

---

# The implications of attachment theory and research for understanding borderline personality disorder

---

KENNETH N. LEVY

*Pennsylvania State University and Weill Medical College of Cornell University*

## Abstract

Borderline personality disorder (BPD) is a highly prevalent, chronic, and debilitating psychiatric problem characterized by a pattern of chaotic and self-defeating interpersonal relationships, emotional lability, poor impulse control, angry outbursts, frequent suicidality, and self-mutilation. Recently, psychopathology researchers and theorists have begun to understand fundamental aspects of BPD such as unstable, intense interpersonal relationships, feelings of emptiness, bursts of rage, chronic fears of abandonment and intolerance for aloneness, and lack of a stable sense of self as stemming from impairments in the underlying attachment organization. These investigators have noted that the impulsivity, affective lability, and self-damaging actions that are the hallmark of borderline personality occur in an interpersonal context and are often precipitated by real or imagined events in relationships. This article reviews attachment theory and research as a means of providing a developmental psychopathology perspective on BPD. Following a brief review of Bowlby's theory of attachment, and an overview of the evidence with respect to the major claims of attachment theory, I discuss individual differences, the evidence that these differences are rooted in patterns of interaction with caregivers, and how these patterns have important implications for evolving adaptations and development. Following this discussion, I present recent work linking attachment theory and BPD, focusing on the implications for understanding the etiology and treatment of BPD. In conclusion, I address some of the salient issues that point to the direction for future research efforts.

Borderline personality disorder (BPD) is a highly prevalent, chronic, and debilitating psychiatric problem characterized by a pattern of chaotic and self-defeating interpersonal relationships, emotional lability, poor impulse control, angry outbursts, frequent suicidality, and self-mutilation (Skodol, Gunderson, Livesley, Pfohl, Siever, & Widiger, 2002). Approximately 1–2% of the population, 10% of psychiatric outpatients, 20% of inpatients, and 6% of primary care patients meet the *Diagnostic and Statistical Manual—4th Edition (DSM-IV; American Psychiatric Association [APA], 1994)* criteria for BPD (Gross et al., 2002; Lenzenweger, Loranger, Korfine, & Neff,

1997; Torgersen, Kringlen, & Cramer, 2001), the majority of whom are women.

Individuals diagnosed with BPD suffer from devastating behavioral problems. Self-injurious behaviors are particularly prevalent among BPD patients, occurring in 69–75% of cases (Kjellander, Bongar, & King, 1998). Other common self-destructive behaviors include alcohol and drug abuse, and serious over- or undereating. Patients with BPD are at high risk of suicide (McGlashan, 1986; Paris & Zweig-Frank, 2001; Stone, 1983), with a completed suicide rate between 3 and 9.5% (McGlashan, 1986), a rate that is 400 times greater than the general population.

In addition, BPD is substantially comorbid with other personality disorders (PDs), as well as with Axis I disorders (Zanarini et al., 1999). The presence of BPD negatively effects the both the psychotherapeutic and psychophar-

---

Address correspondence and reprint requests to: Kenneth N. Levy, Department of Psychology, Pennsylvania State University, 240 Moore Building, University Park, PA 16802; E-mail: klevy@psu.edu.

macological treatment efficacy for a number of Axis I disorders (see Clarkin, 1996). Not surprisingly, patients with BPD utilize higher levels of services in emergency rooms, day hospital and partial hospitalization programs, outpatient clinics and inpatient units. For example, although borderline patients made up only 1% of the patient population seen in a psychiatric emergency room, they accounted for 12% of all visits (Bongar, Peterson, Gollan, & Hardiman, 1990) and 20% of psychiatric hospitalizations (Zanarini & Frankenburg, 2001).

Further compounding these problems, patients with BPD are notoriously difficult to treat. The disorder is characterized by high rates and chaotic use of medical and psychiatric services, repeated patterns of dropout, erratic psychotherapy attendance, refusal to take medications as prescribed, and pervasive non-compliance. Given these facts, BPD is clearly a major public health problem that is prevalent, painful, debilitating, and deadly. The disorder constitutes one of the most important sources of long-term impairment in both treated and untreated populations.

### **Attachment Theory and BPD**

Bowlby's (1973, 1977, 1980) attachment theory, and the subsequent research it generated, provides a comprehensive developmental perspective for conceptualizing and understanding BPD. Attachment theory offers a cogent theory regarding the development and maintenance of the interpersonal difficulties and adaptations that characterize personality pathology, while simultaneously explaining the concomitant development of self-concept and the problems of self-definition and self-regulation. Embedded in a developmental psychopathology perspective, attachment theory provides a perspective for understanding atypical development in the context of typical development (Cicchetti & Cohen, 1995). Both attachment theory and developmental psychopathology share a common interest in uncovering the developmental course of psychological disorders of childhood and adulthood. Attachment theory, al-

though traditionally regarded as a dilution of psychoanalytic ideas, has developed significantly over the recent years, combining objects relations theory with empirical research in developmental psychopathology. The integration of a developmental psychopathology framework with attachment theory offers a unique window for exploring the development and maintenance of the behaviors, symptoms, and dynamics that characterize borderline pathology.

This article reviews attachment theory and research as a means of providing a developmental psychopathology perspective on BPD. Following a brief review of Bowlby's theory of attachment, and an overview of the evidence with respect to the major claims of attachment theory, I discuss individual differences, the evidence that these differences are rooted in patterns of interaction with caregivers, and how these patterns have important implications for evolving adaptations and development. Following this discussion, I present recent work linking attachment theory and BPD, focusing on the implications for understanding the etiology and treatment of BPD. In conclusion, I address some of the salient issues that point to the direction for future research efforts.

### **Fundamentals of Attachment Theory**

Attachment theory posits that the affective bond that develops between the child and caregiver has consequences for the child's emerging self-concept and developing view of the social world. The theory emerged from John Bowlby's observations of the pervasive disruptive consequences of maternal deprivation in children temporarily separated from their primary caregiver (usually mother) during World War II. His observations suggested that: "the young child's hunger for his mother's love and presence is as great as his hunger for food," and that her absence inevitably generates "a powerful sense of loss and anger" (Bowlby, 1969, p. xiii).

Based on ethological theory, John Bowlby conceptualized human motivation in terms of "behavioral systems," and noted that attachment-related behavior in infancy (e.g.,

clinging, crying, smiling, monitoring caregivers, and developing a preference for a few reliable caregivers or “attachment figures”) is part of an evolution-based functional biological system that increases the likelihood of protection from dangers and predation, and comfort during times of stress. The attachment system also enhances the infant’s chances for survival by allowing the immature brain to use the parents’ mature functions to organize its own life processes. In fact, the fundamental survival gain of attachment lies not only in eliciting a protective caregiver response, but also in the experience of psychological containment of aversive affect states required for the development of a coherent and symbolizing self (Fonagy, 2001).

Bowlby (1973) proposed that through repeated transactions with their attachment figures, infants form mental representations or affective–cognitive schemata of the self and others and develop expectations about interpersonal relations, which he called “internal working models.” These “internal working mental models” (Bowlby, 1973) are believed to organize personality development, and subsequently direct and shape future relationships. The continuity of these mental models over time is regarded as rooted in the complementary nature of working models of self, other, and concomitant expectations regarding one’s role in interpersonal relationships. For example, it is hypothesized that an infant whose needs are typically left unmet may develop a model of others as unreliable and uncaring. Consequently, the neglected infant and child may believe, as an adult, that each new person in his or her life will likewise prove to be inaccessible, uncaring, and unresponsive. Conversely, the child whose needs have been addressed in a consistent loving and supportive manner may subsequently regard others as dependable and trustworthy. Working models are thought to be initially encoded in procedural memory as expectations that help the infant feel secure. These working models are hypothesized to subsequently act as heuristics in relationships, organizing personality development and the regulation of affect. It is thought that parental responses serve both to amplify and reinforce the infant’s positive emo-

tional state and attenuate the infant’s negative emotional states by giving the infant secure protection when upset. As procedural memories, these early experiences are believed to be often implicit and thus remain unconscious or out of one’s immediate awareness.

Based on Bowlby’s attachment theory, Mary Ainsworth conducted a seminal study to observe the effects of child rearing techniques and the development of attachment patterns. Ainsworth, Blehar, Waters, and Wall (1978) developed a laboratory procedure called the Strange Situation, which was designed to assess the quality and organization of infant attachment and exploratory behavior in the context of incrementally increasing environmental stress. The Strange Situation consists of a series of infant–caregiver separations and reunions, and the behavior that the infant manifests during the procedure serves as the basis for Ainsworth’s attachment classifications. Based on observations of infants and caretakers, Ainsworth et al. (1978) identified three distinct patterns or styles of infant–mother attachment: secure (63% of the dyads tested), avoidant (21%), and anxious–ambivalent (16%).

All three types of infants are *attached* to their mothers, yet there are significant individual differences in the quality of these attachment relationships, and these differences can be reliably measured. The *avoidant* dyad is characterized by quiet distance in the mother’s presence, often acting unaware of the mother’s departure, and avoiding the mother upon reunion. The *anxious–ambivalent* dyad is characterized by emotional protest and anger on the part of the infant, who becomes extremely distressed upon the mothers’ departure, and often continues crying long after the mother returns. These reunions are also characterized by the infant’s seeking attention, yet being unable to experience the mother’s ministrations as soothing and comforting. The *secure* dyad is characterized by the confident use of the mother as a “secure base” to explore the playroom with considerable ease and comfort in the mother’s presence. Secure infants may experience distress and reduce their exploration upon the mother’s departure; however, upon the mother’s return, secure babies greet

the mother with enthusiasm, accept comfort readily, seek proximity and interaction with the mother, and then resume their exploration of the environment. Later, a fourth category, *disorganized–disoriented*, was added (Ainsworth & Eichberg, 1991; Hesse & Main, 2000; Main & Solomon, 1986, 1990). The disorganized baby displays disorganized and/or disoriented behaviors in the parent's presence, suggesting a *temporary* "collapse" of a behavioral strategy. For example, the infant may freeze with a trancelike expression and hands in the air, or may approach the parent but then fall prone and huddled on the floor. Because these behaviors are seen as a temporary collapse of one of the other three attachment patterns, the disorganized classification is not used on its own. Instead, infants classified as disorganized are assigned to either the secure, avoidant or anxious–ambivalent classifications as a secondary attachment pattern.

Bowlby strongly considered attachment as a life-span construct that indelibly influenced human relationships "from the cradle to the grave." Accordingly, Main, Kaplan, and Cassidy (1985) employed Ainsworth's typology of attachment patterns in the development of the Adult Attachment Interview (AAI), an instrument that assesses aspects of adults' internal working models of attachment with regard to their parents. The AAI is a semistructured interview designed to elicit thoughts, feelings, and memories about early attachment experiences, and to assess the individual's state of mind with regard to early attachment relationships (George, Kaplan, & Main, 1985). Consisting of a set series of 20 questions, the AAI requires the interviewees to reflect on their parents' styles of parenting and how their childhood experiences with their parents influenced their lives. The technique has been described as having the effect of "surprising the unconscious" (George et al., 1985), and allowing numerous opportunities for the interviewee to elaborate upon, contradict, or fail to support previous statements.

The interviews are assigned to one of five primary classifications: secure/autonomous, preoccupied, dismissing, unresolved, or cannot classify (CC). Individuals rated as *secure* describe the positive and negative aspects of

their childhood experiences with their parents in an open, balanced, coherent, and consistent manner. They seem to be thinking afresh while the interview is in progress, at times reflecting on their own thinking process. Secure adults generally have a favorable, realistic, and coherent representation of self and are flexible, realistic, and forgiving in interpersonal relationships. Individuals with attachment styles classified as *dismissing* devalue the importance of attachment relationships or portray them in an idealized fashion with few corroborating concrete examples. As the interview proceeds, inconsistencies usually emerge between vaguely positive generalizations and "leaked" evidence to the contrary. Individuals classified as *preoccupied* typically speak about their childhood experiences in a confused, incoherent manner with long, grammatically entangled sentences, use of jargon and nonsense words, reversion to childlike speech, and confusion regarding past and present relationships, all of which convey a lack of distance or perspective. Individuals are classified as having an *unresolved* (for trauma and loss) attachment style when they show lapses in their monitoring of reasoning or discourse when discussing experiences of loss and abuse. These individuals may speak in a moderately coherent manner, but they make highly implausible statements regarding the causes and consequences of traumatic attachment-related events. Because their interviews may have prominent features of either the secure, dismissing, or preoccupied attachment style, these interviews are given a corresponding secondary classification Interviews that do not fall into one of the above three categories are given a CC rating, signifying a more global breakdown in discourse and inconsistent uses of attachment strategies. The first three categories parallel the parent–child attachment patterns originally identified in childhood (the secure, avoidant, and ambivalent) by Ainsworth et al. (1978). The unresolved for trauma and loss category corresponds to the pattern of disorganized–disoriented attachment later described in infants who had been subjected to maltreatment or to frightened or frightening behaviors on the part of parents with histories of trauma and loss experiences about which

they themselves remained unresolved (Hesse & Main, 2000).

In another important development, Bartholomew (1990; Bartholomew & Horowitz, 1991) showed that adult attachment, like infant attachment as conceptualized by Main and Solomon (1990), can best be characterized by four rather than three major categories. Bartholomew's key insight was that Main's prototype of the adult avoidant style (assessed in the context of parenting) is more defensive, denial-oriented, and overtly unemotional than Hazan and Shaver's (1987) avoidant romantic attachment prototype, which seems more vulnerable, conscious of emotional pain, and "fearful." In Bartholomew's four-category interview and self-report classifications of adult attachment styles, both kinds of avoidance, dismissing and fearful, are included.

With this revision of the Hazan and Shaver classification scheme, it became evident to Bartholomew that the four categories could be arrayed in a two-dimensional space, with one dimension being "model of self" (positive vs. negative) and the other being "model of others" (positive vs. negative; see, e.g., Griffin & Bartholomew, 1994). In other words, Bartholomew conceptualized adult attachment styles in terms of the combinations of representational models of self and others that purportedly underlie them. For secure individuals, models of self and other are both generally positive. For preoccupied or anxious-ambivalent individuals, the model of others is positive (i.e., relationships are attractive) but the model of self is not. For dismissing individuals, the reverse is true: the somewhat defensively maintained model of self is positive, whereas the model of others is not (i.e., intimacy in relationships is regarded with caution or avoided). Fearful individuals have relatively negative models of both self and others.<sup>1</sup>

1. Although the AAI category system, Hazan and Shaver's three-category typology, Bartholomew's four-category typology, and several variations of these conceptual frameworks are all rooted in Bowlby and Ainsworth's theory and research, they are not conceptually identical (e.g., some are more clearly dimensional than others, and some focus on parenting, whereas others focus

### Genetics and attachment

Attachment theory makes strong predictions about the role of caregiver sensitivity in the development of attachment patterns. Nevertheless, given the evidence for the role of genetics in the development of behavior, personality traits, and attitudes, it is reasonable to hypothesize the transmission of attachment from parents to their infants could be, at least in part, genetically mediated (Main, 1999; van IJzendoorn, 1992). There have now been a number of studies examining the genetic basis of attachment patterns (Bokhorst, Bakermans-Kranenburg, Fearon, van IJzendoorn, Fonagy, & Schuengel, 2003; Gurvits, Koenigsberg, & Siever, 2000; Lakatos, Cook, & Scavone, 2000; Lakatos et al., 2002; O'Connor & Croft, 2001; Ricciuti, 1992; van IJzendoorn & Bakermans-Kranenburg, in press; Waller & Shaver, 1994). Early studies of genetics and attachment failed to find genetic influences in infant-parent at-

---

on romantic relationships), and they have generated different kinds of measures. The AAI is scored primarily in terms of indicators of "current state of mind," such as awkward pauses, gaps in memory, incoherent discourse, and other signs of defensiveness. The self-report measures, such as Bartholomew's and Hazan and Shaver's, tap self-characterizations of beliefs, feelings, and behaviors in romantic or other close relationships. From the beginning, Bartholomew included both interviews and self-report measures in her studies, and her interviews covered both relationships with parents (in line with the AAI) and relationships with close friends and romantic partners (in line with Shaver and Hazan's work). Bartholomew's self-report measure is a four-category extension of Shaver and Hazan's three-category romantic attachment measure. Recent examination of several studies based on Bartholomew's measures and either the AAI or Hazan and Shaver's measure (Bartholomew & Shaver, 1998) suggests a rough continuum ranging from the AAI (an interview measure focused on parenting issues and coded categorically rather dimensionally), through Bartholomew's parental attachment and peer/romantic interviews and her self-report measure, to Shaver and Hazan's self-report measure. Methods that lie close to each other on this continuum are more highly related empirically, but factor analyses or structural equation models based on several measures consistently indicate the presence of an underlying latent construct, which Bartholomew and Shaver (1998) interpret as reflecting a common core that is established in childhood. These attachment orientations may become differentiated with development and social experience.

tachment styles (Ricciuti, 1992; Vandell, Owen, Wilson, & Henderson, 1988). Likewise, adult romantic attachment styles have been shown to be based on an individual's self-report of relationship histories with significant others (Levy, Blatt, & Shaver, 1998) and independent of genetic influence (Waller & Shaver, 1994). However, a behavioral genetics study in a Hungarian sample of 90 low-risk 1-year-old infants found that attachment disorganization was four times more frequent among children carrying at least one e7-repeat allele of the dopamine D4 receptor gene (*DRD4*; Lakatos et al., 2000). The risk increased 10-fold if the *DRD4* gene was present alongside another independent identifiable allele (Lakatos et al., 2002). A modest genetic effect would not be inconsistent with an environmental explanation of attachment organization based on Belsky's (1997) differential susceptibility hypothesis; however, a 10-fold increase in risk for disorganization could not be easily integrated into an attachment theory perspective for the development of disorganization. Using a behavioral genetics paradigm, Bokhorst et al. (2003) examined genetic and environmental influences on infant attachment in a sample of 157 mono- and dizygotic twins, finding that genetic factors in attachment security and disorganization were negligible. They found that for the secure versus nonsecure distinction, 52% of the variance in attachment security was explained by shared environment, and that 48% of the variance was explained by unique "nonshared" environmental factors and measurement error. With regard to disorganized attachment, they found genetic factors to be negligible. Only unique environmental or error components could explain the variance between disorganized and organized attachment patterns. Temperamental reactivity was mainly explained by genetic factors (77% of variance), was minimally explained by unique environmental factors and measurement error (23% of variance), and was not associated with attachment concordance. In a follow-up study to the Lakatos et al. studies, Gurvits et al. (2000) examined the genetic data from the parents of the children in the initial studies. They found that parental genetic data did not suggest a link between the

two polymorphisms (*DRD4* 7-repeat and -521C/T) and disorganized attachment as the frequencies of the haplotypes of the two polymorphisms did not differ between parents of disorganized and securely attached infants. In fact, the preferential transmission of the 7-repeat allele from parents to disorganized children was not significant. Thus, the empirical evidence to date, consistent with attachment theory predictions, supports variability in parenting or parental factors rather than genetic factors as an explanation for attachment organization, including disorganization.

### Temperament and Attachment

The influence of temperament on attachment security is controversial (Chess & Thomas, 1982; Kagan, 1982; Lamb et al., 1984), but the balance of the evidence suggests that attachment is independent of temperament (Vaughn & Bost, 1999). Temperament has been defined as a behavioral style under direct biological control, rather than a personality style subject to motivational influences. It is thought to be constitutional and derived from genetic origins; whereas attachment behaviors are regarded as highly influenced by environmental factors (e.g., caregiver sensitivity) and largely independent of genetic influences. Initially temperament theorists interpreted attachment behavior as manifestations of temperament. Behavioral differences between infants classified as avoidant and anxious-resistant during the Strange Situation were viewed as manifesting differences in temperament rather than different interaction histories with caregivers (Kagan, 1982, 1985). It has been argued that anxious-resistant infant behavior reflects the high distress temperament of babies who are simply irritable, difficult, reactive, and/or behaviorally inhibited; whereas avoidant infant behavior in the Strange Situation reflects the low distress temperament of babies who are simply precociously independent. According to theories of temperament, secure infant behavior in the Strange Situation reflects moderate distress and easy temperaments.

Early studies simply related parental reports of their infants' temperaments with Strange Situation behavior, usually finding lit-

the association between the two (Bates, Maslin, & Frankel, 1985; Bradshaw, Goldsmith, & Campos, 1987; Egeland & Farber, 1984). Other studies examined the relationship between neonatal ratings of temperament (Belsky & Rovine, 1987; Crockenberg, 1981; Crockenberg & McCluskey, 1986; Waters, Vaughn, & Egeland, 1980) or observed temperament (Belsky, Fish, & Isabella, 1991; Thompson & Lamb, 1984). Taken as a whole, the findings from these studies were generally mixed, methodologically limited, and thus inconclusive. For example, Thompson and Lamb (1984) found an association between observed emotional responsiveness, attachment classification, and Strange Situation behavior. However, contingencies between mothers and infant are forming from birth and are established as early as the first week of life; thus observed emotional responsiveness in the infant is most likely influenced by both constitutional factors and environmental factors. Compounding the problem, there are no pure measures of temperament. Parental reports are prone to bias, observational measures can be confounded by the child's experience of care, and assessments at birth or shortly thereafter often provide only limited assessment of temperament domains (e.g., activity level).

Attachment theorists have noted that infants often show different attachment patterns with each parent, presumably because of different relationship histories (Fox, Kimmerly, & Schafer, 1991; Steele, Steele, & Fonagy, 1996). In addition, studies have shown, consistent with the theory, that caregiver sensitivity was related to attachment patterns. Sroufe and Waters (1977) measured changes in heart rate in children during the Strange Situation. They found that all children, regardless of attachment status, showed accelerated heart rates during the separation phases, which remain elevated until reunion with the parent. At reunion, however, there are important differences. Secure infants exhibited a return to baseline heart rate in less than a minute; whereas both anxious-resistant and avoidant children exhibited sustained heart rate accelerations into the reunion phase, despite clear differences in behavior (in the absence of vigorous motor activity). Upon the caregiver's

return, avoidant children displayed very little distress, and instead engaged a toy; however, the accelerated heart rate suggested that they were not actually engaged with the toy but only trying to distract themselves (although apparently unsuccessfully). Sroufe and Waters (1977) have interpreted these findings as an indication that these children have a definite affective response, and are not simply indifferent or precociously independent.

A temperament-based theory of attachment might posit that distress-prone infants would develop anxious-resistant attachments. However, a number of investigators have found fearful and shy infants among secure, anxious-resistant, and avoidant groups (Gunnar, Brodersen, Nachmias, Buss, & Rigatuso, 1996; Gunnar, Mangelsdorf, Larson, & Hertsgaard, 1989; Hertsgaard, Gunnar, Erickson, & Nachmias, 1995; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996; Spangler & Schieche, 1994; Stevenson-Hinde & Marshall, 1999; van den Boom, 1989). These findings suggest that there is little evidence that distress-prone infants become anxious-resistant babies.

In addition, Gunnar et al. (1989, 1996; Hertsgaard et al., 1995; Nachmias et al., 1996) in a series of studies found that security of attachment moderates the relationship between fearfulness and stress reactivity. They found that fearful insecure-avoidant and fearful insecure-anxious-resistant infants exhibited elevations in cortisol in response to a variety of attachment-related stressors, whereas secure infants did not. Spangler and Schieche (1994) also reported that fearful insecure avoidant and insecure-anxious-resistant infants exhibited elevations in cortisol in response to the Strange Situation, whereas fearful secure infants did not. These findings suggest attachment security moderates the expression of temperament in stressful situations and thus, is a protective factor against elevated cortisol during stressful situations.

Belsky and Rovine (1987), based on the suggestions of Thompson (Frodi & Thompson, 1985; Thompson & Lamb, 1984), grouped infants according to the level of distress displayed in the Strange Situation. Avoidant (A) infants were grouped with secure attachment subclassifications (B1 and B2) infants and con-

trasted with a group consisting of anxious-resistant and B3 and B4 babies. Belsky and Rovine (1987) found that the A1 through B2 infants were less difficult and expressed less negative affect than the B3 through anxious-resistant subclassifications (C) infants. This finding suggests that temperamental distress is reflected in attachment behavior but does not necessarily determine whether the child is classified as securely versus insecurely attached. Thus, they noted that low distress characterizes two of the secure attachment subclassifications (B1, B2), just as it does the avoidant subclassifications (A1, A2), whereas high distress characterizes the two other secure attachment subclassifications (B3, B4), just as it does the anxious-resistant subclassifications (C1, C2). However, a number of investigators have failed to replicate this finding (Gunnar et al., 1989; Mangelsdorf et al., 1990; Seifer, Sameroff, Dickstein, Keitner, & Miller, 1996; Vaughn, Lefever, Seifer, & Barglow, 1989) and others have found that these molar temperamental groupings lack stability (Barnett, Ganiban, & Cicchetti, 1999).

Moreover, the findings from a number of intervention studies with irritable babies suggest that attachment patterns are independent of temperament. Crockenberg (1981) found increased rates of secure attachment among babies with irritable temperaments as a function of maternal social support. van den Boom (1994, 1995) showed that a brief therapeutic intervention with mothers and their irritable babies resulted in dramatic and enduring increases in secure attachment.

In sum, examining the role of temperament and its association with attachment has been slowed because temperament has been difficult to specify in humans, and there is still no agreement on a conceptual framework for characterizing human temperament. The current consensus based on research suggests that temperament may influence the expression of attachment, but that attachment and temperament is not the same thing (Vaughn & Bost, 1999). That is, attachment behaviors are not merely the manifestations of temperament; however, temperament likely influences the expression of attachment patterns (Belsky & Rovine, 1987; Frodi & Thompson, 1985).

Although temperament does not appear to directly influence attachment security, it may interact with attachment security to increase the risk for BPD. A number of prominent psychological theories of BPD hypothesize the interaction between temperament and environment in the formation of the disorder (Bateman & Fonagy, 2004; Kernberg, 1984; Linehan, 1993). For instance, Kernberg (1984) argues that high levels of constitutional aggression interfere with normative developmental processes of integrating disparate representations. Instead, the high levels of aggression result in a division between positive and negative representations. In attachment terms, high levels of constitutional aggression may result in multiple contradictory internal working models of self and others. Likewise, Gurvits et al. (2000) point out that affective instability may interfere with the ability to develop stable perceptions of self and others. They note that both the specific role of aggression and the more general role of affect lability may make the developmental task of integrating stable representations of self and others more difficult to accomplish. There are a number of important conceptualizations of temperament processes in the development of BPD that suggest the importance of understanding the intersection of attachment and constitutional factors (Depue & Lenzenweger, 2001; Derryberry & Rothbart, 1988; Posner et al., 2003).

### **Implications of Attachment for BPD**

Psychopathology researchers and theorists have begun to understand fundamental aspects of BPD such as unstable, intense interpersonal relationships, feelings of emptiness, bursts of rage, chronic fears of abandonment and intolerance for aloneness, and lack of a stable sense of self as stemming from impairments in the underlying attachment organization (Blatt, Auerbach, & Levy, 1997; Fonagy et al., 1996; Gunderson, 1996; Levy & Blatt, 1999; Yeomans & Levy, 2002). These investigators have noted that the impulsivity, affective lability, and self-damaging actions that are the hallmark of borderline personality occur in an interpersonal context and are often precipitated by real or imagined events in relationships

(benign separations may be perceived as rejection, bids for intimacy may be seen as intrusive or engulfing, differences of opinion may be seen as personal attacks). For example, mood lability in BPD patients is often triggered by the misperception of subtle events in the environment (Gurvits et al., 2000; Yeomans & Levy, 2002). Once the mood state is obtained, it can rapidly lead to aggressive, impulsive, self-destructive, interpersonally intrusive, or extremely isolative behavior (Gurvits et al., 2000; Yeomans & Levy, 2002).

These investigators have begun examining the clinical applications of attachment theory both theoretically (Blatt & Levy, 2003; Bowlby, 1988; Diamond, Clarkin, Levine, Levy, et al., 1999; Fonagy, Gergely, Jurist, & Target, 2002; Gunderson, 1996; Holmes, 1996; Levy & Blatt, 1999) and empirically (Dozier, 1990; Dozier, Cue, & Barnett, 1994; Fonagy et al., 1996; Levy et al., in press; Tyrrell, Dozier, Teague, & Fallot, 1999). These authors have begun to delineate how attachment classifications and dimensions contribute to understanding the underlying psychopathology and the quality and nature of the therapeutic alliance, psychotherapy process, patterns of transference and countertransference, and psychotherapy outcome.

From its inception, Bowlby conceptualized attachment theory in both normal and psychopathological development. Bowlby (1973) believed that attachment difficulties increase vulnerability to psychopathology, and can help identify the specific types of difficulties that arise. Bowlby (1977) contended that internal working models of attachment help explain “the many forms of emotional distress and personality disturbances, including anxiety, anger, depression, and emotional detachment, to which unwilling separations and loss give rise” (p. 201). He held that childhood attachment underlies the “later capacity to make affectional bonds as well as a whole range of adult dysfunctions” including “marital problems and trouble with children as well as . . . neurotic symptoms and personality disorders” (1977, p. 206). Bowlby postulated that insecure attachment lies at the center of disordered personality traits, and he actually tied the overt expression of felt insecurity to specific char-

acter disorders. For instance, Bowlby connected anxious ambivalent attachment to “a tendency to make excessive demands on others and to be anxious and clingy when they are not met, such as is present in dependent and hysterical personalities,” and avoidant attachment to “a blockage in the capacity to make deep relationships, such as is present in affectionless and psychopathic personalities” (1973, p. 14). Avoidant attachment, Bowlby postulated, results from the individual constantly being rebuffed in his or her appraisals for comfort or protection, and “may later be diagnosed a narcissistic” (1973, p. 124). Thus, Bowlby not only postulated that early attachment experiences have long-lasting effects that tend to persist across the life span, but are among the major determinates of personality organization and pathology.

### **The Association of Adult Attachment and BPD**

To date, nine studies have examined attachment patterns using the AAI in study groups with patients diagnosed with BPD or with identifiable borderline patients (Babcock, Jacobson, Gottman, & Yerington, 2000; Barone, 2003; Diamond, Stovall-McClough, Clarkin, & Levy, 2003; Fonagy et al., 1996; Levy et al., in press; Patrick et al., 1994; Rosenstein & Horowitz, 1996; Stalker & Davies, 1995; Stovall-McClough & Cloitre, 2003; van IJzendoorn et al., 1997). A few others have examined the relationship between BPD and attachment using AAI-like interviews or methods (Buchheim, George, & Walter, 2003; Salzman, Salzman, & Wolfson, 1997). Two studies have examined attachment using the AAI in study groups of patients with personality disorders, where subgroups of borderline patients have not been reported (Levinson & Fonagy, 2004). A number of studies have examined the relationship between self-reported attachment patterns and BPD (Alexander, 1993; Bender, Farber, & Geller, 2001; Brennan & Shaver, 1998; Dutton, Saunders, Starzomski, & Bartholomew, 1994; Fossati et al., 2001, 2003; Levy, 1993; Levy, Meehan, Weber, Reynolds, & Clarkin, 2005; Nickell, Waudby, & Trull, 2002; Sack, Sperling, Fagen, & Foelsch,

1996; Sperling, Sharp, & Fishler, 1991; West, Keller, Links, & Patrick, 1993). Two studies have examined the relationship between attachment and BPD using clinician-based ratings of patient attachment (Meyer, Pilkonis, Proietti, Heape, & Egan, 2001; Nakash-Eisikovits, Dutra, & Westen, (2002). In a particularly creative design, Handley and Swenson (1989) carried out a case study for a 27-year-old hospitalized woman diagnosed with BPD. They used an observational scheme, which parallels the Strange Situation, and an "acting out" scale to examine the effects of separations from her therapist. These studies, reviewed below in greater detail, have generally found that BPDs and traits are significantly associated with fearful avoidant and preoccupied attachment.

#### *Interview studies*

Patrick et al. (1994) compared 12 dysthymic patients with 12 BPD patients on the AAI, the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), and the Beck Depression Inventory (BDI; Beck, 1984). They found that the borderline group reported lower maternal care and higher maternal overprotection on the PBI and their AAIs were more likely to be characterized as confused, fearful, and overwhelmed in relation to past experiences with attachment figures. There were no differences between the two groups in terms of depression as assessed by the BDI. An examination of the distribution of AAI attachment classification between the two groups found a significantly higher proportion of preoccupied classification among the borderline patients. In fact, all 12 borderline patients were classified as preoccupied. Even more striking, however, they found that 10 of the 12 (88%) borderline patients were classified as fearfully preoccupied, a subclassification of the preoccupied group. In contrast, only four of the dysthymic patients were classified as preoccupied, and none were fearfully preoccupied. Another important aspect of their study concerned the findings regarding unresolved trauma. The patients with BPD, compared with depressed patients, were no more likely to have had a history of trauma history, but were more

likely to be unresolved for trauma events (75 vs. 20%).

In a clinical sample of 40 women with a history of childhood sexual abuse, Stalker and Davies (1995) explored the association among attachment organization, current psychosocial functioning, and *DSM* PDs. They found that of the eight women diagnosed with BPD, five (62%) were preoccupied and three were dismissive (38%). Seven of the eight women with BPD were also classified as unresolved (88%), compared with 60% for the entire sample and 62% for those with avoidant or self-defeating PDs. However, the rates of the unresolved classification may be higher than other samples, because not only did the entire sample have a history of sexual abuse, but they were all in treatment, indicating a lower likelihood of resilience to the trauma. In a study of 60 hospitalized adolescents, Rosenstein and Horowitz (1996) did not find a significant relationship between meeting the threshold for the borderline diagnosis based on the Millon Clinical Multiaxial Inventory (MCMI) and preoccupied attachment. However, based on the *DSM-III-R* diagnoses, they found that of the 14 patients diagnosed with BPD, nine (64%) had a preoccupied attachment style, four (29%) a dismissing attachment style, and only one (8%) had a secure attachment style. The non-BPD patients were more likely to be dismissive (52%) than preoccupied (46%). Although they assessed lack of resolution of trauma and loss, they did not report the percentage of borderline patients who were unresolved. Fonagy and colleagues (1996) at the Anna Freud Centre of the University of London in the Cassell Hospital Psychotherapy Project studied the relation between patterns of attachment and psychiatric status in 82 nonpsychotic inpatients and 85 case-matched controls using the AAI. Of the 82 inpatients, 36 were diagnosed with BPD. Seventy-five percent of the borderline patients were classified as preoccupied with 47% classified as fearfully preoccupied. Fonagy found that BPD patients were significantly more likely than non-BPD patients to be classified as unresolved (89 vs. 65%). However, 79% of patients with other PDs were unresolved, 77% of paranoid-antisocial patients were unresolved, and 61% of patients

without a PD were unresolved. Consistent with predictions, BPD patients scored significantly lower on reflective function (RF) than did patients with no PD. Multivariate analyses suggested that BPD was characterized by a combination of higher prevalence of abuse and neglect, lower ratings of RF, and higher rates of unresolved attachment. In addition, there was a significant interaction between abuse and low RF predicting BPD. Fonagy et al. interpreted these findings to suggest that individuals who respond to experiences of abuse by inhibiting mentalizing are less likely to resolve this abuse and more likely to manifest BPD. Barone (2003) compared the attachment status of 40 patients with BPD to 40 nonclinical individuals. She found that the two samples differed in the distribution of attachment patterns when comparing two (secure vs. insecure status), three (secure, dismissive, and preoccupied), and four (secure, dismissive, preoccupied, and unresolved) categories. In the BPD patient group, only 7% of the patients were secure with respect to attachment status, 20% were dismissing, 23% preoccupied, and 50% unresolved. Stovall-McClough and Cloitre (2003) recently reported on the attachment status of 52 women in treatment for child abuse (CA)-related symptoms. Patients were classified as CA-related posttraumatic stress disorder (PTSD) without BPD ( $n = 34$ ), CA-PTSD plus BPD ( $n = 13$ ), and CA-no trauma diagnosis ( $n = 5$ ). Both the psychiatric groups (PTSD and PTSD-BPD) showed high rates of unresolved trauma (67 and 72%, respectively) compared to treatment controls (40%). Preoccupied attachment was most common in the BPD group (39%), somewhat lower in the PTSD group (33%), and lowest in the secure group (20%). Rates of secure attachment also differed as a function of psychiatric status: 80% in the control group, 50% in the PTSD only group, and 30% in the PTSD/BPD group. There were only three cases of dismissing states of mind with respect to attachment in the sample.

Preliminary findings from Levy et al. (in press) indicate similar rates of secure attachment (about 7%) among outpatients with BPD; however, they have found a more even distribution in attachment patterns than did Patrick

et al. (1994) and Fonagy et al. (1996). For example, using the five-category system (i.e., secure, preoccupied, dismissing, unresolved, and CC), they found that about 35% of patients can be classified into the unresolved and 25% into the CC categories, and using secondary classifications, about 50% of patients can be classified into the preoccupied category and 40% into the dismissing category. Secondary classifications for CC patients were mostly dismissing and for unresolved patients mostly preoccupied (two to one in each case). In a preliminary study, Diamond et al. (2003) reported on the attachment status of 10 seriously disturbed BPD patients. In that sample, 60% of the patients were unresolved for trauma, 10% were CC. Using secondary classifications, 50% were dismissing with respect to attachment, 40% were preoccupied, and 10% were secure with respect to attachment.

Two studies examined the relationship of the AAI to borderline dimensions in samples of violent men (Babcock et al., 2000; van IJzendoorn et al., 1997). Babcock et al. (2000) examined attachment and PD differences between violent husbands and unhappily married, but nonviolent, husbands using the AAI and the MCMI. Violent husbands were less likely to be classified as securely attached and more likely to be classified as dismissing and antisocial. Borderline personality scores also tended to be higher among the dismissing husbands and lower among the secure husbands, although only at a trend level ( $p < .10$ ). van IJzendoorn et al. (1997) examined the relationship between PDs and attachment in a sample of 40 male criminal offenders. They found that the CC classification appeared to be the most disturbed, showing the most PD symptoms. Dismissing subjects had fewer PD symptoms than preoccupied, unresolved, and CC individuals. Using the forced choice three-category system, preoccupied subjects showed significantly more PDs than the other patterns, particularly cluster C anxious disorders. BPD was significantly positively correlated with AAI insecurity ( $r = .27$ ), but not as strongly as were narcissistic, sadistic, and self-defeating PDs, and about the same as antisocial, obsessive, and passive-aggressive. In

this sample, antisocial and schizotypal PDs, rather than BPD, were associated with high unresolved scores and high CC scores.

Salzman (1988) reported data from two samples in which she and her colleagues examined the relationship between BPD and attachment using an interview similar to the AAI. The first sample consisted of 41 participants, and it was drawn from a pool of 101 college students. Individuals were drawn in an attempt to have equal numbers of each attachment pattern. Of the 41 interviewees, nine met criteria for BPD. All nine interviewees were classified as ambivalent. A 10th person was classified as subthreshold for BPD; this person was classified as secure/ambivalent. This study suffered from a number of problems, including the fact that the attachment ratings and BPD ratings were made from the same interview. In their second sample, Salzman and colleagues diagnosed 31 women recruited for a psychopharmacology study with BPD using both the Structured Clinical Interview for *DSM-III-R* (SCID-II) and the Diagnostic Interview for Borderlines—Revised, and in contrast to her first study, found a predominance of avoidant attachment. The second study did not have a comparison group, and it is difficult to draw inferences from either of these two studies. Buchheim and colleagues (Buchheim et al., 2003; Buchheim & Walter, 2002) examined attachment patterns in a sample of eight adult women with BPD using the Adult Attachment Projective. They found that four of the eight patients were unresolved. However, four of the eight control participants were unresolved also.

### Rating scales

Two studies used rating scales to assess attachment (Meyer et al., 2001; Nakash–Eisikovits et al., 2002). Nakash–Eisikovits et al. developed a clinician rated multiple-item attachment rating scale which was completed by 294 clinicians of various theoretical orientations and disciplines. *DSM*-based BPD was negatively related to secure attachment ( $r = -.29$ ) and positively related to anxious–ambivalent and unresolved–disorganized attachment ( $r = .20$  and  $.39$ , respectively).

However, anxious–ambivalent attachment was more highly related to histrionic and dependent PDs, and unresolved attachment was more positively related to avoidant PD, equally related to paranoid PD, and only slightly more related to BPD than to dependent, obsessive–compulsive, schizotypal, and schizoid PDs. Disorganized attachment was also significantly related to narcissistic PD. Nakash–Eisikovits et al. also examined the Westen’s empirically derived conceptualization of BPD (Conklin & Westen, 2005), which they called emotionally dysregulated. The emotionally dysregulated dimension was the only empirically derived PD highly related to unresolved attachment (although the narcissism dimension was significantly related,  $r = .15$ ). The findings of this study are interesting, although there are some notable limitations that must be kept in mind. For instance, the relationship between variables may be a function of all the data being provided by one informant. Meyer et al. (2001) related Pilkonis’s (1998) attachment prototype measure to PDs in a sample of 149 patients with affective, anxiety, substance use disorders. Patients were interviewed shortly after beginning treatment and at 6 and 12 months. BPD was negatively correlated with secure attachment ( $r = -.45$ ) and positively correlated with excessive dependency ( $r = .22$ ) and a borderline attachment prototype, which included ambivalent and erratic feelings and behaviors in close relationships ( $r = .80$ ). However, attachment ratings were made based on the information obtained during the diagnostic assessments and by the same raters during the same diagnostic conference. Thus, any associations may be confounded.

### Case studies

During a 245-day inpatient treatment, Handley and Swenson (1989) naturalistically studied separations and reunions between a therapist and a 27-year-old, single, college graduate diagnosed with borderline personality and a long history of self-destructive behavior, including cutting, chronic suicidality, and substance use. The authors identified 12 categories of acting out behavior and rated each category for severity (e.g., damaging

property = 30 points, self-mutilation = 64 points, and suicide attempt = 93 points). During the 245 days of treatment there were eight separations ranging from 3 to 18 days (including weekends). Consistent with findings from attachment research, Handley and Swenson found that acting out occurred more frequently during the reunion phase of the separation than during nonseparations, the anticipation phase, or during the actual separation. The severity of the acting out was also much greater during the reunion phase (mean = 45, vs. a mean of >10 for nonseparation, anticipation, and separation phases). Thus, the acting out behavior of this patient appears to have served a communication function rather than an emotional regulation function.

### *Self-report measures*

A number of studies have examined the relationship between self-reported attachment patterns and BPD (Alexander, 1993; Bender et al., 2001; Brennan & Shaver, 1998; Dutton et al., 1994; Eurelings-Bontekoe, Verschuur, & Schreuder, 2003; Fossati et al., 2001, 2003; Hoermann, Clarkin, Hull, & Fertuck, 2004; Levy, 1993; Levy & Clarkin, 2005; Levy et al., 2005; Nickell et al., 2002; Sack et al., 1996; Stern, 1998; Sperling et al., 1991; Tweed & Dutton, 1998; West et al., 1993). These studies have used a number of different measures, which focus on different attachment relationships, and in different samples. Six of these studies used measures based on Bartholomew's two dimensional/category model (Alexander, 1993; Bender et al., 2001; Brennan & Shaver, 1998; Dutton et al., 1994; Eurelings-Bontekoe et al., 2003; Hoermann et al., 2004; Levy, 1993; Levy & Clarkin, 2005; Levy et al., 2005; Stern, 1998), two used measures based on Hazan and Shaver's three-category scheme (Allen, Moore, Kuperminc, & Bell, 1998; Levy, 1993), two studies used the Attachment Style Questionnaire (Fossati et al., 2001, 2003), two used the Reciprocal Attachment Questionnaire (Bender et al., 2001; West et al., 1993), two used the PBI (Fossati et al., 2003; Nickell et al., 2002), and two used the Attachment Style Inventory (Sack et al., 1996; Sperling et al., 1991).

In one of the first studies, Sperling et al. (1991) found that patients with BPD, compared with a college students, showed greater attachment insecurity, particularly characterized by increased levels of anxious-resistant and hostile attachments and lower levels of normal dependence. Levy (1993) examined the relationship between attachment patterns and PDs in a sample of 217 college students using Hazan and Shaver's Adult Attachment Questionnaire, Bartholomew's Relationship Questionnaire (RQ), and the MCMI. Attachment security was negatively related to the schizoid, avoidant, schizotypal, passive-aggressive, and borderline scales. Dismissive attachment was positively associated with paranoid, antisocial, and narcissistic personality scales; fearful avoidance was associated with schizoid, avoidant, and schizotypal scales; and preoccupied attachment was associated with schizotypal, avoidant, dependent, and borderline scales. All eight subjects who were diagnosed with BPD were judged to have insecure preoccupied attachment. Alexander (1993) examined the relationship between trauma, attachment, and PDs in a sample of 112 adult female incest survivors. She assessed attachment using Bartholomew's RQ and assessed PDs using MMCI-II (Millon, 1992). Only 14% of the sample rated themselves as secure, 13% rated themselves as preoccupied, 16% as dismissing, and 58% as fearfully avoidant. Preoccupied attachment was associated with dependent, avoidant, self-defeating, and BPD. Fearful avoidance was correlated with avoidant, self-defeating, and BPD, and they also scored highest on the Symptom Checklist-90—Revised. Dismissing subjects reported the least distress, most likely due to their proclivity to suppress negative affect (Kobak & Sceery, 1988). Using regression analyses, Alexander examined the relative contributions of abuse history (including age of onset, type of abuse, degree of coercion, and perpetrator relationship) and attachment dimensions for predicting BPD dimensional ratings. She found that BPD did not vary as a function of abuse characteristics, but was significantly related to attachment, particularly preoccupied attachment.

Brennan and Shaver (1998) examined the connections between adult attachment pat-

terns and PDs in a nonclinical sample of 1,407 adolescents and young adults. They used discriminant function analysis to predict attachment dimensions based on PD symptoms. Their results indicated substantial overlap between attachment and PD measures. They found that BPD symptoms loaded significantly on the secure–fearful dimension. Those with BPD rated the fearful and preoccupied dimensions significantly higher than the other two dimensions. Using the Experiences in Close Relationships (ECR), Stern (1998) confirmed the Brennan and Shaver’s results, finding that the borderline dimension of the PDQ-IV was related to both the avoidance and anxiety dimensions.

Hoermann et al. (2004) examined the role of attachment in predicting service utilization in a sample of 41 cluster B patients. All but two of the patients had BPD. The borderline patients scored highest on the fearful dimension; however, the preoccupied dimension predicted hospitalizations. Eurelings–Bontekoe et al. (2003) examined the association between attachment and PDs among 109 second-generation offspring of victims of World War II. They found that borderline personality symptomatology was significantly related to fearful and preoccupied attachment dimensions.

Allen et al. (1998) identified two groups of borderline patients, alienated and hostile, and found that the alienated group scored highest on the Collins and Read (1990) anxiety factor and lowest on the close and depend factors. The authors interpreted their findings as to suggest that borderline personality reflects both a pattern of ambivalent engagement in hostile–dependent relationships and fearful–depressed withdrawal coping style.

Fossati et al. (2003) used canonical correlation and found that BPD significantly correlated with anxious attachment (as defined by positive view of other and negative view of the self). Sack et al. (1996) compared borderline individuals with an unselected group of college students and found evidence of a number of indicators of attachment-related distress (e.g., fear of loss, separation protest, compulsive care seeking, angry withdrawal) as well as a mixture of general ambivalent and avoidant tendencies in romantic/sexual attach-

ment relationships. Although they did not include Bartholomew and Horowitz’s (1991) measure in their study, their pattern of findings indicates that both preoccupation and fearful avoidance may be most closely associated with BPD.

Using the Reciprocal Attachment Questionnaire, West et al. (1993) found that BPD patients could be distinguished from other outpatients by elevated scores on feared loss of other, lack of secure base, compulsive care seeking, and angry withdrawal subscales. However, in a sample of 30 individuals from a university-based outpatient training clinic, Bender et al. (2001) found that although the borderline dimension of the MCMI was highly correlated with perceived unavailability, feared loss, proximity seeking, and separation protest, so were other cluster B PDs.

In a sample of abusive men, Dutton et al. (1994) found that fearful attachment was significantly related to borderline personality organization (BPO) as measured by the BPO instrument of Oldham et al. (1985), a precursor to the Inventory of Personality Organization (Lenzenweger, Clarkin, Kernberg, & Foelsch, 2001). The BPO dimension was also related to preoccupied attachment, although not as strongly and negatively related to secure attachment.

Levy et al. (2005) examined the psychometric properties of the ECR in a well-characterized study group of 90 patients diagnosed with BPD using the International Personality Disorders Examination. They found that almost all the patients choose the preoccupied and fearful attachment patterns; however, factor analyses revealed six factors that clustered into three groups corresponding to a dismissing/avoidant attachment pattern, a preoccupied attachment pattern, and a fearfully preoccupied pattern. The preoccupied pattern showed more concern and behavioral reaction to real or imagined abandonments, whereas the avoidant group had higher ratings of inappropriate anger. The fearfully preoccupied group had higher ratings on identity disturbance, although only at the trend level. The psychometric properties and response characteristics of the ECR items suggest that the scales, keying, and domains are appropriate

for assessment of attachment in BPD samples. The scales generally retain their factor structure and show a similar pattern of correlations and interrelationships. Nevertheless, consistent with a developmental psychopathology model, there are some important differences in factor structure, indicating the need to look at both typical and atypical samples when constructing models of attachment.

### Summary of Findings

Consistent with conceptualizations of BPD patients as insecurely attached, secure attachment in this group is extremely low, especially compared to other groups. Across interview measures, secure attachment ranges from 0 to 30%, usually around 6 to 8%. Across the self-report measures, the rates of secure attachment are also low; although rates have been higher in nonclinical samples (e.g., Brennan & Shaver, 1998). All studies found an inverse relationship between scores on borderline dimensions and secure attachment. Although early interview studies suggested a strong relationship between BPD and preoccupied and unresolved attachments, especially angry preoccupied and fearfully preoccupied, later studies suggests that BPD is not specifically related to one type of attachment pattern. Although most studies show elevated rates of unresolved attachment, rates have ranged from as low as 35%, and are generally in the 50% range, a range that is not much different than other psychiatric disorders (Buchheim, Strauss, & Kachele, 2002; Carlson, Cicchetti, Barnett, & Braunwald, 1989; Espinosa, Beckwith, Howard, Tyler, & Swanson, 2001; Fonagy et al., 1996; Lyons-Ruth, Connell, Grunebaum, & Botein, 1990; Manassis et al., 1994; O'Connor, Sigman, & Brill, 1987; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985; Rodning, Beckwith, & Howard, 1991; Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996; Stovall-McClough & Cloitre, 2001; Teti, Nakagawa, Das, & Wirth, 1991; Wallis & Steele, 2001). Additionally, a number of interview studies now suggest that many BPD patients can be diagnosed with dismissing attachment (Barone, 2003; Diamond et al., 2003; Levy et al., in press; Rosenstein & Horowitz, 1996;

Salzman, 1988; Stalker & Davies, 1995). Some more recent studies (Diamond et al., 2003; Levy et al., in press; Stalker & Davies, 1995) have also employed the CC category (Hesse, 1996), and this category is also common, ranging in about the 30% range, and this category may be very important for understanding BPD.

With regard to studies using self-report measures, studies have consistently found that borderline personality traits are significantly negatively correlated with attachment security and significantly positively correlated with both fearful avoidant and preoccupied attachment.

### Implications of Findings on the Association of Attachment and BPD

The fact that BPD appears not to be specifically related to a particular attachment pattern, combined with the fact that many individuals from nonclinical and normal samples also can be classified in these same patterns, suggests that there may be a range of functioning within each attachment pattern. Consistent with this idea, Levy and Blatt (1999), integrating Blatt's (1995) cognitive-developmental psychoanalytic theory with attachment theory, proposed that within each attachment pattern, there may exist more and less adaptive forms of dismissing and preoccupied attachment. These developmental levels are based on the degree of differentiation and integration of representational or working models that underlie attachment patterns. In terms of PDs, Levy and Blatt (1999) noted that several PDs (i.e., histrionic, dependent, borderline) appear to be focused in different ways, and possibly at different developmental levels, on issues of interpersonal relatedness. They proposed that preoccupied attachment would run along a relatedness continuum from non-BPD individuals who value attachment, intimacy, and closeness to the gregarious who may exaggerate relatedness, to those with a hysterical style, who not only exaggerate closeness and overly value others but also may defend against ideas inconsistent with their desires, to more histrionic individuals, who are overly dependent and easily show anger in attachment relationships, to those with BPD.

In contrast, another set of PDs (i.e., avoidant, paranoid, obsessive–compulsive, narcissistic) appear to express a preoccupation with establishing, preserving, and maintaining a sense of self, possibly in different ways and at different developmental levels. Levy and Blatt (1999) proposed that avoidant attachment would run along a self-definitional continuum from individuals without personality disorders who are striving for personal development to those who are more obsessive, to those with avoidant PD, to those with narcissistic PD, and finally, at the lowest developmental levels, to those with BPD and antisocial PD.

This integration allows us to note that the two primary types of insecure attachment, avoidant and anxious–preoccupied, can occur at several developmental levels. Differences in the content and structure of mental representations (or internal working models) distinguishes more and less adaptive forms of avoidant and anxious–preoccupied attachment, thereby bringing a fuller developmental perspective to the study of attachment patterns. Different patterns of attachment not only involve differences in the content of internal working models but also differences in the structure of those models (e.g., degree of differentiation and integration). It may be the structure of these models, more so than the content, that results in different capacities and potentials for adaptation. Thus, within specific attachment styles, internal working models may vary in the degree of differentiation, integration, and internalization (Levy et al., 1998).

### **Association Between BPD and Unresolved/Disorganized Status**

#### *Disorganized attachment*

Some have argued that the roots of BPD lie in disorganized attachment patterns during childhood (Fonagy et al., 2002; Holmes, 2003, 2004; Liotti, 2000). Holmes (2004) has gone as far to equate the two. Indeed, one of the most consistent findings from initial studies examining the relationship between adult attachment and BPD is the association between unresolved/disorganized attachment and BPD

diagnosis (Fonagy et al., 1996; Patrick et al., 1994; Stalker & Davies, 1995).

Liotti (2000) describes the clinical presentation of BPD patients as consistent with disorganized attachment. He notes that disorganized attachment disrupts the construction of a unitary internal working model of the self and the attachment figure. Instead, citing Main (1991), Liotti notes the internal working model of the self and of the attachment figure is multiple, fragmented, and incoherent. These internal working models are so contradictory and incompatible that they cannot be easily integrated and are dissociated. Citing evidence from longitudinal studies of the continuity between disorganization and dissociation, Liotti hypothesizes that infant disorganization leads to symptoms in adulthood that are consistent with BPD. For example, Carlson (1998) found that infant disorganization was associated with higher ratings of dissociative behavior on the Teacher Report Form of the Child Behavior Checklist both in elementary and high school and with self-report of more dissociative experiences on the Dissociative Experience Scale at age 19. Three adolescents in this longitudinal sample had developed clear-cut dissociative disorders at the time of Carlson's inquiry; all of them had been disorganized in their infant attachment to a primary caregiver. Likewise, Holmes (2003, 2004) links disorganized attachment with the clinical problems presented by BPD. He suggests that both disorganized attachment and borderline personality can be understood as approach–avoidance dilemmas. The approach–avoidance dilemma is a result of interpersonal relationships with stressed or traumatized/traumatizing caregivers who are simultaneously a source of threat and a secure base. These approach–avoidance conflicts manifest themselves in representational deficits that result in needing to act out feelings rather than being able to verbalize them. To support his contention, Holmes cites Patrick et al. (1994), finding that 75% of borderline patients in their sample were unresolved. Finally, Fonagy et al. (1996, 2002) contend that BPD is specifically linked to the interaction between unresolved attachment, trauma, and low RF. Fonagy et al. (1996) found that 97% of patients with a history of abuse

and low reflective functioning met criteria for BPD, whereas only 17% of abused patients who had high RF met criteria for BPD.

Although equating BPD with unresolved/disorganized attachment seems reasonable, it is also problematic for a number of conceptual and empirical reasons. First, although initial studies examining the relationship between attachment and BPD found rates of unresolved attachment to be between 75 and 89% (Fonagy et al., 1996; Patrick et al., 1994; Stalker & Davies, 1995), subsequent studies have found lower rates of unresolved status ranging from 35 to 72%. In general, the rate seems to be about 50–60% with some of the differences in rates seemingly related to sampling issues (e.g., inpatients vs. outpatients, sexually abused vs. nonsexually abused) and coding schemes (studies using the CC category report lower levels of unresolved attachment). Because roughly half of BPD patients are not unresolved, theories to explain the development of BPD must include mechanisms other than the lack of resolution of loss and trauma. Second, unresolved attachment is also common for many other clinical disorders. For example, researchers have found high rates of unresolved and disorganized attachment for anxiety disorders (Buchheim et al., 2002; Fonagy et al., 1996; Manassis et al., 1994; Seifer, Schiller, et al., 1996), depressive disorders (Lyons-Ruth et al., 1990; Radke-Yarrow et al., 1985; Teti, Gelfan, Messinger, & Isabella, 1995), drug addiction (Espinosa et al., 2001; O'Connor et al., 1987; Rodning et al., 1991), PTSD (Stovall-McClough & Cloitre, 2001), dissociation (Carlson, 1998), adolescents with emotional and behavioral disturbance (Wallis & Steele, 2001) and in maltreated and high-risk samples (Carlson et al., 1989; Lyons-Ruth et al., 1990). Thus, unresolved attachment lacks sufficient specificity and appears to be a general vulnerability factor rather than specific to BPD.

Third, although Fonagy et al. (1996) found that 97% of patients who suffer sexual abuse and have low reflective functioning meet criteria for BPD, and that 17% of sexually abused patients who had high RF meet criteria for BPD, many patients with BPD do not experience sexual or physical abuse (Paris, 2004)

and thus cannot be unresolved for trauma. An etiological theory of BPD must also explain the development of BPD in nontraumatized individuals. Thus, consistent with a developmental psychopathology approach, any viable theory must allow for multiple pathways to the disorder and heterogenic expression of the disorder.

Fourth, the data that exists to date suggest little continuity between childhood disorganization and BPD features in adulthood. The only direct evidence examining disorganized attachment during infancy and BPD comes from the work of Lyons-Ruth, Yellin, Melnick, and Atwood (2005), who reported results of a longitudinal study examining the development of BPD symptomatology. They followed 56 infants and their mothers for 18 years. Twenty-nine infants and their mothers were originally referred for clinical home visits by a variety of community service providers (28% of these had state-documented maltreatment) and 27 infants were from socioeconomic status (SES)-matched community families. Attachment patterns and maternal behaviors were assessed during infancy. Borderline features were assessed in young adulthood using the SCID-II. Predictors of BPD status in young adulthood included early referral for documented maltreatment, total abuse reported in adolescence, and mother-infant disrupted communication. Fifty percent of the high-risk clinically referred infants and 38% of state-documented maltreated infants displayed BPD features in young adulthood, compared with 9% of the SES-matched controls. Likewise, 40% of the infants of the disrupted affective communication mothers displayed BPD features in young adulthood, compared with 12% of the nondisrupted mothers. It is important that infant disorganization was unrelated to later BPD features ( $\eta = .04$ ).<sup>2</sup> Later abuse during adolescence did not mediate the relationship between early referral status and later BPD features, although unresolved status for

---

2. Although studies have found that disrupted affective communication during infancy is related to disorganized attachment status (Grienberger, Kelly, & Slade, in press; Kelly, Ueng-McHale, Grienberger, & Slade, 2003).

later abuse may predict BPD features. However, preliminary prospective findings using longitudinal data from the Minnesota Longitudinal Study of Parents and Children found significant associations between early childhood maltreatment, particularly sexual abuse and adolescent self-injurious behaviors (Yates & Carlson, 2003).

In summary, it is reasonable to conclude that disorganized attachment may be one mechanism by which traumatic and loss experiences result in adaptational vulnerabilities, which may lead to BPD. However, there are other likely mechanisms, such as insecure attachment, low reflective functioning, and their relative relationship to constitutional factors and relationship buffers.

### **Association Between BPD and the CC Category**

In addition to, or instead of, being unresolved for trauma and loss, it is likely that many patients with BPD would be characterized by mental states suggesting the CC status with respect to attachment. Like those categorized as CC, patients with BPD exhibit multiple, contradictory, incompatible, and unintegrated working models, often leading to chaotic and mood-dependent behavior in interpersonal relationships. Hesse (1999) has suggested that those classified in the CC category show a global breakdown of coherent discourse about attachment experiences, whereas individuals classified as dismissing or preoccupied display an insecure but systematic or organized strategy toward attachment experiences. Unresolved individuals show only a local breakdown in the discourse on loss or trauma. Van IJzendoorn (1992) found that 8 of the 11 CC subjects were diagnosed with a PD. Many of the studies examining BPD have not used the CC category (Barone, 2003; Fonagy et al., 1996; Patrick et al., 1994; Rosenstein & Horowitz, 1996; Stovall-McClough & Cloitre, 2001), although two recent studies have (Diamond et al., 2003; Levy et al., in press) found that about 25% of patients met criteria for CC classification and that these individuals were at increased risk for dropping out of treatment. Thus, in addition to showing incoher-

ence of internalized representations of self and others, many BPD patients also show an un-integrated mixture of approach/activating and avoidance/deactivating strategies with regard to attachment relationships.

### **Developmental Research Related to Attachment and BPD**

#### *Studies of parental loss*

Six studies have assessed the prevalence of prolonged early separations and loss in the childhood histories of BPD patients (Akiskel et al., 1985; Bradley, 1979; Links, Steiner, Offord, & Eppel, 1988; Paris, Nowlis, & Brown, 1988; Reich & Zanarini, 2001; Soloff & Millward, 1983; Walsh, 1977; Zanarini et al., 1988). These studies have found that early separations and loss are common among borderline patients with reports ranging from 37 to 64%, and these rates were significantly higher than for psychotic, affective, or other personality disordered patients. However, at least four other studies have failed to confirm these findings (Brennan & Shaver, 1998; Ogata, Silk, & Goodrich, 1990; Paris, Zweig-Frank, & Guzder, 1994; Weaver & Clum, 1993). Thus, early separation and loss in itself probably does not lead to a specific disorder such as BPD. Instead, the impact of early loss on adult psychopathology in general has been shown to be influenced by factors such as the level of family dysfunction and the presence of buffering influences (Rutter, 1989; Kwok et al., 2005). In fact, Pfeffer et al. (1997) found that child adjustment after parental suicide was strongly influenced by the adjustment of the surviving parent. The family context and constitutional factors like temperament may also be important factors. Two studies have shown that loss in the life of the attachment figure increases rates of psychopathology in their adult children including BPD (Hesse & van IJzendoorn, 1998; Liotti & Pasquini, 2000). Hesse and van IJzendoorn (1998) found that participants whose parents' experienced familial loss within 2 years of their birth showed elevated levels of dissociative absorption. Liotti and Pasquini (2000) found that mothers of borderline patients were 2.5 times more likely

to have had a serious loss within 2 years of the patient's birth.

### *Studies of parental caregiving*

There are a number of studies that have looked at caregiving provided by mothers or fathers of individuals with BPD or borderline traits (Bezirgianian, Cohen, & Brook, 1993; Brennan & Shaver, 1998; Heffernan & Cloitre, 2000; Hobson, Patrick, Crandell, García-Pérez, & Lee, 2005; Weiss et al., 1996). Most of the studies examining caregiving have focused on maternal caregiving and have used retrospective ratings. Brennan and Shaver (1998) found that dimensional ratings of BPD in college students were significantly negatively related to fostering of independence, warm acceptance, and was ideal parent for both mother and fathers. Weaver and Clum (1993) examined patient-reported childhood trauma experiences and family environment in a sample of young adult inpatients. They found that overcontrol predicted BPD even after controlling for sexual abuse. In a sample of adolescents with BPD, Bezirgianian et al. found that mother-reported maternal inconsistency combined with maternal overinvolvement predicted the persistence or emergence of BPD, but not other Axis II disorders. Heffernan and Cloitre (2000) found that among sexually abused patients, those with BPD compared with those with PTSD, had higher rates of physical and verbal abuse by mother.

### **Studies of Families of Patients With BPD**

In several studies, patients with BPD report that their parents were neglectful, uncaring, underinvolved, and had serious psychopathology, including depression and alcoholism (Goldberg, Mann, Wise, & Segall, 1985; Grinker, Werble, & Drye, 1968; Gunderson, Kerr, & Englund, 1980; Links, 1990; Patrick et al., 1994; Trull, 2001a, 2001b; Walsh, 1977; Zanarini, Gunderson, Marino, Schwartz, & Frankenburg, 1989; Zweig-Frank & Paris, 1991); however, in all these studies, data was collected retrospectively through self-report; therefore, recall bias cannot be ruled out.

There have been few studies of the risk of psychopathology in children of mothers with BPD (Crandell, Patrick, & Hobson, 2003; DeMulder, Tarulla, Klimes-Dougan, Free, & Radke-Yarrow, 1995; Espinosa et al. 2001; Hobson et al., 2005; Rutter & Quinton, 1984; Weiss et al., 1996). Feldman et al. (1995) examined the families of mothers with BPD as compared to families of mothers with other PDs. They found that the families of BPD mothers were more unstable, less cohesive and organized, but not less conflicted. Feldman and colleagues suggests that low family cohesion and high instability may affect the parenting capacities of the mother with BPD and place her children at increased risk for their own maladaptive outcomes. This conclusion is consistent with Rutter and Quinton's (1984) findings. They examined the effects of a PD diagnoses on parenting behavior among women with affective disorders. They found that the presence of PDs was an important prognostic indicator of both the parents functioning and the child's behavioral outcome.

A couple of studies had mothers of BPD adolescents also report on their parenting (Golomb et al., 1994; Guttman & Laporte, 2000). Golomb et al. (1994) compared 13 mothers of adolescents with borderline personality with 13 mothers of nonclinical adolescents using an interview measure of maternal empathy. They found that the mothers of the borderline patients provided responses that were blindly coded as less empathic, more egocentric, less differentiated from their daughters', and showing that they view their daughters in "need gratifying" ways. The authors note that the mothers of BPD daughters also reported more environmental stressors, which likely affected their daughters directly and affected their capacity to parent effectively and empathically.

Guttman and Laporte (2000) examined empathy in the families of 27 women with BPD, 28 women with anorexia nervosa, and 27 women without a clinical diagnosis. The daughters and both parents completed questionnaires and interview measures of empathy. BPD patients scored significantly higher than the other two groups on immature empathy and lower on mature empathy. The parents

of the BPD patients scored significantly lower on all measures of empathy. On the interview measures, BPD patients and their parents agreed about the relative absence of empathic parenting.

There are a number of recent studies that have examined caregiving behavior directly and prospectively. DeMulder et al. (1995) examined maternal caregiving in affectively ill mothers with comorbid PDs. Affectively ill mothers reported more PD symptoms than did well mothers, and severity of illness was related to higher rates of PD symptomatology. Although PD symptoms were generally related to less engagement and involvement, BPD symptoms were significantly related to increased engagement among bipolar mothers, and there was a trend for decreased engagement among depressed mothers. BPD symptoms were not related to irritability or criticalness for either bipolar or depressed mothers.

Crandell et al. (2003), using Tronick's Still Face procedure, compared mothers with BPD to nonclinical controls. They found that the BPD mothers demonstrated more intrusiveness and insensitivity toward their 2-month-old infants. Similar to adults with BPD, the infants showed less positive affect during and after the Still Face procedure, made more bids to their mother but looked away from mothers more often. In addition, the infants of BPD mothers were more likely to display a dazed look that includes freezing of facial movements and eye contact similar to the freezing that is found in the disorganized attachment pattern in the Strange Situation test. The infants of BPD mothers also showed less positive affect with a stranger afterwards, indicating a possible carryover effect from the maternal interactions. Hobson et al. (2005) found similar findings with BPD mothers when their infants were 12 months old. The authors compared 10 infants of borderline mothers with 22 infants of mothers completely free of any current and past psychopathology. Consistent with predictions, infants of borderline mothers were more likely to be classified as disorganized, were less sociable, and the mothers with BPD were more likely to engage in intrusive behaviors with their infants. Hobson

et al. found that 8 out of 10 infants of mothers with BPD were classified as having a disorganized attachment. Interestingly, of the eight disorganized babies, four were assigned a secondary classification of securely attached and the two nondisorganized infants were classified as securely attached. The mothers of the secure nondisorganized babies scored even more deviant than the borderline or control disorganized mothers. These findings generate a number of issues for further study. For example, we have to consider that a subgroup of disturbed infants may not be able to be identified by their strange situation behaviors or that there may be some unrecognized infant behaviors that mimic security, but represent a pseudosecurity.

Weiss et al. (1996) examined psychopathology in the offspring of mothers with BPD. Weiss et al. (1996) examined 21 children of BPD mothers compared with 23 children of non-BPD mothers. The children of BPD mothers had more psychiatric diagnoses, more impulse control disorders, a higher frequency of child BPD, and lower global functioning scores. A general conclusion from these studies is that offspring of BPD mothers are at high risk for psychopathology.

As mentioned earlier, Lyons-Ruth et al. (2005) followed 56 infants and their mothers for 18 years in a longitudinal study examining the development of BPD symptomatology. Mothers of children who later displayed BPD features were significantly more disrupted in their affective communication, particularly through withdrawal. Infant disorganization was unrelated to later BPD features. Later abuse during adolescence did not mediate the relationship between early referral status and later BPD features, although unresolved for that abuse may predict BPD features.

Macfie, Rivas, Engle, Hamilton, and Rathjen (2005) compared 10 children of BPD mothers with 10 mothers without BPD on measures on narrative representation. They found that compared to the children of non-BPD mothers, the narratives of children of BPD mothers were significantly more negative and less positive of mother, had more intrusions of traumatic material, and showed significantly more fear of abandonment.

Danon and Graignic (2003) found that borderline mothers showed an incapacity of modulating behavior after the Still Face episode, therefore heightening noncontingency during reunion play. Infants of borderline mothers displayed more negative emotional expressions, heightened autonomic behaviors before the Still Face, less self-comfort behavior, and more distancing behavior. They tended to respond to situations that require self-soothing by hiccupping and spitting, and using self-clasping and touch behavior; whereas, infants of control mothers would yawn, or engage in sucking behavior. Danon and Graignic concluded that BPD mothers seemed less aware of infants' needs for emotional regulation both before and after Still Face. Their speech to the babies was characterized as more descriptive than engaging and resulted in heightened noncontingency during reunion play.

In summary, there is substantial evidence to suggest that pathways to BPD may involve heightened risk from chaotic family life, increased stressors on parents, noncontingent interactions, and disrupted communication between caregivers and their children. Of course, these risk factors most likely interact with temperamental expressions of genetic predispositions toward impulsivity, negative affect, and perhaps aggression. The relationship between constitutional factors and environmental factors is probably in relation to each other. Thus, the higher the constitutional disadvantage, the lower the threshold for environmental perturbations to overwhelm the child's capacity to assimilate and accommodate to his or her environment. Conversely, a child who has a low constitutional load may be resilient to greater perturbations. In addition, family stressors may affect the developing child directly and through the effects on caregivers. Finally, the development of multiple, contradictory, and unintegrated internal working models of self and attachment figures may leave these children vulnerable to life's stressors and traumatic experiences.

### **Recommendations for Future Research**

Although borderline personality is one of the most serious psychiatric disorders, relatively

little is known about its developmental precursors. Establishing childhood precursors and identifying etiological factors related to the development of borderline personality is a significant research problem. Longitudinal prospective research designs are critical in this regard because they have the potential to provide vital information concerning developmental adaptation and potential causal relationships. There are a number of existing samples, both low and high risk, that have followed infants into young adulthood (Hamilton, 2000; Lyons-Ruth et al., 2005; Main, 1999; Waters, Hamilton, & Weinfield, 2000; Weinfield, Sroufe, & Egeland, 2000). These samples are well characterized in terms of infant attachment and environments. There are other samples of children followed into adulthood that may be relevant for examining precursors of BPD (Shedler & Block, 1990). However, these studies are limited by not being specifically designed to examine BPD. These studies generally have sufficiently large enough numbers of participants to address the questions initially posed in the investigations; however, given the base rate of BPD, these samples may be too small to individually address questions about precursors of BPD. For example, in the Minnesota Longitudinal Study of Children and Parents, only four (2%) of 175 participants met criteria for BPD. One recommendation would include conducting a multisite follow-up of these infants into young adulthood. Constructs that are common across samples, but identified through previous research as pertinent developmental variables, could be assessed at various time points. For example, assessments during the infant assessment can specify temperament, disorganized attachment, atypical caregiver behaviors, caregiver hostile–helpless mental states, and caregiver attachment status, and so forth. Assessments carried out during childhood and adolescence can specify concrete stressors such as parental loss, divorce, adolescent abuse, and substance use. Finally, important adult outcome variables could be measured (BPD symptomatology, love and work functioning, attachment status, unresolved attachment, helpless–hostile states of mind, RF).

Another strategy suggested by Gunderson and Zanarini (1989) and very consistent with

a developmental psychopathology perspective is to investigate children exposed to known adversities for BPD over time. These adversities, identified in both retrospective and prospective research, would include the experience of sexual abuse or other traumas, parental impulsive spectrum disorders such as substance abuse, parental recent loss or trauma, domestic violence, depressed mothers, and mothers with BPD. This approach could be broadened to include following up children who display childhood parallels of borderline symptoms. For example, depressed and/or anxious children have been shown to be at risk for developing BPD (Kassen, Cohen, Skodol, Johnson, Smailes, & Brook, 2001). Levy and Clarkin (2005) have found that one-third of their BPD patients engaged in self-injurious behaviors before age 12.

In conclusion, attachment theory provides a useful approach within the developmental psychopathology perspective for conceptualizing BPD. Within attachment theory, BPD is viewed as resulting from a series of successive interactional processes along a developmental path. Although new experiences influence the individual, these later experiences are not independent of preexisting rep-

resentations but are understood within the context these models. Distorted and impaired representational models may result when perturbations overwhelm the child's organizational capacities to accommodate the experience, thereby compromising the child's development of representational structures (Blatt, 1995). These representational processes interact with constitutional factors that may increase risk; therefore, it has become central to identify how these experiences interact with constitutional factors. These compromised representations can result in multiple, contradictory, and unintegrated representations, which in those patients with BPD, typically oscillate quickly and result in an unintegrated view of self and others and extremely chaotic behavior.

Attachment research has made important advances in the understanding of BPD; however, many questions regarding specific mechanisms for the development of BPD remain unanswered. Nevertheless, an attachment theoretical perspective within a developmental psychopathology framework appears to be a powerful approach to understanding the mechanisms underlying both the interpersonal and intrapersonal difficulties characteristic of BPD.

## References

- Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Oxford: Erlbaum.
- Ainsworth, M., & Eichberg, C. (1991). Effects on infant-mother attachment of mother's unresolved loss of an attachment figure or other traumatic experience. In C. Murray & J. Stevenson-Hinde (Eds.), *Attachment across the life cycle* (pp. 160-183). New York: Tavistock/Routledge.
- Akiskal, H., Downs, J., Parri, J., Jordan, P., Watson, S., Dougherty, D., et al. (1985). Affective disorders in referred children and younger siblings of manic-depressives. *Archives of General Psychiatry*, *42*, 996-1003.
- Alexander, P. C. (1993). The differential effects of abuse characteristics and attachment in the prediction of long-term effects of sexual abuse. *Journal of Interpersonal Violence*, *8*, 346-362.
- Allen, J. P., Moore, C., Kuperminc, G., & Bell, K. (1998). Attachment and adolescent psychosocial functioning. *Child Development*, *69*, 1406-1419.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Babcock, J. C., Jacobson, N. S., Gottman, J. M., & Yerington, T. P. (2000). Attachment, emotional regulation, and the function of marital violence: Differences between secure, preoccupied, and dismissing violent and nonviolent husbands. *Journal of Family Violence*, *4*, 391-409.
- Barnett, D., Ganiban, J., & Cicchetti, D. (1999). Maltreatment, negative expressivity, and the development of Type D attachments from 12 to 24 months of age. *Monographs of the Society for Research in Child Development*, *64*, 97-118.
- Barone, L. (2003). Developmental protective and risk factors in borderline personality disorder: A study using the Adult Attachment Interview. *Attachment and Human Development*, *5*, 64-77.
- Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships*, *7*, 147-178.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*, 226-244.
- Bartholomew, K., & Shaver, P. (1998). Methods of assessing adult attachment: Do they converge? In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 25-45). New York: Guilford Press.
- Bateman, A. W., & Fonagy, P. (2004). Mentalization-

- based treatment for BPD. *Journal of Personality Disorders*, 18, 36–51.
- Bates, J. E., Maslin, C. A., & Frankel, K. A. (1985). Attachment security, mother–child interaction, and temperament as predictors of behavior–problem ratings at age three years. *Monographs of the Society for Research in Child Development*, 50, 167–193.
- Beck, A. (1984). The Beck Depression Inventory. In M. Williams (Ed.), *The psychological treatment of depression: A guide to the theory and practice of cognitive behavioral therapy*. New York: Free Press.
- Belsky, J. (1997). Attachment, mating, and parenting: An evolutionary interpretation. *Human Nature*, 8, 361–381.
- Belsky, J., Fish, M., & Isabella, R. A. (1991). Continuity and discontinuity in infant negative and positive emotionality: Family antecedents and attachment consequences. *Developmental Psychology*, 27, 421–431.
- Belsky, J., & Rovine, M. (1987). Temperament and attachment security in the strange situation: An empirical rapprochement. *Child Development*, 58, 787–795.
- Bender, D. S., Farber, B. A., & Geller, J. D. (2001). Cluster B personality traits and attachment. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry*, 29, 551–563.
- Bezirgianian, S., Cohen, P., & Brook, J. S. (1993). The impact of mother–child interaction on the development of borderline personality disorder. *American Journal of Psychiatry*, 150, 1836–1842.
- Blatt, S. J. (1995). Representational structures in psychopathology. Rochester symposium on developmental psychopathology. In S. L. Toth & D. Cicchetti (Eds.), *Emotion, cognition, and representation* (Vol. 6, pp. 1–33). Rochester, NY: University of Rochester Press.
- Blatt, S. J., Auerbach, J. S., & Levy, K. N. (1997). Mental representations in personality development, psychopathology, and the therapeutic process. *Review of General Psychology*, 1, 351–374.
- Blatt, S. J., & Levy, K. N. (2003). Attachment theory, psychoanalysis, personality development, and psychopathology. *Psychoanalytic Inquiry*, 23, 102–150.
- Bokhorst, C. L., Bakermans–Kranenburg, M. J., Fearon, R. M. P., van IJzendoorn, M. H., Fonagy, P., & Schuengel, C. (2003). The importance of shared environment in mother–infant attachment security: A behavioral genetic study. *Child Development*, 74, 1769–1782.
- Bongar, B., Peterson, L. G., Golann, S., & Hardiman, J. J. (1990). Self-mutilation and the chronically suicidal patient: An examination of the frequent visitor to the psychiatric emergency room. *Annals of Clinical Psychiatry*, 2, 217–222.
- Bowlby, J. (1969). *Attachment and loss. Vol. 1. Attachment*. New York: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Separation* (Vol. 2). New York: Basic Books.
- Bowlby, J. (1977). The making and breaking of affectional bonds: I. Aetiology and psychopathology in the light of attachment theory. *British Journal of Psychiatry*, 130, 201–210.
- Bowlby, J. (1980). *Attachment and loss*. New York: Basic Books.
- Bowlby, J. (1988). *A secure base: Parent–child attachment and healthy human development*. New York: Basic Books.
- Bradley, S. J. (1979). The relationship of early maternal separation to borderline personality in children and adolescents: A pilot study. *American Journal of Psychiatry*, 136, 424–426.
- Bradshaw, D. L., Goldsmith, H. H., & Campos, J. J. (1987). Attachment, temperament, and social referencing: Interrelationships among three domains of infant affective behavior. *Infant Behavior and Development*, 10, 223–231.
- Brennan, K. A., & Shaver, P. R. (1998). Attachment styles and personality disorders: Their connections to each other and to parental divorce, parental death, and perceptions of parental caregiving. *Journal of Personality*, 66, 835–878.
- Buchheim, A., George, C., & Walter, H. (2003). *Neural correlates of attachment representation in borderline patients*. Paper presented at the Society for Personality Assessment Midwinter Meeting, March 19–23, San Francisco, CA.
- Buchheim, A., Strauss, B., & Kachele, H. (2002). The differential relevance of attachment classification for psychological disorders. *Psychotherapy, Psychosomatic Medicine, and Psychology*, 52, 128–133.
- Buchheim, A., & Walter, H. (2002). Neural correlates of attachment patterns using fMRI. *Psychotherapy, Psychosomatic Medicine, and Psychology*, 52, 82.
- Carlson, L. A. (1998). Object relational and attachment status in eating disordered women and professional dancers. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 59, 1361.
- Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology*, 25, 525–531.
- Chess, S., & Thomas, A. (1982). Infant bonding: Mystique and reality. *American Journal of Orthopsychiatry*, 52, 213–222.
- Cicchetti, D., & Cohen, D. J. (Eds.). (1995). *Perspectives on developmental psychopathology: Developmental psychopathology, Vol. 1: Theory and methods*. Wiley series on personality processes (pp. 3–20). Oxford: Wiley.
- Clarkin, J. F. (1996). Treatment of personality disorders. *British Journal of Clinical Psychology*, 35, 641–642.
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58, 644–663.
- Conklin, C. Z., & Westen, D. (2005). Borderline personality disorder in clinical practice. *American Journal of Psychiatry*, 162, 867–875.
- Crandell, L. E., Patrick, M. P. H., & Hobson, P. (2003). “Still-Face” interactions between mothers with borderline personality disorder and their 2-month-old infants. *British Journal of Psychiatry*, 183, 239–247.
- Crockenberg, S. B. (1981). Infant irritability, mother responsiveness, and social support influences on the security of infant–mother attachment. *Child Development*, 52, 857–865.
- Crockenberg, S., & McCluskey, K. (1986). Change in maternal behavior during the baby’s first year of life. *Child Development*, 57, 746–753.
- Danon, G., & Graignic (2003, April). *Borderline personality disorder and mother–infant interaction*. Poster presented at the Society for Child Development, Atlanta, GA.
- DeMulder, E. K., Tarulla, L. B., Klimes–Dougan, B., Free, K., & Radke–Yarrow, M. (1995). Personality disorders of affectively ill mothers: Links to maternal behavior. *Journal of Personality Disorders*, 9, 199–212.
- Depue, R. A., & Lenzenweger, M. F. (2001). A Neurobehavioral dimensional model. In J. W. Livesley (Ed.), *Handbook of personality disorders: Theory, research,*

- and treatment (pp. 136–176). New York: Guilford Press.
- Derryberry, D., & Rothbart, M. K. (1988). Arousal, affect and attention as components of temperament. *Journal of Personality and Social Psychology*, *55*, 958–966.
- Diamond, D., Clarkin, J., Levine, H., Levy, K., Foelsch, P., & Yeomans, F. (1999). Borderline conditions and attachment: A preliminary report. *Psychoanalytic Inquiry*, *19*, 831–884.
- Diamond, D., Stovall-McClough, C., Clarkin, J. F., & Levy, K. N. (2003). Patient–therapist attachment in the treatment of borderline personality disorder. *Bulletin of the Menninger Clinic*, *67*, 227–259.
- Dozier, M. (1990). Attachment organization and treatment use for adults with serious psychopathological disorders. *Development and Psychopathology*, *2*, 47–60.
- Dozier, M., Cue, K. L., & Barnett, L. (1994). Clinicians as caregivers: Role of attachment organization in treatment. *Journal of Consulting and Clinical Psychology*, *62*, 793–800.
- Dutton, D. G., Saunders, K., Starzomski, A., & Bartholomew, K. (1994). Intimacy–anger and insecure attachment as precursors of abuse in intimate relationships. *Journal of Applied Social Psychology*, *24*, 1367–1386.
- Egeland, B., & Farber, E. A. (1984). Infant–mother attachment: Factors related to its development and changes over time. *Child Development*, *55*, 753–771.
- Espinosa, M., Beckwith, L., Howard, J., Tyler, R., & Swanson, K. (2001). Maternal psychopathology and attachment in toddlers of heavy cocaine—Using mothers. *Infant Mental Health Journal*, *22*, 316–333.
- Eurelings–Bontekoe, E. M., Verschuur, M. J., & Schreuder, B. (2003). Personality, temperament, and attachment style among offspring of WWII victims: An integration of descriptive and structural features of personality. *Traumatology*, *9*, 106–122.
- Feldman, R. B., Zerkowicz, P., Weiss, M., Vogel, J., Heyman, M., & Paris, J. (1995). A comparison of the families of mothers with borderline and nonborderline personality disorders. *Comprehensive Psychiatry*, *36*, 157–163.
- Fonagy, P. (2001). The human genome and the representational world: The role of early mother–infant interaction in creating an interpersonal interpretive mechanism. *Bulletin of the Menninger Clinic*, *65*, 427–448.
- Fonagy, P., Gergely, G., Jurist, E. L., & Target, M. (2002). *Affect regulation, mentalization, and the development of the self*. New York: Other Press.
- Fonagy, P., Leigh, T., Steele, M., Steele, H., Kennedy, R., Mattoon, G., et al. (1996). The relation of attachment status, psychiatric classification and response to psychotherapy. *Journal of Consulting and Clinical Psychology*, *64*, 22–31.
- Fossati, A., Donati, D., Donini, M., Novella, L., Bagnato, M., & Maffei, C. (2001). Temperament, character, and attachment patterns in borderline personality disorder. *Journal of Personality Disorders*, *15*, 390–402.
- Fossati, A., Feeney, J. A., Donati, D., Donini, M., Novella, L., Bagnato, M., et al. (2003). On the dimensionality of the Attachment Style Questionnaire in Italian clinical and nonclinical participants. *Journal of Social and Personal Relationships*, *20*, 55–79.
- Fox, N. A., Kimmerly, N. L., & Schafer, W. D. (1991). Attachment to mother/attachment to father: A meta-analysis. *Child Development*, *62*, 210–225.
- Frodi, A., & Thompson, R. (1985). Infants' affective responses in the strange situation: Effects of prematurity and of quality of attachment. *Child Development*, *56*, 1280–1290.
- George, C., Kaplan, N., & Main, M. (1985). *The Berkeley Adult Attachment Interview*. Unpublished Manuscript, University of California, Berkeley, Department of Psychology.
- Goldberg, R. L., Mann, L. S., Wise, T. N., & Segall, E. A. (1985). Parental qualities as perceived by borderline personality disorders. *Hillside Journal of Clinical Psychiatry*, *7*, 134–140.
- Golomb, A., Ludolph, P., Westen, D., Block, J., Maurer, P., & Wiss, F. C. (1994). Maternal empathy, family chaos, and the etiology of borderline personality disorder. *Journal of the American Psychoanalytic Association*, *42*, 525–548.
- Grienberger, J., Kelly, K. M., & Slade, A. (in press). The relation between maternal reflective function and parenting behavior. *Infant Mental Health Journal*.
- Griffin, D., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology*, *67*, 430–445.
- Grinker, R. R., Werble, B., & Drye, R. C. (1968). *The borderline syndrome: A behavioral study of ego-functions*. New York: Basic Books.
- Gross, R., Olsson, M., Gameroff, M., Shea, S., Feder, A., Fuentes, M., et al. (2002). Borderline personality disorder in primary care. *Archives of Internal Medicine*, *162*, 53–60.
- Gunderson, J. G. (1996). Borderline patient's intolerance of aloneness: Insecure attachments and therapist availability. *American Journal of Psychiatry*, *153*, 752.
- Gunderson, J. G., Kerr, J., & Englund, D. W. (1980). The diagnostic interview for borderline patients. *American Journal of Psychiatry*, *138*, 896–903.
- Gunderson, J. G., & Zanarini, M. C. (1989). Pathogenesis of borderline personality. *American Psychologist: Press Review of Psychiatry*, *8*, 25–48.
- Gunnar, M. R., Brodersen, L., Nachmias, M., Buss, K., & Rigatuso, J. (1996). Stress reactivity and attachment security. *Developmental Psychobiology*, *29*, 191–204.
- Gunnar, M. R., Mangelsdorf, S., Larson, M., & Hertsgaard, L. (1989). Attachment, temperament, and adrenocortical activity in infancy: A study of psychoneuroendocrine regulation. *Developmental Psychology*, *25*, 355–363.
- Gurvits, I. G., Koenigsberg, H. W., & Siever, L. J. (2000). Neurotransmitter dysfunction in patients with borderline personality disorder. *Psychiatric Clinics of North America*, *23*, 27–40.
- Guttman, H. A., & Laporte, L. (2000). Empathy in families of women with borderline personality disorder, anorexia nervosa, and a control group. *Family Process*, *39*, 345–358.
- Hamilton, C. E. (2000). Continuity and discontinuity of attachment from infancy through adolescence. *Child Development*, *71*, 690–694.
- Handley, R. B., & Swenson, C. R. (1989). Acting out of separation conflicts in borderline pathology: Empirical case study. *Bulletin of the Menninger Clinic*, *53*, 18–30.
- Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511–524.
- Heffernan, K., & Cloitre, M. (2000). A comparison of posttraumatic stress disorder with and without border-

- line personality disorder among women with a history of childhood sexual abuse: Etiological and clinical characteristics. *Journal of Nervous and Mental Disease*, 188, 589–595.
- Hertsgaard, L., Gunnar, M., Erickson, M. F., & Nachmias, M. (1995). Adrenocortical responses to the Strange Situation in infants with disorganized/disoriented attachment relationships. *Child Development*, 66, 1100–1106.
- Hesse, E. (1996). Discourse, memory, and the Adult Attachment Interview: A note with emphasis on the emerging cannot classify category. *Infant Mental Health Journal*, 17, 4–11.
- Hesse, E. (1999). The Adult Attachment Interview: Historical and current perspectives. In P. R. Shaver & J. Cassidy (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 395–433). New York: Guilford Press.
- Hesse, E., & Main, M. (2000). Disorganized infant, child, and adult attachment: Collapse in behavioral and attentional strategies. *Journal of the American Psychoanalytic Association*, 48, 1097–1127.
- Hesse, E., & van IJzendoorn, M. H. (1998). Parental loss of close family members and propensities towards absorption in offspring. *Developmental Science*, 1, 299–305.
- Hobson, R. P., Patrick, M., Crandell, L., García-Pérez, R., & Lee, A. (2005). Personal relatedness and attachment in infants of mothers with borderline personality disorder. *Development and Psychopathology*, 17, 329–347.
- Hoermann, S., Clarkin, J. F., Hull, J. W., & Fertuck, E. A. (2004). Attachment dimensions as predictors of medical hospitalizations in individuals with DSM-IV Cluster B personality disorders. *Journal of Personality Disorders*, 18, 595–603.
- Holmes, J. (1996). *Attachment, intimacy, autonomy: Using attachment theory in adult psychotherapy*. Northvale, NJ: Jason Aronson.
- Holmes, J. (2003). Borderline personality disorder and the search for meaning: An attachment perspective. *Australia–New Zealand Journal of Psychiatry*, 37, 524–531.
- Holmes, J. (2004). Disorganized attachment and borderline personality disorder: A clinical perspective. *Attachment and Human Development*, 6, 181–190.
- Kagan, J. (1982). The construct of difficult temperament: A reply to Thomas, Chess, and Korn. *Merrill–Palmer Quarterly*, 28, 21–24.
- Kagan, J. (1985). The human infant. In C. J. Scheirer & A. M. Rogers (Eds.), *The G. Stanley Hall lecture series* (Vol. 5, pp. 55–86). Washington, DC: American Psychological Association.
- Kassen, S., Cohen, P., Skodol, A. E., Johnson, J. G., Smailes, E., & Brook, J. S. (2001). Childhood depression and adult personality disorder: Alternative pathways of continuity. *Archives of General Psychiatry*, 58, 231–236.
- Kelly, K. M., Ueng–McHale, J., Grienberger, J., & Slade, A. (2003, April). Atypical maternal behaviors and their relation to infant attachment disorganization. Presented at the Biennial Meeting of the Society for Child Development, Atlanta, GA.
- Kernberg, O. F. (1984). *Severe personality disorders*. New Haven, CT: Yale University Press.
- Kjellander, C., Bongar, B., & King, A. (1998). Suicidality in borderline personality disorder. *Crisis*, 19, 125–135.
- Kobak, R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. *Child Development*, 59, 135–146.
- Kwok, O., Haine, R. A., Sandler, I. N., Ayers, T. S., Wolchik, S. A., & Tein, J. (2005). Positive parenting as a mediator of the relations between parental psychological distress and mental health problems of parentally bereaved children. *Journal of Clinical Child and Adolescent Psychology*, 34, 260–271.
- Lakatos, S., Cook, P. C., & Scavone, G. P. (2000). Selective attention to the parameters of a physically informed sonic model. *Journal of the Acoustical Society of America*, 107, L31–L36.
- Lakatos, K., Nemoda, Z., Toth, I., Ronai, Z., Ney, K., Sasvari–Szekely, M., et al. (2002). Further evidence for the role of the dopamine D4 receptor (DRD4) gene in attachment disorganization: Interaction of the exon III 48-bp repeat and the -521 C/T promoter polymorphisms. *Molecular Psychiatry*, 7, 27–31.
- Lamb, M. E., Thompson, R. A., Gardner, W. P., Charnov, E. L., & Estes, D. (1984). Security of infantile attachment as assessed in the “strange situation”: Its study and biological interpretation. *Behavioral and Brain Sciences*, 7, 127–171.
- Lenzenweger, M. F., Clarkin, J. F., Kernberg, O. F., & Foelsch, P. A. (2001). The Inventory of Personality Organization: Psychometric properties, factorial composition, and criterion relations with affect, aggressive dyscontrol, psychosis proneness, and self-domains in a nonclinical sample. *Psychological Assessment*, 13, 577–591.
- Lenzenweger, M., Loranger, A., Korfine, L., & Neff, C. (1997). Detecting personality disorders in a nonclinical population: Application of a 2-stage for case identification. *Archives of General Psychiatry*, 54, 345–351.
- Levinson, A., & Fonagy, P. (2004). Offending and attachment: The relationship between interpersonal awareness and offending in a prison population with psychiatric disorder. *Canadian Journal of Psychoanalysis*, 12, 225–251.
- Levy, K., & Blatt, S. (1999). Attachment theory and psychoanalysis: Further differentiation within insecure attachment patterns. *Psychoanalytic Inquiry*, 19, 541–575.
- Levy, K. N. (1993, May). *Adult attachment styles and personality pathology*. New research presented at the 1993 American Psychiatric Association Annual Meeting, San Francisco, CA.
- Levy, K. N., Blatt, S. J., & Shaver, P. R. (1998). Attachment styles and parental representations. *Journal of Personality and Social Psychology*, 74, 407–419.
- Levy, K. N., & Clarkin, J. F. (2005). *Attachment and borderline personality disorder*. Unpublished manuscript. Cornell University, Ithaca, NY.
- Levy, K. N., Kelly, K. M., Meehan, K. B., Reynoso, J. S., Clarkin, J. F., & Kernberg, O. F. (in press). Change in attachment organization during the treatment of borderline personality disorder. *Journal of Consulting and Clinical Psychology*.
- Levy, K. N., Meehan, K. B., Weber, M., Reynoso, J., & Clarkin, J. F. (2005). Attachment and borderline personality disorder: Implications for psychotherapy. *Psychopathology*, 38, 64–74.
- Linehan, M. M. (1993). *Cognitive behavioral treatment of borderline personality disorder*. New York: Guilford Press.
- Links, P. S. (Ed.). (1990). *Family environment and borderline personality disorder*. *Progress in psychiatry*

- series. Washington, DC: American Psychiatric Association.
- Links, P. S., Steiner, M., Offord, D. R., & Eppel, A. B. (1988). Characteristics of borderline personality disorder: A Canadian study. *Canadian Journal of Psychiatry, 33*, 336–340.
- Liotti, G. (2000). Disorganized attachment, models of borderline states and evolutionary psychotherapy. In K. G. Bailey & P. Gilbert (Eds.), *Genes on the couch: Explorations in evolutionary psychotherapy* (pp. 232–256). New York: Brunner–Routledge.
- Liotti, G., & Pasquini, P. (2000). Italian Group for the study of dissociation. Predictive factors for borderline personality disorder: Patients' early traumatic experiences and losses suffered by the attachment figure. *Acta Psychiatrica Scandinavica, 102*, 282–289.
- Lyons–Ruth, K., Connell, D. B., Grunebaum, H. U., & Botein, S. (1990). Infants at social risk: Maternal depression and family support services as mediators of infant development and security of attachment. *Child Development, 61*, 85–98.
- Lyons–Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2005). Expanding the concept of unresolved mental states: Hostile/helpless states of mind on the Adult Attachment Interview are associated with disrupted mother–infant communication and infant disorganization. *Development and Psychopathology, 17*, 1–23.
- Macfie, J., Rivas, E., Engle, J., Hamilton, S., & Rathjen, R. (2005, April). *Effect of maternal borderline personality disorder on preschoolers' narrative representations*. Poster presented at the Biennial Meeting of the Society for Research in Child Development, Atlanta, GA.
- Main, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) vs. multiple (incoherent) model of attachment: Findings and directions for future research. In J. Stevenson–Hinde & C. M. Parkes (Eds.), *Attachment across the life cycle* (pp. 127–159). New York: Tavistock/Routledge.
- Main, M. (1999). Mary D. Salter Ainsworth: Tribute and portrait. *Psychoanalytic Inquiry, 19*, 682–736.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development, 50*, 66–104.
- Main, M., & Solomon, J. (1986). Discovery of an insecure–disorganized/disoriented attachment pattern. In M. W. Yogman & T. B. Brazelton (Eds.), *Affective development in infancy* (pp. 95–124). Westport, CT: Ablex Publishing.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research and intervention* (pp. 95–124). Chicago: University of Chicago Press.
- Manassis, K., Bradley, S., Goldberg, S., Hood, J., & Swinson, R. P. (1994). Attachment in mothers with anxiety disorders and their children. *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, 1106–1113.
- Mangelsdorf, S., Gunnar, M., Kestenbaum, R., Lang, S., & Andreas, D. (1990). Infant proneness-to-distress temperament, maternal personality, and mother–infant attachment: Associations and goodness of fit. *Child Development, 61*, 820–831.
- McGlashan, T. H. (1986). The Chestnut Lodge follow-up study: III. Long-term outcome of borderline personalities. *Archives of General Psychiatry, 43*, 20–30.
- Meyer, B., Pilkonis, P. A., Proietti, J. M., Heape, C. L., & Egan, M. (2001). Attachment styles and personality disorders as predictors of symptom course. *Journal of Personality Disorders, 15*, 371–389.
- Millon, T. (1992). Millon Clinical Multiaxial Inventory: I and II. *Journal of Counseling and Development, 70*, 421–426.
- Nachmias, M., Gunnar, M., Mangelsdorf, S., Parritz, R. H., & Buss, K. (1996). Behavioral inhibition and stress reactivity: The moderating role of attachment security. *Child Development, 67*, 508–522.
- Nakash–Eisikovits, O., Dutra, L., & Westen, D. (2002). Relationship between attachment patterns and personality pathology in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 1111–1123.
- Nickell, A. D., Waudby, C. J., & Trull, T. J. (2002). Attachment, parental bonding and borderline personality disorder features in young adults. *Journal of Personality Disorders, 16*, 148–159.
- O'Connor, M. J., Sigman, M., & Brill, N. (1987). Disorganization of attachment in relation to maternal alcohol consumption. *Journal of Consulting and Clinical Psychology, 55*, 831–836.
- O'Connor, T. G., & Croft, C. M. (2001). A twin study of attachment in preschool children. *Child Development, 72*, 1501–1511.
- Ogata, S. N., Silk, K. R., & Goodrich, S. (1990). The childhood experience of the borderline patient. Progress in psychiatry series. In P. S. Links (Ed.), *Family environment and borderline personality disorder* (pp. 87–103). Washington, DC: American Psychiatric Association.
- Oldham, J., Clarkin, J., Appelbaum, A., Carr, A., Kernberg, P., Lotterman, A., et al. (1985). A self-report instrument for borderline personality organization. In T. H. McGlashan (Ed.), *The borderline: Current empirical research* (pp. 1–18). Washington, DC: American Psychiatric Association.
- Paris, J. (2004). Sociocultural factors in the treatment of personality disorders. In *Handbook of personality disorders: Theory and practice* (pp. 135–147). New York: Wiley.
- Paris, J., Nowlis, D., & Brown, R. (1988). Developmental factors in the outcome of borderline personality disorder. *Comprehensive Psychiatry, 29*, 147–151.
- Paris, J., & Zweig–Frank, H. (2001). The 27-year follow-up of patients with borderline personality disorder. *Comprehensive Psychiatry, 42*, 482–487.
- Paris, J., Zweig–Frank, H., & Guzder, J. (1994). Psychological risk factors for borderline personality disorder in female patients. *Comprehensive Psychiatry, 35*, 301–305.
- Parker, G., Tupling, H., & Brown, L. B. (1979). A Parental Bonding Instrument. *British Journal of Medical Psychology, 52*, 1–10.
- Patrick, M., Hobson, P., Castle, D., Howard, R., & Maughan, B. (1994). Personality disorder and the mental representation of early social experience. *Development and Psychopathology, 6*, 375–388.
- Pfeffer, C. R., Martins, P., Mann, J., Sunkenberg, M., Ice, A., Damore, J. P., Jr., et al. (1997). Child survivors of suicide: Psychosocial characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 65–74.

- Pilkonis, P. A. (1998). Personality prototypes among depressives: Themes of dependency and autonomy. *Journal of Personality Disorders, 2*, 144–152.
- Posner, M. I., Rothbart, M. K., Vizueta, N., Thomas, K. M., Levy, K. N., Silbersweig, D., et al. (2003). An approach to the psychobiology of personality disorders. Special Experiments of nature: Contributions to developmental theory. *Development and Psychopathology, 15*, 1093–1106.
- Radke-Yarrow, M., Cummings, M., Kuczynski, L., & Chapman, M. (1985). Patterns of attachment in two- and three-year-olds in normal families and families with parental depression. *Child Development, 56*, 884–893.
- Reich, B., & Zanarini, M. C. (2001). Developmental aspects of borderline personality disorder. *Harvard Review of Psychiatry, 9*, 294–301.
- Ricciuti, A. (1992). Child–mother attachment: A twin study. *Dissertation Abstracts International, 54*, 3364.
- Rodning, C., Beckwith, L., & Howard, J. (1991). Quality of attachment and home environments in children prenatally exposed to PCP and cocaine. *Development and Psychopathology, 3*, 351–366.
- Rosenstein, D. S., & Horowitz, H. A. (1996). Adolescent attachment and psychopathology. *Journal of Consulting and Clinical Psychology, 64*, 244–253.
- Rutter, M. (1989). Psychiatric disorder in parents as a risk factor for children. In D. Schaffer (Ed.), *Prevention of mental disorder, alcohol and other drug use in children and adolescents*. Rockville, MD: Office for Substance Abuse, USDHHS.
- Rutter, M., & Quinton, D. (1984). Parental psychiatric disorder: Effects on children. *Psychological Medicine, 14*, 853–880.
- Sack, A., Sperling, M. B., Fagen, G., & Foelsch, P. (1996). Attachment style, history, and behavioral contrasts for a borderline and normal sample. *Journal of Personality Disorders, 10*, 88–102.
- Salzman, J. P. (1988). *Primary attachment in female adolescents: An extension of Bowlby's perspective*. Unpublished doctoral dissertation, Harvard University.
- Salzman, J. P., Salzman, C., & Wolfson, A. N. (1997). Relationship of childhood abuse and maternal attachment to the development of borderline personality disorder. In M. Zanarini (Ed.), *Role of sexual abuse in the etiology of borderline personality disorder* (pp. 71–91). Washington, DC: American Psychiatric Association.
- Seifer, R., Sameroff, A. J., Dickstein, S., Keitner, G., & Miller, I. (1996). Parental psychopathology, multiple contextual risks, and one-year outcomes in children. *Journal of Clinical Child Psychology, 25*, 423–435.
- Seifer, R., Schiller, M., Sameroff, A. J., Resnick, S., & Riordan, K. (1996). Attachment, maternal sensitivity, and infant temperament during the first year of life. *Developmental Psychology, 32*, 12–25.
- Shedler, J., & Block, J. (1990). Adolescent drug use and psychological health. A longitudinal inquiry. *American Psychologist, 45*, 612–630.
- Skodol, A. E., Gunderson, J. G., Livesley, W. J., Pfohl, B., Siever, L. J., & Widiger, T. A. (2002). The borderline diagnosis from the perspectives of psychopathology, comorbidity, personality structure, biology, genetics, and course. *Biological Psychiatry, 51*, 936–950.
- Soloff, P. H., & Millward, J. W. (1983). Developmental histories of borderline patients. *Comprehensive Psychiatry, 24*, 574–588.
- Spangler, G., & Schieche, M. (1994). Biobehavioral organization in one-year-olds: Quality of mother–infant attachment and immunological and adrenocortical regulation. *Psychologische Beiträge, 36*, 30–35.
- Sperling, M. B., Sharp, J. L., & Fishler, P. H. (1991). On the nature of attachment in a borderline population: A preliminary investigation. *Psychological Reports, 68*, 543–546.
- Sroufe, A., & Waters, E. (1977). Heart rate as a convergent measure in clinical and developmental research. *Merrill–Palmer Quarterly, 23*, 3–27.
- Stalker, C. A., & Davies, F. (1995). Attachment organization and adaptation in sexually-abused women. *Canadian Journal of Psychiatry, 40*, 234–240.
- Steele, H., Steele, M., & Fonagy, P. (1996). Associations among attachment classifications of mothers, fathers, and their infants. *Child Development, 67*, 541–555.
- Stern, B. L. (1998). *The clinical utility of adult attachment models in predicting interpersonal adjustment*. Paper presented at the Annual Conference of the American Psychological Association, San Francisco, CA.
- Stevenson-Hinde, J., & Marshall, P. J. (1999). Behavioral inhibition, heart period, and respiratory sinus arrhythmia: An attachment perspective. *Child Development, 70*, 805–816.
- Stone, M. (1983). Psychotherapy with schizotypal borderline patients. *Journal of the American Academy of Psychoanalysis and Dynamic Psychiatry, 11*, 87–111.
- Stovall-McClough, K. C., & Cloitre, M. (2003). Reorganization of unresolved childhood traumatic memories following exposure therapy. *Annals of the New York Academy of Sciences, 1008*, 297.
- Teti, D., Gelfand, D., Messinger, D., & Isabella, R. (1995). Maternal depression and the quality of early attachment: An examination of infants, preschoolers, and mothers. *Developmental Psychology, 31*, 364–376.
- Teti, D. M., Nakagawa, M., Das, R., & Wirth, O. (1991). Security of attachment between preschoolers and their mothers: Relations among social interaction, parenting stress, and mother's sorts of the Attachment Q-Set. *Developmental Psychology, 27*, 440–447.
- Thompson, R. A., & Lamb, M. E. (1984). Assessing qualitative dimensions of emotional responsiveness in infants: Separation reactions in the strange situation. *Infant Behavior and Development, 7*, 423–445.
- Torgersen, S., Kringlen, E., & Cramer, V. (2001). The prevalence of personality disorders in a community sample. *Archives of General Psychiatry, 58*, 590–596.
- Trull, T. J. (2001a). Structural relations between borderline personality disorder features and putative etiological correlates. *Journal of Abnormal Psychology, 110*, 471–481.
- Trull, T. J. (2001b). Relationships of borderline features to parental mental illness, childhood abuse, Axis I disorder, and current functioning. *Journal of Personality Disorders, 15*, 19–32.
- Tweed, R. G., & Dutton, D. G. (1998). A comparison of impulsive and instrumental subgroups of batterers. *Violence and Victims, 13*, 217–230.
- Tyrrell, C. L., Dozier, M., Teague, G. B., & Fallot, R. D. (1999). Effective treatment relationships for persons with serious psychiatric disorders: The importance of attachment states of mind. *Journal of Consulting and Clinical Psychology, 67*, 725–733.
- Vandell, D. L., Owen, M. T., Wilson, K. S., & Henderson, V. K. (1988). Social development in infant twins: Peer and mother–child relationships. *Child Development, 59*, 168–177.

- van den Boom, D. C. (1989). Neonatal irritability and the development of attachment. In J. E. Bates & G. Kohnstamm (Eds.), *Temperament in childhood* (pp. 299–318). Oxford: Wiley.
- van den Boom, D. C. (1994). The influence of temperament and mothering on attachment and exploration: An experimental manipulation of sensitive responsiveness among lower-class mothers with irritable infants. *Child Development, 65*, 1457–1477.
- van den Boom, D. C. (1995). Do first-year intervention effects endure? Follow-up during toddlerhood of a sample of Dutch irritable infants. *Child Development, 66*, 1798–1816.
- van IJzendoorn, M. H. (1992). Intergenerational transmission of parenting: A review of studies in nonclinical populations. *Developmental Review, 12*, 76–99.
- van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (in press). Attachment representations in mothers, fathers, adolescents, and clinical groups: A meta-analytic search for normative data. *Journal of Consulting and Clinical Psychology, 64*, 8–21.
- van IJzendoorn, M. H., Feldbrugge, J., Derks, F., de Ruiter, C., et al. (1997). Attachment representations of personality-disordered criminal offenders. *American Journal of Orthopsychiatry, 67*, 449–459.
- Vaughn, B. E., & Bost, K. K. (1999). Attachment and temperament: Redundant, independent, or interacting influences on interpersonal adaptation and personality development? In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 198–225). New York: Guilford Press.
- Vaughn, B. E., Lefever, G. B., Seifer, R., & Barglow, P. (1989). Attachment behavior, attachment security, and temperament during infancy. *Child Development, 60*, 728–737.
- Waller, N. G., & Shaver, P. R. (1994). The importance of nongenetic influences on romantic love styles: A twin-family study. *Psychological Science, 5*, 268–274.
- Wallis, P., & Steele, H. (2001). Attachment representations in adolescence: Further evidence from psychiatric residential settings. *Attachment and Human Development, 3*, 259–268.
- Walsh, F. (1977). The family of the borderline patient. In R. R. Grinker & B. Werble (Eds.), *The borderline patient* (pp. 153–177). New York: Jason Aronson.
- Waters, E., Hamilton, C. E., & Weinfield, N. S. (2000). The stability of attachment security from infancy to adolescence and early adulthood. *General Introduction Child Development, 71*, 678–683.
- Waters, E., Vaughn, B. E., & Egeland, B. R. (1980). Individual differences in infant–mother attachment relationships at age one: Antecedents in neonatal behavior in an urban, economically disadvantaged sample. *Child Development, 51*, 208–216.
- Weaver, T. L., & Clum, G. A. (1993). Early family environments and traumatic experiences associated with borderline personality disorder. *Journal of Consulting and Clinical Psychology, 61*, 1068–1075.
- Weinfield, N. S., Sroufe, L. A., & Egeland, B. (2000). Attachment from infancy to young adulthood in a high-risk sample: Continuity, discontinuity and their correlates. *Child Development, 71*, 695–702.
- Weiss, M., Zerkowicz, P., Feldman, R. B., Vogel, J., Heyman, M., & Paris, J. (1996). Psychopathology in offspring of mothers with borderline personality disorder: A pilot study. *Canadian Journal of Psychiatry, 41*, 285–290.
- West, M., Keller, A., Links, P. S., & Patrick, J. (1993). Borderline disorder and attachment pathology. *Canadian Journal of Psychiatry, 38*(Suppl. 1), 16–22.
- Yates, T. M., & Carlson, E. (2003, April). *Fragile foundations: The developmental antecedents of self-injurious behavior*. Paper presented at the Biennial Meeting of the Society of Research in Child Development, Tampa, FL.
- Yeomans, F. E., & Levy, K. N. (2002). An object relations perspective on borderline personality disorder. *Acta Neuropsychiatrica, 14*, 76–80.
- Zanarini, M. C., & Frankenburg, F. R. (2001). Attainment and maintenance of reliability of Axis I and II disorders over the course of a longitudinal study. *Comprehensive Psychiatry, 42*, 369–374.
- Zanarini, M. C., Frankenburg, F. R., Reich, D., Marino, M. F., Haynes, M. C., & Gunderson, J. G. (1999). Violence in the lives of adult borderline patients. *Journal of Nervous and Mental Disease, 187*, 65–71.
- Zanarini, M. C., Gunderson, J. G., Marino, M. F., Schwartz, E. O., & Frankenburg, F. R. (1989). Childhood experiences of borderline patients. *Comprehensive Psychiatry, 30*, 18–25.
- Zanarini, M. C., Gunderson, J. G., Marino, M. F., Schwartz, E. O., & Frankenburg, F. R. (1988). *DSM-III disorders in the families of borderline outpatients. Journal of Personality Disorders, 2*, 292–302.
- Zweig-Frank, H., & Paris, J. (1991). Parents emotional neglect and over-protection according to the recollections of patients with borderline personality disorder. *American Journal of Psychiatry, 148*, 648–651.