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PERSONALITY DISORDER RESEARCH AGENDA FOR THE DSM–V

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Abstract

The American Psychiatric Association is sponsoring a series of international conferences to set a research agenda for the development of the next edition of the diagnostic manual. The first conference in this series, "Dimensional Models of Personality Disorder: Etiology, Pathology, Phenomenology, & Treatment," was devoted to reviewing the existing research and setting a future research agenda that would be most effective in leading the field toward a dimensional classification of personality disorder. The purpose of this article, authored by the Steering Committee of this conference, was to provide a summary of the conference papers and their recommendations for research. Covered herein are the reviews and recommendations concerning alternative dimensional models of personality disorder, behavioral genetics and gene mapping, neurobiological mechanisms, childhood antecedents, cross–cultural issues, Axes I and II continuity, coverage and cutoff points for diagnosis, and clinical utility.

In 1999, a DSM–V Research Planning Conference was held under joint sponsorship of the American Psychiatric Association (APA) and the National Institute of Mental Health (NIMH), the purpose of which was to set research priorities for future editions of the diagnostic manual (McQueen, 2000). DSM–V Research Planning Work Groups were formed to develop white papers to provide explicit research recommendations. The Gaps Work Group concluded that "despite the compelling impact of maladaptive personality traits, there is notable dissatisfaction with the current conceptualization and definition of the DSM–IV–TR (APA, 2000) personality disorders" (First et al., 2002, p. 124). This work group then outlined the conceptual and empirical support for an alternative dimensional model of classification (First et al., 2002). The Nomenclature Work Group, charged with addressing fundamental assumptions of the diagnostic system, also concluded that it is "important that consideration be given to advantages and disadvantages of basing part or all of DSM–V on dimensions rather than categories" (Rounsaville et al., 2002, p. 12). The Nomenclature Work Group recommended in particular that initial efforts toward a dimensional model of classification be conducted with the personality disorders. "If a dimensional system of personality performs well and is acceptable to clinicians, it might then be appropriate to explore dimensional approaches in other domains" (Rounsaville et al., 2002, p. 13).

The white papers developed by the DSM–V Research Planning Work Groups are being followed by a series of international conferences that aim to further enrich the empirical data

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base in preparation for the eventual development of the DSM–V (a description of this conference series can be found at www.dsm5.org). The first conference in this series, "Dimensional Models of Personality Disorder: Etiology, Pathology, Phenomenology, & Treatment," was devoted to reviewing the existing research and setting a future research agenda that would be most effective in leading the field toward a dimensional classification of personality disorder. Topics covered at this conference included (1) alternative dimensional models of personality disorder, (2) behavioral and molecular genetics, (3) neurobiological mechanisms, (4) childhood antecedents, (5) cross–cultural issues, (6) Axes I and II continuity, (7) coverage and cutoff points for diagnosis, and (8) clinical utility. The purpose of this article, authored by the Steering Committee of this conference, is to provide a summary of these papers and their recommendations. Our summary will be organized with respect to the eight topics that were addressed.

ALTERNATIVE DIMENSIONAL MODELS

Widiger and Simonsen (2005) summarized in their presentation 18 alternative ways in which personality disorders could be converted to a dimensional model of classification. They called for an integration of these alternative models within a single, common hierarchical model. At the highest level could be the two clinical spectra of internalization and externalization identified by Krueger (1999, 2002). Immediately beneath would be four to five broad domains of personality functioning. Further below would be personality trait scales, and at the lowest level would be the more behaviorally specific diagnostic criteria.

Widiger and Simonsen (2005) suggested that all but one or two of the existing dimensional models of personality and personality disorder could be well represented within this common hierarchical structure. They illustrated how most of the scales of the dimensional models developed by Clark (Clark, Simms, Wu, & Casillas, in press), Cloninger (2000), Costa and McCrae (1992), Eysenck (1987), Harkness and McNulty (1994), the interpersonal circumplex (Wiggins, 2003), Livesley (2003), Millon et al. (1996), Shedler and Westen (2004), Tellegen (Watson, Wiese, Vaidya, & Tellegen, 1999), Tyrer (2000), and Zuckerman (2002) could be well integrated within four broad domains of adaptive and maladaptive personality functioning (i.e., emotional dysregulation vs. emotional stability, constraint vs. impulsivity, extraversion vs. introversion, & antagonism vs. compliance). They further indicated how the existing personality disorder diagnostic criteria would be readily incorporated within this hierarchical structure and how the existing personality disorder constructs (e.g., Antisocial or Borderline) could be recovered through diagnostic algorithms using the personality trait scales.

However, they also acknowledged that the placement of scales from some of the models (e.g., the scales from the Temperament and Character Inventory of Cloninger [2000] and the Personality Assessment Schedule of Tyrer [2000]) was based on only a limited amount of research. They suggested in particular that one important focus of future research will be to determine whether the three (or six) polarities of the Millon Index of Personality Styles (Millon, 1994) and the 12 scales of the Shedler and Westen Assessment Procedure–200 (Shedler & Westen, 2004) can also be integrated with the higher–order structure or whether they concern instead aspects of maladaptive personality functioning that are not commensurate with the other dimensional models. Some of the specific scale placements of Widiger and Simonsen (2005) might also be disputed. Future research could help determine how these alternative dimensional models of personality disorder could be best integrated into a common hierarchical structure.

Not only is it important to determine where the scales and constructs should be included but also how many to include within each broad domain and how best to identify them. Considered in these decisions could be extent of overlap, adequate representation of different models,

adequate coverage of the domain, clinical relevance, familiarity, and ease of usage. It will also be important to further consider the question of whether a fifth domain of unconventionality (e.g., cognitive–perceptual aberrations and peculiar, eccentric behaviors) also warrants inclusion. Last, but not least, is the fundamental question of whether to also include normal, adaptive traits. It is possible that the diagnostic manual simply should not include any reference to normal (healthy) psychological functioning, but it is also possible that the inclusion of normative, adaptive traits will facilitate the provision of a more comprehensive (and accurate) description of each patient's general personality structure, the integration of the diagnostic manual with basic science research on general personality structure, and the facilitation of treatment decisions through the identification of traits that contribute to treatment responsivity.

BEHAVIORAL AND MOLECULAR GENETIC CONTRIBUTIONS

Livesley (2005) summarized the existing behavioral and molecular genetic research. Although it is likely that a future edition of the diagnostic manual will (and should) incorporate a provision for encoding genotypes, there is currently only very limited data supporting a relationship between genetic polymorphisms and specific personality traits. There is more potential and existing empirical support for these associations than has been or will likely be obtained for the DSM–IV personality disorder diagnostic categories (Jang, Vernon, & Livesley, 2001) but as yet it is unlikely that the next edition of the diagnostic manual could be guided explicitly by the molecular genetic research.

Of more immediate relevance for developing a dimensional classification of personality disorder in the DSM–V would be behavioral genetic research that seeks to explicate the genetic and environmental structure underlying phenotypic variation (e.g., Ando et al., 2004; Jang, Livesley, Angleitner, Riemann, & Vernon, 2002). A dimensional classification of personality disorder requires information about the etiological factors responsible for observed patterns of covariation. The development of multivariate genetic techniques permits the consideration of these findings to form the foundation for an etiologically based classification. Multivariate genetic analyses extend univariate analyses of genetic influences on a single trait to estimate genetic and environmental influences on the covariation among two or more traits. Genetic and environmental covariation matrices can then be factored to provide information on the structures underlying the covariation. The results of the behaviorally genetic research can be used to refine personality phenotypes and to construct a genetically informed nosology. A set of genetically–defined primary traits would facilitate molecular research by providing targets with more homogeneous genetic variance. Molecular genetic research can then be used to fine–tune this nosology and provide further validation.

The existing multivariate genetic research, using a wide variety of measures, suggests that a few general genetic factors account for the observed patterns of trait covariation (Livesley, in press). The remarkably consistent finding that four secondary traits (i.e., emotional dysregulation, constraint/conscientiousness, antagonism/dissocial, & inhibition/introversion) are sufficient to represent personality disorder provides an initial structure for the system (Livesley, Jang, & Vernon, 1998). This suggests that personality is subject to extensive pleiotropic effects in which a single genetic entity influences distinct phenotypes. The high genotype–phenotype correspondence that occurs with studies of dimensional models of adaptive and maladaptive personality functioning contrasts with the relatively poor geneotypic–phenotypic correspondence observed with many existing diagnostic categories (Merikangas, 2002). Evidence that trait structure primarily reflects genetic influences forms a valuable part of the foundation for a genetically informed classification. We are in fact in a position to develop a classification that is structured along etiological lines; in this sense the diagnosis of personality disorders is perhaps in a stronger position than most other mental disorders.

Nevertheless, genetic research also raises conceptual problems that will need to be addressed in future research. For instance, the issue of the relative importance of primary and secondary traits is basic to the way a dimensional classification is organized and used. Primary traits are generally assumed to be part of a secondary trait domain, and secondary domains are generally assumed to be equal in breadth and to be defined by the same number of primary traits. However, it seems improbable that such models reflect the genetic architecture of personality disorder. Primary traits are likely to have unique genetic variance and some may not even be part of a secondary domain.

NEUROBIOLOGICAL MECHANISMS

Paris (2005) began his review by noting that existing research has failed to identify any consistent biological factors that correlate with the current diagnostic categories. As Paris (2000, 2003) has suggested elsewhere, the existing diagnostic categories are too heterogeneous to have biological coherence, as defined by consistent and specific relations to biological markers. In fact, there has been little to no effort to even attempt to explicate the neurobiology of some of the current diagnostic categories (e.g., Histrionic, Narcissistic, Dependent, & Obsessive–Compulsive; Blashfield & Intoccia, 2000).

Paris (in press) reviewed the existing molecular genetic, behavioral genetic, neuroimaging, pharmacologic responsivity, and additional human and animal research relevant to neurobiological mechanisms for dimensional models of personality and personality disorder that have placed a particular emphasis on a neurobiological foundation. He focused in particular on the dimensional models of Cloninger (2000), Depue (Depue & Collins, 1999; Depue & Lenzenweger, 2001), and Siever (Siever & Davis, 2001). He noted that the empirical literature is quite extensive, but this research has also yielded quite inconsistent results. For example, the conclusions of some meta–analytic reviews of the molecular genetic research have reached positive conclusions. In an extensive meta–analysis involving 5,629 subjects, Sen, Burmeister, and Ghosh (2004) concluded that “there is a strong association between the serotonin transporter promoter variant and neuroticism … and that non–replications are largely due to small sample size and the use of different inventories” (p. 85). Paris also suggested that there was consistent empirical support for an association of serotonergic functioning with harm avoidance and impulsive aggression. Nevertheless, other meta–analyses of molecular genetic research concerning (for example) novelty seeking has yielded more negative conclusions (e.g., Kluger, Siegfried, & Ebstein, 2002; Schinka, Letsch, & Crawford, 2002).

Paris (in press) concluded that it might be premature or unrealistic to attempt to build a dimensional model of maladaptive personality functioning solely or even primarily on the basis of hypothesized neurobiological mechanisms. This effort might be premature in that our understanding of brain mechanisms is at too early a stage to conduct this research effectively. Until we know more about the basic science of emotions and behaviors, attempts to develop a neurobiological model linked to personality dimensions might be premature.

The effort might also be unrealistic, given that no brain function is strictly limited to one site or to one neurotransmitter; modulation and interaction are the rules rather than the exceptions (Andreasen, 2001). For example, the monoamines, which have been a main subject of research, serve to modulate the effects of other neurons that use glutamine and GABA as transmitters (Cooper, Bloom, & Roth, 2003). Their effects on behavior are far from linear, with the same receptors potentially having entirely different effects in different brain locations, depending upon brain anatomy as well as physiology. Serotonin may have as many as 15 receptor sites (Kroeze, Kristiansen, & Roth, 2002). These findings make it unlikely that one will find a one–to–one correspondence between any single neurotransmitter and any single neurophysiological mechanism, not to speak of behavioral traits (Paris, in press). Minimally, future research is

advised to focus on narrower personality trait dimensions, rather than the broad domains that have currently been the focus of research. In the meantime, it is advised by Paris that it would probably be better to use a factor analytically derived personality schema rather than one based on a particular neurobiological hypothesis. The dimensions obtained from this research could be revised at a later point in time on the basis of the brain–behavior research.

CHILDHOOD ANTECEDENTS

The review by Mervielde, De Clercq, De Fruyt, and Van Leeuwen (2005) began with the point that although it is widely recognized that adult personality disorders have their roots in a variety of developmental and temperamental factors, there has been remarkably little research examining the childhood and adolescent antecedents of the DSM–IV personality disorders (e.g., Johnson et al., 2000). Only one of the ten personality disorders included in the DSM–IV even makes any reference to childhood antecedents (APA, 2000). This is in stark contrast to the extensive research on the relationship of childhood temperament with adult personality structure (Roberts & DelVecchio, 2000).

Child and adolescent temperaments are probably among the best candidates as general broadband developmental antecedents for adult personality disorders (Krueger & Tackett, 2003; Shiner & Caspi, 2003). Researchers interested in individual differences among children, and especially among young children, have generally conceptualized these differences in terms of temperamental characteristics. Temperament is traditionally distinguished from personality as it refers to stable individual differences that appear from birth onward that presumably have a strong genetic or neurobiological basis. Mervielde et al. (2005) summarized the predominant temperament models, particularly those of Chess and Thomas (1996), Buss and Plomin (1984), Derryberry and Rothbart (1997), and Goldsmith and Camos (1982). They suggested that the alternative models can be integrated within four basic temperaments: (1) emotionality (negative affectivity, anxious or irritable distress), (2) extraversion (sociability vs. social inhibition or shyness), (3) activity (activity level, surgency), and (4) persistence (task persistence, effortful control).

Mervielde et al. (2005) further related these fundamental temperaments to adult personality traits on the basis of the considerable number of studies that have been conducted, including their own extensive peer nomination and childhood lexical studies. For example, Kohnstamm, Halverson, Mervielde, and Havill (1998) collected unstructured parental personality descriptions of 2,416 children aged 2 to 12 years as part of a collaborative international research project conducted in Belgium, China, Germany, Greece, Holland, Poland, and the United States. Using the 9,000 free parental descriptions provided by Flemish parents, Mervielde and De Fruyt (2002) developed the Hierarchical Personality Inventory for Children (HiPIC). Analysis of its items led to a five–factor structure that they identified as conscientiousness, benevolence, extraversion, emotional stability, and imagination. They indicated how this classification integrated well the person–centered approach often used in childhood studies (e.g., overcontrollers are low in emotional stability and extraversion, whereas undercontrollers are low on agreeableness & conscientiousness).

Mervielde et al. (2005) indicated further that their childhood personality model is congruent with the recent conclusions of Shiner and Caspi (Shiner, 1998; Shiner & Caspi, 2003), who also reviewed the vast temperament literature and suggested that much of the apparently disparate temperaments appear to be well organized within four broad domains of extraversion or positive emotionality (i.e., social inhibition, sociability, dominance, energy/activity level), neuroticism or negative emotionality (i.e., anxious distress, irritable distress), conscientiousness or constraint (i.e., attention, inhibitory control, achievement motivation), and agreeableness (i.e., antagonism, prosocial tendencies). The only difference was the absence

of an imagination dimension, which they suggested could reflect that preschool teachers do not generally distinguish curiosity and creativity from conscientiousness. In any case, Caspi, Roberts, and Shiner (2005) do now include an openness dimension in their more recent reviews of the childhood research.

Mervielde et al. (2005) concluded that it is evident that a general pattern of associations between temperament, personality, and psychopathology emerges across a wide variety of measures. The highest level is perhaps best represented by two broad domains of internalization and externalization (Achenbach, 1995; Krueger & Tackett, 2003). Individual differences can be reasonably well covered by the four higher–order traits proposed by Shiner and Caspi (2003) of neuroticism, extraversion, agreeableness, and conscientiousness. The integration of the child and adult research within a common model provides a conceptual basis for understanding the well–documented stability of personality across the life span (Caspi et al., 2003; Roberts & DelVecchio, 2000). They suggested that an important contribution of future research will be to further integrate the existing personality disorder constructs of the DSM–IV with the childhood temperament and adult personality literature in order to achieve a sound scientific basis for understanding the childhood antecedents of adult personality disorders.

CROSS–CULTURAL ISSUES

Cross–cultural studies of personality structure are fraught with difficulties, not the least of which is the expense. There are a few studies that have considered the application of the DSM–IV personality disorder nomenclature within cultures notably different from the predominant Western society in which it was largely created (e.g., Grilo, Anez, & McGlashan, 2003) but there appears to be only one systematic multinational study, in which the International Personality Disorder Examination was administered in 14 mental health centers located in 11 different countries of North America, Europe, Africa, and Asia (Loranger et al., 1994). This is in contrast to the extensive research on the universality of general personality structure.

Allik (this issue) indicated that one of the first comprehensive personality trait measures to enjoy worldwide popularity and a fairly large number of translations into different languages was the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975), which assesses the broad domains of neuroticism, extraversion, and psychoticism. For example, extensive data have been reported on its cross–cultural generalizability (mean scores and trait structure) in a study including 38 countries and 68,374 participants (Lynn & Martin, 1995). More recently, McCrae (2002) reported on the generalizability of the five factors of neuroticism, extraversion, openness, agreeableness, and conscientiousness across 36 different countries involving five major language families (Indo–European, Uralic, Altaic, Dravidian, and Sino–Tibetian). McCrae et al. (2005) subsequently replicated the cross–cultural generalization using peer–reports of 11,985 target individuals obtained in 50 different societies.

The largest cross–cultural study to date has been conducted by Schmitt and his colleagues as part of the International Sexuality Description project, which includes 100 scientists from 56 countries. They administered in this project the Big Five Inventory (Benet–Martinez & John, 1998), translated into 29 languages and administered to 17,837 participants from 56 different countries. Results indicated that the five–dimensional structure was highly robust across major regions of the world, including North America, South America, Western Europe, Eastern Europe, Southern Europe, the Middle East, Africa, Oceania, South–Southeast Asia, and East Asia (Schmitt et al., 2003). The results of these (and other) studies have generally provided strong support for the universality of personality structure across a wide array of cultures and languages. There are also interesting data with regard to the relationship of these personality traits to cultural indicators, such as gross national product and Hofstede's dimensions of culture (Hofstede & McCrae, 2004).

Allik (this issue) indicated that it is also worth noting that the above findings are largely consistent with emic, lexical studies of the trait terms indigenous to a particular language. Some might argue that consistency of the trait structure of an inventory across many languages does not necessarily indicate that the personality traits included within the inventory are universal in their interest, relevance, or importance. Emic studies approach the question of universality by determining whether a comparable personality structure emerges from analyses of constructs or measures that are indigenous to each culture. For instance, Saucier and Goldberg (2001) summarized the results of lexical studies of the trait terms indigenous within 13 different languages (English, German, Dutch, Czech, Polish, Russian, Italian, Spanish, Hebrew, Hungarian, Turkish, Korean, & Filipino). They reported that the personality trait domains of extraversion (surgency or positive emotionality), agreeableness, and conscientiousness emerged consistently. The fourth and fifth factors of emotional instability and openness also emerged across all languages, although not as consistently as the first three. Ashton and Lee (2001) extended these analyses, providing a systematic review of all indigenous lexical studies to date, and reached the conclusion that the findings have "repeatedly produced variances of surgency (I), agreeableness (II), conscientiousness (III), and emotional stability (IV), the first four factors of the well–known Big Five" (p. 328).

Nevertheless, more work needs to be done. Allik (this issue) encouraged in particular further research on cross–cultural differences in response style (e.g., tendency to describe oneself in a socially desirable manner or the tendency to acquiescence in response to inquiries). For instance, Schmitt and Allik (in press) reported Rosenberg Self–Esteem findings involving translations into 28 languages and administered to 16,998 participants across 53 countries. As expected, self–esteem correlated negatively with neuroticism and positively with extraversion within nearly every nation. In addition, all nations scored, on average, above the theoretical midpoint, suggesting that a generally positive self–evaluation might be culturally universal. There was no relationship between national self–esteem components of the Human Development Index (e.g., life expectancy, adult literacy rates, or standard of living). However, there was a relationship of these indices with response styles. Persons from developed countries (where there is better education and longevity) appear to understand negatively worded items in a different manner than positively worded items. There does appear to be a need for additional cross–cultural studies using additional methodologies, such as observer ratings and semi–structured interviews.

Allik (this issue) also emphasized the importance of understanding the variation in mean levels across cultures. Some of the findings are difficult to explain given their inconsistency with objective measures of cultural stereotypes (e.g., relatively lower scores on conscientiousness for Japanese). On the other hand, the differences that are obtained might be so small that they will be largely negligible for cross–cultural personality description and may not even replicate in subsequent studies. The relatively modest size of the cross–cultural differences in scale elevations could in fact suggest that a reasonable scalar equivalence can be achieved and all individuals, regardless of language and culture, can be represented in a common metric (Allik, this issue). Nevertheless, the implications of these differences in mean levels for a universal measure of maladaptive personality functioning is not as yet clear. It is at least evident, however, that a strong scientific base for developing a universal dimensional model of personality disorder can be provided through its integration with the extensive cross–cultural study of general personality structure.

CONTINUITY OF AXIS I AND AXIS II

Personality disorders are placed on a separate axis of the DSM–IV (APA, 2000). The separate axis placement has received some criticism (Livesley, 2003; Widiger, 2003). Even if personality disorders are moved to Axis I in the DSM–V, there would also remain the concern

that there might not be any meaningful or clear boundary between personality and other mental disorders.

Krueger (this issue) reviewed the evidence for putative bases for distinguishing between personality and other mental (clinical) disorders, including temporal stability, age of onset, treatment response, insight, diagnostic co–occurrence, and etiology. He concluded that the personality and clinical disorders are not well distinguished in terms of any one (or more) of them. He suggested that the most promising general direction for future research would therefore be an understanding of why and how the personality and clinical disorders are so interconnected. He further suggested that a better understanding of this connection would be through an integration with the structure of general personality.

Increasing evidence points to the feasibility of developing an empirically based model of personality that simultaneously incorporates both normal and abnormal variation (Trull & Durrett, 2005). For example, Markon, Krueger, and Watson (2005) provided a joint structural model of the constructs assessed with the Dimensional Assessment of Personality Pathology–Basic Questionnaire (DAPP–BQ; Livesley & Jackson, in press), the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975), the Multidimensional Personality Questionnaire (MPQ; Tellegen, in press), the NEO Personality Inventory–Revised (NEO PI–R; Costa & McCrae, 1992), and the Temperament and Character Inventory (TCI; Cloninger, 2000). Markon et al. first used a meta–analytic approach to assembling a matrix of correlations among the 44 scales derived from all of these inventories obtained from 52 prior studies. Structural modeling yielded the following conclusions. First, the data indicated that no more than five major factors underlie variation in the 44 scales. Second, these five factors (neuroticism, agreeableness, conscientiousness, extraversion, & openness) strongly resembled the domains of the Five–Factor Model (Costa & Widiger, 2002). Further analyses, however, also supported the existence of meaningful factors above the level of the five; specifically, the four–factor level resembled four–factor models often articulated in the personality and psychopathology literature (e.g., Livesley et al., 1998; O'Connor & Dyce, 1998; Watson, Clark, & Harness, 1994). The three–factor level resembled the three factors of Clark and Watson (1999), Eysenck (1987), and Tellegen (in press), with the dimensions of negative emotionality, disinhibition (a combination of disagreeableness and unconscientiuosness), and positive emotionality. Finally, the Two–Factor Model resembled the two–factor model of Digman (1990), with one factor (alpha) combining neuroticism, agreeableness, and conscientiousness, and the other factor (beta) combining extraversion and openness. The second study of Markon et al. (2005) replicated this hierarchical model using a new, unique sample of participants who completed the NEO PI–R (Costa & McCrae, 1992), the EPQ–R (Eysenck, Eysenck, & Barrett, 1985), the Schedule for Nonadaptive and Adaptive Personality (Clark et al., in press), and the Big Five Inventory (John, Donahue, & Kentle, 1991).

The Markon et al. (2005) results suggest that the five–factor level of the hierarchy is the basic organizing framework of choice because there was no compelling evidence for higher–order structures beyond the five, and structures above the five can be understood as combinations of the five–factor domains. Nevertheless, the analyses also indicated that structures above the five factors, as well as the facet-level scales that delineate the five domains, are also theoretically and clinically important. For example, the domain of disinhibition, which is above the five-factor level (combining disagreeableness and unconscientiousness), is closely linked to antisocial behavior (e.g., Lynam & Derefinko, in press). In addition, many of the scales in the Markon et al. analyses contained substantial amounts of residual variance that could not be accounted for by the higher-order factors. For example, the DAPP–BQ (Livesley & Jackson, in press) self–harm scale was a marker for the broad domain of neuroticism but the majority of the variance in DAPP–BQ Self–Harm was unique to this scale. Self–harm is of obvious clinical importance and inasmuch as it cannot be captured entirely by the broad neuroticism

domain, it represents an example of a specific, facet–level construct below the five broad domains that might be important to include in a complete system of normal–abnormal personality description. Indeed, the question of which facet–level constructs should be included in a comprehensive system of normal–abnormal personality description is an important topic for continued research and discussion. The detailed information about personality functioning contained in facet–level constructs is important in connecting broad domains of personality with the richness of clinical phenomena encountered with personality disorders (Shedler & Westen, 2004). New developments in the modeling of multivariate data (Muthen, 2002) can also be used to identify points of greater and lesser density within the multivariate space. These regions of greater density (if they exist) might be thought of as frequently encountered personality configurations, and some of these configurations might be of particular clinical importance (e.g., Hicks, Krueger, Iacono, McGue, & Patrick, 2004).

Exploration at the higher–order level is helpful in leading toward a potential integration of the personality and Axis I disorders. Diagnostic co–occurrence is not necessarily an artifact or nuisance; it may represent instead a reliable empirical observation in need of an explanatory model. Diagnostic co–occurrence makes sense when thought of in terms of the personological underpinnings of these disorders (Krueger & Tackett, 2003). Krueger, Caspi, Moffitt, and Silva (1998) demonstrated that the co–occurrence of unipolar mood and anxiety disorders appears to reflect a latent internalizing propensity, and the co–occurrence of substance dependence and antisocial behavior disorders a latent externalizing propensity. This internalizing–externalizing structure can also be observed in the primary care setting in numerous countries around the globe, with the internalizing spectrum also encompassing somatoform disorders (Krueger, Chentsova-Button, Markon, Goldgerg, & Ormel, 2003). Putting the personality findings together with the findings on the structure of mental disorders, neuroticism (negative affectivity) appears to provide the personological basis for internalizing psychopathology, and negative emotionality paired with disinhibition the personological basis for externalizing psychopathology. Thus, the connections between personality and psychopathology make psychological sense within a common, hierarchical, integrative dimensional model. This conceptualization is further supported by behavioral genetic research that has obtained consistent findings (Kendler, Prescott, Myers, & Neale, 2003; Krueger & Tackett, 2003).

Much work, however, is needed before a complete reorganization of the diagnostic manual along these lines is possible. Krueger (this issue) suggested that we first consider converting the existing personality disorder section to a system of facet–level constructs organized in terms of five broad domains (Markon et al., 2005) and pursue research and discussion of the most optimal facets for representing these domains in clinical practice. Second, we should consider reorganizing sections and disorders described within the diagnostic manual to recognize the internalizing and externalizing spectra, and pursue research and discussion on the most optimal organization of diagnoses within these spectra. Finally, we should encourage further research linking cutting-edge developments in methodology with novel ideas about how to describe and organize personality and psychopathology constructs. Open-minded, creative research that asks probing and novel questions but sticks close to the data in pursuing these questions has real potential to ultimately result in a diagnostic system that is empirically supported, useful in the clinic, and inspires research that leads to better prevention and treatment of mental disorders.

COVERAGE AND CUTOFF POINTS

Trull (this issue) considered two major challenges that must be addressed by a dimensional model of personality disorder if it is to be considered a viable alternative to the present categorical system: coverage and cutoff points. A dimensional model must adequately cover

the existing conditions that are currently seen in clinical practice, and provide a meaningful basis with which to diagnose the presence of personality disorder.

It is evident that the existing diagnostic manual fails to provide adequate coverage of the maladaptive personality functioning seen in clinical practice (Westen & Arkowitz–Westen, 1998; Verheul & Widiger, 2004), yet at the same time it contains substantial redundancy, evident in part by the excessive diagnostic co–occurrence (Trull & Durrett, 2005). Concerns regarding coverage have generally been addressed in existing research through determining whether a proposed dimensional model would adequately include the personality disorder symptomatology that is currently included within the existing criterion sets. In some instances, the answer to this question is rather straightforward because the dimensional models were derived in large part through analyses of the existing diagnostic criteria (e.g., Clark et al., in press; Livesley & Jackson, in press; Tyrer, 2000; Westen & Shedler, 2000). The Five–Factor Model was developed instead to assess general personality structure, but Trull (this issue) noted that over 50 studies have now documented that the existing diagnostic criteria can be well understood from the perspective of this model (Livesley, 2001; Saulsman & Page, 2004; Widiger & Costa, 2002). There are now even studies demonstrating that the extent to which a person matches a five–factor profile for a DSM–IV personality disorder has as much convergent and discriminant validity as a direct measure of that respective personality disorder (e.g., Miller, Lynam, Widiger, & Leukefeld, 2001; Trull, Widiger, Lynam, & Costa, 2003).

A potential advantage of dimensional models of personality disorder relative to the existing diagnostic categories is the ability to characterize unique or idiosyncratic personality profiles that are currently not well represented by one of the existing diagnostic categories. One of the more common diagnoses within clinical practice has been personality disorder not otherwise specified, due in large part to the failure of the existing set of ten diagnoses to provide adequate coverage of the maladaptive personality traits that are seen in clinical practice (Westen & Arkowitz–Westen, 1998; Verheul & Widiger, 2004). All of the existing dimensional models of personality disorder are likely to provide better coverage than the existing diagnostic categories through individualized profile descriptions that will be relatively unique to each patient and through the inclusion of additional traits not included within any one of the existing diagnostic categories. Even the dimensional models of personality disorder that were derived in large part through analyses of the symptoms included within the existing categories have gone beyond the categories to include additional symptomatology (e.g., Clark et al., in press; Livesley & Jackson, in press; Westen & Shedler, 2000). Nevertheless, it would be useful for future studies to document empirically that the inclusion of these additional traits (maladaptive and adaptive) do in fact provide incremental validity for clinical assessments and increase the coverage of cases currently receiving a diagnosis of personality disorder not otherwise specified.

An issue not well addressed empirically by the existing research is how to use a dimensional model of personality disorder to make the clinical distinction between the presence vs. absence of a personality disorder. The existing research documents well that there does not appear to be a clear, qualitative distinction between normal and abnormal personality functioning (one of the arguments favoring a dimensional model), but the absence of any apparent or obvious point of distinction then makes it even more imperative that concerted effort be given toward developing a reasonable or meaningful basis for any such distinction. Cutoff points will be needed for clinical decisions (e.g., whether to provide treatment, medication, or insurance coverage). A purported advantage of dimensional models is a flexibility of cutoff points for these different social and clinical decisions. Nevertheless, the existing research has not provided any explicit support for how these decisions could or should be made.

A few of the alternative models have included proposals for how such a distinction could be made. Westen and Shedler (2000) suggest using a relatively subjective prototypal matching procedure whereby the clinician uses his or her professional judgment in determining whether the personality traits of a patient are sufficiently close enough to a brief, narrative description of a prototypic case to warrant a diagnosis. Cloninger (2000) emphasizes low scores on his scale of Self–Directedness, and secondarily low scores on Cooperativeness, Affective Stability, and/or Self–Transcendence, as a basis for determining whether a personality disorder is present. If a personality disorder is present, then other TCI scales would be used to identify the specific features of the personality disorder. Livesley (2003) suggests that the initial assessment for the presence of a personality disorder should focus on a failure to establish and maintain stable representations of the self and others; interpersonal dysfunction; and/or a failure to develop prosocial behavior and cooperative relationships. The procedure of Widiger, Costa, and McCrae (2002) is to first describe the person's personality profile (including normal and abnormal traits), and then determine whether the maladaptive personality traits reach a clinically significant level of impairment. These are all admirable proposals, but they all share the feature that there is little to no direct empirical research on the reliabilty, validity, or utility of their clinical application. It is not known whether these proposed distinctions would resemble closely the diagnostic thresholds that are currently provided in the DSM–IV or the diagnostic thresholds that are generally used by clinicians when they provide a diagnosis of personality disorder, not otherwise specified.

In defense of the absence of this research, it should be noted that there has also been little to no research on the diagnostic thresholds currently provided in the DSM–IV (Samuel & Widiger, in press). What is needed in future research is a more concerted effort to identify optimal cutoff points for alternative clinical and social decisions. A personality disorder diagnoses could be made at that point in which there is evidence of a clinically significant level of impairment to social or occupational dysfunction, but as yet there is no clear consensus as to what constitutes a clinically significant impairment (Wakefield & First, 2003). It is unlikely that a cutoff point could be based simply on statistical deviance, as each personality dimension will have different implications for impairment (e.g., a lower cutoff point would likely be used for a dimension of self–harm than for a dimension of social avoidance). In addition, it might be useful to disengage personality assessment from the determination of the presence of a personality disorder. This will facilitate the consideration of adaptive personality functioning and a more explicit, differentiated assessment of clinical impairment (Lehman, Alexopoulos, Goldman, Jeste, & Ustun, 2002). Different cutoff points will likely be necessary for alternative clinical decisions, for example, when to recommend medication, hospitalization, or entrance into a specialized treatment program (e.g., dialectical behavior therapy). In sum, a dimensional model of classification has much to offer for an improvement in how a personality disorder is diagnosed, but a conversion to a dimensional model of classification would be facilitated by studies that are explicitly concerned with the identification of the optimal cutoff points for these clinical decisions.

CLINICAL UTILITY

As stated within the text of the DSM–IV, the "highest priority has been to provide a helpful guide to clinical practice" (APA, 2000, p. xxiii). Clinical utility has always been an important priority for the authors of the diagnostic manual, but Verheul (this issue) suggested that increased attention needs to be given to the obtaining of empirical data that will document explicitly how revisions to the diagnostic manual would address or improve matters of clinical utility (First et al., 2004).

Verheul (this issue) endorsed the definition of clinical utility offered by First et al. (2004), that is, "the extent to which DSM assists clinical decision makers in fulfilling the various clinical

functions of a psychiatric classification system" (p. 947). First, Verheul identified elements of diagnostic validity that are conditional to clinical utility, including adequate coverage, consistency with developmental and etiological models, and consistency with models of course and change. Second, Verheul identified components that directly concern matters of clinical utility, including user acceptability and accuracy, professional communication, interrater reliability, subtlety of diagnosis, and clinical decisionmaking.

Achieving user acceptability and accuracy in the application of diagnostic criteria are critically important since nonutilization and incorrect application would eliminate any potential value that would be provided by a more valid diagnostic system. Current research suggests that the existing diagnostic criterion sets are in fact not being used effectively in clinical practice. Empirical information about the potential user acceptability of alternative dimensional models of classification, however, is scarce (Sprock, 2003).

It is also of considerable importance for a classification to allow for effective professional communication. It has been suggested that the existing diagnostic categories are preferable to the more complex dimensional models of classification because they allow for the communication of a considerable amount of information through the provision of a single diagnostic label. However, it also appears to be the case that the single diagnostic labels are inadequate in their description and coverage, and clinicians may in fact prefer to at least have the opportunity to obtain and consider a more extensive personality description (Zimmerman & Mattia, 1999). Studies that assess and compare alternative dimensional models and the existing diagnostic categories with respect to effectiveness of professional communication would be of considerable benefit to the authors of a future diagnostic manual.

The existing diagnostic categories can be assessed with adequate to high levels of interrater reliability, but it is not at all clear that adequate levels of reliability are being obtained in general clinical practice. Existing research has indicated that dimensional classifications generally obtain higher levels of reliability than categorical diagnoses, but these direct comparisons have been confined largely to studies that have used structured instruments. It is unclear whether clinicians would in fact use structured assessment instruments (Widiger & Samual, in press) and, if they do not, whether a dimensional model of classification would still result in an improvement in reliability.

Several authors have demonstrated that dimensional models permit greater subtlety of diagnosis than what can be derived from a category–based system (e.g., Stone, 2002). This strength, however, is closely related to the complexity and detail of the information that is provided. The optimum level of detail provided by any classification system will be related to issues of feasibility, preferred level for communication, and added value for clinical decisionmaking. Studies that address specifically whether the additional information provided by a dimensional classification is actually helpful for clinical decisions would be of considerable benefit.

The extent to which a taxonomy is able to direct clinical decision making is perhaps the most important component of clinical utility (First et al., 2004; Verheul, this issue). Proponents of the existing diagnostic categories argue correctly that there currently exists a substantial amount of clinical literature regarding methods of treatment that is coordinated explicitly with these categories. However, a dimensional model that retains the existing personality disorder symptoms as lower–order (behavioral) manifestations of respective personality trait scales would be able to draw upon this literature (Widiger & Simonsen, 2005). In addition, the existing diagnostic categories may not in fact be tremendously helpful to clinicians (Livesley, 2001; Verheul, this issue). For instance, many treatment decisions require more subtle, quantitative assessments (e.g., when and how to firmly set treatment limits, or how much to permit

dependence or encourage independence) that go beyond the broad and heterogeneous diagnostic categories (Clark, 1993). It is even unclear that the existing diagnostic categories are in fact helpful for such basic decisions as to whether to hospitalize or medicate a patient (Verheul, this issue).

Treatment decisions involve quite a few levels of consideration, including setting (e.g., inpatient, day hospital, or outpatient), format (e.g., individual, group, or family), major strategies or techniques (including choice of which theoretical model to guide conceptualization and intervention), duration (e.g., crisis intervention, short–term, or long–term), and frequency of appointments, and medication selection. There is a growing number of studies and clinical reports that suggests that an assessment of personality dimensions can be helpful in making these decisions (e.g., Lambert & Anderson, 1996; Miller, 1991; Sanderson & Clarkin, 2002). There are further data and clinical reports to suggest the possible value of dimensional models in facilitating therapeutic tailoring or microtreatment decisions, including goal setting, matching patient to therapist characteristics, handling of transference, and degree of therapy directiveness (Livesley, 2003; Verheul, this issue). In any case, clinicians would find a conversion to a dimensional model of classification easier to accept if they were adequately trained with respect to this literature, or if it was somehow more effectively disseminated to them.

In sum, there is much about which to be optimistic concerning the actual and potential clinical utility of a dimensional model of personality disorder classification. Nevertheless, it is also apparent that a considerable amount of additional research in this area will be of tremendous importance. Of most use will be field trials in which the existing diagnostic categories and alternative dimensional models of classification are compared directly with respect to their clinical utility (e.g., ease of usage, professional communication, interrater reliability, subtlety of diagnosis, and clinical decision making). Any comparison to the existing diagnostic categories will be hindered by the fact that the clinicians would have been trained with the current diagnostic system and may even be largely unfamiliar with the alternative dimensional models. Nevertheless, this research would still be of use in field-testing alternative proposals and in alerting the authors of a future diagnostic manual to potential problems with the application of a dimensional model. Field trials can, of course, be quite expensive and labor–intensive. Short of this approach could be studies that survey clinicians as to their opinions regarding ease of usage, communication, and treatment decisions, either through direct questioning or in response to case vignettes.

CONCLUSIONS

It was evident that the participants at the conference largely endorsed a conversion to a dimensional model of classification. The conference presentations were quite helpful in documenting the advantages of and empirical support for an integrative, hierarchical dimensional classification of personality disorder, consisting of four or five broad domains of personality functioning. This research included a considerable number of studies addressing behavioral genetics, developmental antecedents, cross–cultural application, convergence with other mental disorders, coverage, and clinical utility.

The participants were also helpful in generating ideas for research that would facilitate a conversion to a dimensional model of classification. More specifically, additional research is needed to help define more specifically the optimal number and content of the facets included within the four (or five) broad domains that are common across the alternative models. The alternative dimensional models have generated quite a number of possible scales to include in a dimensional model of personality disorder. Not all of them can be included, and research is needed to help lead the field toward their optimal integration within a common hierarchical

structure. This research should include genetically defined primary traits that would lead to an etiologically defined classification that could in turn facilitate molecular research by providing targets with a more homogeneous genetic variance. Considered as well would be studies addressing the adequacy of the phenotypic representation of alternative dimensional models, coherence and coverage of a respective domain, familiarity and ease of usage for clinicians, and relevance to treatment decisions.

The broad domains that have been identified to date do appear to be well coordinated with the basic temperaments identified in childhood, providing thereby not only a classification of personality disorder with explicit childhood antecedents but also one that is well coordinated with basic science research on childhood development. Nevertheless, it will be important in future research to further articulate the transition from the normal to the abnormal variants of these personality dimensions through childhood development.

The broad domains also appear to have strong etic and emic cross–cultural support, providing the potential for a truly universal classification of personality disorder. Nevertheless, it will be important for future research to explore additional emic and etic methodologies, particularly studies including semi–structured interview and peer assessments. It will also be helpful to specify more concretely how a universal method of diagnosis would be implemented (e.g., could or should cutoff points for diagnosis be common across different cultures and social settings).

The broad domains are also well coordinated with the existing research explaining the common latent structure underlying the co–occurrence of personality with other mental disorders, particularly when this structure is understood hierarchically. Above the four or five broad domains appear to be two broad constructs of internalization and externalization, whereas beneath them are the more specific facets of normal and abnormal personality structure that will be of most immediate and direct clinical relevance. Additional research is needed though to help define more precisely how to integrate the classification of other mental disorders with structural models of personality.

A dimensional model of personality disorder has considerable potential in improving the coverage of the maladaptive personality functioning seen in clinical practice. Nevertheless, it will be useful for future studies to document empirically that the inclusion of the additional maladaptive and adaptive personality traits within proposed models do in fact provide incremental validity for clinical assessments and increase the coverage of cases currently receiving a diagnosis of personality disorder not otherwise specified. An issue not well addressed currently by the existing research is how to use the dimensional models to make the clinical distinction between normal and abnormal personality functioning. A potential advantage of a dimensional model is a flexibility in how cutoff points are used, but existing research has not yet demonstrated empirically how or where these cutoff points are best placed for different clinical decisions.

Finally, additional research is needed on matters of clinical utility. A dimensional model of personality disorder would help address many of the problems that are currently problematic in clinical practice (e.g., inadequate coverage, unstable diagnostic boundaries, & excessive diagnostic co–occurrence), but it will also be important to demonstrate empirically whether and how a dimensional model of classification will improve ease of usage, reliability of unstructured clinical assessments, professional communication, and various treatment decisions. Field studies with clinicians in general practice would be informative, as well as survey and clinical vignette studies involving practicing clinicians. A consideration of utility in the context of general public health care concerns and costs will also be of particular importance. For instance, demonstrations of how a dimensional classification could facilitate

the consideration of personality disorders in public health care coverage would be particularly informative.

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