

## *Dimensional models of personality: the five-factor model and the DSM-5*

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*It is evident that the classification of personality disorder is shifting toward a dimensional trait model and, more specifically, the five-factor model (FFM). The purpose of this paper is to provide an overview of the FFM of personality disorder. It will begin with a description of this dimensional model of normal and abnormal personality functioning, followed by a comparison with a proposal for future revisions to DSM-5 and a discussion of its potential advantages as an integrative hierarchical model of normal and abnormal personality structure.*

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### Introduction

In a survey of members of the International Society for the Study of Personality Disorders and the Association for Research on Personality Disorders, 80% of respondents indicated that “personality disorders are better understood as variants of normal personality than as categorical disease entities.”<sup>1,5,42</sup> Indeed, the diagnosis and classification of personality disorder within the American Psychiatric Association’s (APA) *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)*<sup>2</sup> is shifting toward a more dimensional model of classification<sup>3,4</sup> and perhaps in particular, the five-factor model (FFM) of general personality structure.<sup>5</sup> Frances<sup>6</sup> had suggested that the switch to a dimensional model was not a matter of “whether, but when and which” (p 110). Frances was at that time the Chair of the forthcoming *DSM-IV*.<sup>7</sup> It has now been almost 20 years since *DSM-IV*, and the primary coordinators of the forthcoming fifth edition of the diagnostic manual are embracing a shift of the entire manual toward a dimensional classification.<sup>8</sup> “We have decided that one, if not the major difference, between *DSM-IV* and *DSM-5* will be the more prominent use of dimensional measures.”<sup>9,3,p649</sup>

Frances<sup>6</sup> had asked not only when, but which dimensional model should be used. The text of *DSM-IV-TR*<sup>2</sup> makes reference to dimensions from six alternative models: (i) the five domains of the FFM, consisting of neuroticism versus emotional stability, extraversion versus introversion, openness versus closedness to experience, agreeableness versus antagonism, and conscientiousness versus undependability<sup>9</sup>; (ii) Cloninger’s<sup>10</sup> seven-dimen-

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sional model (four temperaments of harm avoidance, novelty seeking, reward dependence, and persistence, along with three character traits of self-directedness, cooperativeness, and self-transcendence); (iii) the four-factor model of Livesley,<sup>11</sup> consisting of emotional dysregulation, dissocial behavior, inhibitedness, and compulsivity; (iv) the three-factor model of Clark and Watson,<sup>12,13</sup> consisting of negative affectivity, positive affectivity, and constraint; (v) the interpersonal circumplex dimensions of agency and communion<sup>14</sup>; and (vi) the three polarities (ie, self-other, active-passive, and pleasure-pain) proposed by Millon.<sup>15</sup>

The first *DSM-5* research planning conference<sup>8</sup> included a work group whose task was to lay the conceptual groundwork for the eventual development of a dimensional model of personality disorder.<sup>16</sup> The members of this work group focused in particular on the dimensional models of Livesley,<sup>11</sup> Clark and Watson,<sup>12</sup> Cloninger,<sup>10</sup> and the FFM.<sup>9</sup> In a subsequent *DSM-5* research planning conference devoted to shifting the PDs toward a dimensional classification, Widiger and Simonsen<sup>17</sup> proposed a four-dimensional model in an effort to find a common ground among the major alternatives. This model consisted of emotional dysregulation versus emotional stability, extraversion versus introversion, antagonism versus compliance, and constraint versus impulsivity. Included within each domain were the normal and abnormal trait scales from existing alternative models. They suggested though that a fifth broad domain, unconventionality versus closedness to experience, would also be necessary to fully account for all of the maladaptive trait scales included within the alternative dimensional models. This fifth domain was not included within their common model because it is missing from some of the predominant alternatives, including the four-factor model of Livesley<sup>11</sup> and the three-factor model of Clark.<sup>12,18</sup> The domain of unconventionality versus closedness to experience is, however, included within the FFM.<sup>19,20</sup> Markon et al<sup>21</sup> conducted a meta-analytic factor analysis of numerous measures of normal and abnormal personality representing the models of Clark,<sup>18</sup> Livesley,<sup>11</sup> and others, and reached the conclusion that all of the alternative models are indeed well integrated within a common, integrative, five-factor structure that they indicated “strongly resembles the Big Five factor structure” (p 144).

Although *DSM-5* is likely to keep the ten personality disorder classification system that appeared in *DSM-IV*,

a new dimensional model of personality pathology classification will appear in Section 3 of the new manual; this section will include conditions and classifications that are in need of further study before being formally adopted. Section 3 of *DSM-5* will include a five-domain dimensional model that aligns closely with the FFM,<sup>5,22</sup> with each broad domain further differentiated into more specific traits that are included within the diagnostic criterion sets for the personality disorder categories, consistent with the FFM diagnosis of personality disorder, proposed for the next edition of the diagnostic manual. The purpose of this paper is to provide a brief overview of the FFM, compare it with the *DSM-5* Section 3 dimensional trait model, and outline its potential strengths and advantages as a dimensional model of personality and personality disorder.

## The five-factor model

Most models of personality have been developed through the reflections of well-regarded theorists (eg, refs 10,15). The development of the FFM was more strictly empirical; specifically, through studies of the trait terms within different languages. This lexical paradigm was guided by the premise that what has the most importance, interest, or meaning to persons will be encoded within the language. Language can be understood as a sedimentary deposit of persons’ observations over the thousands of years of the language’s growth and transformation. From this perspective, the most important domains of personality will be those with the greatest number of terms to describe and differentiate the gradations and variations of a particular trait, and the structure of personality will be evident in the empirical relationship among these trait terms.<sup>23</sup>

The initial lexical studies were conducted on the English language, and these investigations converged onto a five-factor structure,<sup>23</sup> consisting of extraversion (versus introversion), agreeableness (versus antagonism), conscientiousness (or constraint), emotional instability (or neuroticism), and intellect (unconventionality or openness). Subsequent lexical studies have been conducted in Czech, Dutch, Filipino, German, Greek, Hebrew, Hungarian, Italian, Korean, Polish, Russian, Spanish, Turkish, and other languages, and the findings have supported reasonably well the universal existence of the five domains.<sup>24</sup> Costa and McCrae,<sup>25</sup> through their development of and research with the NEO Personality

Inventory-Revised (NEO PI-R<sup>26</sup>) further differentiated each broad domain into six more specific facets. For example, the six facets they identified for agreeableness were trust, straightforwardness, compliance, altruism, modesty, and tender-mindedness.

The universality of the FFM domains is not terribly surprising when one considers their content. The first two domains that appear in every language have consistently been extraversion and agreeableness.<sup>27</sup> The aspect of personality functioning considered to be most important to persons across all cultures and languages when describing themselves and other persons is how people relate to one another. Many theorists have similarly placed special emphasis on interpersonal relatedness as providing the core of personality disorder.<sup>28</sup>

The third domain extracted from every language is conscientiousness (or constraint). This domain concerns the control and regulation of behavior, contrasting being disciplined, compulsive, dutiful, conscientious, deliberate, workaholic, and achievement-oriented, with being care-free, irresponsible, lax, impulsive, spontaneous, disinhibited, negligent, and hedonistic. It is again self-evident that all cultures would consider it to be important to describe the likelihood a person will be responsible, conscientious, competent, and diligent as a mate, parent, friend, employee, or colleague (versus being negligent, lax, disinhibited, or impulsive).

The fourth domain, emotional instability, is of considerable importance in mental and also medical health,<sup>29</sup> saturating most measures of personality disorder.<sup>30</sup> It is again not terribly surprising that people in most, and perhaps all, cultures consider the emotional stability (in terms of anxiousness, depressiveness, irritability, volatility, anger, and vulnerability) of their partners, children, friends, workers, laborers, and employees to be of considerable importance. The fifth domain, openness, intellect, or unconventionality, reflects a culture or society's interest in creativity, intellect, and imagination, contrasting being open-minded, unusual, odd, weird, creative, peculiar, and unconventional with being closed-minded, practical, conventional, and rigid.

The FFM has amassed a considerable body of empirical support, including multivariate behavior genetics with respect to its structure<sup>31</sup> (and even some molecular genetic support for neuroticism<sup>30</sup>), neurobiological correlates,<sup>32</sup> childhood antecedents,<sup>33</sup> temporal stability across the life span,<sup>34</sup> and cross-cultural validity, both through the emic studies considering the structures

indigenous to different languages<sup>24</sup> and etic studies translating the FFM across the major regions of the world.<sup>35</sup> The FFM domains and traits have been shown to be useful in predicting a substantial number of important life outcomes, both positive and negative, such as subjective well-being, social acceptance, relationship conflict, marital status, academic success, criminality, unemployment, physical health, mental health, job satisfaction, and mortality.<sup>24,29,36</sup>

### The FFM and personality disorders

One of the strengths of the FFM is its robustness, which follows naturally from its coverage of essentially all of the trait terms within a variety of languages. The FFM has been used effectively as a basis for comparing, contrasting, and integrating broad sets of personality scales and traits considered within diverse areas of research.<sup>37</sup> Widiger and Costa<sup>38</sup> similarly proposed that the personality disorders included within *DSM-IV-TR*<sup>2</sup> could be understood as maladaptive and/or extreme variants of the domains and facets of the FFM.

The FFM accommodates the diagnostic features of each *DSM-IV-TR* personality disorder and goes beyond the criterion sets to provide fuller, more comprehensive descriptions.<sup>20</sup> For example, the FFM includes the traits of *DSM-IV-TR* antisocial personality disorder, such as deception, exploitation, manipulation, and aggression (facets of antagonism), irresponsibility, negligence, and rashness (facets of low conscientiousness), and excitement-seeking and assertiveness (facets of extraversion). However, it also goes beyond *DSM-IV-TR* to include traits that are unique to the widely popular Psychopathy Checklist-Revised (PCL-R<sup>39</sup>), such as glib charm (low self-consciousness), arrogance (low modesty), and lack of empathy (tough-minded callousness) and goes even further to include traits of psychopathy emphasized originally by Cleckley<sup>40</sup> but not included in either the *DSM-IV-TR* or the PCL-R, such as low anxiousness and low vulnerability or fearlessness.<sup>39,41</sup> The FFM has the withdrawal evident in both the avoidant and schizoid personality disorders (facets of introversion), but also the anxiousness and self-consciousness that distinguishes the avoidant from the schizoid (facets of neuroticism), as well as the anhedonia (low positive emotions) that distinguishes the schizoid from the avoidant.<sup>42</sup> The FFM includes the intense attachment needs (high warmth of extraversion), the deference (high compliance of agree-

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ableness), and the self-conscious anxiousness of the dependent personality disorder,<sup>43,44</sup> the perfectionism and workaholicism of the obsessive-compulsive (high conscientiousness<sup>45,46</sup>), and the fragile vulnerability and emotional dysregulation of the borderline patient.<sup>47</sup>

A compelling body of empirical research has now accumulated in support of this understanding.<sup>9,48</sup> O'Connor<sup>49</sup> conducted inter-battery factor analyses with previously published correlations involving FFM variables and the scales of 28 other normal and abnormal personality inventories published in approximately 75 studies. He concluded that "the basic dimensions that exist in other personality inventories can thus be considered 'well captured' by the FFM" (p 198). As mentioned above, Markon et al<sup>21</sup> conducted meta-analytic and exploratory hierarchical factor analyses of numerous measures of normal and abnormal personality, and consistently obtained a five-factor solution that they indicated "strongly resembles the Big Five factor structure" (p 144).

Samuel et al<sup>50</sup> demonstrated through item response theory analysis that the maladaptive personality trait scales assessed in the models of Livesley<sup>11</sup> and Clark<sup>18</sup> lie along the same latent traits as those assessed by measures of the FFM, with the measures of abnormal personality representing more extreme variants of the traits of normal personality. Samuel et al<sup>51</sup> extended this research to focus specifically on borderline personality disorder. They indicated that the borderline symptoms (eg, recurrent suicidality) lie along the same latent trait as FFM neuroticism (or emotional instability). Stepp et al<sup>52</sup> similarly integrated an FFM measure with scales to assess the dimensional models of Cloninger<sup>10</sup> and Clark,<sup>8</sup> in a confirmatory factor and item response theory analyses that documented the presence of a common five-factor model that was closely aligned with the FFM. More specifically, they demonstrated that dependent traits were extreme variants of FFM agreeableness, obsessive-compulsive traits were extreme variants of FFM conscientiousness, and schizotypal cognitive-perceptual aberrations were extreme variants of FFM openness. Distel et al<sup>53</sup> examined the phenotypic and genetic association between borderline personality and FFM personality traits in 4403 monozygotic twins, 4425 dizygotic twins, and 1661 siblings from 6140 Dutch, Belgian, and Australian families. Multivariate genetic analyses indicated that the genetic factors that influenced individual differences

in neuroticism, agreeableness, conscientiousness, and extraversion accounted for all of the genetic liability for borderline personality (though unique environmental effects were not completely shared with the FFM traits).

Saulsman and Page<sup>54</sup> conducted a meta-analysis of FFM personality disorder research and concluded that the results "are consistent with the view that personality disorders can be conceptualized using the five-factor model of normal personality" (p 1075). Samuel and Widiger<sup>55</sup> replicated and extended this meta-analysis with 16 studies (containing 18 independent samples) that administered a facet-level assessment of the FFM. They concluded that the findings were "congruent at the facet level with hypothesized FFM translations of the *DSM-IV-TR* personality disorders,"<sup>55, p1326</sup> though they did note significant variation of the strength of findings across different assessment instruments.

Livesley,<sup>56</sup> at one time a member of the *DSM-5* Personality Disorders Work Group, concluded on the basis of his review of this research that "all categorical diagnoses of DSM can be accommodated within the five-factor framework" (p 24). Clark,<sup>57</sup> another member of the *DSM-5* Personality Disorders Work Group, similarly concluded that "the five-factor model of personality is widely accepted as representing the higher-order structure of both normal and abnormal personality traits" (p 246).

The FFM may in fact provide an intriguing and perhaps fruitful alignment with the National Institute of Mental Health Research Domain Criteria (RDoC). "On the basis of reviews of relevant empirical literature, the RDoC working group identified five initial candidate domains: negative affect, positive affect, cognition, social processes, and arousal/regulatory systems."<sup>58, p634</sup> Negative affect aligns well with FFM neuroticism (or *DSM-5* negative affectivity). Positive affect aligns well with FFM extraversion, as positive affectivity is the driving temperament underlying extraversion.<sup>24</sup> Social processes align with FFM agreeableness and extraversion as these are the two fundamental domains of all manner of interpersonal relatedness. FFM conscientiousness (or constraint) is a domain of self-regulation. The RDoC domain of cognition would include the psychoticism and cognitive-perceptual aberration dimension of the *DSM-5* dimensional trait model, which aligns closely with the FFM domain of openness (otherwise known as intellect<sup>59</sup>).

## Five-factor model diagnosis of personality disorder

The purpose of the FFM of personality disorder, however, is not simply to provide another means with which to diagnose *DSM-IV-TR* personality disorders, as the latter system is stricken with a number of fundamental limitations and inadequacies, including inadequate coverage, heterogeneous and overlapping categories, and a weak scientific foundation.<sup>49</sup> The purpose of the FFM of personality disorder is to provide an alternative means with which to conceptualize and diagnose personality disorder.

Widiger et al<sup>19</sup> proposed a four-step procedure for the diagnosis of a personality disorder from the perspective of the FFM. The first step is to obtain an FFM description of the person. There are quite a number of alternative measures to facilitate this description, which is itself a testament to the interest in the FFM.<sup>60</sup> Options include various self-report inventories,<sup>20</sup> a semi-structured interview,<sup>61</sup> childhood rating scales,<sup>62</sup> and abbreviated clinician rating scales.<sup>63</sup>

Simply describing a person in terms of the FFM would be insufficient to determine whether or not a person has a personality disorder. Thus, the second step is to identify the maladaptive traits that are associated with elevations on any respective facet of the FFM. Widiger et al<sup>64</sup> listed typical impairments associated with each of the 60 poles of the 30 facets of the FFM. Researchers are also now developing measures designed specifically to assess these maladaptive variants.<sup>62,65-69</sup>

The third step is to determine whether the impairment and distress reach a clinically significant level that would warrant a diagnosis of personality disorder. The FFM of personality disorder is dimensional, but also recognizes that distinctions along the continua must be made for various social and clinical decisions, such as whether to hospitalize, medicate, provide disability benefits, and/or provide insurance coverage, to name just a few. It is clear that the diagnostic thresholds for the *DSM-IV-TR* personality disorders do not relate well to any one of these clinical decisions, hence the lack of clinical utility for the existing nomenclature.<sup>70</sup> In addition, any single diagnostic threshold is unlikely to be optimal for all of these different clinical decisions. A potential advantage of a dimensional classification is that different thresholds can be provided for different social and clinical decisions, an option that could be quite helpful for various public health care services and agencies.<sup>71</sup>

With respect to the fundamental question of whether the person should be provided with a personality disorder diagnosis, a useful guide for this decision is the global assessment of functioning scale on Axis V of *DSM-IV-TR*.<sup>2</sup> A score of 71 or above indicates a normal range of functioning (ie, problems are transient and expectable reactions to stressors, with no more than slight impairments), whereas a score of 60 or below would represent a clinically significant level of impairment (moderate difficulty in social or occupational functioning, such as having few friends or significant conflicts with coworkers). This point of demarcation is arbitrary in that it does not carve nature at a discrete joint, but it provides a reasonable basis for identifying the presence of disorder that can be used consistently across different personality disorders.<sup>9</sup>

The fourth step is a matching of the individual's personality profile to FFM profiles of theoretically, socially, or clinically important constructs for those researchers or clinicians who wish to continue to provide a single diagnostic term to describe a heterogeneous profile of maladaptive personality traits.<sup>72</sup> One method of obtaining this profile-matching index is to correlate a patient's FFM profile with the FFM profile for a prototypic case of a respective syndrome.<sup>73,74</sup> Another approach is to simply sum the number of the FFM maladaptive variants that are present for a respective syndrome,<sup>75</sup> such as the 12 scales of the Five Factor Borderline Inventory.<sup>67</sup>

## The FFM and *DSM-5* section 3

The limitations of the *DSM-IV-TR* categorical diagnoses, along with the empirical support for and advantages of the FFM, contributed to the proposal of the Personality Disorders Workgroup members for *DSM-5* to shift personality disorder diagnosis much closer to the FFM. The Workgroup's proposal for *DSM-5* was a five-domain, 25-trait dimensional model of maladaptive personality.<sup>4</sup> As expressed by the authors of this proposal, "the proposed model represents an extension of the Five Factor Model."<sup>75,p7</sup> *DSM-5* emotional dysregulation aligns with FFM neuroticism, *DSM-5* detachment aligns with FFM introversion, *DSM-5* psychoticism (or peculiarity) aligns with FFM openness, *DSM-5* antagonism aligns with FFM antagonism, and *DSM-5* disinhibition aligns with low FFM conscientiousness.<sup>22,59</sup> This five-domain dimensional trait model will appear in Section 3 of *DSM-5*, serving now as a proposal for the next edition of the diagnostic manual.

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Also proposed for *DSM-5* was the retention of six personality disorder types (ie, borderline, antisocial, schizotypal, narcissistic, obsessive-compulsive, and avoidant) that would have been diagnosed in large part by a list of maladaptive personality traits,<sup>4</sup> consistent with the FFM prototype matching approach developed by Miller et al.<sup>75</sup> For example, the diagnostic criteria proposed for *DSM-5* borderline personality disorder included emotional lability, anxiousness, separation insecurity, depression, impulsivity, risk taking, and hostility.<sup>5</sup> These seven traits aligned closely with scales from the Five Factor Borderline Inventory (FFBI<sup>67</sup>): Affective Dysregulation, Anxious Uncertainty, Despondence, Behavior Dysregulation, Rashness, and Dysregulated Anger. The FFBI though goes further than the *DSM-5* to include such additional traits as self-disturbance, fragility, distrust, manipulation, and oppositionality. There are, however, some important differences between the FFM of personality disorder and the proposed *DSM-5* dimensional trait model. The latter was largely a unidimensional model.<sup>27,76</sup> Persons who are low in *DSM-5* antagonism (for instance) were not considered to have

any maladaptive personality traits. They simply lacked the trait of antagonism. The FFM has a bipolar structure, such that opposite to antagonism is agreeableness, with its own maladaptive variants.

It is generally better to be extraverted than introverted, but gregariousness can turn into attention-seeking and inappropriate flirtatiousness, normal assertiveness can become pushiness and authoritarianism, and normal excitement-seeking can become recklessness and excessive risk-taking.<sup>77</sup> Similarly, an individual rated high in agreeableness is traditionally considered to be prosocial, cooperative, pleasant, giving, considerate, kind, and honest. These traits are nearly universally valued as positive, and may even be described as virtuous. However, when taken to their extremes, they can be quite maladaptive, as trusting becomes gullibility, altruism becomes self-sacrificing selflessness,<sup>44</sup> compliance becomes subservience, and modesty becomes self-effacement.<sup>43,77</sup> These maladaptive variants of extraversion and agreeableness are either not present within the *DSM-5* proposal (eg, excluded are gullibility and self-effacement) or they are placed within other domains (eg, submissiveness is placed

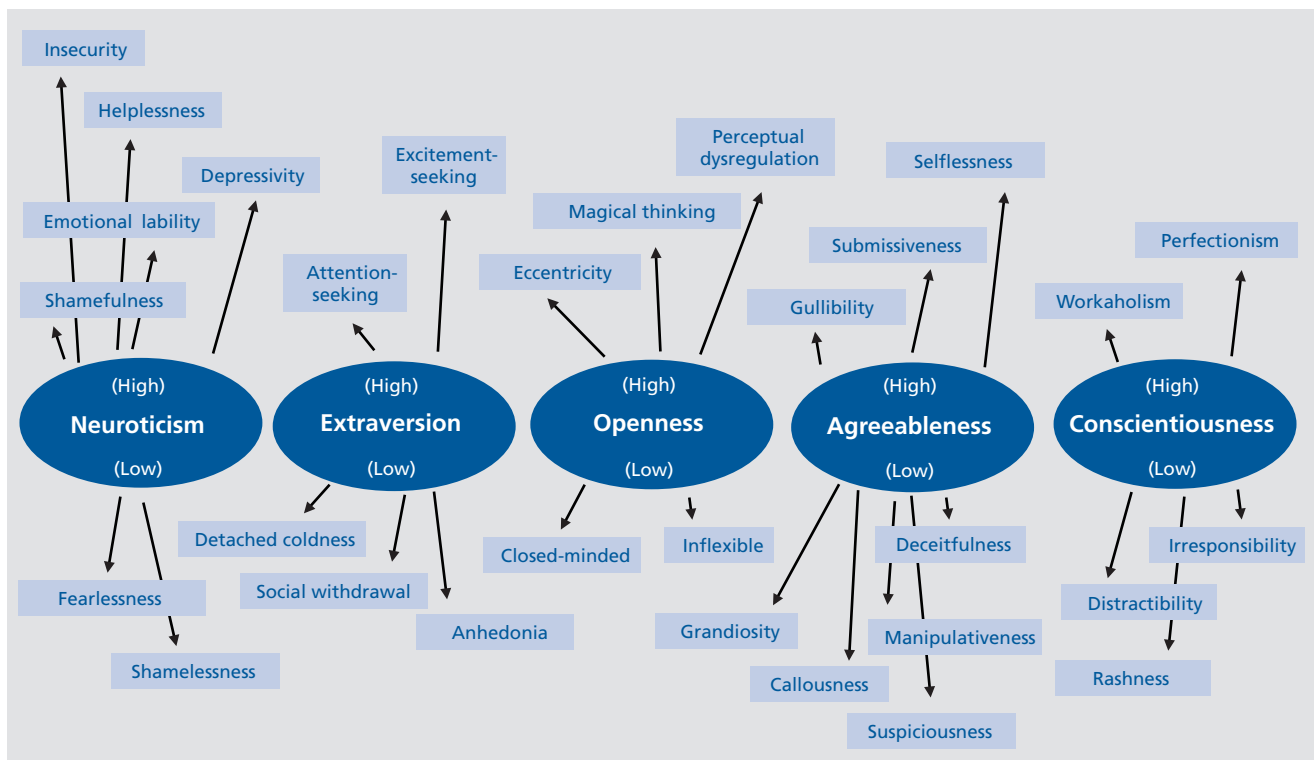


Figure 1. Illustrative traits within the five-factor model.

within neuroticism and attention-seeking is placed within antagonism). *Figure 1* provides a few illustrative traits at both poles of the five domains of the FFM.

One concern that has been raised with respect to the FFM of personality disorder is its potential complexity.<sup>78</sup> To the extent that the model is comprehensive in its coverage of maladaptive personality functioning there is indeed the potential for any particular individual's FFM profile to be exceedingly complex. *Figure 1* provides only a few illustrative traits. The FFM includes well over 100 maladaptive traits. The *DSM-5* dimensional trait model included only 25.

The relative simplicity of the proposed *DSM-5* dimensional trait model (ie, unipolar structure and fewer traits) was perhaps a necessary compromise. The dimensional trait proposal for *DSM-5* did meet considerable opposition within the personality disorder field.<sup>72,79</sup> A dimensional trait model consisting of over 100 traits would likely be considered way too complex for many clinicians to accept. Although the confinement of the *DSM-5* trait model to just 25 traits would have resulted in a lack of adequate coverage (eg, obsessive-compulsive personality disorder was to be assessed by just the two traits of perfectionism and perseveration, and narcissistic by just the two traits of grandiosity and attention-seeking), it was perhaps necessary to keep the model as simple as possible for it to be considered acceptable.

The convergence of the proposed *DSM-5* dimensional trait model with the FFM, though, is far greater than the divergence. Therefore the proposal presented in Section 3 of *DSM-5* appears to be taking a significant step closer to the FFM of personality disorder by conceptualizing personality disorders in large part as constellations of maladaptive personality traits organized within a five-domain dimensional trait model.<sup>5</sup>

### Potential advantages of FFM personality disorder diagnosis

Conceptualizing personality disorders from the perspective of the FFM has a number of potential advantages.<sup>9</sup> One benefit is bringing to an understanding of personality disorder a large body of scientific research that has accumulated concerning the etiology, course, temporal stability, genetics, neural functioning, life outcomes, and universality of the FFM. As acknowledged by the Chair of the *DSM-5* Personality Disorders Work Group, "similar construct validity has been more elusive

to attain with the current *DSM-IV* personality disorder categories."<sup>780,p1923</sup>

Some of the FFM personality disorder research has in fact helped to address problems and gaps for the *DSM-IV-TR* personality disorders.<sup>81</sup> For example, a major failing of the *DSM-IV-TR* diagnostic categories is their excessive diagnostic co-occurrence and lack of adequate discriminant validity.<sup>9,57,82</sup> The diagnostic co-occurrence obtained for the *DSM-IV-TR* personality disorders has in fact been so problematic that it is touted as the primary reason for the recommended deletion of four of the 10 categories.<sup>83</sup>

Some studies have suggested that the FFM is unable to provide an adequate differentiation among the personality disorders.<sup>84</sup> This criticism is somewhat ironic, given the extensive overlap and excessive diagnostic co-occurrence among the *DSM-IV-TR* personality disorders. No instrument (including any instrument that assesses the FFM) can adequately differentiate the *DSM-IV-TR* personality disorders because they are inherently overlapping. Scales to assess the *DSM-IV-TR* personality disorders will even contain the same items precisely because they share many of the same traits.<sup>85</sup>

What the FFM can do well is explain the diagnostic co-occurrence.<sup>73,86,87</sup> For example, Lynam and Widiger indicated that the extent to which the personality disorders shared FFM traits explained much of the co-occurrence among the diagnostic categories. They produced FFM profiles for each *DSM-IV-TR* personality disorder, and then indicated empirically that the extent of overlap among the FFM traits that defined each disorder accounted for much of their diagnostic co-occurrence. For example, the avoidant and schizoid personality disorders share traits of introversion; dependent and avoidant share traits of agreeableness; and most of the personality disorders contain a considerable amount of neuroticism. The "overlap among FFM profiles reproduced well the covariation obtained for the schizoid, schizotypal, antisocial, borderline, histrionic, narcissistic, avoidant, and compulsive personality disorders aggregated across several sets of studies."<sup>773,p410</sup> Poor results were obtained for only one personality disorder, dependent, precisely because its FFM description provided considerably more differentiation from other personality disorders than is in fact found using the *DSM-IV-TR* criterion sets.

Discriminant validity would clearly be better with the factor-analytically based FFM constructs relative to the

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explicitly overlapping syndromes of the *DSM-IV-TR*. Some of the FFM facets do correlate with other domains (eg, the angry hostility of neuroticism correlates with antagonism; and the excitement-seeking of extraversion correlates with low conscientiousness), but the five domains of the FFM are much less correlated than the 10 personality disorders (or the three clusters) of the *DSM-IV-TR*. Samuel and Widiger<sup>88</sup> demonstrated this empirically in a direct comparison of the FFM and *DSM-IV-TR* models of classification across four methods of assessment: self-report, semistructured interview, peer report, and clinician rating.

Gender bias within the personality disorder nomenclature has been a heated issue for quite some time.<sup>89</sup> The differential sex prevalence rates that have been reported were also difficult to justify in the absence of any theoretical basis for knowing what differential sex prevalence should be obtained. In contrast, the FFM has proved useful in helping to explain and understand gender differences in personality<sup>90,91</sup> and can help explain as well the gender differences in personality disorder.<sup>92</sup> Lynam and Widiger<sup>93</sup> demonstrated that the differential sex prevalence rates obtained for the *DSM-IV-TR* personality disorders are well explained if these disorders are understood as maladaptive variants of the domains and facets of the FFM. They reported that the differential sex prevalence rates obtained through a meta-analytic aggregation of prior studies was consistent with the sex differences that would be predicted if the personality disorders were understood to be maladaptive variants of the FFM. One exception was for histrionic personality disorder. The FFM conceptualization predicted no differential sex prevalence rate, whereas this personality disorder is diagnosed much more frequently in women. This finding is consistent with the fact that histrionic personality disorder has been the most controversial diagnosis with respect to concerns of gender bias.<sup>89</sup> Samuel and Widiger<sup>94</sup> indicated empirically how a reformulation of the personality disorders in terms of the FFM could help to diminish gender assumptions and stereotypic expectations.

One of the difficulties for the *DSM-IV-TR* personality disorders is a temporal stability that is less than one would have expected for a disorder of personality. Temporal stability “goes to the heart of how personality traits are conceptualized.”<sup>34,p.3</sup> Personality does change over time, typically for the better (ie, increased conscientiousness and agreeableness, along with decreased

neuroticism) as one matures through adulthood.<sup>95</sup> Nevertheless, it is inconsistent with the concept of a personality trait (or a personality disorder) to experience the sudden, dramatic remissions that have been observed in personality disorder research.<sup>96</sup> In contrast, there is considerable support for the temporal stability of the FFM across the lifespan.<sup>34</sup> Further, in direct comparisons of the FFM versus the *DSM-IV-TR*, the FFM traits have demonstrated better temporal stability. Over 2-year<sup>97</sup> and 4-year<sup>98</sup> follow-up periods assessed within the Collaborative Longitudinal Study of Personality Disorders, the temporal stability of FFM traits has been substantially higher than obtained for the *DSM-IV-TR* constructs. This has also contributed to greater predictive validity over time for the FFM than for the *DSM-IV-TR*.<sup>98</sup> As indicated by Warner et al,<sup>97</sup> changes in FFM personality predicted changes in personality disorder, but not vice versa. Warner et al<sup>97</sup> concluded that this finding “supports the contention that personality disorders stem from particular constellations of personality traits” (pp 222-223).

A further advantage of the FFM is that it will also allow the clinician to recognize the presence of personality strengths (step one of the four-step procedure<sup>19</sup>) as well as the deficits and impairments (step two). Personality disorders are among the more stigmatizing labels within the diagnostic manual. Anxiety and mood disorders are events that happen to the person, whereas a personality disorder is who that person is and might always be.<sup>15</sup> The FFM of personality disorder recognizes and appreciates that the person is more than just the disorder, and that other aspects of the self can be adaptive, even commendable, despite the presence of some maladaptive personality traits. Some of these strengths can also be quite relevant for treatment planning, such as openness to experience indicating an interest in exploratory psychotherapy, agreeableness indicating an engagement in group therapy, and conscientiousness indicating a willingness and ability to adhere to the demands and rigor of dialectical behavior therapy.<sup>71</sup>

An additional advantage of the FFM is the deconstruction of the heterogeneous *DSM-IV-TR* personality disorders into their component parts. Clinicians, when treating a personality disorder, do not attempt to address the entire personality structure all at once. They focus instead on underlying components, such as the dysregulated anger, the oppositionality, or the manipulateness of persons diagnosed with borderline personality disorder.



der. This more specific assessment available with the FFM could be more useful for clinicians and third-party payers tracking clinical progress.<sup>71</sup>

A notable failing of the *DSM-IV-TR* personality disorder nomenclature has been a dearth of empirically based therapies. The primary purpose of the APA diagnostic manual is to facilitate treatment planning.<sup>2,78</sup> The APA has been developing practice guidelines for over 20 years for each of the mental disorders included within *DSM-IV-TR*, and to date guidelines have been published for only one personality disorder: borderline.<sup>99</sup>

One possible reason for the absence of manualized treatment programs for the APA personality disorders is their complex heterogeneity.<sup>71,100</sup> Each *DSM-IV-TR* personality syndrome is a compound assortment of different traits.<sup>73</sup> Two patients meeting the diagnostic criteria for the same personality disorder may at times have only one single feature in common.<sup>82</sup> Given this degree of variability within each diagnosis, it is understandably difficult to develop a common or consistent treatment plan.<sup>70</sup>

The factor analytically derived FFM is better suited for treatment planning because the domains are considerably more distinct and homogeneous. Extraversion and agreeableness are concerned specifically with social, interpersonal dysfunction. Interpersonal models of therapy, marital-family therapy, and group therapy would be particularly suitable for them. In contrast, neuroticism provides information with respect to mood, anxiety, and emotional dyscontrol. There are very clear pharmacologic implications for mood and anxiety dysregulation and emotional instability (eg, anxiolytics, antidepressants, and/or mood stabilizers) that would not apply to the other domains of personality. Maladaptively high openness implies cognitive-perceptual aberrations, and so would likely have pharmacologic implications (ie, neuroleptics) that are quite different from those for neuroticism. The domain of conscientiousness has specific relevance to occupational dysfunction. Maladaptively

high levels involve workaholicism, perfectionism, and compulsivity, whereas low levels involve laxness, negligence, and irresponsibility with potentially their own specific pharmacologic treatment implications (eg, methylphenidates<sup>101</sup>). In sum, the potential for the development of relatively specific treatment plans, including pharmacotherapy, are considerably better for the FFM domains than for the overlapping *DSM-IV-TR* personality disorder categories.

## Conclusions

The FFM of personality disorder provides a reasonably comprehensive integration of normal and abnormal personality within a common hierarchical structure. Advantages of the FFM of personality disorder include the provision of precise, individualized descriptions of the personality structure, the inclusion of homogeneous trait constructs that will have more specific treatment implications, and the inclusion of normal, adaptive personality traits that will provide a richer and more appreciative description of each patient. The FFM of personality disorder addresses the many fundamental limitations of the categorical model (eg, heterogeneity within diagnoses, inadequate coverage, lack of consistent diagnostic thresholds, and excessive diagnostic co-occurrence), and brings to the nomenclature a wealth of knowledge concerning the origins, childhood antecedents, stability, and universality of the dispositions that underlie personality disorder.

It is apparent that *DSM-5* is shifting much closer to the FFM through the inclusion of a supplementary five-domain dimensional model that aligns with the five factors of the FFM, and through an emphasis on FFM traits in the diagnosis of each respective personality disorder type. Nevertheless, the *DSM-5* could move even closer through the recognition of the bipolarity of personality structure, the inclusion of normal traits, and the expansion of the coverage of maladaptive personality traits. □

## REFERENCES

1. Bernstein DP, Iscan C, Maser J. Opinions of personality disorder experts regarding the DSM-IV personality disorders classification system. *J Personal Disord.* 2007;21:536-551.
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 4th ed, Text Revision. Washington, DC: American Psychiatric Association; 2000.
3. Regier DA, Narrow WE, Kuhl EA, Kupfer DJ. The conceptual development of DSM-V. *Am J Psychiatry.* 2009;166:645-650.

4. Skodol A. Diagnosis and DSM-5. Work in progress. In: Widiger TA, ed. *The Oxford Handbook of Personality Disorders.* New York, NY: Oxford University Press; 2012:13-34.
5. American Psychiatric Association. Personality Disorders. Available at: <http://www.dsm5.org/PROPOSEDREVISIONS/Pages/PersonalityandPersonalityDisorders.aspx>. Accessed May 2, 2012.
6. Frances AJ. Dimensional diagnosis of personality - not whether, but when and which. *Psychol Inq.* 1993;4:110-111.
7. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 4th ed. Washington, DC: American Psychiatric Association; 1994.

# State of the art

## **Modelos dimensionales de personalidad: el modelo de cinco factores y el DSM5**

*Es evidente que la clasificación del trastorno de personalidad está cambiando hacia un modelo de características dimensionales, y más específicamente, hacia el modelo de cinco factores (MCF). El propósito de este artículo es ofrecer una panorámica del trastorno de personalidad de acuerdo con el MCF. El artículo se inicia con una descripción de este modelo dimensional del funcionamiento de la personalidad normal y anormal, y continúa con la comparación con una propuesta para futuras revisiones para el DSM5 y una discusión de sus potenciales ventajas como un modelo jerárquico integrador de la estructura de personalidad normal y anormal.*

## **Modèles dimensionnels de personnalité : le modèle des cinq facteurs et le DSM-5**

*La classification des troubles de la personnalité se dirige clairement vers un modèle dimensionnel de caractéristiques et, plus spécifiquement, vers le modèle des cinq facteurs de personnalité (MCF). Cet article propose une synthèse du MCF des troubles de la personnalité. Il commence par une description de ce modèle du fonctionnement normal et anormal de la personnalité et se poursuit par une comparaison et des propositions pour les révisions à venir du DSM-5 ; vient ensuite une discussion des avantages éventuels d'utiliser le MCF comme modèle hiérarchique intégrateur d'une structure de personnalité normale et anormale.*

8. Kupfer DJ, First MB, Regier DE. Introduction. In: Kupfer DJ, First MB, Regier DE, eds. *A Research Agenda for DSM-V*. Washington, DC: American Psychiatric Association; 2002:xv-xxiii.
9. Widiger TA, Trull TJ. Plate tectonics in the classification of personality disorder: shifting to a dimensional model. *Am Psychol*. 2007;62:71-83.
10. Cloninger CR. A practical way to diagnose personality disorder: a proposal. *J Personal Disord*. 2000;14:98-108.
11. Livesley WJ. A framework for integrating dimensional and categorical classification of personality disorder. *J Personal Disord*. 2007;21:199-224.
12. Clark LA, Watson D. Temperament: an organizing paradigm for trait psychology. In: OP John, RW Robins, LA Pervin, eds. *Handbook of Personality Theory and Research*. 3rd Ed. New York, NY: Guilford; 2008:265-286.
13. Tellegen A, Waller NG. Exploring personality through test construction: development of the Multidimensional Personality Questionnaire. In: Boyle GJ, Matthews G, Saklofske DH, eds. *The Sage Handbook of Personality Theory and Assessment*. Los Angeles, CA: Sage; 2008:261-291.
14. Pincus AL. The interpersonal nexus of personality disorders. In: Strack S, ed. *Handbook of Personality and Psychopathology*. New York, NY: Wiley; 2005:120-139.
15. Millon T. Disorders of Personality. *Introducing a DSM/ICD Spectrum from Normal to Abnormal*, 3rd Ed. New York, NY: John Wiley & Sons; 2011.
16. First MB, Bell CB, Cuthbert B, et al. Personality disorders and relational disorders: a research agenda for addressing crucial gaps in DSM. In: Kupfer DJ, First MB, Regier DA, eds. *A Research Agenda for DSM-V*. Washington, DC: American Psychiatric Association; 2002:123-199.
17. Widiger TA, Simonsen E. Alternative dimensional models of personality disorder: finding a common ground. *J Personal Disord*. 2005;19:110-130.
18. Clark LA. *Manual for the Schedule for Nonadaptive and Adaptive Personality (SNAP)*. Minneapolis, MN: University of Minnesota Press; 1993.
19. Widiger TA, Costa PT, McCrae RR. A proposal for Axis II: diagnosing personality disorders using the five factor model. In: Costa PT, Widiger TA, eds. *Personality Disorders and the Five Factor Model of Personality*, 2nd Ed. Washington, DC: American Psychological Association; 2002:431-456.
20. Widiger TA, Mullins-Sweatt SN. Five-factor model of personality disorder: a proposal for DSM-V. *Annu Rev Clin Psychol*. 2009;5:115-138.
21. Markon KE, Krueger RF, Watson D. Delineating the structure of normal and abnormal personality: an integrative hierarchical approach. *J Pers Soc Psychol*. 2005;88:139-157.
22. Widiger TA. The DSM-5 dimensional model of personality disorder: rationale and empirical support. *J Personal Disord*. 2011;25:222-234.
23. Goldberg LR. The structure of phenotypic personality traits. *Am Psychol*. 1993;48:26-234.
24. John OP, Naumann LP, Soto CJ. Paradigm shift to the integrative Big Five trait taxonomy: history, measurement, and conceptual issues. In: John OP, Robins RR, Pervin LA, eds. *Handbook of Personality Theory and Research*. 3rd Ed. New York, NY: Guilford; 2008:114-158.
25. Costa PT, McCrae RR. Domains and facets: hierarchical personality assessment using the Revised NEO Personality Inventory. *J Pers Assess*. 1995;64:21-50.
26. Costa PT, McCrae RR. *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*. Odessa, FL: Psychol Assess Resources; 1992.
27. De Raad B, Barelids DPH, Levert E, et al. Only three factors of personality description are fully replicable across languages: a comparison of 14 trait taxonomies. *J Pers Soc Psychol*. 2010;98:160-173.
28. Pincus AL, Lukowitsky MR, Wright AGC. The interpersonal nexus of personality and psychopathology. In: T Millon, RF Krueger, E Simonsen, eds. *Contemporary Directions in Psychopathology: Scientific Foundations for the DSM-V and ICD-11*. New York, NY: Guilford; 2010:523-552.
29. Lahey BB. Public health significance of neuroticism. *Am Psychol*. 2009;64:241-256.
30. Widiger TA. Neuroticism. In: Leary MR, Hoyle RH, eds. *Handbook of Individual Differences in Social Behavior*. New York, NY: Guilford; 2009:129-146.
31. Yamagata S, Suzuki A, Ando J, et al. Is the genetic structure of human personality universal? A cross-cultural twin study from North America, Europe, and Asia. *J Pers Soc Psychol*. 2006;90:987-998.
32. DeYoung CG, Hirsh JB, Shane MS, Papademetris X, Rajeevan N, Gray J. Testing predictions from personality neuroscience: brain structure and the Big Five. *Psychol Sci*. 2010;21:820-828.
33. Caspi A, Roberts BW, Shiner RL. Personality development: stability and change. *Annu Rev Psychol*. 2005;56:453-484.
34. Roberts BW, DelVecchio WF. The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychol Bull*. 2000;126:3-25.
35. Allik J. Personality dimensions across cultures. *J Personal Disord*. 2005;19:212-232.
36. Ozer DJ, Benet-Martinez V. Personality and the prediction of consequential outcomes. *Annu Rev Psychol*. 2006;57:401-421.
37. Funder DC. Personality. *Annu Rev Psychol*. 2001;52:197-221.
38. Widiger TA, Costa PT. Personality and personality disorders. *J Abnorm Psychol*. 1994;103:78-91.
39. Hare RD, Neumann CS. Psychopathy as a clinical and empirical construct. *Annu Rev Clin Psychol*. 2008;4:217-246.
40. Cleckley H. *The Mask of Sanity*. St Louis, MO: C.V. Mosby; 1941.

41. Lynam DR, Widiger TA. Using a general model of personality to identify the basic elements of psychopathy. *J Personal Disord.* 2007;21:160-178.
42. Widiger TA. Social anxiety, social phobia, and avoidant personality disorder. In: Corzier WR, Alden L, eds. *International Handbook of Social Anxiety.* NY: Wiley; 2001:335-356.
43. Lowe JR, Edmundson M, Widiger TA. Assessment of dependency, agreeableness, and their relationship. *Psychol Assess.* 2009;21:543-55.
44. Widiger TA, Presnall JR. Pathological altruism and personality disorder. In: Oakley B, ed. *Pathological Altruism.* New York, NY: Springer; 2012:85-93.
45. Samuel DB, Gore WL. Maladaptive variants of conscientiousness and agreeableness. *J Pers.* 2012;80:1669-1696.
46. Samuel DB, Widiger TA. Conscientiousness and obsessive-compulsive personality disorder. *Personal Disord: Th Res Tr.* 2011;2:161-174.
47. Widiger TA. A temperament model of borderline personality disorder. In: Zanarini M, ed. *Borderline Personality Disorder.* Boca Raton, FL: Taylor & Francis; 2005:63-81.
48. Trull TJ, Widiger TA. Geology 102: more thoughts on a shift to a dimensional model of personality disorders. *Soc Pers Comp.* 2008;2:949-967.
49. O'Connor BP. A quantitative review of the comprehensiveness of the five-factor model in relation to popular personality inventories. *Assess.* 2002;9:188-203.
50. Samuel DB, Simms LJ, Clark LA, Livesley WJ, Widiger TA. An item response theory integration of normal and abnormal personality scales. *Personal Disord: Th Res Tr.* 2010; 1:5-21.
51. Samuel DB, Carroll KM, Rounsaville BJ, Ball SA. Personality disorders as maladaptive, extreme variants of normal personality: Borderline personality disorder and neuroticism in a substance using sample. *J Personal Disord.* In press.
52. Stepp SD, Yu L, Miller JD, Hallquist MN, Trull TJ, Pilkonis PA. Integrating competing dimensional models of personality: linking the SNAP, TCI, and NEO using item response theory. *Personal Disord Th Res Tr.* 2012;3:107-126.
53. Distel MA, Trull TJ, Willemsen G, et al. The five-factor model of personality and borderline personality disorder: A genetic analysis of comorbidity. *Biol Psychiatry.* 2009;66:1131-1138.
54. Saulsman LM, Page AC. The five-factor model and personality disorder empirical literature: a meta-analytic review. *Clin Psychol Rev.* 2004;23:1055-1085.
55. Samuel DB, Widiger TA. A meta-analytic review of the relationships between the five-factor model and DSM-IV-TR personality disorders: a facet level analysis. *Clin Psychol Rev.* 2008;28:1326-1342.
56. Livesley WJ. Conceptual and taxonomic issues. In: Livesley WJ, ed. *Handbook of Personality Disorders. Theory, Research, and Treatment.* NY: Guilford; 2001:3-38.
57. Clark LA. Assessment and diagnosis of personality disorder: perennial issues and an emerging reconceptualization. *Annu Rev Psychol.* 2007;57:277-257.
58. Sanislow CA, Pine DS, Quinn KJ, et al. Developing constructs for psychopathology research: research domain criteria. *J Abnorm Psychol.* 2010;119:631-639.
59. Trull TJ. The five-factor model of personality disorder and DSM-5. *J Personal.* 2012;80:1697-1720.
60. DeRaad B, Perugini M. *Big Five Assessment.* Seattle, WA: Hogrefe & Huber Publishers; 2002.
61. Trull TJ, Widiger TA, Burr R. A structured interview for the assessment of the Five Factor Model of personality: facet level relations to the Axis II personality disorders. *J Personal.* 2001;69:175-198.
62. De Clercq B, De Fruyt F, Van Leeuwen K, Mervielde I. The structure of maladaptive personality traits in childhood: a step toward an integrative developmental perspective for DSM-V. *J Abnorm Psychol.* 2006;115:639-657.
63. Mullins-Sweatt SN, Jamerson JE, Samuel DB, Olson DR, Widiger TA. Psychometric properties of an abbreviated instrument of the five-factor model. *Assess.* 2006;13:119-137.
64. Widiger T, Trull T, Costa P, McCrae R, Clarkin JF, Sanderson C. Description of the DSM-IV personality disorders with the Five Factor Model of personality. In: Costa P, Widiger T, eds. *Personality Disorders and the Five-Factor Model of Personality,* 2nd Ed. Washington, DC: American Psychological Association; 2002:89-99.
65. Edmundson M, Lynam DR, Miller JD, Gore WL, Widiger TA. A five-factor measure of schizotypal personality traits. *Assess.* 2011;18:321-34.
66. Lynam DR, Gaughan ET, Miller JD, Miller DJ, Mullins-Sweatt S, Widiger TA. Assessing the basic traits associated with psychopathy: development and validation of the Elemental Psychopathy Assessment. *Psychol Assess.* 2011;23:108-124.
67. Mullins-Sweatt SN, Edmundson M, Sauer-Zavala SE, Lynam DR, Miller JD, Widiger TA. Five-factor measure of borderline personality traits. *J Pers Assess.* 2012;94:475-487.
68. Piedmont RL, Sherman MF, Sherman NC, et al. Using the five-factor model to identify a new personality disorder domain: the case for experiential permeability. *J Pers Soc Psychol.* 2009;96:1245-58.
69. Simms LJ, Goldberg LR, Roberts JE, Watson D, Welte J, Rotterman JH. Computerized Adaptive Assessment of Personality Disorder: Introducing the CAT-PD Project 2011. *J Pers Assess.* 2011;93:380-389.
70. Verheul R. Clinical utility for dimensional models of personality pathology. *J Personal Disord.* 2005;19:283-302.
71. Mullins-Sweatt SN, Lengel GJ. Clinical utility of the five-factor model of personality disorder. *J Personal.* 2012;80:1615-1639.
72. Shedler J, Beck A, Fonagy P, et al. Personality disorders in DSM-5. *Am J Psychiatry.* 2010;167,1027-1028.
73. Lynam DR, Widiger TA. Using the five factor model to represent the DSM-IV personality disorders: an expert consensus approach. *J Abnorm Psychol.* 2001;110:401-412.
74. Trull TJ, Widiger TA, Lynam DR, Costa PT. Borderline personality disorder from the perspective of general personality functioning. *J Abnorm Psychol.* 2003;112:193-202.
75. Miller JD, Bagby RM, Pilkonis PA, Reynolds SK, Lynam DR. A simplified technique for scoring the DSM-IV personality disorders with the five-factor model. *Assess.* 2005;12:404-415.
76. Krueger RF, Eaton NR, Clark LA, et al. Deriving an empirical structure of personality pathology for DSM-5. *J Personal Disord.* 2011;25:170-191.
77. Gore WL, Tomiatti M, Widiger TA. The home for histrionism. *Personal Ment Health.* 2011;5:57-72.
78. First MB. Clinical utility: a prerequisite for the adoption of a dimensional approach in DSM. *J Abnorm Psychol.* 2005;114:560-564.
79. Gunderson JG. Commentary on "Personality Traits and the Classification of Mental Disorders: Toward a More Complete Integration in DSM-5 and an Empirical Model of Psychopathology". *Personal Disord Th Res Treat.* 2010;1:119-122.
80. Skodol AE, Oldham JM, Bender DS, et al. Dimensional representations of DSM-IV personality disorders: Relationships to functional impairment. *Am J Psychiatry.* 2005;162:1919-1925.
81. Widiger TA, Costa PT, Gore WL, Crego C. Five factor model personality disorder research. In: Widiger TA, Costa PT, eds. *Personality Disorders and the Five-Factor Model of Personality,* 3rd Ed. Washington DC: American Psychological Association; 2013:75-100.
82. Trull TJ, Durrett CA. Categorical and dimensional models of personality disorder. *Annu Rev Clin Psychol.* 2005;1:355-380.
83. Skodol A. Rationale for proposing five specific personality types. Available at: <http://www.dsm5.org/ProposedRevisions/Pages/RationaleforProposingFiveSpecificPersonalityDisorderTypes.aspx>. Accessed February 10, 2010.
84. Morey LC, Gunderson JG, Quigley BD, Lyons M. Dimensions and categories: the "Big Five" factors and the DSM personality disorders. *Assess.* 2000;7:203-216.
85. Widiger TA, Boyd S. Personality disorders assessment instruments. In: Butcher JN, ed. *Oxford Handbook of Personality Assessment.* New York, NY: Oxford University Press; 2009:336-363.
86. O'Connor BP. A search for consensus on the dimensional structure of personality disorders. *J Clin Psychol.* 2005;61:323-345.
87. Trull TJ, Scheiderer EM, Tomko RL. Axis II comorbidity. In: Widiger TA, ed. *Oxford Handbook of Personality Disorders.* New York, NY: Oxford University Press; 2012:219-236.
88. Samuel DB, Widiger TA. Comparing personality disorder models: Cross-method assessment of the FFM and DSM-IV-TR. *J Personal Disord.* 2010;24:721-745.
89. Morey LC, Alexander GM, Boggs C. Gender and personality disorder. In: Oldham J, Skodol A, Bender D, eds. *Textbook of Personality Disorders.* Washington, DC: American Psychiatric Press; 2005:541-554.

# State of the art

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90. Costa PT, Terracciano A, McCrae RR. Gender differences in personality traits across cultures: robust and surprising findings. *J Pers Soc Psychol.* 2001;81:322-331.
91. Feingold A. Gender differences in personality: a meta-analysis. *Psychol Bull.* 1994;116:429-456.
92. Oltmanns TF, Powers AD. Gender and personality disorders. In: Widiger TA, ed. *Oxford Handbook of Personality Disorders.* New York, NY: Oxford University Press; 2012:206-219.
93. Lynam DR, Widiger TA. Using a general model of personality to understand sex differences in the personality disorders. *J Personal Disord.* 2007;21:583-602.
94. Samuel DB, Widiger TA. Comparative gender biases in models of personality disorder. *Personal Ment Health.* 2009;3:12-25.
95. Roberts BW, Walton KE, Viechtbauer W. Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychol Bull.* 2006;132:1-25.
96. Widiger TA. CIC, CLPS, and MSAD. *J Personal Disord.* 2005;19:586-593.
97. Warner MB, Morey LC, Finch JF, et al. The longitudinal relationship of personality traits and disorders. *J Abnorm Psychol.* 2004;113:217-227.
98. Morey LC, Hopwood CJ, Gunderson JG, et al. Comparison of alternative models for personality disorders. *Psychol Med.* 2007;37:983-994.
99. American Psychiatric Association. *Practice Guidelines for the Treatment of Patients with Borderline Personality Disorder.* Washington, DC, American Psychiatric Association; 2001.
100. Smith GG, Zapolski TCB. Construct validation of personality measures. In: Butcher JN, ed. *Oxford Handbook of Personality Assessment.* New York, NY: Oxford University Press; 2009:81-98.
101. Nigg JT, John OP, Blaskey LJ, et al. Big five dimensions and ADHD symptoms: links between personality traits and clinical symptoms. *J Pers Soc Psychol.* 2002;83:451-469.