

PERSONALITY AND PSYCHOPATHOLOGY: WORKING TOWARD THE BIGGER PICTURE

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There are systematic and meaningful links among normal and abnormal personality traits and Axis I and II constructs from the DSM. Nevertheless, much research in this area focuses on pairs of constructs (e.g., the link between personality traits and a specific Axis I disorder), rather than on the broader multivariate structure of the personality-psychopathology domain. We underscore the need for this broader perspective, a perspective that would transcend largely artificial boundaries between current constructs (e.g., normal and abnormal personality). We outline our approach to research from this perspective and we emphasize the internalizing (mood and anxiety) and externalizing (substance use and antisocial behavior) spectra as promising foci for initial research on the joint structure of personality and psychopathology.

Our field is currently enjoying a renaissance of research linking personality and psychopathology. During much of the recent past, the personality and psychopathology literatures proceeded mostly in parallel. Yet this was not always so. Many of the broader frameworks proposed by earlier theorists assumed an intimate link between personality and psychopathology. The grand frameworks of the past, however, have mostly given way to empirical research on links between specific personality and psychopathology constructs. Current research might therefore be conceptualized as a rapprochement of the personality and psychopathology literatures, accompanied by an emphasis on empirical data to support the rapprochement. Of course, this is a welcome antidote to grand theories lacking substantial empirical support. Nevertheless, the specialized focus of much current research is naturally accompanied by the risk of neglecting the bigger picture. Is it possible to pursue research working toward an empirical model that strives for the comprehensiveness and scope of coverage that accompanied early theorizing in this area?

The goal of our article is to consider this question. The framework for considering this question is provided by current distinctions in the existing literature. These distinctions are outlined in Figure 1. Figure 1 contains four boxes, representing DSM (American Psychiatric Association, 1980, 1987,

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1994) Axis I (or syndromal) psychopathology, Axis II (or personality) psychopathology, dimensional models of normal personality, and dimensional models of abnormal personality. Much current research represents investigation along one of the axes in Figure 1. For example, an investigation of the normal-range personality trait profile of individuals diagnosed with a major depressive episode on Axis I would fall along the upper left-most axis in Figure 1. Hence, to frame our perspective on the feasibility of a comprehensive empirical model of personality and psychopathology, we begin with a brief review of research organized by the axes in Figure 1. Our review is not meant to be exhaustive; rather, we examine research along each axis in Figure 1 with an eye toward potential ways of bringing together the constructs delineated in Figure 1 under a broader, more integrative framework. We begin by examining the link between syndromal (Axis I) and personality (Axis II) psychopathology as conceptualized in the DSM.

LINKING AXIS I AND AXIS II

Relegating the personality disorders (PDs) to Axis II in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980) had the good intention of calling more attention to the often-neglected or overlooked PDs. However, a major problem with this move was soon to follow; specifically, that of comorbidity, or co-occurrence of disorders. The high levels of comorbidity between Axis I and Axis II disorders has been widely documented (e.g., Fabrega, Ulrich, Pilkonis, & Mezzich, 1992; McGlashan, 1987; Skodol, Oldham, & Gallagher, 1999). Approaches to this problem have varied. Some researchers have attempted to eliminate comorbidity from their studies by screening for “pure” cases. However, others have made this issue a focus of investigation and sought to determine the role comorbidity plays in etiology, course, severity, treatment, and prognosis of disorders.

Four proposed models of the relationship between Axis I and Axis II disorders seem to have gained consensus within the field as plausible explanations for this relationship: (a) the predisposition/vulnerability model; (b) the complication/scar model; (c) the pathoplasty/exacerbation model; and (d) the spectrum model. In the predisposition/vulnerability model, the presence of an existing disorder increases the probability of developing a second disorder. Specifically, a certain subset of maladaptive personality traits, such as those making up Borderline PD, may predispose an individual to developing a particular Axis I disorder, such as depression, by evoking particular responses that facilitate the development of this disorder. In the complication/scar model, the direction of causality is reversed, such that an existing Axis I disorder is presumed to “complicate” or “scar” an individual’s personality. For example, the existence of a long-term, severely disabling Axis I disorder, such as chronic, recurring major depression, may cause changes in personality at the trait level, such as increased neuroticism/negative emotionality.

The pathoplasty/exacerbation model assumes that co-occurring Axis I and Axis II disorders may have independent etiology and onset but that personality can influence the course or manifestation of an Axis I disorder. This

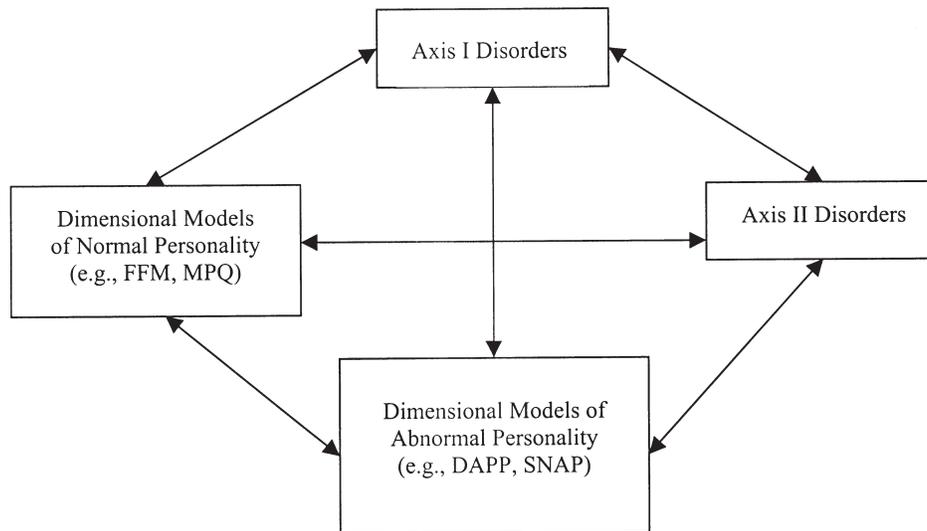


FIGURE 1. Heuristic Guide to the Major Literatures Relevant to the Study of Personality and psychopathology. DAPP = Dimensional Assessment of Personality Pathology; FFM = Five-Factor Model; MPQ = Multidimensional Personality Questionnaire; SNAP = Schedule for Nonadaptive and Adaptive Personality.

influence may be due to either a synergistic effect, in which the PD negatively impacts the course or prognosis of the Axis I disorder (exacerbation) or a modifying effect, in which the PD affects the way the Axis I disorder is expressed, for example, the specific symptom profile (pathoplasty; Dolan-Sewell, Krueger, & Shea, 2001). Finally, the spectrum model posits similar Axis I and Axis II disorders as “developing from the same constitutional soil” (Millon & Davis, 1996, p. 18). As opposed to viewing related Axis I and Axis II disorders as distinct, from this perspective they are thought to exist on a spectrum or continuum ranging from subclinical traits to full-blown psychopathology. For example, cluster C PDs may represent a manifestation of the same underlying mechanisms contributing to Axis I anxiety disorders, whereas the cluster A PDs may exist on a continuum with schizophrenia (Tyrer, Gunderson, Lyons, & Tohen, 1997).

Siever and Davis (1991), for example, proposed a spectrum model that encompasses both Axis I and Axis II disorders. Their psychobiological model purports four dimensions to account for Axis I and II pathology: cognitive/perceptual organization, impulsivity/aggression, affective instability, and anxiety/inhibition. The authors state that these are dimensions of abnormality, such that extreme, discrete symptoms represent an Axis I disorder, whereas disturbances on the other end of the dimension may become crystallized into characterological behavior patterns representing the related Axis II disorder.

The psychobiological model was developed based on the authors' thorough understanding of the literature examining genetic and biological underpinnings of personality. However, the approach taken in this model attempted to integrate this literature into the current diagnostic scheme, which separates syndromal and personality disorders on two distinct axes. In this important work, Siever and Davis did emphasize the point that "the pathophysiology of psychiatric disorders may transcend this [Axis I and Axis II] division," (Siever & Davis, 1991, p.1653) but did not break free from the axis division in creating this model. Furthermore, the model only includes personality pathology, and it is unclear where a current conceptualization of normal personality might fit. Criticism of this model has also noted that the anxiety/inhibition, impulsivity/aggression, and affective instability dimensions are congruent with three facets of Neuroticism in the Five-Factor Model of personality (FFM; Widiger & Frances, 2002), potentially limiting the scope and comprehensiveness of the model. In addition, empirical research on the model has been limited, likely because no measure of the proposed dimensions is available currently (Widiger & Frances, 2002).

Although much discourse on the relationship between Axis I and Axis II disorders identifies these four models (the predisposition/vulnerability model, the complication/scar model, the pathoplasty/exacerbation model, and the spectrum model), both empirical research and theoretical writing on the topic remains conflicted as to which model represents the optimal conceptualization. Indeed, Millon and Davis (1996) write that "it is not impossible that all are applicable within a single individual to some degree," (p. 18). It has also been suggested that different models may better explain different classes of disorders (Dolan-Sewell et al., 2001).

LINKING AXIS I AND NORMAL PERSONALITY

Some work supporting all four personality-psychopathology models (i.e., predisposition/vulnerability, complication/scar model, pathoplasty/exacerbation, and spectrum) has been done using normal range personality traits (for a recent review see Widiger, Verheul, & van den Brink, 1999). However, most studies including measures of Axis I disorders and normal personality have focused on a specific disorder as it relates to one or more normal personality traits (Widiger et al., 1999). The disorder that has gained the most attention from this approach is depression. Work done in this area has supported all four of the models, to some extent, as plausible explanations for the relationship between personality and depression (Bagby, Joffe, Parker, Kalemba, & Harkness, 1995; Kendler, Neale, Kessler, Heath, & Eaves, 1993; Rothschild & Zimmerman, 2002; Scott, Williams, Brittlebank, & Ferrier, 1995). A thorough examination of this work is also presented in a review by Enns and Cox (1997). Here, we focus on reviewing multivariate research linking multiple Axis I disorders and multiple personality traits, since the goal of our article is to provide some outlines of the bigger picture linking multiple aspects of personality and psychopathology (see Figure 1).

The first comprehensive study examining the relationships between multiple traits and multiple diagnoses was by Trull and Sher (1994), which looked at the relationships between the five factors of the FFM and a broad range of Axis I disorders in a nonclinical sample. This work confirmed the hypothesis that the normal-range personality traits found in the FFM are related to Axis I disorders, across the broad range of disorders sampled in this study. The results suggested a general profile differentiating those with disorders from those without, with high Neuroticism and Openness, and with low Extraversion, Agreeableness, and Conscientiousness characterizing all Axis I pathology in this study. Additional analyses were able to identify further some unique distinctions between disorders. For example, after controlling for comorbidity, a profile of low Neuroticism, Conscientiousness, and Agreeableness, and high Extraversion characterized substance users without depression.

An additional study investigating multiple normal-range personality traits as they relate to multiple Axis I disorders was done by Krueger, Caspi, Moffitt, Silva, & McGee (1996). This study measured normal personality with the Multidimensional Personality Questionnaire (MPQ; Tellegen, in press) and created "personality profiles" for the categories of Affective Disorder, Anxiety Disorder, Substance Dependence and Conduct Disorder. Similar to Trull and Sher (1994), Krueger et al. (1996) found that Negative Emotionality/Neuroticism played the primary role in distinguishing clinically-disordered individuals from others. However, Krueger et al. (1996) also demonstrated that many individual differences explained by personality were lost when comorbid cases were not included, suggesting that comorbid cases are fundamental in understanding the relationships between personality and psychopathology. In addition, a follow-up study by Krueger (1999a) controlled for psychopathology at the time personality was assessed with the MPQ (age 18) and showed that the MPQ at age 18 still predicted disorders at a follow-up wave of the study (age 21) across the four major domains assessed (i.e., affective, anxiety, substance dependence, antisocial disorders).

These studies provide foundations by which to begin to understand the complex relationships between models of personality and categories of Axis I psychopathology. Nevertheless, these studies must be interpreted within existing schemes used to measure and conceptualize psychopathology and personality. In addition, the analyses were primarily focused on understanding distinct profiles of personality variables within disorders and not on building a comprehensive multivariate model of personality and psychopathology.

LINKING NORMAL PERSONALITY AND AXIS II

Research investigating the structural relationship between normal personality traits and DSM PDs has stemmed largely from the idea that abnormal personality is best conceived as extreme variants on underlying traits. This idea has gained much support because abnormal and normal personality do not appear discontinuous, and the structure of personality appears similar across clinical and nonclinical samples (Clark & Watson, 1999;

O'Connor, 2002). Because current thinking on this topic generally assumes that a dimensional model is the best approach to linking normal with abnormal personality, most work has linked normal personality with dimensional models of abnormal personality, a topic that we turn to later. Examination of the link between normal personality and Axis II disorders assessed according to DSM criteria has been more limited. Furthermore, many studies incorporating the DSM conceptualization of PDs with a measure of normal personality have used a dimensional self-report measure designed to capture the DSM PDs (e.g., the Minnesota Multiphasic Personality Inventory PD scales; Morey, Waugh, & Blashfield, 1985; or the Millon Clinical Multiaxial Inventory syndromes; Millon, 1983, 1987; Millon, Millon, & Davis, 1994). Here we focus on work assessing PDs according to DSM criteria, particularly by semistructured interview, and the connections of those PDs with normal personality.

To date, most studies on this specific topic have approached it from the side of normality. Most researchers have asked: What existing model of normal personality can best account for individual differences described using the DSM conceptualization of PD? Early attempts to answer this question primarily examined the amount of variance in PDs that could be accounted for by models of normal personality or the similarity in trait structure between clinical and nonclinical samples. More recent research has extended this work by beginning to identify "profiles" of normal personality traits for specific PDs and looking at lower-level traits to provide differentiation among PDs. These studies have almost always focused on the FFM as the structure of normal personality. Research to date relating the FFM to PDs is quite extensive and a thorough review can be found elsewhere (Widiger & Costa, 2002). Here we focus on a more general review of some key findings from this literature.

Numerous studies have established significant, stable, and comprehensive relationships between DSM PDs and the higher-order factors of the FFM (Ball, Tennen, Poling, Kranzler, & Rounsaville, 1997; Costa & McCrae, 1990; Trull, 1992; Wiggins & Pincus, 1989). However, some of these studies have failed to find a strong relationship between Openness and the PDs (Schroeder, Wormworth, & Livesley, 1992; Widiger et al., 1991). Extensions of this work include replications in clinical samples (Bagby et al., 1999; Hyer et al., 1994; Lehne, 1994) and across diagnostic systems (DSM-III-R and ICD-10; Duijsens & Diekstra, 1996). Similarly, factor analyses of DSM PDs (Nestadt et al., 1994) and other clinical instruments, such as the California Q-Sort (McCrae, Costa, & Busch, 1986; John, Caspi, Robins, Moffit, & Stouthamer-Loeber, 1994) have revealed factors resembling the FFM. More recent research has focused more on the facets of the FFM and provided evidence that facet-level analyses provide greater ability to discriminate among PDs (Axelrod, Widiger, Trull, & Corbitt, 1997; Dyce & O'Connor, 1998; Morey et al., 2002; Trull et al., 1998), which are consistent with theoretical predictions (Widiger, Urnes, Friis, Pedersen, & Karterud, 1994). Facet-level analyses also appear to emphasize the importance of facets of Openness in discriminating among PDs (Dyce & O'Connor, 1998; Reynolds & Clark, 2001). Researchers focusing on the relationship between the FFM and specific PDs, such as borderline

PD (Clarkin, Hull, Cantor, & Sanderson, 1993; Wilberg et al., 1999), avoidant PD (Wilberg et al., 1999), and narcissistic PD (Bradlee & Emmons, 1992; Ramanaiah, Detwiler, & Byravan, 1994) have contributed to a more accurate conceptualization and more informative empirical investigations of these PDs. Specifically, exploring the correlates of normal personality at both the domain and facet level can offer a comprehensive understanding of certain PDs in relation to normality. For example, understanding narcissism as a combination of high Extraversion, low Agreeableness, and low Neuroticism may lead to understanding of the etiology of this PD or to more accurate diagnostic conceptualization in future editions of the DSM (Trull & McCrae, 2002).

Furthermore, recommendations have been made for specific clinical applications of the FFM, such as aiding in diagnosis formation, establishing rapport, and treatment selection (Costa & McCrae, 1992). However, criticism suggests some hesitation is warranted in relying solely on the FFM when working with PDs in a clinical setting, particularly because the incremental contributions of the FFM over measures of abnormal personality needs to be demonstrated (Ben-Porath & Waller, 1992). In addition, current models of normal personality may not provide an exhaustive measure of personality pathology (Livesley, 2001), as supported by consistent findings that measures of abnormal personality account for specific variance that the FFM does not (Reynolds & Clark, 2001; Schroeder et al., 1992).

This work on the relationship between the FFM and DSM PDs has been quite important and influential in demonstrating that the DSM PD constructs can be usefully conceived of in terms of the FFM, particularly the facets of the FFM as conceptualized in the NEO-PI-R (Widiger & Costa, 2002). However, the research to date in this area has incorporated a current conceptualization of PDs into an existing model of normal personality. Thus, this approach still maintains, or at least is often silent, regarding the putative distinction between Axis I, or syndromal, and Axis II, or personality, pathology. Yet as we have seen, evidence also indicates that Axis I disorders are well-predicted by non-normative scores on "normal" personality instruments (Krueger et al., 1996; Trull & Sher, 1994).

A recent argument was made by Trull and McCrae (2002) that comorbidity between Axis I and Axis II disorders may be explained by trait levels of the FFM. They noted several studies examining Axis I and II comorbidity that would support this hypothesis (Millon & Kotik, 1985; Swartz, Blazer, George, & Winfield, 1990). For example, Axis I disorders that are high in *N* might be expected to be comorbid with Axis II disorders also high in *N*. However, this interpretation has not consistently been supported by comorbid associations because disorders showing different FFM profiles have also been shown to be strongly comorbid (Widiger et al., 1991). Furthermore, studies are needed that include measures of the FFM along with measures of Axis I and Axis II constructs to determine if similar FFM profiles explain Axis I and II links in the same sample. Thus, it is important to begin to expand research on the relationship between normal personality traits and DSM PDs to account for links with syndromal (Axis I) psychopathology.

LINKING NORMAL PERSONALITY AND DIMENSIONAL MODELS OF PERSONALITY PATHOLOGY

As previously mentioned, there has been a growing consensus that abnormal personality should be conceptualized dimensionally, as opposed to the categorical approach found in the DSM. Thus, many measures incorporated in empirical research investigating abnormal personality have been dimensional instruments created specifically to assess abnormal personality. The most widely used dimensional measures of personality pathology in recent work, as well as the most extensively researched, are the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2002), the Millon Clinical Multiaxial Inventory (MCMI, Millon, 1983; MCMI-II, Millon, 1987; MCMI-III, Millon et al., 1994), the Minnesota Multiphasic Personality Inventory-II (MMPI-II; Butcher, Dahlstrom, Graham, Tenhegen, & Kaemmer, 1989) and the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993a). In the following section, research relating measures of normal personality to each measure will be reviewed independently, followed by studies integrating two or more of these dimensional measures with a measure of normal personality.

THE DIMENSIONAL ASSESSMENT OF PERSONALITY PATHOLOGY-BASIC QUESTIONNAIRE (DAPP-BQ)

The DAPP-BQ (Livesley & Jackson, 2002) is a self-report measure that assesses 18 factorially derived dimensions intended to delineate the basic elements of personality disorder. Previous studies have shown that the dimensional structure of the DAPP-BQ is consistent across normal and clinical samples (Livesley, Jang, & Vernon, 1998). In addition, factor analyses of the higher-order factors of the FFM and Eysenck's three-factor model of normal personality with the 18 DAPP-BQ dimensions revealed strong convergence of higher-order domains of normal personality with dimensions of abnormal personality (Schroeder et al., 1992; Jang, Livesley & Vernon, 1999). However, the extracted factors did not completely correspond between normal and abnormal measures, as only four of the Big Five were represented, the exception being Openness to Experience (Schroeder et al., 1992), and two factors representing dimensions from the DAPP-BQ were extracted in addition to the three factors of the EPQ (Jang et al., 1999). A joint analysis of the DAPP-BQ with the EPQ and the FFM revealed a four-factor structure (Larstone, Jang, Livesley, Vernon, Wolf, 2002), similar to four-factor models found in other studies (Livesley et al., 1998; Mulder & Joyce, 1997). Furthermore, these four higher-order factors revealed in the DAPP-BQ have been supported by a similar underlying genetic structure (Livesley et al., 1998; Jang & Livesley, 1999). These four factors, which appear to characterize the underlying structure of normal and abnormal personality, were labeled Emotional Dysregulation, Dissocial, Inhibition, and Compulsivity (Livesley et al., 1998).

THE MILLON CLINICAL MULTIAXIAL INVENTORY (MCMI)

The MCMI (Millon, 1983, 1987; Millon et al., 1994) was designed to assess disordered personality largely within the constructs of PD proposed by the DSM. Thus, work investigating the relationship between versions of the MCMI and normal personality have primarily used the MCMI as a self-report measure intended to tap into Axis II constructs. Nonetheless, within the MCMI scales, scores are presented dimensionally, so this work is reviewed here. Research has suggested that all five factors of the FFM are significantly related to the MCMI-I and II (Millon, 1983, 1987) scales in predictable ways, suggesting that the FFM may represent a comprehensive account of the symptomatology in the MCMI (Costa & McCrae, 1990). A more recent study (Dyce & O'Connor, 1998) used the MCMI-III (Millon et al., 1994) in relation to the domains and facets of the NEO-PI-R and found that although the FFM facets provide little overall improvement in explanatory power to the FFM domains, the facets provide greater ability to discriminate among PDs as assessed by the MCMI-III.

THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY (MMPI)

The MMPI (MMPI-I, Hathaway & McKinley, 1967; MMPI-II, Butcher et al., 1989) is one of the most widely used measures of abnormal personality and psychopathology. Scales were developed for the MMPI (Bagby, 1990; Morey et al., 1985) and the MMPI-2 (presentation by Somwaru & Ben-Porath, cited in Butcher & Rouse, 1996) intended to represent the PD constructs as conceptualized in the DSM. More recently, the Personality and Psychopathology Five (PSY-5) Scales were created by using replicated rational selection of MMPI-2 items corresponding to a five-factor structure of normal and pathological personality traits (Harkness, McNulty, & Ben-Porath, 1995). The PSY-5 scales are named Aggressiveness, Psychoticism, Constraint, Negative Emotionality/Neuroticism, and Positive Emotionality/Extraversion. Studies relating the NEO-PI-R to the PSY-5 scales have consistently found support for links to Positive Emotionality, which seems to represent Extraversion in the FFM, and Negative Emotionality, which seems to represent Neuroticism in the FFM, but not for Openness, which does not seem to be represented in the PSY-5 scales (Byravan & Ramanaiah, 1999; Trull, Ueda, Costa, & McCrae, 1995). Furthermore, relationships between the FFM and the Constraint and Psychoticism scales appear more complex, with Constraint and Psychoticism being related to a number of FFM dimensions (Trull et al., 1995), suggesting that the NEO-PI-R and PSY-5 scales measure both overlapping and specific variance. However, a study relating the MPQ to the PSY-5 scales found that the three higher-order factors of the MPQ have direct counterparts with PSY-5 scales, specifically Positive Emotionality, Negative Emotionality, and Constraint (Harkness et al., 1995). The remaining two PSY-5 scales, Aggressiveness and Psychoticism, show expected relationships with primary facet scales of the MPQ.

THE SCHEDULE FOR NONADAPTIVE AND ADAPTIVE PERSONALITY (SNAP)

The SNAP (Clark, 1993a) was developed as a dimensional measure of abnormal personality based on 15 factorially-derived scales. Factor analyses have revealed that 12 of the scales contribute to 3 higher-order factors, identified as Negative Affectivity/Neuroticism, Positive Affectivity/Extraversion, and Disinhibition (vs. Conscientiousness), which bear strong resemblance to three factor models of normal personality, such as the three-factor model of the MPQ (Clark, Vorhies, & McEwen, 2002). These findings provide further support for the idea that normal and abnormal personality may share a similar underlying trait structure. Analyses of the relationship between the FFM (as measured by the NEO-PI, the NEO-PI-R and Goldberg's adjective markers; Clark et al., 2002) and the SNAP scales provide consistent evidence for a similar underlying structure between these models of normal and abnormal personality (Clark et al., 2002; Reynolds & Clark, 2001). Furthermore, these studies have suggested that Agreeableness and Openness provide significant variance beyond the first three factors (Clark et al., 2002) and that the facets of the NEO-PI-R provide greater discriminability among disordered personality symptomatology (Reynolds & Clark, 2001). However, similar to studies of other dimensional measures of abnormal personality, the FFM does not seem to account fully for the variance assessed by the SNAP (Clark, 1993b; Clark et al., 2002).

COMPARISONS BETWEEN DIMENSIONAL MEASURES

Studies that have included both the SNAP and the DAPP-BQ in examining relationships with the FFM have found strong convergence between these two measures and four of the FFM factors, with the exception of Openness (Clark & Livesley, 2002; Clark, Livesley, Schroeder, & Irish, 1996). Recent research has suggested that four factors of the FFM may be sufficient to account for the higher-order structure of abnormal personality (O'Connor & Dyce, 1998) and studies using dimensional models of personality pathology appear to support this. In particular, recent research with the SNAP and DAPP-BQ has been especially beneficial in elucidating the convergence between these two measures and the FFM. To work toward a comprehensive understanding of normal and abnormal personality, further integrative research such as this must be pursued. Furthermore, an even broader approach will be required in attempts to understand the relationship between syndromal psychopathology, normal personality, and abnormal personality.

LINKING DIMENSIONAL MODELS OF PERSONALITY PATHOLOGY WITH AXES I AND II

Research examining the relationship between constructs from dimensional models of personality pathology (such as the DAPP-BQ, MCMI, MMPI, and SNAP) with constructs defined per the DSM (Axis I and Axis II pathology) has been somewhat limited. The MMPI provides an interesting example because

the original version of this instrument was developed before the putative Axis I/Axis II distinction (Hathaway & McKinley, 1967). However, as previously mentioned, scales representing the DSM PDs have been constructed from existing MMPI items (Bagby, 1990; Morey et al., 1985; Butcher & Rouse, 1996). Furthermore, the MMPI has long been regarded as a useful tool for measuring Axis I pathology as well as discriminating among Axis I groups in clinical settings (Butcher & Williams, 2000). Thus, it is important to note that although the MMPI was designed without the current understanding of Axis I and II disorders as conceptualized in the DSM, it has been shown to represent both types of pathology in one measure. However, the MMPI has largely maintained its original structural organization over time, a structural organization which may not fully encompass more recent developments in our understanding of personality and psychopathology.

The relationship between Axis I and II disorders with the MCMI (Millon, 1983, 1987; Millon et al., 1994) is more apparent, as the scales in the MCMI were designed to represent the specific disorder categories. Originally, the MCMI was designed particularly to measure personality pathology within the categories found in the DSM. However, many items assessing these categories stemmed from Millon's theory of disordered personality. With new editions of the DSM, Millon has modified the measures of abnormal personality to reflect the changes. In addition, clinical scales have been added to represent Axis I pathology, maintaining the Axis I/Axis II distinction found in the DSM. Thus, the Millon scales are often used as self-report measures of the corresponding Axis I and II disorders.

The DAPP-BQ (Livesley & Jackson, 2002) and the SNAP (Clark, 1993a) are the more recent instruments that were developed with current conceptualizations of personality pathology in mind, but with the intention of creating measures of the most fundamental traits of abnormal personality. Thus, both of these provide empirically based dimensional measures of personality pathology. However, these instruments were designed to cover symptomatology also covered by Axis II. Thus, examination of DSM Axis II overlap with dimensional models of personality pathology is not really investigating relationships between different constructs, but rather, the ability of measurement instruments to capture the same variance. Do the DAPP-BQ and SNAP also tap into variance covered by Axis I constructs?

DAPP-BQ

A recent study used the DAPP-BQ to examine personality pathology in patients with eating disorders (Goldner, Skirameswaran, Schroeder, Livesley, & Birmingham, 1999). Using factor and cluster analyses, these authors were able to identify three clinically relevant subgroups based on personality characteristics assessed by the DAPP-BQ. Another study related the DAPP-BQ to social anxiety-related constructs (Stein, Jang, & Livesley, 2002). These authors discovered that characteristics related to social anxiety are highly interrelated with abnormal personality traits, such as submissiveness, anxiousness, and social avoidance. Furthermore, these interrelations have a genetic basis, suggesting that genetic factors link related Axis I and II pathologies. These studies have demonstrated the utility

of the DAPP-BQ in relation to specific Axis I disorders. However, work to date has not examined links between the DAPP-BQ and a broad spectrum of Axis I pathology.

SNAP

Clark et al. (2002) demonstrated that the SNAP scales were systematically related to clinician-rated Axis I disorders, particularly at the level of higher-order SNAP factors (i.e., Negative Affectivity, Positive Affectivity, and Disinhibition). For example, chronic depression had a moderate negative correlation (-.44) with Positive Affectivity, whereas Alcohol Dependence had a moderate positive correlation (.32) with Disinhibition. A previous study had related the lower-level scales of the SNAP to Axis I and II pathology and found that relationships were weaker with Axis I pathology (Clark, McEwen, Collard, & Hickok, 1993). However, an examination of relationships with the higher-order SNAP factors found Axis I and II pathology to be similarly correlated with the factors (Clark et al., 2002). A more recent study demonstrated the utility of the SNAP in understanding the comorbidity between Axis I (substance use disorders) and Axis II (cluster B PDs) pathology (Casillas & Clark, 2002). Although the SNAP is also a relatively newer instrument, these studies have provided the basis for an empirical framework demonstrating that the SNAP is strongly and systematically related to the symptomatology captured in Axis I and II disorders. Furthermore, this work has underscored the blurred distinction between Axis I and Axis II.

OUR PERSPECTIVE

Our review reveals close associations among constructs from dimensional models of both normal and abnormal personality, and psychopathological constructs located on both Axis I and II of the DSM (see Figure 1). Therefore, from our perspective, although the distinctions in Figure 1 frame much current empirical research, they are more apparent than empirically real. Moreover, many apparent distinctions seem to exist for historical rather than empirical reasons. For example, literature on the structure of normal personality developed largely independently of literature on the DSM constructs. This has led to important efforts to understand DSM constructs (e.g., Borderline PD) in terms of normal personality variation using comprehensive structural models such as the FFM. However, these efforts are still largely confined to the constructs proposed in the DSM and to the structural organization proposed in the DSM. Yet the structural organization of the DSM is clearly problematic from an empirical perspective. High levels of systematic covariance (comorbidity) are seen not only within, but also across Axes I and II (Fabrega et al., 1992; McGlashan, 1987; Skodol et al., 1999).

We feel this leaves us with a clear need for an empirically based, comprehensive descriptive system that transcends the boundaries in Figure 1—a system that can account for the patterning of personality and its psychopathological manifestations in forms that are currently described on

both Axes I and II of the DSM. Attempts to construct this kind of system seem warranted based on the current literature. There are systematic and meaningful links among all the constructs delineated in Figure 1. Normal personality, abnormal personality, and psychopathology *per se* appear to be highly interrelated aspects of human individual differences. What we are proposing, therefore, are efforts to construct descriptive and explanatory models of the joint structure of personality and psychopathology that transcend the putative distinctions in Figure 1.

Constructing this kind of system, however, could easily be a rather overwhelming task. Personality and psychopathology are rich in their variety and modeling the entire picture at once may not be feasible. For this reason, our own efforts have focused on forms of psychopathology that are especially prevalent in the population at large (i.e., mood, anxiety, substance use, and antisocial behavior disorders; Kessler et al., 1994). The prevalence of these kinds of problems makes them an important focus for work linking personality and psychopathology. Specifically, such research has demonstrated that major social and public health problems have a psychological basis in peoples' characteristic ways of thinking, feeling, and relating to the world around them (i.e., personality). Personality matters on an epidemiological scale, and the patterning of individual differences in personality has unique relevance to understanding the patterning of psychopathology in the population at large (Krueger, Caspi, & Moffitt, 2000).

Specifically, our work in this area began with attempts to understand the relationship between these "common" mental disorders and "normal-range" personality traits (Krueger et al., 1996; Krueger, 1999a). Two major findings from this work were that the personality correlates of the mood and anxiety disorders were similar (involving high levels of negative emotionality) and in addition, that the personality correlates of the substance use and antisocial behavior disorders were similar (involving high levels of negative emotionality paired with low levels of constraint). This led us to the idea that the comorbidity among these disorders might follow a pattern that makes sense when thought of in personality terms. Rather than representing noise, the comorbidity among common mental disorders signals the personological bases of psychopathology.

We have proposed and provided support for a model of comorbidity that groups the mood and anxiety disorders under the rubric of "internalizing" and substance use and antisocial behavior disorders under the rubric of "externalizing" disorders (Krueger, Caspi, Moffitt, & Silva, 1998; Krueger, McGue, & Iacono, 2001; Krueger, 1999b). These labels derive from extensive research on the structure of childhood psychopathology, which shows a notably similar two-factor pattern (Achenbach & Edelbrock, 1984). Yet the labels also make psychological sense in terms of the personality correlates of the disorders, as the internalizing disorders are associated with negative emotionality, whereas the externalizing disorders are associated with negative emotionality and a lack of constraint. Both internalizing and externalizing disorders involve emotional distress, expressed inwards (internalized) when people have normative levels of constraint, and expressed outwards (externalized) when emotional distress is accompanied by a lack of constraint.

The labels internalizing and externalizing refer to broad but coherent spectra of personality and psychopathology that transcend distinctions in Figure 1. Of potential models of the relationship between personality and psychopathology (i.e., the predisposition/vulnerability model, the complication/scar model, the pathoplasty/exacerbation model, and the spectrum model), our model is a spectrum model. The empirical basis for selecting this model is provided by studies of the genetic links between personality and psychopathology. Specifically, mood and anxiety disturbances are genetically linked with the personality trait of neuroticism (Fanous et al., 2002; Jang & Livesley, 1999; Kendler et al., 1993; Markon, Krueger, Bouchard, & Gottesman, 2002; Roberts & Kendler, 1999). In addition, substance use and antisocial behavior problems are genetically linked with an unconstrained, impulsive personality style (Jang, Vernon, & Livesley, 2000; Krueger et al., 2002; Young, Stallings, Corley, Kraufer, & Hewitt, 2000).

We do not deny that there may be other intriguing complexities that augment and extend the basic genetic spectrum model. For example, an individual with high genetic risk for internalizing problems might initially present with an apparent predisposition to psychopathology (i.e., a neurotic personality style), and then experience a full-blown psychopathological episode (i.e., a major disturbance of mood regulation), exacerbated by the neurotic personality style. This exacerbated episode of mood dysregulation might then complicate the basically neurotic character structure (e.g., the individual becomes even more anxious, knowing that future debilitating episodes of mood dysregulation are a very real possibility). Nevertheless, we do not see these additional complexities as models competing with the spectrum model. Rather, these potential complexities are additional phenomena that could be modeled taking into account the basic findings of coherent genetic connections among internalizing phenomena (i.e., mood disorder, anxiety disorder, and neurotic personality traits), and coherent genetic connections among externalizing phenomena (i.e., substance use disorder, antisocial behavior disorder, and unconstrained personality traits). The difficult part is to capture this additional potential complexity in the context of the empirically supported genetic spectrum model. We see this as basically a problem of capturing the ways in which environmental events unique to specific persons impact their current personality-psychopathology profile. How do such events affect the current, observed manifestation of latent genetic predispositions to internalizing and externalizing patterns of behavior across the course of a person's life? Along these lines, behavior genetic research has endeavored to understand the unique events that make peoples' personalities distinctive (nonshared environments), with little success (Turkheimer & Waldron, 2000). Nevertheless, capturing unique patterns of personality-psychopathology interrelationship that characterize specific persons at specific points in their lives remains an important goal in translating the genetic-spectrum model into clinical application.

In addition, we propose that the internalizing and externalizing spectra are organized dimensionally and hierarchically (see Krueger & Piasecki, 2002, for a more extensive discussion of dimensional-hierarchical models

and their relevance to the internalizing and externalizing spectra). Our model originated as an account of the comorbidity among common categorical mental disorders from the DSM in terms of the higher-order internalizing and externalizing dimensions. Nevertheless, as dimensions organizing the covariance among disorders, the internalizing and externalizing dimensions are at a high level of breadth and abstraction. Therefore, the next step in fully delineating the internalizing and externalizing spectra would consist of downward extensions of the model—explorations of the more basic, symptom-level dimensions within the internalizing and externalizing spectra. For example, dimensional models of anxiety and depression, such as the tripartite model (Clark & Watson, 1991), seem excellent candidates for beginning to delineate the basic dimensions within the internalizing spectrum (Mineka, Watson, & Clark, 1998). Our own work in this area has begun to focus on the development of a detailed hierarchical-dimensional model of the externalizing spectrum because no comprehensive model of the basic elements within the externalizing spectrum currently exists (Widiger & Clark, 2000).

Although our framework has received empirical support from a number of studies to date, it is clearly a starting point, rather than a completely comprehensive account of the personality-psychopathology domain. The scope of the model is currently limited and needs to be expanded to include other varieties of psychopathology. As we described, mood, anxiety, substance use, and antisocial behavior disorders are good starting points for linking personality and psychopathology in large-scale epidemiological samples, given the high prevalence and clear social and public health relevance of these problems. A disadvantage of community-based samples, however, is the low prevalence of other varieties of psychopathology that, nevertheless, are clinically important. We would therefore welcome extensions of our framework to other populations (e.g., specific clinical populations), where other varieties of psychopathology (e.g., psychosis, somatization) are more prevalent and, therefore, amenable to examining connections with our framework. Along these same lines, we also look forward to studies of the connections between our framework and other frameworks that have been developed in the closely related domains delineated on Figure 1 and reviewed above. For example, research reviewed above points to the possibility of an integrative four-factor model of normal and abnormal personality linking constructs from the SNAP, DAPP-BQ, and FFM (Clark & Livesley, 2002; Clark et al., 1996; O'Connor & Dyce, 1998). How are these dimensions linked to the internalizing and externalizing spectra? Do psychotic phenomena form a separate and additional spectrum? Where does openness from the FFM fit in to this picture? Multiperspective, integrative research along these lines, transcending traditional boundaries between various historically distinct literatures, has real potential to inform the development of an empirically based, big picture model of personality and psychopathology.

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