questions to assess PDs (although direct questions can obviously be valuable for diagnosing more behavioral criteria, such as cutting or suicide attempts). Instead, clinicians of all theoretical orientations assess personality pathology by listening to the narratives patients tell about their lives and significant relationships, and observing the way the patients relate to them in the consulting room (Westen, 1997).

These and other problems provide a substantial challenge to the utility of the present diagnostic system and suggest that continuing piecemeal revisions of the diagnostic manual may no longer be adequate. It may be time to reconsider the assumptions on which the Axis II taxonomy rests.

ISSUES IN THE CLASSIFICATION OF PERSONALITY PATHOLOGY

If it is time to rebuild the PD taxonomy, we must address several questions at the outset. Telegraphically, we outline some of the most important issues: (a) how to distinguish Axis I from Axis II; (b) whether to use a categorical or dimensional diagnostic system; (c) and how to select categories and criteria.

DISTINGUISHING AXIS I FROM AXIS II

It is no longer clear what distinction is being coded by locating a disorder on Axis I versus Axis II. The explicit aim in distinguishing the two axes in DSM-III and subsequent editions of the manual was to ensure that clinicians did not ignore conditions (PDs and developmental disabilities) that otherwise might not draw the same kind of attention as the clinical disorders recorded on Axis I. Whether the placement of PDs on a separate axis has had the intended or opposite effect is unclear, especially in psychiatric research. The distinction between the two axes has, however, led to a substantial literature on comorbidity of Axis I and Axis II disorders, which may be meaningful, or may simply reflect the possibility that we are "carving nature" in the middle of the forearms rather than at its joints. Research on Axis I syndromes such as anxiety disorders (Brown, Chorpita, & Barlow, 1998) and eating disorders (Westen & Harnden, 1999) suggests that that the separation of clinical syndromes from personality organization may be arbitrary.

Conceptually, the distinction between Axis I and Axis II is used in ways that confound several issues. One distinction is state versus trait. Axis I arguably codes conditions or states that could presumably remit, whereas Axis II codes traits, or constellations of traits, that define who the person *is* (rather than what the person *has*). Although this is an important distinction, it cannot be neatly mapped onto the current Axis I/Axis II system. For many patients with psychotic disorders, for example, state becomes trait—indeed, the state is often foreshadowed by traits such as social peculiarity and soft neurological signs in childhood and adolescence. For many patients with schizophrenia or bipolar disorder (but not for others, suggest-

ing what a more clean state–trait distinction might do), the disorder is argu-
ably as descriptive of who they are (or have become) as of what they have.
Some clinical theorists (Kernberg, 1984) explicitly regard psychotic condi-
tions as forms of personality organization (which is likely accurate in some
cases but not in others, such as for high-functioning individuals who have
occasional bipolar episodes).

A related area of confusion concerns the distinction between syndrome
and personality, with the implication that a syndrome can be treated with-
out changing the overall structure of the organism, whereas personality is
the overall structure of the "psychological organism." This assumes that
syndromes exist independently of their "host" personalities—an assump-
tion may be conceptually and empirically problematic. In some instances
this disease analogy (or homology) makes sense: Just as an environmental
pathogen (such as a virus) can infect an organism that is vulnerable (either
by virtue of some organismic weakness, such as a congenital defect, or be-
cause the pathogen is so virulent that it could affect virtually any member of
the species), so too can a stressor produce Axis I symptoms either by virtue
of an underlying vulnerability (an Axis II condition) or its capacity to affect
virtually anyone in the population (e.g., extreme trauma).

But the analogy quickly breaks down because "host" and "pathogen" are
not so neatly distinguishable in the psychological realm. Humans often
seek, evoke, or elicit the environmental pathogens to which they are then
exposed. People who are paranoid can create paranoid environments when
they treat others with hostility and suspicion; eventually the environment
responds accordingly. Borderline patients who have grown up in chaotic
circumstances often recreate chaotic circumstances. If they desperately
fear abandonment, they may behave in ways that are so needy and inatten-
tive to personal boundaries that they drive others away, thus experiencing
repeated abandonments. What then is host and what is pathogen?

Another difficulty with the current Axis I/II distinction is that certain de-
fining features of Axis II conditions are included on Axis I. For example, re-
cent research indicates that intense depression and dysphoria are more
diagnostic of borderline PD than many of the criteria now included in the
borderline PD criterion set (Shedler & Westen, 1998; Westen & Shedler,
1999a). Thus the issue of comorbidity of depression and borderline PD may
be an artifact of our placing some of the symptoms on one axis and some on
the other. The high comorbidity between Axis I and Axis II disorders sug-
gests that borderline PD may not be unique in this regard.

Moreover, the largest group of patients currently treated for personality
pathology appears to suffer from a syndrome best described as depressive
or dysphoric PD. This syndrome is clearly a PD by the DSM-IV's definition,
involving enduring, maladaptive, inflexible patterns of cognition, emotion,
impulse regulation, and interpersonal functioning (Westen & Shedler,
1999b). These syndromes could be as easily represented, if at all, on Axis II
as on I (e.g., dysthymic disorder) and not Axis II is unclear.

Another source of confusion implicit in much thinking about Axis I and
Axis II (despite a clear caveat in the diagnostic manual) is the notion that the
former is more "biological," whereas the latter is more "psychosocial." This
distinction also does not hold, because many Axis I disorders (e.g., sub-

stance abuse and depression) have multiple etiologies, some of which are clearly psychosocial, and many PDs, such as schizotypal and antisocial PD, clearly have heritable components. Thus, we cannot easily place biological syndromes on one axis and psychosocial ones on another.

As we look toward DSM-V, at least two strategies seem tenable. One is for PD researchers to put their own house in order—devising a set of PD categories or dimensions that best fit the personality data—and to let Axis I researchers do the same. Then, at some later point, we can wrestle with the relation between the two axes in a more systematic way. An alternative strategy would be to select one of the distinctions implicit in the current Axis I/II division—probably state–trait—and use that as a basis for a cleaner distinction between the two axes. Thus, we might code manifest symptoms or states on Axis I, perhaps dimensionally in terms of severity and duration (e.g., anxiety, panic, depressive mood, psychosis), and we might code enduring patterns, whether disease processes that appear to have substantially affected the "psychological organism," such as schizophrenia, or personality patterns, on Axis II.

DIMENSIONAL OR CATEGORICAL DIAGNOSIS?

A much-debated issue is whether we should retain a categorical diagnostic system or move to a dimensional system, or some combination of the two (e.g., "borderline PD with narcissistic features"). The issue has been explored at length elsewhere (see Frances, 1982; Livesley, 1995; Livesley, Schroeder, Jackson, and Jang, 1994; Skinner, 1981; Widiger, 1992) and we will not elaborate all the arguments for or against each approach here. Instead, we will offer a few brief observations.

First, we can reasonably ask whether personality characteristics are continua (dimensions) or categories in nature. Quantitative methods, notably taxometric analysis, can be used to determine whether patterns of associations between continuously measured variables are generated by underlying taxons (true categories). Taxometric analysis considers whether patterns of correlations among relevant variables change once certain thresholds or cut points are reached (Meehl, 1995; Waller & Meehl, 1998). If so, the underlying phenomenon may be a true taxon rather than a continuum.

Another way to address the question of dimensional versus categorical diagnosis is to consider patterns of association between personality variables and relevant etiological and prognostic data. In a recent study, for example, we factor analyzed the 200 personality descriptive statements included in the Shedler-Westen Assessment Procedure-200 (SWAP-200), a Q-sort instrument designed to measure personality pathology. One factor that emerged was a subclinical thought disorder or schizotypy factor. Scores on this factor were associated with family history of psychosis in first-degree relatives, but the association was driven entirely by patients with factor scores in the upper fifth percentile of the distribution (Westen & Shedler, 1999c). In the remainder of the distribution, schizotypy scores were unrelated to genetic history (but were associated with a history of childhood abuse, particularly sexual abuse). Such data suggest that schizotypy may indeed be taxonic, with a low base rate even in our sample of PD patients (consistent with findings of other studies;

see, Korfine & Lenzenweger, 1995). They also suggest that below the level of taxonicity, the presence of subclinical thought disorder may represent something other than genetics (e.g., disruption of thought and memory by abuse), or that as a field we may have inadequately distinguished subtly different types of subclinical thought disturbance (a possibility we are in the process of examining empirically).

Second, we should consider what level of molarity is most appropriate for describing personality. Proponents of dimensional approaches such as the Five Factor Model (Costa & Widiger, 1994) favor traits as the primary descriptive units. Traits are relatively narrow, circumscribed constructs (e.g., neuroticism, agreeableness, or introversion). The alternative is to focus on organized constellations of personality traits that form syndromes. In our work, for example, we have empirically identified multifaceted personality syndromes, such as a schizoid syndrome, that includes not only the trait of introversion but also concrete thinking, deficits in social skills, flat affect, lack of interest in relationships, etc. We have identified a narcissistic syndrome that includes not only the trait of grandiosity (or in the parlance of the Five Factor Model, low modesty), but also envy, rage in response to perceived humiliations, a sense of entitlement, a tendency to devalue others, and so on, similar in many respects to the DSM-IV disorder.

Two final issues concern the mind of the observer (the clinician) as much as the mind of the observed (the patient). The first is clinical utility. We should consider whether a diagnostic system provides a method for describing psychopathology that is clinically useful. We may find, for example, that some version of a Five Factor Model maps neatly onto genetic data, but such findings do not necessarily mean that the Five Factor Model will be useful to clinical practitioners.

A second issue that pertains to the mind of the observer is the way clinicians (or, more broadly, people, of whom clinicians are a subset) naturally think. It may be that a purely dimensional system (using either relatively narrow constructs, such as anxiety or neuroticism, or relatively rich constructs, such as a paranoid personality syndrome) has psychometric advantages relative to a categorical system. Yet describing patients in terms of categories (as in the diagnosis of narcissistic PD with histrionic features) may be a more parsimonious way to think and talk clinically.

At this point, we suspect the best solution may be to develop a hybrid system that capitalizes on the advantages of both dimensional and categorical diagnosis and does not commit prematurely to one or the other. It may be in our interest to be agnostic, to develop a classification system that can be used either way, and let the data eventually sway us in one direction or another.

HOW TO SELECT CRITERIA, CATEGORIES, AND DIMENSIONS

Finally, we consider how to select categories and criteria or dimensions for a system for classifying personality pathology. As we argued in the first section of this article, the strategy pursued thus far—trying to refine the existing system by tweaking categories and criteria—may no longer be adequate. The methods of refining Axis II used over the last two decades (refinements

in categories and criteria to maximize internal consistency and minimize comorbidity) inevitably require work groups charged with revising Axis II to gerrymander criteria sets in ways that do not follow from either the empirical or the clinical data. An example is the decision (in moving from DSM-III-R to DSM-IV) to drop "lack of empathy" from the diagnostic criteria for antisocial PD in order to reduce comorbidity with narcissistic PD. Lack of empathy is, however, an empirically defining feature of antisocial PD (it is central to both PDs).

We can approach the issue of how to select categories, dimensions, and criteria from many angles and will comment here on only one or two issues. First, we might develop a classification system that is more empirically grounded than the current system, by making use of statistical aggregation techniques (such as cluster and factor analysis). If we choose to work with relatively circumscribed traits as the unit of analysis, factor analysis can help aggregate trait variables to identify underlying factors or dimensions (Livesley, Jans, & Verson, 1998). If we chose to work with broader personality syndromes as the unit of analysis, Q analysis[1] and other cluster algorithms can be used to identify clusters or groupings of PD patients (i.e., diagnostic categories or types) that occur in nature, based on common psychological features. Q-analysis has been used in biology to aid in classifying species and has been used successfully by personality researchers studying normal personality (Block, 1971, 1978). Researchers have attempted to use factor analysis, cluster analysis, latent class analysis, and similar methods over the last 30 years for diagnostic purposes with varying degrees of success (e.g., Grove & Andreasen, 1986; Morey, 1988; Skinner, 1986).

Thinking in terms of traits (e.g., variables such as neuroticism or extroversion) and thinking in terms of categories or types (e.g., categories such as histrionic PD or narcissistic PD) both have advantages. Perhaps a combined approach will be more useful than either approach alone (see Clark, Livesley, and Morey, 1997; Frances, 1982). In our own research (described briefly in the final section), we obtained detailed psychological descriptions of nearly 500 patients with PDs, using the SWAP-200. We subjected the SWAP-200 data to Q-analysis to identify naturally occurring groupings or categories of patients and found theoretically and clinically meaningful diagnostic categories (e.g., narcissistic, paranoid, schizoid, emotionally dysregulated). In separate analyses, we also subjected the 200 items contained in the SWAP-200 to factor analysis to learn what underlying dimensions the instrument tapped. Some of the resulting factors were similar to diagnostic categories obtained in the Q-analysis (such as narcissism and psychopathy factors). Some, however, were distinct, and better understood as traits than as types, notably factors measuring schizotypy, sexual conflict, and dissociation. These relatively narrow traits do not define personality types or diagnostic categories but are clinically and theoretically important.

Finally, we should give serious thought to how to generate the items or variables that will be factored or clustered and who should provide the data.

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1. Q-analysis is mathematically the same procedure as factor analysis. The difference is that factor analysis seeks to identify groups of similar variables, whereas Q-analysis seeks to identify groups of similar cases or people.

The approach taken by advocates of the Five Factor Model is based on the lexical hypothesis, namely that whatever is important to assess will be reflected in common, everyday language. Thus, Five Factor Model researchers have relied on self-report data first, and on data provided by lay observers second, largely with normal (rather than clinical) samples, from which the Five Factor Model was derived. Researchers later extended the Five Factor Model to PDs, based on the assumption that the constructs used by lay people would be sufficiently comprehensive for clinicians to use in describing psychopathology.

Our own approach, in contrast, extends the lexical hypothesis by recognizing that lay constructs alone may not be refined or comprehensive enough to capture the psychological phenomena salient to expert clinicians. Research in cognitive science makes clear that experts in any domain are likely to have language for many phenomena (and, more broadly, greater complexity and differentiation in their constructs) that are not salient to lay observers.[2] Thus, if we are to factor analyze anything, we might use an item set containing the kinds of psychological observations made by expert clinicians, not just lay observers, and study a sample that includes participants with a wide range of personality functioning, from relatively healthy to relatively disturbed.

A PROTOTYPE-MATCHING APPROACH TO PERSONALITY PATHOLOGY

In this final section, we briefly describe an emerging alternative to the current system for classifying PDs, which preserves many of its strengths and much of its format (and hence would provide only moderate "sticker shock" to practicing clinicians), but also addresses the problems described in the first part of this article. This method makes use of both clinical observation and statistical methods and seeks to capitalize on the unique strengths of both approaches.

Clinicians and statistical algorithms are good at different things. As we have shown in previous studies (Shedler & Westen, 1998), clinicians can make observations and inferences about specific psychological processes (e.g., ways of thinking, feeling, and regulating affects, including processes of which the patient is not aware) that are highly sophisticated and reliable. Self-report questionnaires and most structured research interviews cannot match the sensitivity of expert clinicians in discerning subtle psychological processes, especially implicit processes. Conversely, clinicians (and humans in general) are not adept at combining or aggregating data to identify underlying dimensions or categories, which is where statistical methods such as factor analysis or Q-analysis are most appropriate.

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2. The lay vocabulary for describing frozen water is limited to just a few constructs (ice, snow, and perhaps slush), but it is doubtful that expert observers, such as meteorologists or dedicated skiers, find these basic level constructs adequate for their purposes. A similar argument may be made for lay people versus expert clinicians in describing psychological functioning, particularly when describing a range of functioning that may be outside the average person's experience.

Thus, our work has taken an alternative route to integrating clinical and empirical methods that is, in many respects, the reverse of the approach taken over the last 20 years in revising Axis II. We (a) make use of a psychometrically rigorous method to quantify expert clinical observations; and (b) apply statistical aggregation techniques to the resulting data to identify dimensions and categories that are clinically meaningful, theoretically coherent, and empirically based (i.e., that predict other variables in sensible ways). We rely on clinicians to do what they do well—observe and perceive—and we rely on statistical aggregation procedures to do what statistical algorithms do well: aggregate data. We believe this is at least as useful a way to proceed as the more standard method, namely to fashion categories by convention and to use self-reports and clinician-administered interviews, which rely heavily on direct questions to patients about their personality characteristics, to refine those categories empirically.

DEVELOPING A CLINICALLY AND EMPIRICALLY BASED TAXONOMY OF PDs

We began with the assumption that all methods and all observers have their strengths and weaknesses, but that aggregated judgments of experienced clinicians, with years of training and experience, are likely to be better sources of data for registering subtle disturbances of personality than observations of lay observers describing themselves or their acquaintances. What is essential, however, in taking this approach is to ask clinicians to do what they do well—observe—and not what they do not do well: aggregate observations into intuitive categories or diagnoses.

To harness clinical observation, we adapted a widely used method in research on normal personality, the Q-sort procedure (Block, 1978). A Q-sort (in the context of personality assessment) is a set of statements describing various aspects of personality and psychological functioning. The statements provide a standard language with which observers or clinical judges may express their observations. Each statement is printed on a separate card, and the clinician-observer rank-orders the cards by sorting them into piles from those that are least applicable or descriptive of a given patient to those that are most applicable or descriptive.

The SWAP-200 is a Q-sort instrument designed to assess personality pathology. It includes 200 personality descriptors (items). Clinicians sort the items into categories from those least descriptive of the patient (assigned a value of 0 for data analysis purposes) to those most descriptive of the patient (assigned a value of 7). Creation of the item set for the SWAP-200 was an iterative process that took approximately 7 years. Items came from a mixture of sources, including (a) diagnostic criteria from several editions of the DSM; (b) clinical and empirical literature on PDs; (c) input from hundreds of clinicians who used the instrument over several iterations; (d) research on normal personality traits; and (e) clinical experience. To hone the item set, we used the standard procedures for item refinement used by personality psychologists, such as soliciting feedback from hundreds of clinicians who used the item set to describe their patients, eliminating items with minimal variance or high redundancy with other others, etc.).

Research thus far supports the validity and reliability of the instrument. SWAP-200 data predict (a) clinician PD diagnoses made both categorically and dimensionally; (b) objective indicators of personality dysfunction such as suicide attempts; (c) overall level of adaptation assessed by measures such as the Global Assessment of Functioning scale from the DSM-IV; and (d) various developmental and genetic history variables (Shedler & Westen, 1998; Westen & Shedler, 1999a, 1999c).

For the present purposes, we will describe our major study to date, which represents a first attempt using this method to develop an empirically derived, clinically near taxonomy of PDs (Westen & Shedler, 1999b). The study relied on experienced clinicians as informants, using a practice research network method that allows us to do taxonomic work with large samples. Participants were 496 psychologists and psychiatrists randomly selected from the registers of the American Psychological and American Psychiatric Associations, who each described one patient using the SWAP-200. Each clinician used the SWAP-200 to describe a patient in his or her practice, who was currently diagnosable with at least one DSM-III-R or DSM-IV Axis II disorder. Thus, this study represents a conservative first use of the instrument for the purpose of developing a new taxonomy, since it was deliberately biased to include only patients diagnosable using the existing DSM system. This conservatism, however, amplifies the potential importance of any divergences between the empirically derived taxonomy and the Axis II taxonomy, because the study represents an empirical reclassification of patients currently classifiable using Axis II.

To identify naturally occurring clusters or groupings among PD patients, we used Q-factor analysis. The technique is designed to identify clusters of patients who share common psychological features and are distinct from other clusters of patients. As noted above, the technique has been used by taxonomists in classifying species, and it has been used successfully in studies of normal personality (Block, 1971; Caspi, 1998; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996), but it has not previously been applied to the study of PDs. Q-analysis is essentially inverted factor analysis, in which the rows and columns of data are reversed, so that people (cases), rather than variables, are factored and hence aggregated. Thus, Q-analysis identifies groups of patients who share psychological features, distinct from patients in other groups. The groups, called Q-factors, represent empirically-derived diagnostic categories.

The Q-factor analysis yielded seven orthogonal, clinically and theoretically coherent clusters, or Q-factors: dysphoric, schizoid, antisocial, obsessional, paranoid, histrionic, and narcissistic. Although each Q-factor is defined by the entire configuration of the 200 items included in the Q-sort, we will describe, for the sake of brevity, only the 10 or 11 most diagnostic criteria for each disorder.

The *dysphoric* Q-factor was characterized by SWAP-200 statements indicating (in descending order of diagnosticity) a tendency to feel inadequate, inferior, or a failure; to feel unhappy, depressed, or despondent; to feel ashamed or embarrassed; to blame the self or feel responsible for bad things that happen; to feel guilty; to be sensitive to rejection or abandonment; to

feel helpless and powerless; to be needy or dependent; to be ingratiating or submissive; and to be passive and unassertive.

The *antisocial–psychopathic* Q-factor was characterized by items indicating a tendency to be deceitful; to take advantage of others and have minimal investment in moral values; to experience no remorse for harm or injury caused to others; to be angry or hostile; to act impulsively, without regard for consequences; to manipulate others' emotions to get what she or he wants; to be unreliable or irresponsible; to engage in criminal behavior; to have little empathy; and to be unconcerned with the consequences of his or her actions.

The *schizoid* Q-factor was defined by statements indicating a tendency to lack close friendships or relationships; to have a limited or constricted range of emotions; to lack social skills; to have an odd or peculiar appearance or manner; to be shy or reserved in social situations; to be inhibited or constricted (to have difficulty allowing self to acknowledge or express wishes and impulses); to have difficulty making sense of other people's behavior (to tend to misunderstand, misinterpret, or be confused by others' actions and reactions); to be unable to describe important others in a way that conveys who they are as people (i.e., descriptions of others come across as two-dimensional and lacking in richness); to have little psychological insight into his or her own motives, behavior, etc.; and to think in concrete terms and interpret things in literal ways (i.e., to have limited ability to appreciate metaphor, analogy, or nuance).

The *paranoid* Q-factor was characterized by items indicating a tendency to hold grudges; to feel misunderstood, mistreated, or victimized; to be quick to assume that others wish to harm or take advantage of him or her; to express intense and inappropriate anger out of proportion to the situation at hand; to be critical of others; to get into power struggles; to be angry or hostile; to see certain others as "all bad," and lose the capacity to perceive any positive qualities the person may have; to be self-righteous or moralistic; and to react to criticism with feelings of rage or humiliation.

The *obsessional* Q-factor was defined by a mix of adaptive and maladaptive characteristics, including a tendency to be consciousness and responsible; to be articulate; to have moral and ethical standards; to be able to use his or her talents, abilities, and energy effectively and productively; to enjoy challenges; to see oneself as logical and rational, uninfluenced by emotion; to be excessively devoted to work and productivity; to be controlling; to be able to find meaning and satisfaction in the pursuit of long-term goals and ambitions; to appreciate and respond to humor; and to be inhibited or constricted (to have difficulty allowing oneself to express wishes and impulses).

The *histrionic* Q-factor was most strongly defined by items reflecting a tendency to be overly needy or dependent (to require excessive reassurance or approval); to become attached quickly or intensely; to become attached to or romantically interested in people who are emotionally unavailable; to be suggestible or easily influenced; to be overly sexually seductive or provocative; to express emotion in exaggerated and theatrical ways; to fantasize about finding ideal, perfect love; to be unable to soothe or comfort oneself when distressed (i.e., to require involvement of another person to help regulate emotion); to have emotions that spiral out of control; and to fear she or he will be rejected or abandoned by those who are emotionally significant.

Finally, the *narcissistic* Q-factor included items indicating a tendency to have fantasies of unlimited success, power, beauty, talent, brilliance, etc.; to feel privileged and entitled (to expect preferential treatment); to have an exaggerated sense of self-importance; to treat others as an audience to witness one's own brilliance, beauty, etc.; to seek to be the center of attention; to expect oneself to be perfect; to be arrogant, haughty, or dismissive; to fantasize about finding ideal, perfect love; to think others are envious of one; and to feel envious of others.

Because the first Q-factor, the dysphoric group, was very large (it included approximately 20% of the patients in the sample, which is particularly interesting in light of the fact that DSM-IV does not recognize dysphoric or depressive PD), we performed a second Q-analysis to learn if we could identify subtypes of dysphoric patients. This analysis produced five Q-factor subtypes that proved to be highly clinically coherent.

The first subtype, which we labeled *dysphoric: avoidant,* was characterized by item statements indicating a tendency to be shy or reserved; to avoid social situations because of fear of embarrassment or humiliation; to be socially awkward or inappropriate; to be inhibited or constricted; to be passive and unassertive; to lack close friendships and relationships; to feel like an outcast or outsider; to have difficulty allowing oneself to experience strong pleasurable emotions; to feel inadequate; and to feel ashamed, embarrassed, or humiliated.

The second subtype, which we labeled *dysphoric: high functioning,* was characterized by a number of items indicating psychological strengths: they are articulate; have moral and ethical standards; are empathic; appreciate humor; are insightful; and tend to elicit liking in others. These items were followed by items indicating chronic dysphoria, such as self-blame; feeling guilty; feeling unhappy, depressed, or despondent; and seeking out relationships where one is in the role of caring for or rescuing others.

The third subfactor, which we labeled *dysphoric: emotionally dysregulated,* included many patients currently diagnosed by their clinicians as borderline. These patients were best characterized by items describing emotions that spiral out of control; frequent struggles with genuine suicidal wishes; an inability to soothe or comfort themselves when distressed; a tendency to experience life as meaningless; and a tendency to make repeated suicidal threats or gestures.

The fourth subtype, *dysphoric: dependent,* appears substantially more disturbed than the current dependent PD category. Patients in this category were characterized by a tendency to get drawn into or remain in relationships in which they use emotionally or physically abused; to be ingratiating or submissive; to become attached quickly or intensely; to be suggestible or easily influenced; to become attached to or romantically interested in people who are emotionally unavailable; and to be overly needy or dependent.

We labeled the final subtype *dysphoric: hostile-externalizing.* The statements most descriptive of this Q-factor included a tendency to get into power struggles; to be angry or hostile; to blame others for his or her own failures or shortcomings; to feel misunderstood, victimized, or mistreated; to be conflicted about authority (e.g., to feel one must submit, rebel against,

win over, defeat, etc.); to hold grudges; and to express aggression in passive and indirect ways.

Several aspects of this empirically derived system for classifying PDs are of note. First, whereas previous cluster analyses of Axis II criteria have often failed to produce a coherent, clinically meaningful diagnostic system, Q-analysis of the relatively comprehensive item set provided by the SWAP-200 did produce a coherent diagnostic system. Second, the analysis reproduced many categories resembling those in the current taxonomy, but it selected criteria in such a way that the disorders are more cleanly (empirically) distinguishable. For example, the analysis differentiated cleanly between two kinds of patients with intense, labile emotions: (a) histrionic patients, whose intense emotions are not particularly distressing to them, and are alloyed with other characteristics, such as a seductive interpersonal style and a shallow, impressionistic cognitive style; and (b) emotionally dysregulated patients, whose intense emotions are extremely distressing to them and often lead them to use desperate measures to escape them. Third, the analysis carved the diagnostic spectrum in ways that differ in some fundamental respects from the current taxonomy. For example, it did not provide support for a taxonomy in which schizoid and schizotypal are treated as distinct categories.

We do not, of course, believe this study represents the final word on how PDs should be classified. Among other limitations, it was biased to reproduce a taxonomy that resembles the current one, by selecting patients who could be diagnosed using DSM-III-R and DSM-IV categories. Nevertheless, it is a first step toward a more clinically and empirically grounded taxonomy using this method, and some of its findings, such as the elimination of the borderline diagnosis and its replacement with two empirically derived diagnostic categories (histrionic and emotionally dysregulated), which split up many of the current borderline symptoms differently), have already replicated in both adult, and adolescent samples.[3]

DIAGNOSING PATIENTS USING THE SWAP-200: MOVING TO A PROTOTYPE APPROACH

The approach to diagnosis of personality pathology we are pursuing differs from the DSM-IV approach not only in how the diagnoses are generated but how the data are aggregated on a given patient to make a diagnosis. The empirically derived Q-factors (e.g., narcissistic) serve as diagnostic templates against which a given patient's SWAP-200 description is compared to assess degree of match. We refer to the correlation between a patient's SWAP-200 description and a diagnostic template as a *PD score*. Thus, a patient receives a PD score for each empirically derived diagnostic category. The PD scores can be graphed to create a PD profile, which resembles an MMPI profile.

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3. We have just completed two additional large *N* studies: (a) one of adults with personality pathology not currently diagnosable on Axis II; and (b) the other attempting to make a first pass at a diagnostic system for adolescent personality pathology and are currently embarking on two NIMH-supported studies to pursue this approach with larger samples of adolescent and adult patients using methods designed to overcome some of the limitations of our initial studies, particularly the reliance on single respondents (clinicians).

In a study in progress, we are examining the relation between PD scores in a small sample of outpatients from two standpoints: that of the patient's treating clinician, who has known the patient for an average of about six months, and that of two blind interviewers based on a loosely structured interview called the Personality Diagnostic Interview (PDI). The PDI resembles the first two to three sessions of a thorough psychiatric intake. It asks patients to describe themselves, the presenting problem and its history, their childhood experiences, and their history of friendships, romantic relationships, and school and work relationships. What is most distinctive about this interview is that, unlike current semi-structured PD interviews, it centers on interpersonal narratives, asking the patient to give example after example of interactions with significant others, much as clinicians do in clinical interviews.

The preliminary data are very promising: The average correlation between clinician-based and interview-based PD scores for each of the empirically derived PD prototypes from our national sample (e.g., clinician assessment of narcissistic PD, with interview assessment of narcissistic PD) is $r = .80$, and the average discriminant validity coefficient (e.g., clinician assessment of narcissistic, with interview assessment of antisocial PD) is $r = -.38$. Average interrater reliability across PD scales using the interview is $r = .80$. If these data hold up as the N grows larger (virtually all convergent validity coefficients at present are significant at $p < .001$, even with a small sample), they will demonstrate that (1) expert clinical inference can in fact be quantified reliably; (2) a narrative-based interview can produce substantially better validity estimates than instruments with direct-report format of which we are aware, without sacrificing reliability; and (3) the prototypes we have identified using our large national sample do appear to be orthogonal, since diagnostic overlap is minimal in this new sample.

Using this prototype-matching approach, diagnosis may be dimensional or categorical. Raw PD scores are dimensional. To work with categorical diagnoses, one simply sets a diagnostic threshold for the PD scores. When a score is above threshold, a categorical diagnosis is given. When it is above a somewhat lower threshold, the patient is described as having features of the disorder.

Correlating SWAP-200 descriptions with PD scores is appropriate for research purposes but too cumbersome for day-to-day clinical use. Fortunately it is not necessary for daily use. Instead, Q-factor descriptions (the first 16–20 items would be sufficient, arranged in descending order of importance) can serve as diagnostic templates, and clinicians can simply rate the degree of match between a patient's personality and each diagnostic template, using a simple 5-point rating scale: 1 (no match), 2 (slight match, patient has minor features of the disorder), 3 (moderate match, patient has features of the disorder), 4 (strong match, patient has the disorder; categorical diagnosis warranted), 5 (very strong match, patient exemplifies the disorder; prototypical case) (see Figure 1).[4]

Such a template-matching approach (where the clinician compares the patient against the configuration or gestalt of the template) could replace the current approach used in Axis II, where diagnosis is made by counting symptoms. (Indeed, the current symptom-counting approach, which moved

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4. This scaling system was developed in consultation with Dr. Robert Spitzer.

5   very strong match (patient's personality exemplifies this disorder; prototypical case)

4   ' strong match (patient has this disorder; diagnosis applies)

3   moderate match (patient has significant features of this disorder)

2   slight match (patient has minor features of this disorder)

1   no match (description does not apply)

FIGURE 1. Dimensional and Categorical Diagnosis Using a Prototype Matching Approach

away from the defining features approach to categorization of earlier editions of the DSM, was itself a limited attempt at applying prototype theories of classification to psychiatric diagnosis; see Frances, 1982.)

The presence of two or three items in two different diagnostic templates makes little difference when the clinician is rating the gestalt of 16–20 items instead of counting criteria. Thus, if a self-critical dysphoric: high-functioning patient has rejection sensitivity and depression but does not have the kind of emotional reactivity and problematic affect-regulatory mechanisms that characterize dysphoric: emotionally dysregulated patients, he or she would receive a 1 (no match) on the latter, because the patient would not match the gestalt, even though both share a number of dysphoric features.

This procedure would likely take no more than a minute or two for clinicians familiar with the diagnostic prototypes, and would yield diagnoses similar to those currently used by clinicians, such as "paranoid PD with schizoid features," because clinicians would rate the patient on each prototype, but scores greater than or equal to 4 would constitute categorical diagnosis and scores of 3 would constitute features.

CONCLUSION

In many respects, Axis II has been a casualty of the long-standing distrust and disrespect between clinicians and researchers. Clinicians too often dismiss research as irrelevant to their clinical concerns. Researchers, in contrast, tend to view clinicians as sloppy, unsystematic, and unscientific in their thinking. Thus, when researchers discover that clinicians cannot use the criteria they have developed for a disorder to make reliable diagnoses, they typically conclude that clinicians are incapable of applying the criteria adequately or are too uninformed (or lazy) to use the structured interviews researchers have developed. This is analogous to a professor who writes an exam, finds that most of the students fail, and concludes that the students are unintelligent or have not been applying themselves.

Perhaps an even more apt analogy is coding research data. The DSM-IV is essentially a manual for coding psychological phenomena, such as symptoms of depression, borderline PD, etc. If PhDs and MDs cannot use DSM criteria to make valid and reliable diagnoses after years of graduate training, supervision and multiple years of clinical experience (which, empirically, they do not appear to be able to do), then the problem is arguably with the criteria or the way of aggregating them required by the diagnostic manual.

The studies conducted thus far using the SWAP-200 suggest that the same methods of test construction refined for decades by personality researchers can be used to create instruments that rely on expert clinical judgment. By integrating clinical and research methods, we may be able to produce a more clinically and empirically useful approach to assessing and classifying personality pathology.

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