

Emerging Approaches to the Conceptualization and Treatment of Personality Disorder

John F. Clarkin
Weill Cornell Medical College

Kevin B. Meehan
Long Island University

Mark F. Lenzenweger
State University of New York at Binghamton
and Weill Cornell Medical College

Personality disorders are both prevalent and debilitating, but controversies abound concerning the definition, assessment and treatment of these conditions. This review examines major approaches to conceptualizing the personality disorders, as recently emerging in *DSM-5*, Section III, and the research domain criteria initiative of the National Institute of Mental Health. Three prominent models for understanding these disorders (neural functioning, interpersonal model, and the cognitive-affective processing system model) are considered with their relevant empirical foundations. The implications for future psychopathology and treatment research and practice are detailed.

Keywords: personality, personality disorder, assessment and treatment

Personality disorders (PD) are prevalent in the general population (10.56% median prevalence across studies; see [Lenzenweger, 2008](#)). They are highly debilitating, exerting a powerful impact on work functioning as well as interpersonal and intimate relations. However, there are many impediments to the assessment and treatment of patients with a personality disorder, not the least of which are the controversies in defining personality disorder, the range of severity across the disorders, the difficulties in identifying the key dimensions of personality dysfunction, the striking heterogeneity amongst patients that carry the same personality disorder diagnosis, and the paucity of treatment research on the majority of the personality disorder types.

In this overview, which is necessarily selective and nonexhaustive, we explore a number of empirical developments in personality pathology research, with a particularly focus on the potential impact of these developments on conceptualization, assessment and treatment. While there is substantial agreement about the limitations of the PD nosology articulated in the *Diagnostic and Statistical Manual for Mental Disorders*, now in its fifth edition (*DSM-5*; [APA, 2013](#)), there is less agreement about how to advance our conceptualization. The alternative *DSM-5* model for personality disorders, retained in Section 3 of the *DSM-5*, pro-

poses a radical restructuring of PD diagnosis. At the same time, the National Institute of Mental Health (NIMH) is moving away from *DSM* diagnoses and instead favoring dimensional evaluations of domains of psychopathology, called research domain criteria (RDoC; [Insel & Gogtay, 2014](#)). Each of these approaches will be discussed, including their advantages and limitations, as well as a number of assumptions about the nature of personality pathology that need to be evaluated. Further, a number of promising models of personality psychopathology that have received less visibility thus far will be discussed, which stand to make important contributions to advancing our conceptualization of PDs.

We also attempt to use this review to sketch the outlines of near future research and clinical developments in furthering our understanding the etiology and pathogenesis of PD. A central issue for the field remains the identification of the constituent domains of dysfunction related to PD and the psychological and neural mechanisms underlying these domains that contribute to self and interpersonal disruptions. We highlight research techniques that have refined our fine-grain understanding of the functioning of these disorders. Future empirical diagnostic and treatment efforts will focus on the interaction of organization at the brain, in the mind, and in behavior. Within this brain-mind-behavior matrix, we view PD as an emergent phenomenon, such that the resulting diagnosable PD represents a rich interactive product of this matrix in relation, of course, with the environment. PD, as an emergent product, cannot be reduced to single explanatory dimensions (e.g., disagreeableness or neuroticism).

Historical Influences on Conception of Personality and Its Disorders

The history of the investigation of personality disorders has been conceptualized as occurring in three phases ([Livesley, 2001](#)). Dating from the 19th century, the first phase involved the work of

This article was published Online First March 23, 2015.

John F. Clarkin, Department of Psychiatry, Weill Cornell Medical College; Kevin B. Meehan, Department of Psychology, Long Island University; and Mark F. Lenzenweger, Department of Psychology, State University of New York at Binghamton, and Department of Psychiatry, Weill Cornell Medical College.

Correspondence concerning this article should be addressed to John F. Clarkin, Weill Cornell Medical College, NY Presbyterian Hospital—Westchester Division, 21 Bloomingdale Road, White Plains, NY 10605. E-mail: jclarkin@med.cornell.edu

pioneers in clinical psychiatry and psychopathology in formulating conceptions of character and its related pathology. In the second phase, empirical investigation of personality pathology began in the 1960s and 70s. The second phase was furthered with the introduction of the multi-axial system in the *DSM-III* in 1980, which provided an explicit locus for the assignment of a personality disorder diagnosis. This official recognition of the personality disorders with explicit diagnostic criteria necessarily fostered a focus on PD diagnosis and the development of semi-structured interviews for PD. These interviews provided a methodology for the reliable definition of PD constructs, which set the stage for investigations directed at the validity of the PDs. Such validity oriented investigations have taken many forms, ranging from efforts to investigate underlying neurobehavioral systems to responses to highly detailed, manualized treatments.

In the third, post *DSM-III* (APA, 1980) phase, the problems and shortcoming of the original *DSM*-based PD classification systems have become clear. Most notable, the *DSM* personality disorder categories tend to be quite heterogeneous. For example, Clarkin (1998) and colleagues (2004) have argued that because of the polythetic nature of the criteria for borderline personality disorder (BPD), patients may have distinct symptom profiles with pertinent prognostic implications (i.e., suicidality), and yet each meets criteria for the disorder. There is considerable comorbidity both among the personality disorders and between Axis I and II disorders (Lenzenweger et al., 2007). Further, problems with differential diagnosis as well as concerns about stigma may lead clinicians to diagnose Axis I but not personality disorders (Paris, 2007). The recognition of these shortcomings have resulted in a third phase in which a proliferation of attempts to develop new classification schemes for both research and clinical purposes.

Major Clinical and Research Approaches Under Consideration

In response to the aforementioned limitations of the *DSM-IV* classification of personality disorders, the Personality and Personality Disorders Workgroup (PPDWG) introduced a novel diagnostic system in Section III's "Alternative *DSM-5* Model for Personality Disorders" (APA, 2013); though ultimately not adopted, it represents an intriguing hybrid model that combines dimensional assessments of personality functioning with personality traits. In the latter aspect of the model, traits are argued to better capture both the individuality of the patient, and provide a basis to understand similarities among groups of patients with different personality disorders (i.e., traits cut across different disorders and bring a clearer understanding of important organizing underlying similarities). Those who favor the trait approach to description of the personality pathology cite the advantages of coverage of the complex domain of personality functioning, and tout the advantages of dimensional measurement over categorization, which is seen as losing too much information (Widiger, Simonsen, Sirovatka, & Regier, 2006). The dimensional approach, in the PD context, has been centered on the issue of personality traits for the most part; however, a dimensional methodological approach is generally highly valuable for tapping into meaningful individual differences in any measured construct.

Proponents of trait theory emphasize the continuity of traits between "normal" personality and "abnormal" personality disorder,

as well as the ability of dimensional measurement to better characterize the well-known heterogeneity of personality disturbance (Trull, 2006). In this conceptualization, personality pathology is understood as an extreme of position on a normal trait dimension (e.g., extreme neuroticism or negative affectivity (disagreeableness) would be evident in many PDs). Traits describe individuals in terms of their stable patterns across different environmental situations, but do not address how or why the behaviors occur. In the main, traits are largely descriptive, lacking causal force. This is not necessarily because traits cannot exert causal force, but rather they simply have not been typically studied in a manner to allow for the investigation of causal effects. Even the well-known dimensions in the popular five factor model of personality assessment are fundamentally descriptive at their core (e.g., those tapped by the NEO-PI-R and related instruments; Costa & McCrae, 1992). It is well known that the five factors did not come from a model of personality or personality processes; rather they were distilled, in large part, from the natural language (English) of people used to describe themselves and others.

As shall be discussed in greater detail, it is important to emphasize that personality is the product of a complex interaction of underlying genetic, epigenetic, and trait dimensions that are contextualized by individuals' personal histories (Depue & Lenzenweger, 2005; Lenzenweger & Depue, in press). While trait dimensions, reflecting the activity of underlying neurobehavioral systems, can be studied and understood, this interactive process has given rise to a more complex phenotype that is not merely the sum of its constituent parts. We think, along with others, that personality processes can help us to understand how and why the personality traits have their impact on social relations and occupational functioning (Hampson, 2012). With the combination of personality traits and personality processes (Caspi et al., 2005; Cervone, 2005; Mischel & Shoda, 2008;), one can achieve a fuller picture of personality functioning.

Last, although many investigators and clinicians have seen the value in the general trait approach to PD, its utility in the clinical situation has been questioned (particularly by seasoned clinicians) for a number of reasons. First, clinicians tend to focus less on traits as the point of intervention and more on the active interchange between the patients' personality and environment form the nexus of the treatment foci. Second, the role of the clinician in the assessment of the key traits is complicated by the absence of a clinician-based method for standardized data gathering. Additionally, in a hybrid model it was not clear how clinicians would reliably rate (in common practice) self-and-other functioning. At its conclusion, the hybrid model depended on a self-report inventory (PID-5, Krueger, 2013) for the assessment of personality traits deemed central to PD; a necessary next step for the model would be the development of a clinician-based assessment system as self-report may be inadequate for valid assessment.

Research Domain Criteria

Though not specific to personality disorders, the recently proposed research initiative of the NIMH might have a major role in guiding future empirical PD research efforts. The RDoCs initiative emerged, in large part, out of a concern about the rampant comorbidity amongst disorders on the two Axes of *DSM-IV*. The sentiment related to this comorbidity was that it exemplified a muddy phenomenological and classification picture that was hampered in

its ability to guide research. The RDoCs approach seeks to encourage investigators to abandon the *DSM* diagnostic system as a guide research and adopt, rather, a dimensional approach that seeks to map underlying systems thought to be reflective in normal and abnormal behavior (Sanislow, Pine, Quinn, et al., 2010). It is interesting to note that dimensional measurement and the study of basic processes underlying psychopathology constructs has long history in clinical psychology and experimental psychopathology, whereas traditional psychiatry had remained a largely categorical/diagnosis related enterprise. This initiative will focus research on neurobiological systems such as positive affect, negative affect, cognition, regulatory processes, and social processes as well as other features. These systems are intended to be evaluated at varying levels of analysis, from underlying genetic factors to manifest behaviors. Rather than focus on specific disorders, broad domains of psychopathology (i.e., fear responsivity) will be evaluated along dimensions of severity and across units of analysis.

The methodological perspective of RDoCs shares many characteristics with a neural systems approach (Depue & Lenzenweger, 2001, 2005; Lenzenweger & Depue, in press), which shall be discussed in more detail, in that it seeks to elucidate underlying substrates of psychopathology. Such an approach holds enormous promise for later guiding treatment interventions at the level of systems from which psychopathology arises, rather than treatments targeting manifest disorders. However, to date the gaps in our understanding of how these systems relate to the emergent processes upon which therapists intervene is vast, and therefore the immediate expectation of NIMH that proposed treatments should target domains and not disorders impresses as premature. Our emerging understanding of these neurobiological systems are much more coherent at the lower biological units of analysis; the less clear sketches of an organizing framework at higher behavioral units clearly call for more research (and yet is not where funding priorities seem to lie). It will be essential to flesh out these higher units of analysis that include behavior, cognition, motivation, and relatedness, because at these levels the implications for psychosocial treatments will be most evident. To promote the development of treatments targeting systems that have only begun to be fully understood seems to place the cart before the horse.

However, over time one interesting implication of the RDoCs initiative will be the manner in which it will encourage a focus on personality systems that can be evaluated at multiple levels of analysis. It is conceivable, if properly designed, that RDoCs inspired studies will capitalize on attention to the moment-to-moment functioning of patients at various levels of the organism (e.g., neurotransmitters, neurocognitive functioning, psychological functioning). With the introduction of the RDoC initiative, there may indeed be a shift from examining personality pathology from a cross-sectional, categorical perspective to using a dimensional domains of dysfunction perspective, tapped at different levels (e.g., neural, psychological, and behavioral) of the organism with measurement in real-time and in ecologically valid contexts.

Assumptions in Perspectives on Personality Pathology

One fascinating aspect of the struggle over the reformulation of personality disorder diagnosis in *DSM-5* was that the methodological approaches at the heart of the debate were not new to clinical psychology or psychiatry by any measure. As noted above, clinical

psychological science has long embraced the dimensional method of assessment, whereby constructs are measured in a continuous fashion and variation is a matter of degree. On the other hand, the adherence to classification represented the 100 year-old tradition of psychiatry, whereby psychiatric conditions were akin to medical ailments that could be discerned clearly with pathological states being relatively crisply demarcated from nonpathological states. Though the debates are not new, at this point we now have accumulating data that should lead us to call into question a number of assumptions about personality pathology.

Caseness

Traditionally, in the diagnosis of personality disorders using the *DSM*-based approach, a diagnosis for a specific PD or PD–Not Otherwise Specified (PD–NOS) was given—one either had the diagnosis, or one did not. Having the diagnosis defined the presence. Most models of personality disorder that have their roots in a model of normal personality functioning have posited that personality disorders represent either extremes of commonly occurring “normal” personality dimensions (i.e., very low or very high values on a measured personality dimension).

The boundary between normal personality functioning and functioning that constitutes a personality disorder is hypothetical in nature, and defies exact definition. At the extremes (no problems in love and work vs. severe difficulties in these areas) there is a clear differentiation between personality disorder and its absence. However, there is considerable terrain in between such extremes, ranging from essential normality through subclinical deviations of little clinical significance to subclinical expressions clearly worthy of treatment. From a clinical point of view, the exact boundary between personality *difficulties* and personality *disorder* is not the only consideration related to the decision to intervene. In short, many individuals who seek therapeutic assistance in interpersonal difficulties, but who do not meet the level of dysfunction of a personality disorder may still need and, potentially, benefit from clinical assistance.

Stability Over Time

The assumption of total personality stability at least among the personality disorders is no longer seen as tenable (Lenzenweger et al., in press). Recent longitudinal studies have revealed that personality disorder, as defined and identified by the *DSM* criteria, tends to decline categorically and dimensionally over time, both in community and clinical samples (see Lenzenweger et al., in press for an extensive review; see also Morey & Hopwood, 2013). The literature on the stability and change features in relation to PD is now massive and will not be reviewed here. Consider as but two examples, the Collaborative Longitudinal Personality Disorders Study (CLPS) found a significant decrease in personality disorder diagnoses over a two year time period (Shea et al., 2002) among patients with Axis II diagnoses residing in the community, and a similar decline was found in a sample of university students followed for 4 years (Lenzenweger et al., 2004). The picture of change in PD over time is consistent across the four major longitudinal studies of PD (Lenzenweger et al., in press; Morey & Hopwood, 2013).

The general finding of decrease in personality disorder criteria over time has resulted in speculation about what precisely is

changing over time and what remains relatively stable, an issue that has been of central concern in personality theory. There is also considerable interest in the underlying mechanism or mechanisms for such change over time (which is clearly not explained simply by treatment effects). One explanation is that among borderline patients, the remission of acute symptoms such as suicidal behavior has a different time course than more stable temperamental features such as chronic anger (Zanarini et al., 2003). Likewise, Clark (2007) suggests that basic temperamental dimensions are responsible for the enduring aspects of the personality disorders.

A unique effort to understand change in personality disorder is the Longitudinal Study of Personality Disorders (Lenzenweger, 2006), which sought to examine whether change in personality disorder features would be related to change in personality dimensions reflective of underlying neurobiological systems (Lenzenweger, 2006). Over a 4-year period, elevated initial levels of the agentic positive emotion system predicted more rapid decline in Cluster B personality disorder features over time. The authors suggested that individuals with personality disorder features, but nonetheless able to engage with the world and to use rewards and incentives for self-regulation, find themselves less susceptible to continuing personality dysfunction over time. Consistent with this hypothesis is the results of a prospective follow-up study over a 16-year period of BPD patients treated at McLean Hospital (Zanarini, Frankenburg, Reich et al., 2012). Whereas BPD patients were slower than the comparison patients to achieve symptomatic reductions, both groups had achieved high rates of remission at the 16-year follow-up. However, only 40% of the patients with BPD attained symptom recovery of 8 years or longer, as compared to 75% of the comparison patients with other personality disorders. The authors indicated that vocational impairment was related to the BPD patients' failure to attain or maintain both symptom remission and good social and vocational functioning.

Emerging Models of Psychopathology

In contrast to the understanding of normal personality functioning, the field of personality disorders is dominated by partial models of personality pathology that need amplification with theoretical understanding and empirical advances (Lenzenweger & Clarkin, 2005). Conceptualizations of personality pathology must include multiple levels of analysis, including biological systems (e.g., RDOCs), behavioral traits (e.g., DSM-5 Section III), emergent processes (mental representations), and the interpersonal environment. It is essential not only to understand the mechanisms underlying personality pathology at each of these levels, but also models are needed for articulating the dynamic interactions between levels. We will discuss a number of such models that, while not actively part of the discussion about how to move PD diagnosis forward, have enormous promise in that regard.

Neural Systems Model

Over the past 20 years, we have seen an increased focus on the process/systems approach to understanding the causes of psychopathology. Kagan (Schwartz, Snidman, & Kagan, 1999) described anxiety psychopathology emanating from deviations in the fear system. Recall the core assessments of the children in Kagan's landmark studies were done in the laboratory when the children were 4 months old, thus tapping early indicators of behavioral

inhibition. Davidson (1998) described affective disorder, particularly depression, in terms of the approach (positive emotion) and the withdrawal (negative emotion) systems. This work was done largely in the context of psychophysiological assessments. Depue and Lenzenweger (2001, 2005) proposed a model that describes personality disorders as emergent products of the agentic approach, affiliation, anxiety, fear, and constraint systems. Predictions from this model are currently being tested in the laboratory using both psychological and pharmacological probes. This general line of thinking, where deviations in basic processes are thought to underlie the development of signs and symptoms of psychopathology, has long been a methodological and theoretical mainstay in both experimental and developmental psychopathology.

For a full appreciation of personality pathology, one must consider at least six relevant levels of the organism: (1) observable behavior (signs), (2) subjective experience, (3) neurocognitive functioning (e.g., working memory), (4) neurobehavioral systems and related individual variation in these systems (e.g., affiliation), (5) genetic and epigenetic inputs, and (6) environmental inputs (e.g., severe childhood trauma). Continuing advances in genetics and epigenetics research methods as well as neurocognitive laboratory methods (particularly with the incorporation of emotion/affect) have enabled the PD research field to investigate these influences on the development and functioning of personality pathology.

Of particular importance is the endophenotype approach (Gottesman & Gould, 2003; see also Lenzenweger, 2013), which has gained considerable traction in psychopathology research in the past decade, and makes considerable use of models that speak to genetic underpinnings for some aspects of liability that can turn into personality disorder as well as the rigorous methods of measurement and testing found in the experimental psychology laboratory. The endophenotype approach seeks to identify genetically influenced indicators of psychopathology liability that may be closer to the genetic end of the gene to behavior pathway, which may provide a cleaner window on those processes related to the development of psychopathology (Gottesman & Gould, 2003).

As noted above, we view PD as an emergent end product of interacting processes, processes involving neurobehavioral systems underpinning the psychological organization, epigenetic factors, and environmental inputs (Lenzenweger & Depue, in press; Lenzenweger, 2010). In an emergent view of PD, the resulting configured personality disorder phenotypes are not reducible in a straightforward manner to the underlying individual component systems or influences. Moreover, the match between emergent phenotypes and existing descriptions of the personality disorders remains to be explored fully. Departing from trait models, which tend to focus on the extremity of a given trait, a neural systems model places emphases on trait levels and the interaction of traits (reflective of neural system interaction) as well as emphasis on thresholds for eliciting activation of the systems underlying those traits at various levels of excitation. The contribution of stress and environmental conditions on phenotypic presentation will be magnified or mitigated by underlying neurobiological systems, which over time will tend to bias attention in perception in ways that will come to be reliable and recognizable behavioral expressions. However, manifestations of underlying systems are not stable over time, but rather vary greatly according to the affective and inter-

personal context. The notion of thresholds by which the context evidences its effect is a key notion shared by the CAPS model, which shall be discussed shortly.

A neural systems model also departs from trait models in its conceptualization of the interaction of extreme trait dimensions. The same stressor may be differentially affecting underlying systems due to their differential thresholds, and with perturbations in one system potentially cascading into others. Put differently, trait neuroticism differs greatly at conditions of high versus low trait agreeableness not simply by type, but by virtue of the interaction of perturbations to anxiety and affiliative systems under varying conditions of arousal. As can be seen, with the inclusion of other neural systems and ranges of stressors on those systems the complexity and nuance of emergent configurations is enormous, and therefore the manifest personality configuration is not readily reducible to its constituent parts.

Interpersonal Model

A key component of the *DSM-5* Section III hybrid model was the focus on disordered self-functioning as it relates to interactions with others. This focus is in line with a growing consensus in the field that self-and-other functioning is at the centre of personality and personality disorder (Bender & Skodol, 2007; Gunderson & Lyons-Ruth, 2008; Hengartner et al., 2013; Horowitz, 2004; Krueger, 2013; Livesley, 2001; Pincus, 2005; Meyer & Pilkonis, 2005). This is a view that has long been espoused, for many decades, in object relations theory (Kernberg, 1984), and it is central to the followers of Sullivan and the interpersonal approach (Hopwood, Wright, Ansell, & Pincus, 2013). The centrality of self and interpersonal functioning has many implications.

In the *DSM-5* Section III hybrid model each of the six personality disorder configurations specified has a unique and distinctive combination of faulty self-and-other functioning. As an example, antisocial personality disorder is characterized by an absence of prosocial internal standards, mirrored by interpersonal relations lacking concern for others and an incapacity for intimate relations. In contrast, avoidant personality disorder is marked by low self-esteem and marked impairments in developing close relations. When the *DSM* categories are examined at the individual criterion level, one can recognize the following interpersonal difficulties: pervasive distrust of others; detachment from social relations; reduced capacity for close relationships; instability in interpersonal relations; excessive attention seeking, avoidance, submissive and clinging behavior, preoccupation with interpersonal control, conflict, aggression; defective or relative absence of moral functioning (dishonesty, stealing, physical violence, disregard for the rights of others). The emphasis on interpersonal behavior (with elements of self-and-other embedded within it) and its dysfunction strikes us as potentially rich (still largely untapped) as an avenue for future exploration in the study of PD's. As such it represents an opportunity to pursue with vigor the seminal insights regarding the importance of the interpersonal (self-and-other) dimensions articulated by early workers such as Leary (interpersonal) and Kernberg (object relations).

A contemporary interpersonal model of personality pathology (Hopwood et al., 2013; Pincus & Hopwood, 2012) differs in its emphasis from trait models by noting that a given trait will not express itself in every interpersonal context. Rather, this approach

conceptualizes personality dysfunction as arising from psychopathology operating within a complex relational matrix. Interpersonal situations are organized along the axes of agency (from dominance to submission) and communion (from warmth/approach to cold/avoidance). On one level basic aspects of personality pathology may be understood in terms of extremity of problem interpersonal behaviors, which shares many features with pathological trait descriptions. A central aspect of an interpersonal model is also the focus on the rigidity of interpersonal styles; perhaps more important than our manifest style is our ability to flexibly step out of our characteristic ways of being in order to respond to the needs of others and situational demands. For example, an individual's predilection for taking a more dominant role in interpersonal contexts is not in and of itself a problem, unless it is expressed in extreme ways and accompanied by an inability to flexibly shift into a more submissive role according to situational demands (i.e., needing to ask for help). At times of distress, such difficulty with agentic complementarity is likely to exacerbate distress rather than afford an opportunity for the relationship to provide a regulatory function.

An interpersonal model does not simply conceptualize the personality disorders as extreme and rigid forms of interpersonal problem types. Rather, psychopathology is thought to powerfully interact with interpersonal dispositions in a pathoplastic relationship. This model shares the phenotypic emphasis of a neural systems model, in that interpersonal and personality dysfunction are understood to mutually shape each's manifest expression, but importantly one cannot be easily reduced to the other (i.e., personality pathology is not simply an outgrowth of interpersonal dysfunction; interpersonal dysfunction is not simply an outgrowth of personality pathology). Also consistent with a neural systems model, phenotypic personality dysfunction is conceptualized as emergent mental representations of self-interacting with others that subsequently shape interpersonal behaviors and motives (Pincus, 2005). This model has important implications for conceptualizing the heterogeneity of many personality disorders, with interpersonal subtypes having been empirically identified within both personality (Wright et al., 2012) and symptom disorders (Cain et al., 2010, 2012).

Disturbed and disturbing interpersonal behavior is the final common pathway of a number of dysfunctional processes in individuals with personality disorder. From a neural system's perspective, the human affiliation system is so basic to our fundamental nature as social animals and is so clearly rooted in genetic influences, related neurobehavioral systems, and environmental inputs (see Lenzenweger & Depue, in press; Depue & Lenzenweger, 2005) that a fuller understanding of this rich matrix is not only essential for the illumination of normal psychological functioning, but clearly for pathological functioning as well.

Cognitive–Affective Processing System Model

Central to any theory of personality and personality disorder, its development, and intervention, is the question of what about the personality is relatively stable and what changes with time (see Lenzenweger, Hallquist, & Wright, in press). One cannot coherently address the issue of personality stability and change without a model of personality and its dysfunction. With the central issue of personality stability and change in mind, we consider the

cognitive–affective processing system model (CAPS) (Mischel & Shoda, 2008). The CAPS model is based on empirical data describing individual behavior within and across situations (Mischel & Shoda, 2008). This is a process model that conceives of personality in terms of distinct internalized cognitive–affective units that capture an individual’s encoding and interpretation of situations, beliefs about the world, affective tendencies, goals and values, and self-regulatory competencies. These cognitive–affective units are seen as existing in a structured network and mediate between the environmental situation and the individual’s behavioral response. This theoretical model is able to capture both intra-individual, interindividual, and group differences in personality, making it a compelling model for personality dysfunction (Eaton et al., 2009). This model of personality functioning has considerable empirical support, and has been articulated in an effort to understand both the consistency of personality and the creativity of the individual in the specific situation.

This meta-theory emphasizes five levels of experience: (1) an organized pattern of activation of internal cognitive–affective units (CAUs; e.g., conceptions of self-and-others, expectancies and beliefs, affects, goals and values, self-regulatory plans); (2) behavioral expressions of this internal processing system; (3) self-and-other perception of these behaviors over time; (4) construction of one’s typical environment; and (5) the predispositions at the biological and genetic levels of existence. This framework suggests that personality dysfunction can occur at multiple levels, and the assessment of these crucial areas could guide targets for intervention.

Consistent with a CAPS model, multiple theories of personality disorder use similar concepts to understand mental representations: consider for example, schemas (Pretzer & Beck, 2005), internal working models (Bretherton & Munholland, 2008), or internalized object relations (Kernberg & Caligor, 2005). The level of differentiation and integration of CAUs strongly influences our capacity to access, retrieve and adaptively use pertinent mental representations (Mischel, 2004; see also Blatt, 1995). The more quickly and flexibly that representations can be retrieved and utilized to make fine-grained distinctions between contexts, the better able one is to regulate emotions and maintain a coherent sense of self. In contrast, when CAUs are limited in breadth and rigidly applied regardless of context, individuals are likely to struggle to regulate emotions, to feel unmoored by novel contexts and respond to them as if they are old ones.

The CAPS model differs from trait models in its emphasis on the stability of personality features within a given context that would not be expected between contexts (i.e., intra-individual variability; Mischel, 2004). This distinction has significant implications for how pathological aspects of personality are assessed. Rather than a conceptualization of personality pathology as extreme dispositional attributes, such as excessively low or high agreeableness, a CAPS model would emphasize the stability of the behavioral signature within which the attribute is observed. For example, from an interpersonal perspective a behavioral signature might be observed in which the individual is agreeable (agentic) only when also in the dominant role (behavior covariation) or when experiencing the other person in the submissive role (perception covariation) (Roche et al., 2013; see also Roche et al., 2014 for clinical applications). In this model emergent phenotypes may be understood as those with common organizing interconnec-

tions of CAUs in response to like contexts, thus sharing characteristic if-then signatures.

Key Cognitive–Affective Processes in Personality Pathology

Empirical developments in a number of core cognitive–affective processes stand to elucidate central processes in personality pathology. Though by no means an exhaustive list, we discuss rejection sensitivity and empathy because they have been fruitfully evaluated at multiple levels of analysis, including biological, behavioral, and interpersonal features.

Rejection Sensitivity

Rejection sensitivity is a specific form of cognitive–affective unit (Mischel & Shoda, 2008), object relation dyad, and self-other perception that influences social reactions and behavior. As a construct, it is intimately related to interpersonal function and dysfunction. Rejection sensitivity is ‘the processing disposition to anxiously expect, readily perceive and intensively (negatively) react to rejection cues’ (Downey & Feldman, 1996). Individuals with high degree of rejection sensitivity focus extensively on anxious expectations of rejection. This can result in the perception of rejection even in the ambiguous and/or innocuous behavior of others. There is a tendency to automatically interpret any social situation as confirming their rejection fears. Such an ‘automatic’ ascription of negative dispositions to others accounts for increasing interpersonal conflicts by eliciting a self-fulfilling prophecy of rejection.

In nonclinical individuals, social rejection and threats to acceptance signal the need to increase cognitive control in order to help interpret rejection-related stimuli in ways that minimize personal distress and promote one’s adjustment by responding to the immediate moment with emotional balance (Eisenberger et al., 2003). This mechanism can explain why the deployment of effortful attentional strategies accounts for a successful adjustment following interpersonal conflicts (Hooker et al., 2010).

Again, for the purposes of illustration, let us consider rejection sensitivity in relation to a particular PD, namely borderline PD. Rejection sensitivity is central to interpersonal difficulties of BPD (Ayduk et al., 2008; Staebler et al., 2011a; Stanley & Siever, 2010), and can account for the association between BPD features and the increased tendency to interpret neutral social faces as untrustworthy (Miano et al., 2013). Borderline patients react in a defensive manner and feel rejected regardless of actual interpersonal acceptance or rejection.

However, an effortful attention deployment function (or an efficiently acting function) as noted above seems to be lost or missing in BPD. It is important to note that low executive control abilities increase the risk of developing borderline features in individuals high in RS (Ayduk et al., 2008), indicating that the capacity to effortfully control rejection cues may play a major role in the pathogenesis and maintenance of the disorder. Effortful cognitive abilities are required for inhibiting one’s own self-experience (e.g., perceived distress or rejection) in order to foster an unbiased consideration of another’s state of mind (e.g., neutral intention, context-dependent evaluation rather than hostile attributions) (Lieberman, 2007). BPD patients show a ‘reflexive’ hyper-

sensitivity to negative social cues (Koenigsberg et al., 2009b) as well as reduced perspective taking and increased personal distress (Dziobek et al., 2011).

Empathy

The process of empathy or empathic linkages between self-and-others, rightly highlighted in *DSM-5* (Section III), is a multifaceted process central to smooth, flexible, and enjoyable interpersonal relations. This complex process involves components of affective arousal, emotional understanding, and emotion regulation (Decety, 2010). Empathy is described as an affective response arising from the understanding of the other's emotional state or condition (Eisenberg et al., 1991; Decety, 2010). Empathy, the ability to recognize the emotions and feelings of others, is distinguished from sympathy, which is an other-oriented emotion that involves the added emotional response of concern for the welfare of others.

Mature empathic sensitivity and sympathy depend upon the integration of affective arousal, emotional understanding, and emotion regulation, all in the service of goal-directed, social behavior (Decety, 2010). Affective arousal is active and evident in infants, prior to the development of language. Discrete signs of emotional experience are evident in the facial expressions of infants, and infants quickly derive information about the caregivers' emotional states of pleasure or displeasure.

Gradually, the cognitive understanding of the emotional states of others develops, progressing from situation-bound, behavioral explanations to broader, more mentalistic understandings (Harris et al., 1981). This evolution of a developing cognitive empathy allows the individual to utilize perspective-taking to image what the other is experiencing. This process has been discussed not only in terms of cognitive empathy, but also theory of mind, and executive function and self-regulation. Affective resonance between two individuals is deepened by the growing representations of the feelings of another as an intentional agent (Decety et al., 2008). By four years of age, children can understand that the emotion that another feels about a given event depends upon that person's perception of the event, and this emotion recognition is related to social cognition performance into late adolescence.

Finally, the third key element in empathic linkages to others is emotion regulation. Smooth, satisfying interpersonal relations involve both the joyful experience of spontaneous cognitive-emotional experience, but also in the ability to regulate emotions appropriately, especially negative emotions. The development of emotion regulation is closely linked to the parallel development of executive functions and metacognition. Regions of the prefrontal cortex and the dorsal anterior cingulate cortex (ACC) are intimately involved in these modulation processes (Ochsner, Bunge, Gross, & Gabrieli, 2002). There is a growing understanding of the developmental course of these functions well into adolescence (Casey, Tottenham, Liston, & Durston, 2005).

Contemporary models of cognitive emotion regulation are built on that background by use of fMRI studies of appraisal and reappraisal (Ochsner & Gross, 2008). Emotions arise from brain systems that appraise the significance of stimuli given the goals and needs of the individual, and reappraisal is an effort to reconsider the stimuli and modulate the affective and behavioral response. Reappraisal depends upon interactions between prefrontal

and cingulated regions implicated in control, and the amygdala and insula that are implicated in emotional responding.

In normal individuals affect regulation by reappraisal in contrast to suppression is associated with greater positive emotion, reduced negative emotion and better interpersonal functioning (Gross & John, 2003). However, continuing with our BPD illustrations, those with BPD have difficulty processing negative affect efficiently and effectively (Silbersweig et al., 2007). Borderline patients rely on reflexive, automatically responding networks, whereas healthy controls make more use of networks with access to higher level conscious cortical processing (Koenigsberg et al., 2009a). Most importantly, borderline patients are deficient in their ability to reduce negative affect by reappraisal (Koenigsberg et al., 2009a).

Effortful control has been described as the ability to inhibit a dominant response in order to perform a subdominant response (Posner & Rothbart, 2000). Impulsivity in behavior is inversely related to the capacity for effortful control, a self-regulation dimension of temperament (Ellis, Rothbart, & Posner, 2004). The individual with effortful control is able to voluntarily inhibit, activate or change attention, and thus, potentially modify and modulate subsequent affect. The development of effortful control in infants and toddlers is central in the regulation of affect, and the development of mature social relations and conscience (Eisenberg, Hofer, Sulik, & Liew, 2014).

There is preliminary information on how the empathic process can go array in those with personality disorders. Those with antisocial personality disorder, more specifically psychopathy, are proficient in perceiving others' intentions, but are deficient in recognition of negative emotional facial expressions (Decety & Moriguchi, 2007). There are deficits in the perception of fear and sadness, and this has been associated with blunted amygdala responses (Blair, 2010) with reduction in the functional connectivity between the amygdala and prefrontal cortex, resulting in the lack of integration of emotions and cognition. Those with narcissistic personality disorder manifest deficits in affective empathy (Ritter et al., 2011).

Implications

The models and methods discussed have a number of implications for near future research, assessment, and clinical developments that will be essential in furthering our understanding of personality pathology.

Implications for Conceptualizing PD Pathology

First, as has been now made clear, we deem it essential to conceptualise PD pathology as emergent phenotypes based on underlying biological and behavioral trait systems, in interaction with relational experiences, that result in unique self-other configurations. It should be noted that the focus on self-and-other is not an end in and of itself. The self-versus-other distinction, and the manner in which pathology can manifest itself, will impact other areas of personality/psychological functioning. What is the relationship between self- and interpersonal dysfunction, and symptoms mentioned in the personality disorder criteria such as suicidal behavior (BPD), antisocial and immoral behavior (antisocial personality disorder), anxiety and depression? Emergent representa-

tions of self-affectively relating to others not only arise from underlying biological and behavioral trait systems, but also subsequently shape the experience and expression of those systems, biasing subsequent traits expression and interpersonal behaviors over time (Lenzenweger & Depue, *in press*; Pincus, 2005).

Second, personality pathology must be conceptualised as unstable. It is important to note that the aforementioned process by which emergent phenotypes both arise from and influence the subsequent expression of underlying systems over time may lead to either a “hardening” or “softening” of the phenotypic features over time. For example, whereas low agentic positive emotion may manifest as avoidant behaviors that calcify future relational avoidance, high agentic positive emotion may manifest as approach behaviors that, even if dysfunctionally executed much of the time, may create opportunities for social reward and comfort that may mitigate future dysfunction (Lenzenweger & Depue, *in press*).

Third, personality pathology must be conceptualised as contextual. Pathological processes that bias perception and attention are evidenced under stimulus contexts that may not be elicited in other contexts, and may not be shared to the same extent by those without such pathology. For example, borderline symptoms often occur in the context of social threat; interpersonal hypersensitivity contributes to affectivity, impulsivity, aggression, suicidality and social dysfunction (Gunderson & Lyons-Ruth, 2008). Rejection sensitivity leads to aggressive responses in the context of rejection (Romero-Canyas et al., 2010), but the capacity for effortful control is protective (Ayduk, Zayas, Downey et al., 2008). Further, while some personality pathologies are characterized by dramatic fluctuations in functioning between contexts (e.g., borderline pathology), other pathologies are characterized by a rigid inability to fluctuate and adapt in the presence of changing contexts (e.g., narcissistic and obsessive-compulsive pathologies).

Implications for Research in PD Pathology

Each of the above observations helps us to understand the significant heterogeneity of personality pathology. Future research will need strategies to address the significant heterogeneity in personality pathology. In this regard, methodological approaches such as mixture modelling show significant promise (Lenzenweger, Clarkin, Yeomans, Kernberg, & Levy, 2008; Wright et al., 2013). One of the major limitations of commonly used statistical approaches to cluster or factor personality pathology is that they seek to identify latent structures without an a priori model based in clinical and empirical knowledge of the psychopathology. Rather, dimensions that reflect like constructs, or subjects that have like features, are organized in imprecise ways and often involve a significant amount of the researcher’s discretion in drawing lines between components or groups, leading to failures to replicate findings across studies. In contrast, finite multivariate mixture modelling makes no a priori assumptions regarding the data structure (e.g., common metrics, standardization) and it allows for underlying components of different size, shape, and orientation (unlike ad hoc procedures such as k-means clustering, e.g.). Moreover, finite mixture modelling provides a statistically well principled basis for testing the number of components harbored within the data (i.e., model selection), and thus affords advantages in identifying latent structures in heterogeneous psychopathology indicators/datasets (Lenzenweger et al., 2008).

Future PD research will also need to increasingly focus on real-time assessments of self- and interpersonal functioning in ecologically meaningful contexts. For example, from interpersonal model, problems in agentic complementarity (i.e., flexibly meeting another’s dominance with submissiveness and vice versa according to situational demands; see Pincus & Hopwood, 2012) is not easily captured cross-sectionally, as the appropriateness of the individual’s behavioral is dependent on the role of the interactant at that given moment. Therefore, research tools are needed that may capture the contextual nature of dysfunctional processes in personality disordered individuals. For example, real-time coding of interpersonal patterns between interactants has been fruitfully evaluated using Sadler’s joystick method (Sadler et al., 2009; Thomas et al., 2014), which observers record real-time fluctuations in agency and communion in among interactants (i.e., patient and therapist, romantic couples). The identification of dysfunctional interpersonal patterns that may powerfully interact with the emergence of personality pathology would be essential not only to conceptualizing its phenotypic presentation, but also have important treatment implications in terms of identifying potentially countertherapeutic behavioral transactions (Hopwood et al., 2013).

Ecological momentary assessment (EMA) is another exciting methodological tool that stands to contribute to understanding the contextual nature of dysfunctional processes in personality disordered individuals. Experience sampling methods and ecological momentary assessment are advances over self-report methods that are susceptible to memory bias, in that participants are asked to provide brief but immediate ratings following specific events or random prompts at specified intervals. Such methods allow researchers to move away from aggregate ratings of a given behavioral or emotional experience to evaluate intra-individual variability. Consider for the purposes of illustration some recent research on borderline PD. With an event-contingent ecological momentary assessment procedure, while borderline patients were found to evidence higher overall mean levels of negative affect as compared to controls, greater affective variability was observed with regard to positive affect (Russell, Moskowitz, Zuroff et al., 2007). Further, while on average BPD patients were more submissive and quarrelsome in their interpersonal behavior than were controls, significant variability was reported with regard to agreeableness. The aggregate findings are not surprising and consistent with past research suggesting that borderline patients struggle with assertion and aggression. What is surprising and more powerful is the intraindividual variability within borderline pathology; it is clinically resonant to consider the inconsistency with which positive relatedness is experiencing and subsequently elicited, and the potentially destabilizing ebb and flow of a good feeling for borderline patients.

Experience sampling methods are perhaps most useful for evaluating hypotheses consistent with a CAPS model (Mischel & Shoda, 2008), in which behaviors are most meaningful when understood in the context of characteristic situation-behavior response patterns, rather than aggregated across unrelated situations (as is often the case in cross-sectional designs). For example, by electronically sampling a range of affective experiences at five random times a day for 21 days, Berenson and colleagues (2011) demonstrated a relationship between momentary feelings of rage in the context of perceptions of rejection in participants high in borderline personality features that was not observed in those with low borderline features. Sadikaj and colleagues (2013) found that,

relative to controls, patients with BPD were more quarrelsome and experienced greater negative affect in the context of perceptions of others as quarrelsome. A trait-level assessment of rage and other experiences of anger (or low agreeableness) would obscure the more specific “if-then” signature characterized by precipitating perceptions of rejection and hostility in others.

To give another example of fruitful research in this regard, utilizing the CAPS framework (Mischel & Shoda, 2008), multi-level models were applied to event-contingent social interaction data to examine the influence of narcissistic grandiosity and narcissistic vulnerability (Roche et al., 2013). Participants in this 7-day diary study rated their own and others’ behavior on dimensions of agency and communion. Whereas trait-level research has indicated that grandiose narcissistic pathology tends to be associated with dominant and domineering behaviors, a more specific and surprising contextual association was found in which agency was not complemented (e.g., matching dominance with dominance) in the context of perceiving the interactant as more friendly. It might have been expected that those high on grandiose narcissism would seek to control those perceived as more quarrelsome, but Roche and colleagues (2013) note that concern about failing to enhance the self and dominate a quarrelsome other, and its subsequent loss of status, may lead to avoidance and submissiveness unless the potential for self-enhancement is assured (i.e., with a friendly interactant). Taken together, such methodological approaches have significant implications for not only conceptualizing but also treating the contingent nature of affective and interpersonal dysfunction in borderline and narcissistic pathologies.

Implications for Evaluating PD Treatments

Subsequent to the articulation of explicit diagnostic criteria for the personality disorders in 1980 (*DSM-III*), there has been an explosion of research on personality pathology and treatment of the PDs. This effort has not been proportionate across the various PDs, but focused mainly on the severe end of the PD spectrum, especially involving the borderline and antisocial personality disorders. Using the empirical investigation of psychotherapy for borderline patients as illustrative, it seems clear that structured treatments can reduce harmful symptoms, such as suicidal behavior. However, the question still remains if psychotherapy can change the enduring aspects of the personality, such as the automatic and reflective representations of self-and-other which guide the processes of interpersonal interaction that we have detailed above. Centrality of self-and-other functioning may naturally lead to the ability of treatment to change self-and-other interpersonal functioning. Treatment research to date has focused on symptoms, with less attention to self-and-other functioning.

Kazdin (2007) accurately points out that discussion and theory about why psychotherapy changes people is plentiful, but evidence for the change is quite rare. The mechanisms or processes that are responsible for the changes are still elusive. Despite the centrality of interpersonal behavior in the personality disorders, which is now considerably emphasized in *DSM-5*’s Section III (APA, 2013), the fine grained study of change in the interpersonal domain remains an area ripe for investigation in the PDs. There will be considerable challenges in the study of change in interpersonal functioning in the PDs within the context of treatment. Improvement in interpersonal functioning will not translate simply to

increased scores on extraversion or sociability in a personality trait scheme. Rather, interpersonal behavior in the real-world must be dissected carefully, particularly in relation to contexts where it is manifested in its various forms (love, work, schooling, family functioning, and so on). Future treatment research should seek to evaluate how interpersonal patterns in the treatment (i.e., interpersonal joystick) should mirror interpersonal patterns in daily life (i.e., EMA), and changes over time in the contingent nature of personality dysfunction should then be reflected in changes in manifest symptom (self-report) and brain (fMRI) functioning. Despite the emphasis in treatment research of change in manifest symptom functioning, there would be clear benefit to evaluating clinical response at these multiple levels.

Personality disorders are marked by heterogeneity both within a given disorder and with comorbidity across the personality disorders. The various constellations that personality disorder assumes make it difficult to articulate a treatment that fits all of these individuals even within one personality disorder category. Treatment research may be more illuminative were it to focus on domains of PD dysfunction, not disorders. Given the issues described above with the assessment and treatment of PD, it seems logical to consider the specific client in terms of salient interpersonal difficulties and how these difficulties are manifested in that individual’s unique environment. Domains of dysfunction and severity of these dysfunctions become as important in the clinical workup as the identification of the PD category itself.

An integrated modular approach (Clarkin, Cain, & Livesley, *in press*) is an invitation to drop categorisation of strategies and techniques related to therapy school (e.g., cognitive-behavioral, psychodynamic), and instead focus on patient domains of dysfunction and a variety of ways to approach them with effective treatment modules. The central difficulty in those with personality disorder is an observable dysfunction in interpersonal relations, with a more covert difficulty in the mental representations of self-and-others (Pincus, 2005; Kernberg, 1984). Individuals scoring high on any personality disorder dimension have considerable interpersonal difficulties characterized by a solitary lifestyle, conflicted and distressed social relations, and lack of social support (Hengartner, Muller, Rodgers, Rossler, & Ajdacic-Gross, 2013).

One way to tailor the treatment to the individual is to assess for domains of dysfunction, and match treatment modules to these domains. One can identify treatment modules which target specific domains of dysfunction embedded in larger intervention packages that have been empirically investigated (e.g., Bateman & Fonagy, 2006; Clarkin et al., 2006; Linehan, 1993), or treatment modules devised by clinical researchers with experience intervening with specific target areas (e.g., Safran & Muran, 2000). There are two overarching modules of treatment for those suffering from PD: 1) general treatment modules that are used to structure treatment, enhance motivation for change, and manage the relationship between patient and therapist, and 2) specific treatment modules for specific domains of dysfunction.

Conclusion

The traditional concept of personality rests on the notion of consistency of behavior across situations and time. Modern models of personality—incorporating social, cognitive, and affective components—have transcended this classic conceptualization. For ex-

ample, the CAPS model we have described is one of situational consistency and cross-situational novelty. Social neurocognitive science is exploding with information about the processes involved in the individual's self-functioning as one relates to others. We have focused here on a few of those processes, best captured by the concepts of rejection sensitivity and empathy. Moreover, modern personality neuroscience emphasizes the integration of neurobehavioral systems with the major phenotypic behavioral systems we think of as constituting the basic foundation of personality (e.g., approach, affiliation, fear, anxiety, constraint, and so on; see Lenzenweger & Depue, in press; Depue & Lenzenweger, 2005).

As social animals, we are dependent on others from birth, and negotiating the environment with other individuals is a key process in productive living. Personality dysfunction or personality disorder is a disruption in this process of negotiating our needs and desires with others. *DSM-5* section III has emphasized the disruption in self-and-other functioning that is central across all the personality disorders or types. Thus, understanding the manner in which our genetically influenced, neurobiologically mediated, psychologically experienced, and socially shaped personalities interact with and are influenced by the environment is indeed the research task ahead of us. Being able to influence this complex matrix to move dysfunctional states in the direction of health and adaptation is the clinical task ahead of us.

Résumé

Les troubles de la personnalité sont courants et leur effet est débilant, mais il existe des dissensions au sujet de la définition, de l'évaluation et du traitement de ces conditions. Cette revue examine les principales démarches de conceptualisation des troubles de la personnalité, aussi récentes que celle qui figure dans la section III du *DSM-5* et que l'initiative des critères de volets de recherche du National Institute of Mental Health. Trois modèles connus pour expliquer ces troubles (fonctionnement neural, modèle interpersonnel et modèle du système de traitement cognitif-affectif) sont examinés selon leurs fondements empiriques pertinents. Les répercussions pour la recherche future en psychopathologie, sur les traitements et la pratique sont présentées.

Mots-clés : personnalité, trouble de la personnalité, évaluation et traitement.

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Received September 8, 2014

Revision received December 11, 2014

Accepted December 19, 2014 ■