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## **AN OBJECT RELATIONS MODEL OF BORDERLINE PATHOLOGY**

John F. Clarkin, PhD, Mark F. Lenzenweger, PhD,  
Frank Yeomans, MD, Kenneth N. Levy, PhD,  
and Otto F. Kernberg, MD

Borderline personality disorder (BPD) has attracted extensive clinical theorizing and considerable research effort, however the definitive etiology and pathogenesis of BPD remain relatively opaque (Lenzenweger & Cicchetti, 2005; see entire issue of *Development and Psychopathology*, 3, 2005). In view of the research interest in BPD, one could suggest that models of borderline pathology can serve as a prototype in the development of models of personality pathology in general. BPD is a serious, persistent, and prevalent disorder (Lenzenweger, Lane, Loranger, & Kessler, in press) that absorbs more than its share of mental health treatment resources. The treatment of these patients is difficult and challenging. Given that the DSM criteria for this group of patients is a mixture of behaviors, symptoms, and traits, as defined, BPD involves both state and trait aspects. Furthermore, the extensive "co-morbidity" of BPD and other Axis II disorders suggests that there may be latent structures underlying personality pathology.

Our goal is to present an object relations model of borderline personality organization (BPO), a concept including but broader than BPD, integrated with empirical data on patients diagnosed with borderline personality disorder (BPD). In this manner, we arrive at an empirically informed and refined object relational model of the personality malfunction. We have utilized this model to guide data generation on brain functioning, neurocognition, diagnosis and co-morbidity, temperament, attachment, and symptom patterns.

Any complete model of personality pathology must adequately address multiple issues: (1) the substantive foundations of the model (the historical roots of the model and methods by which the relevant observations and data are obtained); (2) the formal structure of the model (core assumptions, explanatory principles, model formulation which fosters verification/falsification); (3) the taxonomy implied by the model; (4) etiological and developmental considerations; (5) an associated assessment and diagnostic procedure; and (6) articulation of therapeutic procedures (Lenzen-

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From the Weill Medical College of Cornell University (J. F. C., F. Y., O. F. K.); Binghamton University (M. F. L.); and the Pennsylvania State University (K. N. L.).

Address correspondence to John F. Clarkin, Department of Psychiatry, New York Presbyterian Hospital—Cornell Medical Center, Westchester Division, 21 Bloomingdale Road, White Plains, N.Y. 10605; E-mail: jclarkin@med.cornell.edu

weger & Clarkin, 2005a). These six requirements form the outline of our current description of an object relations model of borderline pathology.

### **FOUNDATIONS OF OBJECT RELATIONS MODEL**

Psychoanalytic object relations theories (Klein, 1957; Jacobson, 1964; Kernberg, 1980) cover a broad spectrum of approaches that share an emphasis on the dominant role played by the internalization (perception and memory storage) of dyadic object relations in understanding personality development. Internalization of object relations from early childhood is seen as the groundwork of the evolving psychic structure, which subsequent experiences elaborate on. Finally, much of these internalized object relations are seen as the basis of unconscious conflict and for transference reactions in treatment (Kernberg, 2004). Object relations theorists have generated hypotheses about the vicissitudes of the mother-infant interaction that shape the internalization of object relations. Klein (1940, 1946), for example, articulated an object relations theory consistent with Freud's dual-drive theory. The life instinct was expressed by the infant in pleasure, including the mother as nurturing, giving, soothing, and emotionally containing. These pleasurable experiences are internalized as representations invested with libido, and projected onto external people, which begin to form trust and a desire for pursuits in the environment and knowledge. In contrast, the death instinct, expressed primarily as envy, is projected with resulting fears of annihilation and persecution. From these origins, two basic constellations of object relations and related defenses develop, the paranoid-schizoid position and the depressive position. The former is characterized by paranoid fears about survival, with the use of defensive splitting. The latter is a later development as splitting diminishes with the infant's realization that the mother is both good (gratifying) and bad (frustrating). Fairbairn (1954) elaborated on this theory by postulating that the exciting (libidinal) and frustrating (antilibidinal) aspects are repressed. For Sullivan (1953), psychic life arises out of the interaction with others and the internalization of this experience. A healthy sense of self is crafted from the appraisal and acceptance by others. Importantly, Jacobson (1971) emphasized the role in affect as the representation of drives integrated with internalized self and other representations. According to her, during the separation-individuation phase (later part of the first and second years), there is a differentiation of the "good" and "bad" representations of self and others. Under optimal conditions of development, integrated representations of self and significant others developed. The development of an internal moral system or superego is achieved by a succession of internalizations of the other as punishing and prohibitive, followed by ideal representations of self and other, and finally a more realistic internalization of morals and prohibitions. Mahler (Mahler, Pine, & Bergman, 1975) further elaborated the separation-individuation through which the child achieves, by the fifth year of life, an integrated sense of self differentiated from mother.

John Bowlby, a psychoanalyst in the British school, had a conflicted and ambivalent relationship with the analytic community (Fonagy, 2001; Levy & Blatt, 1999), but used analytic concepts to develop attachment theory which has led to fruitful research initiatives in the understanding of what he called internal working models of relationships. Bowlby focused on the actual behaviors of normal and pathological object relations within the framework of attachment. Although he seemingly ignored assumed intrapsychic correlates, current developments in the hypothesizing of internal working models and their vicissitudes, and the structuralization of internalized object relations postulated in contemporary psychoanalysis corresponds significantly with his ideas and may be utilized within an integrated conceptual object relations model.

Thus, the object relations formulations of borderline pathology are founded on extensive evaluation and treatment of these patients in clinical settings. This method of investigation has the advantage of being close to the actual experience of these patients. It has the disadvantage of lacking objective, quantifiable measures of pathology, and thus must be supplemented and modified by experimental data.

### **FORMAL STRUCTURE OF THE OBJECT RELATIONS MODEL**

A fundamental premise of an object relations conception of personality organization is that both subjective experience and behavior are organized by an internal psychic structure. Psychic structure is composed of units involving a representation of self, a representation of the other in relation to self, and an affect linking the two. This unit of self-representation, other representation, and affect is referred to as an object relation dyad. These object relation dyads are the basic elements of psychic structure insofar as they serve as the organizers of motivation and behavior. It is not assumed that these self and object representations are totally accurate descriptions of prior experience, but rather they are representations of the self and other as they were experienced during development.

### **NORMAL PERSONALITY ORGANIZATION**

There are three characteristics of individuals with normal personality organization: an integrated concept of self and other, a broad spectrum of affective experience, and the presence of an internalized value system. The individual whose personality is organized at this level has an integrated and nuanced conception of self and other combining positive and negative aspects with nonpolarized affect, and this is referred to as normal identity as opposed to identity diffusion. The integrated representation of self includes both an internal cognitive-affective coherent representation, and behavior that reflects coherence. A coherent conceptualization of self is an essential foundation for self-esteem, and for the capacity to derive pleasure from relationships with others, both at the level of friendship and in

intimate relations, and from commitments to work and work-related goals and development. An integrated sense of self is essential to the realization of one's capacities, desires, and long-term goals. Likewise, a coherent and integrated conception of others is also essential to realistically evaluating and appreciating others with empathy and social tact. Therefore, an integrated identity is the basis for the integrated and coherent sense of self and others that is necessary for mature interdependence, and the capacity for mature interdependence characterized by deep emotional commitments to others in the context of maintaining a sense of autonomy.

A second structural characteristic of normal personality organization is the presence and enjoyment of a broad and nuanced spectrum of affective experience. Normal personality organization allows for the experience of a full range of complex and well-modulated affects with full (nondefensive) awareness and without the loss of impulse control. This aspect of normal personality, i.e., affect regulation, is a major focus of our research efforts. A third characteristic of normal personality organization is the presence of an integrated system of internalized values. The mature system of internalized values, while rooted in parental values and prohibitions, does not remain rigidly tied to parental prohibitions, but becomes a stable, individualized, internal structure that exists independently of external relations with others. This structure of values is manifested in a sense of personal responsibility, a capacity for realistic self-criticism, and decision making that is both based on a commitment to standards, values and ideals, and realistically flexible.

The conception of an intimate interaction between observable behavior and internal, unobservable cognitive-affective structures is shared by many recognized theories of both normal and abnormal personality pathology. Mischel and colleagues (Mischel & Shoda, 1999), for example, have conceptualized personality as a system of mediating units (e.g., encodings, expectancies, motives, and goals) which operate at various levels of consciousness to enable the individual to interact successfully with the environment. According to this cognitive-affective personality system (CAPS), individuals differ in the activation of particular cognitive affective mental representations in the interaction with the environment, including the interpersonal environment. Thus, the essential element in personality is the organization of the cognitive-affective representations. These cognitive-affective representations are patterned, relate to behavior expression by the individual, accrue into a perception of self across situations, and motivate the selection of particular environments that the individual prefers.

### BORDERLINE PERSONALITY ORGANIZATION

A model of BPD should be conceptually nested in a general theory of personality pathology. The major theories of the personality disorders have divergences in focus and emphasis, but their areas of agreement are infor-

mative in this period of development (Lenzenweger & Clarkin, 2005a). One can discern the use of similar and overlapping constructs across theories that point to basic cognitive and emotional processes. In fact, there appears to be an emerging consensus that an essential element in personality pathology and dysfunction involves difficulties with self or identity and chronic interpersonal dysfunction (Livesley, 2001; Pincus, 2005). Theoreticians and clinicians representing cognitive (Pretzer & Beck, 2005), interpersonal (Benjamin, 2005), attachment (Meyer & Pilkonis, 2005), and object relations perspectives emphasize concepts around these two key areas.

A defining characteristic of severe personality disorder is the lack of integration, or identity diffusion. The individual's level of personality organization is largely dependent on the degree of integration of the elements contributing to the psychological structure. We view the symptoms—the observable behaviors and subjective disturbances—of patients with BPO as the external manifestation of the core problem, which is the pathological underlying psychological structure.

Borderline patients are under the control of intense emotions that are activated together with their corresponding cognitive systems. This is not simply affect dysregulation, but dysregulation of both cognition and affect. The patient not only gets angry, but is also convinced that there is a good and justifiable reason to be angry. This dysregulation presumably reflects the dyscontrol associated with diminished neural constraint and is probably mediated, in part, by the 5-HT system (Depue & Lenzenweger, 2001, 2005).

The pathological structure of the borderline personality organization involves a lack of integration of primitive positive (idealized) and negative (persecutory) segments of early object relations that were laid down as memory traces in the course of early experiences involving intense affect. This lack of integration is based on a fundamental split between segregated positive and negative affects and is referred to as the syndrome of identity diffusion. On a clinical level, the lack of integration of these positive and negative internal representations of self and others is seen in the patient's nonreflective, contradictory, and chaotic descriptions of self and others, and in the striking inability to become aware of these contradictions, with a consequent inability to resolve them. This unintegrated psychological make-up has direct impact on the individual's experience in the world. Behavioral manifestations of this borderline level of organization include emotional lability, anger, interpersonal chaos, impulsive self-destructive behaviors, and proneness to lapses in social reality testing, that is, the ability to understand the behavior of others. A characteristic of this unstable structure is the sudden, unreflected oscillation between different cognitive-affective states, as seen in the typical oscillation between experiencing oneself as meek and helpless in relation to a tyrannical other and behaving toward the other, or the self, with rageful, tyrannical aggression.

## PRIMITIVE DEFENSES

Psychological defense mechanisms serve to negotiate conflicts among the competing pressures exerted by internal affect states and drives, internalized prohibitions against drives, and external reality. Mature defenses both minimize anxiety stemming from these tensions, and maximize the individual's ability to act flexibly and engage successfully with the environment, e.g., in love relations and work. In normal psychological development, individuals proceed from the primitive defenses that are early attempts to decrease anxiety from psychological conflict to the mature defenses that predominate in the psychological life of the healthy individual, such as rationalization, intellectualization, humor, repression, and sublimation.

The psychological functioning of individuals organized at the borderline level is marked by continued use of these early primitive defenses, which are shaped by splitting, the radical separation of good and bad affect, of good and bad object. Although primitive defenses succeed to some degree in reducing anxiety by denying and/or projecting parts of a conflict, they are rigid and inflexible, and thus do not allow for successful adaptation to external reality. These defense mechanisms are an attempt to protect an idealized, "perfect" segment of the individual's internal world from the segment characterized by negative and aggressive affects and cognitions. This separation is maintained at the expense of the integration of these extreme images. Since these defenses can impede accurate perception and cognitive processing of the external world or of the internal affects, they often lead to behavioral manifestations of distress rather than internal mastery of it.

This split internal psychological organization influences the individual's perception of reality, which is seen in stark dichotomies. Opinions are intense, but not stable. Other people are perceived as good or bad, and yet what is good and what is bad can shift abruptly according to the immediate circumstances and minor triggers. These sudden changes lead to the chaotic nature of the borderline individual's experience. If the individual feels someone has disappointed him, that person may be abruptly relegated to a "black list"; a positive experience may shift things back equally abruptly. There is no sense of stability or security. The black/white responses to the world have an important impact on the individual's moods: a single frustration may make everything seem bleak, bringing on a depressed mood. A pleasing event even may bring on temporary euphoria. The good/bad categories are rigid and provide little flexibility for dealing with the complexity of the environment and, in particular, of interpersonal interactions. There is no ability to appreciate the subtle shadings of a situation or to tolerate ambiguity, leading to distortions in perceptions since external reality is seen through this rigid internal structure. Thus, splitting and its consequences do not provide for successful adjustment to life and lead to many of the specific symptoms of BPO patients.

Splitting, or primitive dissociation, is the core primitive defense. Another primitive defense, related to splitting, is projective identification, in which cognitive affective elements of the self that seem intolerable to the self are unconsciously denied and projected on another in a way that induces what is being projected in the other. By this process, the borderline individual attempts to control in the other person the projected aspect of the patient's self. Omnipotence, omnipotent control, primitive idealization, devaluation and denial are other dominant primitive mechanisms that complement or reinforce splitting and projective identification.

#### LEVELS OF BORDERLINE ORGANIZATION

We have distinguished between high level and low level borderline organization on the basis of the four dimensional variables of introversion-extraversion, quality of object relations, moral values and the management of negative affect. This approach is in contrast to most dimensional approaches to personality pathology that are based upon trait theories which give equal weight to all traits that emerge in factor analysis of self-report measures. In contrast, this model posits specific dimensions based on a theoretical analysis of personality pathology.

*Introversion-Extraversion.* Krueger (2005) views the extensive co-morbidity among both Axis I and Axis II disorders as not necessarily an artifact, but rather as a reliable observation that deserves an explanatory model. He has generated data suggesting a latent internalizing propensity among those with unipolar mood and anxiety disorders, and an externalizing propensity among those with substance dependence and antisocial personality disorder (Krueger et al., 1998).

In this object relations model we consider introversion-extraversion dimension as a temperamental variable which manifests itself in orientation toward or avoidance of others. It is probably a complex dimension, involving temperamental variables of defensiveness (fear, anxiety) and the appetitive system (desire, seeking). The paranoid and schizotypal-schizoid personality disorders are on the introverted side, and the narcissistic, antisocial, and many borderlines are on the extraverted side.

*Object Relations.* Object relations, that is, relationships with others, are distorted and disturbed by a lack of empathy in understanding others. The perception of others is not consistent over time, and can rapidly fluctuate from idealizing others or seeing them as persecutory and/or devalued. Because of these shifting perceptions of others combined with intense affect, intimate relations with others are fraught with difficulty.

We have found that individuals with both BPD and BPO vary extensively in terms of the quality of relationships with family, friends, and intimate others. At the highest level of abstraction, we have found that some borderline patients crave relations with others, even though these relation-

ships are marked with anxiety. Others avoid relationships almost entirely. This relates to the dimension of extraversion-introversion which is an important dimension that captures part of the heterogeneity of borderline patients (see Krueger, 1999). Among those who engage in relationships, the degree and quality of intimate relations varies. For example, sexual pathology takes the form of either inhibition of sexual experience, or chaotic and impulsive sexuality (Hull, Clarkin, & Yeomans, 1993). Those with impulsive sexual behavior have a degree of positive affect that is not found in those without. Some individuals with borderline organization can combine sexuality and tenderness in a long-standing relationship, while others fall short in one or more aspects.

*Moral Values.* The superego, like the other major psychological structures, is constituted developmentally by the integration of successive layers of internalized self and object representations (Jacobson, 1964; Kernberg, 1984). A mature level of superego development operates as an internalized value system that allows the individual to be guided by deep commitments to values and to be less dependent on external confirmation and behavioral control. The extent of superego pathology varies in individuals with borderline personality organization, and shows the extreme in those with co-morbid antisocial personality disorder. High level borderlines have internalized some controls on their behavior toward others, whereas low level borderlines are relatively lacking in internalized moral values, at the extreme manifesting borderline and antisocial behavior without feelings of fear of wrong and guilt.

*Negative Affect.* Constitutionally-based affects that emerge in the earliest stages of development are potent motivators of behavior. Through interaction with the environment and especially with the major caregivers, early affective experiences are organized into a grouping of pleasurable, gratifying affects constituting libido, and a grouping of painful, negative affects that are organized into aggression. Rage, based on experiences of pain or frustration, is the basic affect of aggression, and further differentiation into hatred, envy, anger, and irritability. Likewise, sexual and sensual excitement constitutes the core affect of libido, which evolves out of the early experiences of elation and body surface sensual pleasures.

Individuals at the borderline level are under the impact of a distorted internal world of object relations dominated by negative affect. Whether the origin of the negative affect is constitutional or environmentally mediated, the internal distortions define for the individual what he is feeling and what things mean.

An additional element of the clinical picture involves levels of borderline pathology. Individuals with higher level borderline disorders are blocked in their expression of affiliative needs and affects and engage aggressive affects and behavior in the defensive struggle around comfort with libidinal expression. The more severe low level BPO disorders are characterized by a greater degree of aggression as the primary issue. Patients with low

level BPO manifest more overt aggression, aggression that invades their object relations, and have more lacunae in superego development than the high level BPO. In terms of DSM, Axis II, low level borderlines are likely to have BPD with co-morbid narcissistic, paranoid, and antisocial personality disorder or traits.

## RESULTING TYPOLOGY

To some extent, these theory based dimensions underpin the existing categorical disorders identified in Axis II if one considers all the disorders as a continuous surface rather than as 10 discrete categories (Kernberg & Caligor, 2005). Borderline and schizoid personality disorders are the simplest forms of BPO, characterized by identity diffusion and splitting. The difference between the two may well be the temperamental variable of extroversion and introversion. The dimension of pathological aggression extends across a number of Axis II disorders, including paranoid, narcissistic, and antisocial personality disorder. A third dimension in Axis II is affect and its dysregulation. This is especially manifest in BPD, but as these patients gain more control, they may look more like the depressive masochist personality disorder. A final dimension is that of moral values, which are seen in their absence in borderlines with antisocial traits/personality disorder.

## **RESEARCH RELEVANT TO MAJOR CONSTRUCTS IN THIS MODEL**

A model is useful as a guide to focused empirical research which, in turn may modify the model. The object relations model directed our research involving identity and its diffusion, temperament, the extent of negative affect and its ratio to positive affect, cognitive controls and modulation of affect, and finally, the nature of change brought about by a treatment (TFP) that focuses explicitly on object relations as they are activated in the interaction between patient and therapist. Our research efforts to date suggest the following concerning negative affect and affective dyscontrol.

## TEMPERAMENT

As conceived here, temperament involves individual differences in both motor and emotional reactivity, and self-regulation (Posner & Rothbart, 2000). Temperament arises from genetic endowment (Rothbart, Ahadi, & Evans, 2000), and is comprised of four motivational systems (appetitive, defensive, aggressive, and nurturant) with their related emotional states, neural structures, and personality dimensions (Derryberry & Rothbart, 1997). These systems are interactive with the environment and follow a developmental course (Rothbart & Bates, 1998). Effortful control, the self-regulation dimension of temperament (Rothbart, Ellis, & Posner, 2004), is an ability to inhibit a dominant response in order to perform a subdomi-

nant response (Posner & Rothbart, 2000; Posner et al., 2002). The individual with effortful control is able to voluntarily inhibit, activate, or change attention, and thus, potentially modify and modulate subsequent affect.

Consistent with our model and the diagnostic criteria for BPD, we hypothesized that BPD patients would report high negative affect and low effortful control. Borderline patients reported higher than normals in negative affect, and lower than the normals in their ability to control emotions and behavior (effortful control) on the Adult Temperament Questionnaire (ATQ) (Rothbart et al., 2000). In addition, on the MPQ, borderline patients were high on negative affect and low in constraint, a control variable similar to effortful control. As a group, BPD patients are preoccupied with negative affect (Donegan et al., 2003; Korfine & Hooley, 2000). The ratio of negative affect to positive affect is high, and favors negative affect.

To pursue the issue of emotion control beyond self-report, we examined patients with BPD in a laboratory task known from neuroimaging studies to be related to cognitive and emotional control. Conflict tasks activate a neural network involving the dorsal anterior cingulate and lateral prefrontal cortex, areas central to the control of cognition and emotion (Bush, Luu, & Posner, 2000; Fan, Flombaum, McCandliss, Thomas, & Posner, 2003). The Attention Network Task (ANT) is a reaction-time task that assesses the efficiency of three attentional networks of alerting, orienting, and conflict resolution (Fan, McCandliss, Sommer, Raz, & Posner, 2002). We found that patients differed from both the average and temperamentally matched controls (i.e., high in negative affect and low in effortful control) in the conflict network, but not in any other attentional network, nor in overall reaction time or error rate (Posner et al., 2002). In subsequent analyses, patients differed from average control, but not from temperamentally matched controls. The direction of the differences is for temperamental control subjects to have a larger conflict score than the average controls; however, they did not show significant differences from either the average controls nor from the patients. The difference between patients and average controls could not be explained by age or medication.

These results suggest that BPD patients have a specific abnormality in conflict resolution, but not in alerting and orienting. The fact that this abnormality is present in BPD patients but not in non-BPD individuals matched for temperament, suggests that temperament plays a role in the disorder, possibly in predisposing individuals to BPD, but some other factors must be involved in generating the diagnosable disorder. The object relations model presented here would suggest that the additional variable is the emerging syndrome of identity diffusion.

*Effortful Control and Identity Diffusion.* We have data indicating that borderline patients vary in the extent of self-reported effortful control, and thus the relationship between the dimension of effortful control and the extent of pathology becomes relevant. We (Hoermann, Clarkin, Hull, & Levy, 2005) examined the clusters of borderline patients formed by a con-

sideration of varying degrees of effortful control. Once the patients were empirically grouped by the effortful control construct, hypothesized differences emerged between the groups in reference to symptoms, interpersonal behavior, and self-conception or identity diffusion. In general, the cluster of borderline patients with the highest effortful control scores was the least symptomatic and the least identity diffused as compared to two other groups of patients with lesser effortful control. In a later section of this paper, we describe the developmental paths of these relations between affect and control.

#### NEUROBEHAVIORAL PROCESSES, PERSONALITY, AND PERSONALITY DISORDER

Separate and apart from the temperament model discussed above, Depue and Lenzenweger (2001, 2005, 2006) have proposed a neurobehavioral model of the PD's that emphasizes interactive neurobiologically mediated systems that impact both normal personality and PD. This model proposed that PD's are best viewed as *emergent* phenomena, which means the disorder presents as a complex interactive result of the underlying component dimensions and cannot be readily reduced to these component parts in isolation. Following the description of the Depue-Lenzenweger Model in Lenzenweger and Willett (2006), this model links well established underlying neurobehavioral systems with higher-order personality trait processes and specifies interactions among the underlying neurobehavioral systems that will manifest ultimately, assuming certain configurations, in personality disorder (Depue & Lenzenweger, 2001, 2005, 2006). In short, Depue and Lenzenweger (2005) argue, "the higher-order traits of personality, which are general and few, most likely reflect the activity of the few, general neurobehavioral systems" (p. 6) and this position is based on an extensive review of the relevant animal and human neurobiological literature.

The primary neurobehavioral systems identified in this model are (a) positive incentive motivation (a reward based behavioral approach system); (b) affiliative reward (for establishment and maintenance of social closeness/bonds); (c) anxiety (for assessment of the risk of danger); (d) fear (for escape from unconditioned aversive stimuli); and (e) neural constraint (a tonic inhibitory influence on behavioral responding). These systems are manifested respectively in the following personality traits (a) agentic extraversion (agentic positive emotion; PEM-A); (b) affiliation (social closeness or communal positive emotion; PEM-C); (c) negative emotion (NEM); (d) fear (often referred to as harm avoidance); and (e) nonaffective constraint (CON). According to Depue and Lenzenweger (2001, 2005, 2006), the positive incentive motivation system is mediated largely by dopamine, the affiliative reward system is mediated by a complex interaction of vasopressin, oxytocin, and the endogenous opiates, the anxiety system is mediated in large part by tonic norepinephrine activity, the fear system is mediated by

phasic norepinephrine activity, and the neural constraint system is mediated largely by serotonin (5HT). An important assumption of the model is that individual differences in the underlying neurobehavioral systems will be reflected in individual differences in the higher-order personality traits deriving from these underlying systems. To be clear, the model does maintain neurobiological substrates underpin and, by implication, shape what is known as personality (or temperament). Moreover, and this is important to note, the underlying neurobehavioral processes can configure interactively to create the substrate basis for personality disorder. Thus, in short, Depue and Lenzenweger (2001, 2005, 2006) have argued that personality disorder or personality disturbance is best viewed as an *emergent* phenomenon reflective of these interacting neurobehavioral processes which are represented phenotypically by the personality dimensions associated with the constructs NEM, CON, PEM-A, and PEM-C. BPD is particularly reflective of interactions of the NEM and CON systems in conjunction with diminished PEM-A and, possibly, diminished PEM-C. The role of fear in this model for BPD is still under theoretical development, but is intended to capture the fear embodied in social rejection and/or abandonment by those with whom the BPD person maintains primary social relations.

In a laboratory experiment guided by the Depue-Lenzenweger Model, we (Lenzenweger, Clarkin, Fertuck, & Kernberg, 2004) have found that borderline patients displayed, as predicted, higher levels of negative affect and lower levels of nonaffective constraint (or control). Moreover, as compared to normal controls, BPD patients revealed deficits on a well-known neurocognitive task (the Wisconsin Card Sorting Test; WCST) that requires considerable executive processing resources reflective of control (and presumably neural constraint) for successful performance. Most importantly, as predicted, diminished nonaffective constraint (control) in the BPD patients was strongly related to poor performance on the WCST reflecting, in part, neurocognitive deficits associated with poor control. These deficits in executive functioning are suggestive of diminished nonaffective constraint as predicted for BPD by the Depue-Lenzenweger Model (Depue & Lenzenweger, 2001, 2005, 2006). It is interesting that the degree of borderline pathology is correlated with greater impairment on these neurocognitive tasks (Fertuck, Lenzenweger, & Clarkin, 2005). In contrast to these deficit areas, the borderline patients were not different from controls in sustained attention and spatial working memory tasks.

Additionally, we have found that deficits in reflective function (RF) and coherence of mind (COM) are related to increased impulsivity on the Computerized Performance Task and the WCST. In addition, deficits in RF and COM are related to both preservative errors and failure to maintain the set errors on the WCST. Preseverative errors occur when one, despite feedback, persists with the wrong answer. These are relatively common. Failure to maintain the set errors occur when one changes the correct answer (confirmed through feedback) to the wrong answer. This error is very rare but related to RF and COM (Levy, Meehan, Reynoso, Lenzenweger, Clarkin, & Kernberg,

2005). Because we have evidence that our patients were attending to the task, we interpret this finding to suggest that BPD patients with low RF and COM lack a model of contingency between feedback and their behavior.

Our research into the neurocognitive performance of BPD patients guided by substantive considerations provides the basis for our search for *endophenotypes* for BPD (cf., Lenzenweger & Cicchetti, 2005). Although long used in schizophrenia research as an organizing methodological approach (e.g., Lenzenweger & Loranger, 1989), the endophenotype (which reflects a process or variable that is closer to genetic substrates for a given disorder) methodology is an organizing approach that is relatively new to BPD research but one that, we believe, offers considerable potential.

We (Silbersweig, Clarkin, Goldstein, Kernberg, Tuescher, Levy et al., in press) and others (Donegan et al., 2004) have used functional magnetic resonance imaging (fMRI) to examine the processing of affectively charged stimuli in borderline patients. By the use of an emotional linguistic go/no go paradigm, we examined the hypothesis that decreased prefrontal inhibitory function in the context of negative emotional stimulation would be characteristic of borderline patients as compared to normals. This hypothesis derives from the Depue-Lenzenweger Model. The results confirmed a decreased ventromedial prefrontal activation in experimental conditions calling for behavioral inhibition in the presence of negative affect. In addition, these findings were highly correlated with self-reported measures of low constraint and high negative affect in the BPD patients as predicted by the Depue-Lenzenweger Model. These results are suggestive of plausible neural substrates associated with the core clinical features of emotion dysregulation in BPD.

### **NOSOLOGY GENERATED BY AN OBJECT RELATIONS MODEL**

One of the most vexing problems that impedes advance in the understanding and treatment of borderline patients is the heterogeneity of the group that meets the diagnosis of BPD. Due to the polythetic nature of the Axis II system, there are numerous ways that the patient can combine any five or more criteria out of the set of eight (DSM-III) or nine (DSM-III-R, DSM-IV) to reach the diagnosis (Hurt et al.). In an early study of patients meeting the diagnosis of BPD on DSM-III, we (Clarkin, Widiger, Frances, Hurt, & Gilmore, 1983) found that only 10% met all eight criteria, 25% had seven, 40% had six, and 25% had five. One could diagnosis BPD with 100% certainty with only the two features of identity disturbance and unstable/intense relationships, two features of borderline organization emphasized in this object relations model. The combination of these two features occurred in 60% of the BPD patients in this sample (sensitivity), but not in any of the personality disorders patients in the sample who were not BPD (100% specificity).

In addition, the vast majority of BPD patients also meet criteria for more than one Axis II disorder, and the particular co-occurring personality dis-

order(s) can make a critical difference in the pathology and prognosis of the individual patient. The object relations model presented here suggests that the overlap in Axis II disorders is lawful and that key dimensions underlying the personality disorders are extraversion-introversion, degree of personality integration, moral values, and negative affect. Consistent with our fundamental premise that both observable behavior and underlying psychological structures are necessary to understand personality and its pathology, we have constructed a model of nosology based on these elements.

By considering the extent of identity organization along with the dimensions we have discussed earlier of quality of object relations, negative affect, and moral values, one can make categorical and prototypic or dimensional distinctions. This nosology makes categorical distinctions between neurotic personality organization and borderline personality organization, and uses dimensional factors such as degree of moral values, aggression, and quality of object relations to distinguish between higher and lower levels of borderline organization. Thus, in our conceptualization DSM BPD is in the realm of borderline personality organization (in contrast to neurotic personality organization), characterized by identity diffusion and the use of primitive defenses.

Avoidant, dependent, sado-masochistic, histrionic, and narcissistic personality disorders manifest high level borderline organization. Individuals with these disorders are characterized by identity diffusion, primitive defenses, and some degree of quality in their object relations. Paranoid, schizoid, schizotypal, BPD, and antisocial personality disorders are in the low level borderline organization, characterized by identity diffusion with more aggression, and diminishing degrees of internal moral guidance.

In this nosology, we emphasize the organization of the personality involving affect, defense, and conceptions of self and others. In making categorical distinctions between BPO and NPO, with different treatment indications, we are also aware that identity-identity diffusion can also be measured and conceptualized as a dimension.

One of the benefits of a classification model for BPD that is theory guided is that it allows for substantive exploration of alternative taxonomies for understanding the heterogeneity in BPD. This has long been an interest of our group as well as for the BPD field in general. Prior statistical approaches to the heterogeneity have been helpful in initiating efforts to parse the heterogeneity of BPD in a meaningful manner. However, all prior statistical approaches to the heterogeneity of BPD have been hampered by limitations of the statistical procedures themselves, as well as the interpretation of the results of the analyses. For example, factor analytic approaches (including confirmatory factor analytic approaches) are limited in that they merely organize variables into larger composites, however, this approach does not allow one to organize individuals into meaningful subgroups. Moreover, from the substantive standpoint, one cannot assume that the dimensions resolved in the factor analysis of BPD features repre-

sent the underlying processes responsible for the observed symptomatology. This is so as nearly all features of BPD represent complex phenotypes that most likely reveal the interaction of underlying systems. For example, an "affective instability" dimension that is resolved from a factor analysis of BPD features should not be taken to represent a fundamental (brain-based) process in the determination of BPD, rather affective instability is an *outcome composite* reflective of several highly correlated BPD features. It is more likely, for example, that affective instability represents the *interaction* of diminished neural constraint and an overactive negative affect system in the face of diminished positive affect. Cluster analytic approaches have been hampered by the absence of statistically principled methods for deciding on the optimal number of clusters obtained in a given solution, as well as marked inconsistency across various clustering approaches in the identification of similar clusters in the same data (Lenzenweger, Jensen, & Rubin, 2003). We are currently pursuing a series of analyses using advanced finite mixture modeling (Lenzenweger, McLachlan, & Rubin, 2007) approaches in an effort to parse the heterogeneity of BPD in a manner that is guided by the rich theoretical/clinical considerations underpinning our object relations model-based approach to classification (Lenzenweger, Clarkin, Yeomans, Kernberg, & Levy, in preparation).

### **DEVELOPMENTAL FACTORS**

Aspects of the object relations model of borderline functioning cross-sectionally guide an examination of the developmental aspects of predominant affects, affect regulation, social (peer) relations, and the evolving representations of self and others. The infant is biologically geared to preponderance of emotion over cognition (Panksepp, 2003). Thus, in early development emotion dominates, and a major parental or caregiver task is to assist the child in the gradual development of emotion regulation skills. Parents have an impact on this development by assisting the child in cognitive mechanisms of attention. Mothers' sooth an upset child by assisting in attention control.

### **TEMPERAMENT**

Effortful control has a developmental course. As measured on a child version of the ANT task mentioned earlier, it appears that the attention network matures until age seven but then levels off. This is precisely the early developmental period in which object relations theorists have hypothesized that the child struggles with both positive and negative affect in the relationship with caregivers. At a certain point, the degree of effortful control becomes a trait like factor. Effortful control and its development are central to a number of key areas of maturation, not only the regulation of affect, but also empathy, social behavior, the extent of negative affect, and the development of conscience (Eisenberg, Smith, Sadovsky, & Spinrad, 2004).

Not surprisingly, the expression and regulation of affect is strongly influenced by the caregiving context. Attachment patterns between mother and child present as early as 14 months are related to affect management in laboratory settings. Over time secure children became less angry, and insecure children demonstrated more negative affect.

Central aspects of borderline pathology such as unstable, intense interpersonal relationships, feelings of emptiness, affect storms, chronic fears of abandonment, and intolerance for aloneness can be understood as impairments related to attachment difficulties (Fonagy et al., 1996; Gunderson, 1996; Levy & Blatt, 1999). Borderline patients are likely to be either preoccupied or dismissing in attachment status, and often unresolved for trauma (Patrick et al., 1994; Fonagy et al., 1996). In our own work with carefully diagnosed borderline disorder patients (Levy et al., 2006) we have found 48% were preoccupied in their attachment, 47% were dismissing, and only 5% were securely attached. Looking at rates of unresolved and cannot classify (CC) patterns, we found 33% were unresolved and 18% were CC. Preoccupied patients were more likely to be unresolved and dismissing patients were more likely to be CC. In a smaller sample of ten patients, we found that 60% were unresolved and 10% were CC (Diamond, Stovall, McClough, Clarkin, & Levy, 2003).

The development of effortful control in the young child is associated with many related aspects of normal functioning, including positive affect, compliance and the development of conscience, prosocial behavior, empathy, social competence, and adjustment (Eisenberg, Smith, Sadovsky, & Spinrad, 2004). Attention control and focusing are related to a decrease in distress (Rothbart, Ziaie, & O'Boyle, 1992), and in positive affect dominant over negative affect (Matheny, Riese, & Wilson, 1985). Toddlers at 22 and 33 months who have a relatively high level of effortful control are less angry in frustrating situations (Kochanska, Murray, & Harlan, 2000).

Focused attention at eight to ten months is related to compliance with others (Kochanska, Tjebkes, & Forman, 1998). Effortful control predicts an internalized conscience in school age children (Kochanska, Murray, & Coy, 1997). Effortful control is related to both empathy-related responding (Guthrie & colleagues, 1997), self or other reports of empathy and sympathy (Rothbart, Ahadi, & Hershey, 1994), and prosocial behavior (Eisenberg et al., 1997). In a longitudinal view, lack of control at ages three and five (Henry, Caspi, Moffitt, Harrington, & Silva, 1999) is associated with both internalizing and externalizing problems, and psychiatric disorders at age 21 (Caspi, 2000).

## IDENTITY

Personality development is a self-organizing process (Derryberry & Rothbart, 1997) in which the child acquires an increasing capacity for voluntary or effortful control. The child's perception of the world, especially the interpersonal world, as rewarding or dangerous, pleasurable or aversive,

is internalized as a conception of self in relationship to others. This view of the evolving child is central to object relations theory, and to those who espouse a temperamental view of personality (Derryberry & Rothbart, 1997). Internal representations of self and others develop from an early age, and depend upon the emergence of language and the encoding of semantic and episodic memories. This evolving representation of self and others infuses the motivational systems with information processing foci, and in turn, becomes a potential means of refining self regulation. Conceptions of self and others provide the individual with increasing capacity to evaluate and predict events. At its best, these higher cortical structures provide the individual with information that allows the individual to cope with environmental events without overwhelming fear, and with flexibility that is adaptive. If, however, the individual is overwhelmed with defensive fear or aggression, perception of the environment may be narrow in focus, with limited flexibility of action.

In normal development, there is a gradual integration over the first few years of life of representations of self and other with positive and negative affective valence, resulting in representations that are complex and realistically acknowledging that all people are a mix of good and bad attributes and are capable of being satisfying at some times and frustrating at others. This integration of positive and negative experiences does not evolve in borderline patients, and a more permanent division between the idealized and persecutory sectors of peak affect experiences remains as a stable, pathological intrapsychic structure. This separation "protects" the idealized representations (loving feelings toward the object perceived as satisfying) from the negative representations (associated with disappointment, rage, and hatred).

Autobiographical memory is that aspect of episodic memory which contains representations of one's own story over time (Nelson & Fivulsh, 2004). Memory functions involved in the autobiographical self may operate differently in borderline patients as compared to others. Borderline individuals produce over-general autobiographical memories with negative memory cues.

Self-representations evolve from unrealistically positive evaluation in childhood to the integration of positive and negative attributes in middle to late childhood (Harter, 1999). Disruptions in the relationship between the child and caregivers and trauma both have a profound effect upon the developing conception of self and others (Harter, 1999). Sexual abuse occurs in the lives of a subgroup of borderline patients, and in addition others suffer the deleterious effects of empathic failures, neglect and indifference (Westen, 1993; Cicchetti, Beeghly, Carlson, & Toth, 1990). Children exposed over time to these disturbed environments are likely to form insecure attachments with caregivers (Cicchetti et al., 1990; Westen, 1993), and, in turn, these attachments interfere with the development of crucial capacities for effortful control. Representations of self and others are distorted by defense and intense negative affect that distort incoming information in order to avoid further pain.

Our information on the course of the borderline patient in the adult years has progressed from the early seminal work of Stone (1990) who followed a large group of hospitalized patients over some 25 years, to more short term but more controlled studies. This literature is helpful in separating the changing and fluctuating aspects of personality pathology, and the more long-term aspects of the condition (e.g., work functioning, relationships) (Lenzenweger et al., 2004; Grilo et al., 2004; Skodol et al., 2005).

*Summary.* Most central to the object relations model is the caregiver-infant interaction that contributes to the developing infants' growing memory of self-other interactions. Most importantly, these interactions are infused, both in the actual experience and in memory traces, with affective valence, which can run along positive-negative values. Second, this model posits that the developmental process of storing and consolidating these object relations dyads is influenced by several important factors, namely, the genetically determined temperamental factors that relate to the balance of negative (i.e., irritable, angry) and positive affective disposition, and the nature of the caregiver-infant interaction. If the caregiver-infant interaction is characterized by lack of affectionate attentiveness to the infant's needs, poor empathic linkage, and intense negative affect, these abnormalities will negatively influence the child's effortful control, emotion regulation, and internalization and integration of representations of self and others.

### **ASSESSMENT APPROACH RELATED TO OBJECT RELATIONS MODEL**

Kernberg (1981, 2006) has described a clinically relevant assessment interview, the Structural Interview, which combines a standard psychiatric focus on mental status and symptoms, with an examination of the organization of the personality in terms of identity, description of self and others, quality of object relations, and use of defenses. This interview has been described, demonstrated on DVD (Dalewijk & van Luyn, 2005), and transformed into a semi-structured interview (STIPO). This interview is probably closer to how clinicians assess personality and its pathology (Westen, 1997) than any strict adherence to the DSM criteria. Westen (1997) has demonstrated that clinicians do not use the Axis II diagnostic criteria to assess patients, but rather observe the patient's interaction with the interviewer while listening to narratives patients use to describe their relations with others. Clearly, clinicians of all persuasions are using an object relations approach as a central feature in their assessments, and, by inference, their focus in subsequent treatment. Assessment of personality pathology should cover current symptoms and difficulties, differentiation of level of personality organization, and prognostic factors for treatment.

The yield of a structural interview has treatment planning and prognostic implications. The differential between borderline and neurotic personality organization determines the nature of an object relations treatment,

either highly structured and oriented to the patient's current life circumstances (Clarkin, Yeomans, & Kernberg, 2006), or an approach that uses a range of interpretive strategies (Caligor, Kernberg, & Clarkin, 2007). The prognosis of BPO patients in TFP depends on the extent of secondary gain, the quality of object relations, and the extent of superego as revealed in the interview.

The description of borderline patients by traits is minimally helpful in a clinical evaluation. Traits manifested by BPD individuals include those shaped by the DSM criteria themselves, and in the FFM traits of high Neuroticism and low Agreeableness (Clarkin, Hull, Cantor, & Sanderson, 1993). Dimensional scores on traits do not capture many functional aspects of our patients, including the process of affect regulation, and the moment to moment conception of self and others, and nature of intimate relations.

### **IMPLICATIONS FOR TREATMENT DEVELOPMENT**

A crucial step in the development of any treatment is a thorough and accurate conception of the pathology that is the focus of intervention (Kazdin, 2004). An articulated theory of borderline pathology must be conceptually related to both the desired mechanisms of change in the treatment, and the treatment outcomes (Clarkin, 2006; Clarkin & Levy, 2006; Levy et al., 2006). We have hypothesized that specific changes in the representations of self and others with their related affects would be central to change in borderline pathology. Based on the object relations model described here and elsewhere (Kernberg & Caligor, 2005), we have constructed and described a modified psychodynamic treatment that is highly structured, and focused both on the current life of the patient and the nature and understanding of the relationship that evolves between the patient and the therapist (Clarkin, Yeomans, & Kernberg, 2006).

Any effective treatment of borderline patients will approach the issue of improving affect regulation. We do not assume there is only one effective treatment for borderline patients as there are many routes to cognitive control of emotion, such as attentional control and cognitive reappraisal (Ochsner & Gross, 2006). DBT uses strategies of distraction and attention regulation (mindfulness). MBT focuses on the here-and-now interaction between patient and therapist to stimulate the patients' curiosity about one's own perception and emotions and those of others. TFP sets a frame to control destructive behavior, and calls attention to the present in terms of both the patients' life outside the sessions and inside the sessions. We (Kernberg et al., in press; Clarkin, Yeomans, & Kernberg, 2006) have described the steps in the treatment that are involved in the patient's reconception of self and others. We have found in a randomized clinical trial that TFP compares favorably to DBT and a supportive treatment (Clarkin, Levy, Lenzenweger, & Kernberg, in press) at the level of clinical outcomes. In addition, we have demonstrated that hypothesized changes in the con-

ceptions of self and others as measured by a measure of reflective functioning increases in TFP, but does not show significant changes in DBT and a noninterpretive psychodynamic supportive treatment (Levy et al., 2006).

The fact that borderline patients are a heterogeneous group suggests that a number of treatments are relevant, but distinctions at the level of treatment planning must be made. Dialectical behavior therapy (DBT; Linehan, 1993) has been shown to be most effective with reducing suicidal behavior in that subgroup of borderline patients who have active suicidal behavior. There are many individuals with the borderline diagnosis who do not have a history of suicidal behavior, and, even if present, do not have active current suicidal behavior. Two psychodynamic treatments, mentalization based therapy (MBT; Bateman & Fonagy, 1999) and TFP (Clarkin, Levy, Lenzenweger, & Kernberg, 2007), have focused on conceptions of self and others, and have demonstrated positive outcomes at symptom and interpersonal levels.

The goal of treatment is not just to control negative affect but to reawaken positive affect, especially through the enjoyment and protection of attachment to others. As Linehan has astutely observed, suicidal ideation and depression is not exactly the opposite of experiencing reasons for living. We have argued here that the dimensions that vary among those with borderline organization made a difference in the borderline pathology of the patient, and have treatment implications.

The object relations model indicates that treatment must focus on the representations of self and others, and how they are activated with the therapist and with significant others in the current life of the patient. Beyond this central focus, the dimensions of introversion-extraversion, negative affect, and moral values will place various parameters on the treatment. Patients with borderline organization who have some balance of positive and negative affect, who seek relations with others, and who have an internal sense of honesty are those most accessible for treatment. At the other extreme, there are borderlines that approach the area of intractability (Stone, 2006), whose object relations are almost totally corrupted with negative affect and lack of moral sensitivities. In DSM terms, these are patients with BPD and narcissistic PD combined with antisocial personality disorder.

There is currently no definitive treatment for borderline patients (Binks et al., 2006). A thorough treatment for BPD would involve many levels of change. At a clinical level, treatment would result in changes in self-destructive behaviors and debilitating symptoms. At the level of functional capacities, the patient would develop increases in emotional regulation through a multitude of cognitive controls including mentalization, mindfulness, and more nuanced and articulated representations of self and others. The patient needs to engage in and re-join relationships with others and fruitful involvement in work and profession. Finally, changes in

treatment should be self-sustaining. In order for symptom change to be maintained, the patient needs an underlying change in the perception of self and others, the filtering and intake of information from the environment, and the storage of more accurate information combined with positive affect from the environment.

## CONCLUSIONS

The object relations model is a work in progress. This partial view must be integrated with developmental and neurocognitive data. Identity and identity diffusion are emergent cognitive-affective units that depend upon the developmentally crucial temperamental systems and their shaping by the environment, most especially the interpersonal world created by child and caregiver. Models of borderline pathology that provide hypotheses and direction concerning the variables that describe phenotypic features, which, in turn, relate to genotypic features will most thoroughly foster our efforts.

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