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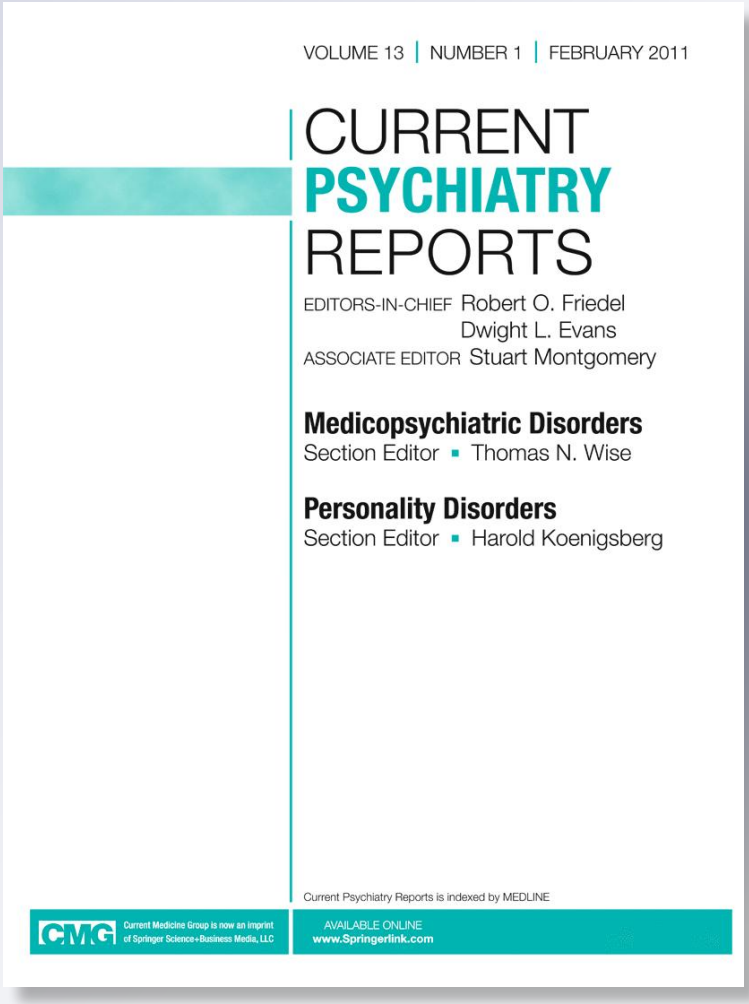

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Attachment and its Vicissitudes in Borderline Personality Disorder

Kenneth N. Levy · Joseph E. Beeney · Christina M. Temes

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Abstract This article reviews the recent literature on attachment and attachment-related constructs in borderline personality disorder, with attention given to how recent findings in this area may inform understanding of the mechanisms underlying the etiology, maintenance, and treatment of the disorder. Most findings on this topic have stemmed from three major areas of research, each of which is reviewed in this article: 1) developmental psychopathology studies; 2) experimental psychopathology studies, particularly those using a neuroscience approach; and 3) treatment studies that have examined variables relevant to attachment. Overall, these findings suggest that attachment and related constructs may factor greatly into the underlying psychopathology of borderline personality disorder and may significantly impact the process and outcome of psychotherapy for the disorder. These findings are discussed as they relate to existing theories and ongoing debates in the field, and the implications for future research and clinical practice are highlighted.

Keywords Attachment · Borderline personality disorder · Developmental psychopathology · Neurobiology · Reflective processes · Interpersonal relationships · Psychotherapy

Introduction

Clinical researchers and theorists have begun to understand fundamental aspects of borderline personality disorder (BPD), such as unstable and intense interpersonal relationships, feelings of emptiness, bursts of rage, chronic fears of abandonment, intolerance of aloneness, and lack of a stable sense of self stemming from impairments in the underlying attachment organization [1–8]. These investigators have noted that the impulsivity, affective lability, and self-damaging actions that are the hallmark of BPD occur in an interpersonal context and are often precipitated by real or imagined events in relationships. For example, benign separations may be perceived as rejection, bids for intimacy may be seen as intrusive or engulfing, and differences of opinion may be seen as personal attacks [7, 9–11]. Thus, mood lability in BPD patients is often triggered by the misperception of subtle events in the environment. Once the mood state is obtained, it can rapidly lead to aggressive, impulsive, self-destructive, interpersonally intrusive, or extreme isolative behavior [7, 10–12]. Relatedly, investigators have begun to examine the clinical applications of attachment theory both theoretically [2, 4, 5, 13–23] and empirically [3, 24–30]. 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.

In the present article, we examine the literature over the past few years that is relevant to attachment and BPD, with an emphasis on important new findings that bear on prevailing theories and controversies. We focus on three areas in particular: 1) developmental psychopathology studies; 2) experimental psychopathology studies, particularly in the areas of neuroscience; and 3) psychotherapy and intervention science studies that have examined attachment constructs or attachment-relevant constructs in BPD. Finally, we summarize the implications and

K. N. Levy (✉) · J. E. Beeney · C. M. Temes
Department of Psychology, The Pennsylvania State University,
521 Moore Building,
University Park, PA 16802, USA
e-mail: klevy@psu.edu

principles that can be derived from the findings reviewed.

Developmental Psychopathology

Attachment and the Developmental Trajectory of Borderline Symptoms and Related Dysfunction

Findings from recent prospective, longitudinal studies on the development of BPD outline many potential antecedents of the disorder and highlight the importance of very early experience—particularly the parent–child relationship—in predicting later BPD symptomatology. In one study, Carlson and colleagues [31••] assessed participants on a variety of domains from infancy to adulthood and found that in addition to infant temperament and disposition, several early relational factors predicted adult BPD symptoms. In particular, disorganized infant attachment (18 months), maltreatment (12–18 months), maternal hostility and boundary confusion (18–42 months), family disruption related to presence of father (12–64 months), and overall family stress (3–42 months) were predictive of later borderline symptoms. Additionally, disturbances in emotion regulation, behavior, attention, relationship functioning, and self-representation in adolescence were also predictive of adult borderline symptoms. Using a similar design, Crawford and colleagues [32] examined the trajectory of BPD symptoms over time with a particular focus on the effect of maternal separations before age 5 years. Extended early separations lasting 1 month or more—particularly separations due to personal and professional reasons—were predictive of more BPD symptoms in adolescence and early adulthood, as well as slower developmental declines in symptoms. Difficult temperament in middle childhood, child abuse, and attachment anxiety and avoidance in adolescence were also predictive of adult BPD symptoms, with only temperament acting as a partial mediator between early separations and later symptoms. Thus, early attachment experiences, particularly coupled with constitutional vulnerabilities, appear to be robust predictors of later borderline personality pathology.

Consistent with some theoretical models of the development of BPD, both of the above studies highlight the central role of attachment and attachment representations in the development of the disorder [33, 34]. In particular, both studies suggest that disruption in early attachment relationships may influence later personality pathology by leading to a series of disturbed mental representations that are elaborated and consolidated over the life span. For example, Crawford and colleagues [32] posit that early mother–child separations may fill the child with confusion and that the child may blame himself or herself for these separations, ultimately contributing to disturbed representations of self and others (i.e., self as unworthy of love/attention, others as rejecting). Carlson and colleagues [31••] demonstrated that representations measured in childhood and adolescence mediated the relationship between infant attachment disorganization and adult BPD symptoms. This finding suggests that early disorganized attachment and related experiences may influence later personality pathology by affecting the quality of self–other representations. Conversely, the development of coherent and integrated representations may protect against disorganized attachment. This idea is consistent with findings from Fonagy and colleagues [3], who found that in a sample of clinical patients, individuals with high mentalizing ability were less likely to be unresolved for past traumatic experiences and, despite significant trauma histories, less likely to meet criteria for BPD.

Focus on adolescence and early adulthood has also been informative in elucidating the relationship between attachment and the development of symptoms related to BPD. For instance, measured in early adolescence, preoccupied attachment predicts increased sexual risk taking and aggressive behaviors over the course of adolescence, as well as steeper rates of growth in these behaviors [35]. Given the similarity of these behaviors to some of the core features of BPD (i.e., impulsivity, deficits in self-regulation), this pattern of findings suggests that preoccupied attachment could be related to the development of BPD. This finding is consistent with existing literature documenting the relatively high rate of preoccupied attachment in BPD [3, 30, 36]. Furthermore, more recent work has demonstrated that individuals with BPD score high on ratings of both preoccupied and fearful attachment compared with non-BPD controls, with the combination of these styles indicating specificity for BPD [37, 38]. Interestingly, in an investigation of potential pathways among attachment, personality features, and borderline symptoms, Scott and colleagues [39] found that trait impulsivity and negative affect fully mediate the relationship between attachment anxiety and BPD symptoms in young adults, suggesting that these temperamental traits may lead to BPD when they occur in the context of high levels of attachment anxiety.

Additional studies have used retrospective self-report methods in an attempt to further unpack the impact of early relational experiences on adult BPD. Findings from several studies have suggested that early abuse and neglect, particularly if perpetrated by close others, are predictive of adult BPD and may be disruptive for attachment and associated self–other representations [40–43]. Reviews of the existing literature on the relationship between trauma and BPD also suggest that biological and temperamental vulnerabilities combined with the experience of trauma may contribute to the development of personality pathology

specifically [40]. Other recent findings suggest that lack of parental responsiveness and disturbed parental communication in infancy predict dissociation in early adulthood, with childhood verbal abuse the only form of abuse that is additionally predictive [44]. Additionally, perceived emotional invalidation by parents in childhood has been found to mediate the relationship between BPD symptoms and romantic relationship dysfunction [45], suggesting that these early experiences may contribute to dysfunctional ideas about the self and social problem solving that may impact later relationships.

Recent research has also highlighted how attachment may play a role in more general domains related to borderline personality pathology (e.g., self-regulation and dissociation). Research on a polymorphism in the serotonin transporter gene (*5-HTTLPR*), wherein a short allele (homozygous or heterozygous) has been implicated in different areas of behavioral dysregulation, has been particularly fruitful in this regard. Kochanska and colleagues [46] found a robust interaction between infant attachment organization and this gene with regard to self-regulation in early childhood. Among those with the short *5-HTTLPR* allele, insecurely attached children showed poor regulatory capacities on behavioral tasks, whereas securely attached children showed stronger regulatory capacities that were equivalent to those with the homozygous long allele. There were no effects of attachment on self-regulation among children with the homozygous long allele. Zimmerman and colleagues [47] found a similar pattern in adolescents with regard to regulation of autonomy and aggression. In this sample, adolescents who had the short allele but were securely attached displayed more agreeable autonomy in interactions with their parents, whereas those who were insecurely attached displayed more hostile autonomy. This attachment difference was not observed in those with the long allele. Both of these studies suggest that attachment may impact expression of genes related to dysregulation; for example, attachment may moderate a genetic predisposition toward negative reactivity to perceived threats to autonomy. Additionally, findings from van IJzendoorn and colleagues [48] suggest that individuals with the short *5-HTTLPR* allele are more likely to show unresolved status with regard to trauma or loss, but only if they also display lower levels of methylation of the gene, suggesting that this effect is more likely to be expressed in the face of adverse environments [48]. In total, these results underline the notion that constitutional factors (e.g., temperament) and environmental factors (e.g., risk, trauma, and parenting) exert influence in relation to each other. Thus, individuals with high constitutional disadvantage likely have a lower threshold for environmental perturbations to overwhelm their capacity to assimilate and accommodate to their environment. Conversely, a child who has a low constitutional load may be resilient to greater perturbations and require greater disruption to develop BPD.

Parents with Borderline Personality Disorder, and Child Functioning

In an effort to better understand the development and transmission of the disorder, researchers recently have focused on the offspring of parents with BPD. Recent findings suggest that children of mothers with BPD display deficits in emotion regulation, distorted self–other representations, and later problems in psychosocial functioning. Additionally, mothers with BPD display atypical behaviors in interacting with their children that may impact child attachment and later functioning.

In an examination of the nature of interaction between mothers and their infant children during the "Strange Situation," Hobson and colleagues [49] found that a significantly greater proportion of mothers with BPD (as compared with mothers with depression or without a psychopathological diagnosis) displayed disruptive affective communication with their infants. With regard to specific atypical behaviors, in response to attachment bids by their infants, mothers with BPD tended to display frightened and disoriented behavior—behaviors that were very rare in mothers without BPD (even those with high levels of disruptive communication). The authors noted the concerning nature of this pattern of maternal behavior given that it is strongly associated with infant attachment disorganization and thus the aforementioned risks of this attachment pattern.

In a study using a story-stem completion measure to assess self–other representations and emotion regulation, children of mothers with BPD provided narratives about parent figures with significantly more role reversal, fear of abandonment, and negative parent–child relationship expectations than did children of mothers without BPD [50]. The children of mothers with BPD also provided narratives with more incongruent and shameful self-representations than did the comparison children. In terms of emotion regulation, children of mothers with BPD displayed significantly more reality/fantasy confusion, self/fantasy boundary confusion, fantasy proneness, intrusion of traumatic material, and lower narrative coherence compared with controls. In a study examining psychosocial functioning in a sample of adolescents [51], maternal BPD symptoms were significantly associated with adolescent self-perception of ability to make close friends and to be socially accepted, adolescent fearful attachment (using the Bartholomew prototypes), chronic stress in the parent–child relationship, and greater maternal hostility (as rated by the child). These associations remained significant after controlling for maternal history of depression and dysthymic

disorder, as well as youth depressive symptoms, indicating that maternal BPD symptoms may pose a risk factor for children that is independent of depression.

Neurobiology, Attachment, and Borderline Personality Disorder

Oxytocin and Interpersonal Relationships

While oxytocin is known to be involved in many behaviors that are disturbed among individuals with BPD, evidence is also accumulating concerning its role in promoting and maintaining attachment. Although few studies exist concerning the direct role of oxytocin in BPD, recent research has documented the effects of intranasal oxytocin administration in humans on various social behaviors and has begun to explore the effects of the neuropeptide on brain function. Much of this research may be critical to understanding the role of attachment in BPD.

A burgeoning area of research concerns the neurobiology of trust, a primary ingredient to secure attachment. Baumgartner and colleagues [52] recently extended previous findings on the moderating effects of oxytocin on trust. They found that oxytocin reduces behavioral adaptation (e.g., increased avoidance, mistrust) following experiences of betrayal of trust and that oxytocin led to reductions in activation in the amygdala, midbrain, and striatum—areas related to fear processing and adjusting behavior. Thus, oxytocin appears to decrease aversion to betrayal and thus willingness to continue to take social risks by calming activation in the amygdala and its input to the midbrain, as well as by decreasing implicit appraisal of reward salience of social encounters. Such details have clear links to BPD pathology. Not only do individuals with BPD show abnormalities to social stimuli in fear and reward-related neurocircuitry [53••], but they also perform poorly in games involving trust and betrayal [53]. A potential role of a disturbed oxytonergic system in BPD seems to be highlighted by the finding by Ditzen and colleagues [54] of a direct link between oxytocin and harmony in close relationships among healthy participants. Couples received placebo or oxytocin and completed a conflictual relationship exercise with their partner. Individuals receiving oxytocin exhibited more prosocial behaviors and after conflict, they had lower levels of salivary cortisol, a marker of hypothalamic-pituitary-adrenal axis stress activity. Thus, interpersonal conflict may be moderated by oxytocin, likely due to modulation of trust and level of defensiveness.

Additional research provides an even more richly detailed portrait of a potential oxytonergic role in the disorder. For instance, administering oxytocin to insecurely attached participants increases rankings of secure attachment characterizations of pictures portraying attachment situations [55]. The neuropeptide also has been shown to be involved in promoting accurate inference of others' mental states [56], an ability thought to be disturbed by insecure attachment [57] and among individuals with BPD. Potentially related, Theodoridou and colleagues [58] found that participants receiving oxytocin appraised faces of strangers as more trustworthy and attractive than those receiving placebo, which is important given that research has found that individuals with BPD show a markedly distinct tendency to identify anger in neutral faces [59]. Thus, disturbed oxytonergic function may be involved in a cluster of overlapping difficulties among individuals with BPD.

The limited amount of research on oxytocin within BPD seems to suggest a complex relationship between this neuropeptide and the disorder. While one preliminary study found, as expected, that administration of oxytocin reduces salivary cortisol in response to social stress among individuals with BPD [60], another study from this group found paradoxical results among individuals with BPD following oxytocin administration [61]. Using a variant of the prisoner's dilemma task, the researchers manipulated whether the partner in the trust game was perceived as cooperative or not. Healthy participants demonstrated more trust following oxytocin administration when they believed their partner was cooperative, which was consistent with previous reports. However, individuals with BPD tended to demonstrate behaviors consistent with mistrust when they perceived their partner as cooperative but demonstrated less mistrust with uncooperative partners. Stanley and Siever [62] interpreted this paradox as suggesting that individuals with BPD view relationships as competitive struggles rather than collaborative efforts, cooperating when a threat is apparent (uncooperative partner) and seeking to create maximum benefits for one's self when a partner is cooperative. Although more research is clearly needed, this interpretation seems to highlight a possible interaction between neurobiology and working models of relationships.

The results of another recent study may corroborate the role of differing working models of relationships among individuals with BPD [53]. Using a similar trust game, King-Casas et al. [53] found individuals with BPD sent social signals that caused recurrent breakdowns in cooperation and were less likely to send signals resulting in repair of cooperation. Although it may be likely that disruption in the oxytonergic system is involved in such difficulties, given that BPD participants demonstrated mistrust in the task and endorsed mistrust across a variety of situations, the authors identified activation in the bilateral insula, an area related to detecting norm violations, as particularly related to differences on this task. Healthy controls showed a strong inverse relationship between anterior insula activation

and the amount of money received from a partner, as well as the amount repaid to a partner. However, activity in the insula among BPD patients was not related to the amount of money received from partners. One interpretation is that individuals with BPD have a different set of expectations of social relationships (corresponding to different working models of relationships); thus, they do not detect a violation of social norms in response to a mistrustful exchange with a partner.

Disturbed Controlled and Reflective Processes in Borderline Personality Disorder

The results of the study by King-Casas and colleagues [53] also suggest that individuals with BPD demonstrate disruption in their ability to perceive and generate social behaviors involved in trust and cooperation. This is likely due to an impaired ability to understand their own behavior and the behavior of their partner in terms of mental states—an ability known as *mentalizing*. A burgeoning amount of research has identified various neuropsychological abnormalities, as well as structural and functional irregularities, associated with BPD. Extensive attention has been paid to compromised executive control in the disorder, and some researchers have examined evidence of impaired reflective capacities, such as mentalization. Interestingly, whereas some argue that executive control is both a temperamental variable and a result of development [63], Fonagy and Target [57] discuss a more central link between attachment and reflective capacity. Although the nature of the relationship is not yet fully clear, research has documented evidence of relationships between attachment and controlled and reflective processes, both of which may be important to understanding BPD.

Comparing BPD patients with controls, Minzenberg and colleagues [64] found that individuals with BPD showed marked deficits in executive control and memory, but further identified associations between executive control and attachment avoidance and memory and attachment anxiety. Furthermore, abuse history was related to impaired executive control, and neurocognitive deficits and abuse history exerted main and interactive effects in promoting attachment disturbance. The authors explain the findings as suggesting that attachment avoidance is a defensive effort among individuals with BPD to compensate for poor executive control and a tendency toward overintense involvement. Koenigsberg et al. [65•] provided a similar interpretation to their findings that individuals with BPD show reduced recruitment of brain areas underlying controlled processing while attempting psychological distancing from emotional stimuli. The authors suggest that such difficulties in achieving distance from socioemotional stimuli play a role in difficulties individuals with BPD have in relationships, including characteristic vacillation between overwhelming closeness and remoteness, a suggestion that again points to an interplay between executive control and attachment.

In another study, Koenigsberg and colleagues [65] demonstrated that in response to negative pictures, individuals with BPD show greater activation in areas such as the amygdala and primary visual areas, prompting the authors to suggest individuals with BPD activate a more reflexive circuit compared with the more reflective circuit used by controls. This work is consistent with other findings using heart rate measures [66], which found that individuals with BPD demonstrate less parasympathetic activity in response to emotional films. Greater parasympathetic activity promotes social engagement, whereas less is more indicative of preparedness for fight/flight. Furthermore, Levy and colleagues [67] have shown that attachment coherence and reflective function (RF) relate to neurocognition in terms of impulsivity and executive control. Lower RF and attachment coherence predict increased impulsivity and poorer executive control, particularly concept formation.

These findings are important given that most prominent treatments of BPD state a primary goal of greater self-reflection and less dependence on reflexivity. Additionally, while these deficits may indicate primary neurocognitive disturbances, which then influence attachment behaviors, it seems a worthy hypothesis that disturbed attachment experiences may affect neurocognition and reflective capacity. This is particularly important given recent literature on the neurophysiology of attachment insecurity, findings of improvements in both attachment security and mentalization over the course of psychotherapy [68], and a vast literature on the neurocognitive effects of abuse and neglect. A more thorough discussion of such interplay is beyond the scope of this article, but it is clear that additional research is needed in this area.

Psychotherapy and Intervention Science

Several clinical investigators have written about the usefulness of assessing attachment, in particular using the Adult Attachment Interview (AAI) to evaluate psychotherapy progress and outcome [69–71]. Although an increasing number of studies have examined attachment and related constructs in BPD, there have been relatively few psychotherapeutic studies of attachment in BPD. This is somewhat surprising given the convergent evidence that relationship dysfunction is the endophenotypic expression of BPD [72], and the value of targeting interpersonal functioning in its treatment.

Despite the paucity of research in this area, attachment theory and research and psychotherapy intersect in several

ways. First, both explicit and implicit attachment-based interventions exist. For instance, Fonagy and Bateman's mentalization-based therapy (MBT) is unambiguously based on attachment theory [8, 73, 74], whereas the transference-focused psychotherapy (TFP) of Levy et al. [75] may be conceived as an implicit attachment theory–based treatment. Second, attachment organization or style can be a moderator of treatment utilization, outcome, or dropout. In these studies, attachment organization or style can be conceptualized as a prognostic indicator of treatment outcome. Third, aptitude by specific treatment interaction (ATI) studies examine the degree to which outcome differs by attachment organization or style as a function of a specific treatment type. Such an approach can be used to examine whether a patient with a particular pattern of attachment would be better served in one treatment, whereas another patient with a different attachment pattern might be better served in another (i.e., a prescriptive indicator of treatment). McBride et al. [76] carried out such a study with depressed patients. Fourth, change in attachment could be examined as a mechanism of change or outcome [75].

With regard to attachment-based treatments for BPD, Fonagy and Bateman's MBT was derived from attachment theory and designed specifically for BPD. MBT has been examined in two published randomized controlled trials. Both studies showed excellent results. Comparing the effectiveness of an 18-month MBT partial hospitalization with standard psychiatric care, the authors found individuals treated with MBT demonstrated significantly greater reductions in suicide attempts; inpatient admissions; medication use; and self-report of depression, anxiety, distress, interpersonal functioning, and social adjustment [73]. In an outpatient trial, the researchers found decreases in similar outcomes among both MBT and structured clinical management, but patients receiving MBT showed sharper improvement over 18 months [8]. Bateman and Fonagy [74] also conducted a 5-year follow-up that found clear differences among treatments, including less suicidality among the MBT group (23% vs 74%), lower medication use, higher global functioning, and improved work functioning. In addition, only 13% of participants treated using MBT continued to meet threshold for BPD, compared with 87% in the control group. Although not explicitly based on attachment theory, much of Kernberg's theory of BPD is consistent with basic premises of attachment theory. Studies examining the outcome in TFP have shown its efficacy as well [77, 78]. Taken together, these studies suggest that an attachment-theoretical approach to the treatment of BPD is a potentially fruitful one. The aims of future investigations could be to confirm that the attachment-related components of these interventions are specifically related to change; in particular, designs aimed at prospectively examining mechanisms of change could be used (e.g., component-control studies of the aforementioned treatments). Relatedly, several treatments are not based on attachment theory but use principles that are consistent with attachment theory. For example, both dialectical behavior therapy and schema-focused psychotherapy are increasingly attending to and articulating the importance of attachment-related constructs for conceptualizing the clinical process with BPD patients [79, 80].

A handful of studies have examined change in attachment in BPD patients during the course of treatment. In our own work at the Personality Disorders Institute at Cornell University, changes in attachment organization and RF (i.e., the ability to mentalize) were assessed as putative mechanisms of change in one of three year-long psychotherapy treatments of patients with BPD [30, 81, 82]. In pilot work in 2005, Levy et al. (unpublished data) examined changes in attachment and RF using the AAI in 10 patients treated in a year-long course of TFP. We were able to show changes in both attachment and RF. Of the nine (90%) insecure patients, two became secure (22%), which resulted in 33% of the BPD patients being classified as secure. Of the six unresolved patients (60%), four (67%) lost their unresolved status, resulting in only 40% of the sample being unresolved after 1 year of treatment. We were also able to show significant increases in coherence and RF at the end of treatment [82].

In a randomized controlled trial, 90 reliably diagnosed patients with BPD were randomly assigned to TFP, dialectical behavior therapy, or a modified psychodynamic supportive psychotherapy [30]. Attachment organization was assessed using the AAI and the RF coding scale. After 12 months of treatment, there was a significant increase in the number of patients classified as secure in the TFP group, but not in the other two treatment groups. Specifically, only 1 (4.5%) of the 22 patients in the TFP group was classified as secure prior to treatment, whereas 7 (31.8%) were classified as secure by the end of treatment. By comparison, only one client in each of the other groups (i.e., dialectical behavior therapy and supportive psychotherapy) was classified as secure before and after treatment. Significant changes in narrative coherence and RF were found as a function of treatment, with TFP showing increases in both constructs during the course of treatment. Our findings are especially important given the literature showing that many treatments do not demonstrate specific effects on theory-driven mechanisms. Additionally, these findings are important in light of findings from neuroscience reviewed earlier in this article that suggest that those with BPD have deficits with regard to reflective thinking [65]. These findings indicate that these deficits can be targeted and rehabilitated in treatment.

To date, there is only one study in which researchers examined attachment as a moderator of treatment outcome in a sample of BPD patients. Fonagy and Tallandini-Shallice [83] reported that those with preoccupied attachment had poorer treatment outcomes, particularly those with passive subcategory characterized by high levels of confusion and fearfulness; lack of objectivity; and the presenting of vague, inchoate negativity. The authors posit that the absence of representational structure put these individuals at risk of dropout. Similarly, unpublished data from our trial [30] suggest that BPD patients who were unresolved were more likely to drop out of treatment. We know of no ATI studies on attachment and BPD. Findings from non–personality-disordered samples are mixed, with some suggesting that preoccupied individuals derive greater benefit from cognitive treatments, and those with avoidant attachment benefit from interpersonal treatments, whereas other studies have found the opposite outcomes.

The results across studies suggest that attachment-based treatments are useful in patients with BPD and that attachment principles can be integrated into diverse interventions, from psychodynamic to cognitive-behavioral treatments. Finally, and most exciting, attachment representations and their corresponding categories can be targeted and rehabilitated in treatment, although this findings has only been demonstrated in psychodynamic treatments to date.

Conclusions

Attachment theory offers a cogent theory for conceptualizing the development and maintenance of the interpersonal difficulties and adaptations that characterize personality pathology, and research from this area has proven to be a powerful paradigm for studying BPD and its vicissitudes. Recent research has focused on examining the role of attachment in the development, maintenance, and change processes in BPD. Findings across these domains are relatively consistent inasmuch as they point to theoretical convergences, suggest new areas for research, and point to preventive mental health services and specific treatment interventions.

Recent findings across developmental, neuroscience, and treatment studies point out the importance of attachment representations, conceptualized as a social-cognitive and affective constructs, for many of the symptoms experienced in BPD. These findings suggest that the social-cognitive aspects of BPD are central and interact with constitutional factors in important ways. Research also suggests that having integrated and coherent representations, or developing such representations, buffers against many of the symptoms of BPD. Particularly important and interesting are the findings suggesting that a core deficit in BPD is the capacity to engage in reflective thinking and the reliance on reflexive thinking, particularly in situations that call for reflection. Thus, it will be important to develop interventions that are not only geared toward skill development but also toward achieving more integrated representations and reflective capacities in BPD.

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References

Papers of particular interest, published recently, have been highlighted as:
- • Of importance
- •• Of major importance

1. Blatt SJ, Auerbach JS, Levy KN. Mental representations in personality development, psychopathology, and the therapeutic process. Review of General Psychology. 1997;1(4):351–374.
2. Fonagy P, Target M, Gergely G. Attachment and borderline personality disorder. A theory and some evidence. Psychiatric Clinics of North America. 2000;23(1):103–22, vii–viii.
3. Fonagy P, Leigh T, Steele M, Steele H, Kennedy R, Mattoon G, Target M, Gerber A. The relation of attachment status, psychiatric classification, and response to psychotherapy. Journal of Consulting and Clinical Psychology. 1996;64(1):22–31.
4. Gunderson JG. The borderline patient's intolerance of aloneness: insecure attachments and therapist availability. American Journal of Psychiatry. 1996;153(6):752–8.
5. Levy KN, Blatt SJ. Attachment theory and psychoanalysis: Further differentiation within insecure attachment patterns. Psychoanalytic Inquiry. 1999;19(4):541–575.
6. Westen D, Lohr N, Silk KR, Gold L. Object relations and social cognition in borderlines, major depressives, and normals: A Thematic Apperception Test analysis. Psychological Assessment. 1990;2(4):355.
7. Yeomans FE, & Levy, K. N. An object relations perspective on borderline personality. Acta Neuropsychiatrica. 2002;14:4.
8. Bateman A, Fonagy P. Treatment of borderline personality disorder with psychoanalytically oriented partial hospitalization: an 18-month follow-up. American Journal of Psychiatry. 2001;158(1):36–42.
9. Pilkonis P. Indentification of Risk Factors in Borderline Personality Disorder: The Example of Interpersonal Functioning. New Directions in Personality Disorder: Minneapolis Nationa Institute of Mental Health 2002.
10. Gurvits IG, Koenigsberg HW, Siever LJ. Neurotransmitter dysfunction in patients with borderline personality disorder. Psychiatric Clinics of North America. 2000;23(1):27-40, vi.
11. Silk KR. Borderline personality disorder. Overview of biologic factors. Psychiatric Clinics of North America. 2000;23(1):61–75.
12. Levy KN, Clarkin JF, Yeomans FE, Scott LN, Wasserman RH, Kernberg OF. The mechanisms of change in the treatment of

borderline personality disorder with Transference Focused Psychotherapy. Journal of Clinical Psychology. 2006;62(4):481–501.
13. Levy K. The Implications of Attachment Theory and Research for Understanding Borderline Personality Disorder. Development and Psychopathology. 2005;17:959–986.
14. Bowlby J. A secure base: Parent-child attachment and healthy human development. New York, NY, US: Basic Books, Inc; 1988.
15. Blatt SJ, Levy KN. Attachment theory, psychoanalysis, personality development, and psychopathology. Psychoanalytic Inquiry. 2003;23(1):102–150.
16. Diamond D, Clarkin J, Levine H, Levy K, Foelsch P, Yeomans F. Borderline conditions and attachment: A preliminary report. Psychoanalytic Inquiry. 1999;19(5):831–884.
17. Farber BA, Lippert RA, Nevas DB. The therapist as attachment figure. Psychotherapy: Theory, Research, Practice, Training. 1995;32(2):204–212.
18. Fonagy P, Gergely G, Jurist EL, Target M. Affect regulation, mentalization, and the development of the self. New York, NY, US: Other Press; 2002.
19. Holmes J. "Something there is that doesn't love a wall": John Bowlby, attachment theory, and psychoanalysis. In: Goldberg SM, Muir R, ed. Attachment theory: Social, developmental, and clinical perspectives. Hillsdale, NJ, England: Analytic Press, Inc; 1995:19–43.
20. Holmes J. Attachment, intimacy, autonomy: Using attachment theory in adult psychotherapy. Northvale, N.J.: J. Aronson; 1996.
21. Mackie AJ. Attachment theory: Its relevance to the therapeutic alliance. British Journal of Medical Psychology. 1981;54(3):203–212.
22. Sable P. Attachment theory: Application to clinical practice with adults. Clinical Social Work Journal. 1992;20(3):271–283.
23. Szajnberg NM, Crittenden PM. The transference refracted through the lens of attachment. Journal of the American Academy of Psychoanalysis. 1997;25(3):409–438.
24. Barone L. Developmental protective and risk factors in borderline personality disorder: a study using the Adult Attachment Interview. Attachment and Human Development. 2003;5(1):64–77.
25. Dozier M. Attachment organization and treatment use for adults with serious psychopathological disorders. Development and Psychopathology. 1990;2(1):47–60.
26. Tyrell C, Dozier M, Teague GB, Fallot RD. Effective treatment relationships for persons wtih serious pscyhiatric disorders: The importance of attachment states of mind. Journal of Consulting & Clinical Psychology. 1999;67:725–733.
27. Dozier M, Cue KL, Barnett L. Clinicians as caregivers: Role of attachment organization in treatment. Journal of Consulting and Clinical Psychology. 1994;62(4):793–800.
28. Mallinckrodt B, Gantt DL, Coble HM. Attachment patterns in the psychotherapy relationship: Development of the Client Attachment to Therapist Scale. Journal of Counseling Psychology. 1995;42(3):307–317.
29. Dozier M, Lomax L, Tyrell CL, Lee SW. The challenge of treatment for clients with dismissing states of mind. Attachment and Human Development. 2001;3(1):62–76.
30. Levy K, N., Meehan KB, Kelly KM, Reynoso J, Clarkin JF, Kernberg OF. Change in attachment patterns and reflective function in a randomized control trial of transference-focused psychotherapy for borderline personality disorder. Journal of Consulting & Clinical Psychology. 2006; 74(6):1027–1040
31. •• Carlson EA, Egeland B, Sroufe LA. A prospective investigation of the development of borderline personality symptoms. Development and Psychopathology 2009; 21:1311–1334. *The authors of this study used a prospective, longitudinal design to examine potential antecedents of BPD from infancy to adulthood. The findings suggest that temperament in addition to early relational factors in early childhood (e.g., attachment) are predictive of BPD symptoms in adulthood. Other disruptions in relationships, behavior, emotion, and self-representation in adolescence were also predictive of adult BPD, with self-representation acting as a mediator between early, disorganized attachment and adult BPD symptoms. These findings highlight the importance of early attachment and subsequent representations in the development of BPD, and add to our understanding of the trajectory of BPD symptomatology over time.*
32. Crawford TN, Cohen PR, Chen H, et al. Early maternal separation and the trajectory of borderline personality disorder symptoms. Development and Psychopathology 2009;21:1013–1030.
33. Fonagy P, Luyten P. A developmental, mentalization-based approach to the understanding and treatment of borderline personality disorder. Development and Psychopathology 2009;21:1355–1381.
34. Kernberg OF. Severe personality disorders: Psychotherapeutic strategies. New Haven, CT: Yale University Press; 1984.
35. Kobak R, Zajac K, Smith C. Adolescent attachment and trajectories of hostile-impulsive behavior: Implications for the development of personality disorders. Development and Psychopathology. 2009;21:839–851.
36. Patrick M, Hobson RP, Castle D, Howard R. Personality disorder and the mental representation of early social experience. Development and Psychopathology. 1994;6(2):375–388.
37. Levy KN, Meehan KB, Weber M, Reynoso J, Clarkin JF. Attachment and borderline personality disorder: implications for psychotherapy. Psychopathology; 2005:64–74.
38. Choi-Kain LW, Fitzmaurice GM, Zanarini MC, et al. The relationship between self-reported attachment styles, interpersonal dysfunction, and borderline personality disorder. Journal of Nervous and Mental Disease 2009;197:816–821.
39. Scott LN, Levy K, N., Pincus AL. Adult attachment, personality traits, and borderline personality disorder features in young adults. Journal of Personality Disorders. 2009;23(3):258–290.
40. Goodman M, Yehuda R. The relationship between psychological trauma and Borderline Personality Disorder. Psychiatric Annals. 2002;32(6):337.
41. Kaehler LA, Freyd JJ. Borderline personality characteristics: A betrayal trauma approach. Psychological Trauma: Theory, Research, Practice, and Policy 2009;1:216–268.
42. Widom CS, Czaja SJ, Paris J. A prospective investigation of borderline personality disorder in abused and neglected children followed up into adulthood. Journal of Personality Disorders 2009;23:433–446.
43. Bierer LM, Yehuda R, Schmeidler J, Mitropoulou V, New AS, Silverman JM, Siever LJ. Abuse and neglect in childhood: relationship to personality disorder diagnoses. CNS Spectrums. 2003;8(10):737–754.
44. Dutra L, Bureau J, Holmes B, et al. Quality of early care and childhood trauma: A prospective study of developmental pathways to dissociation. Journal of Nervous and Mental Disease 2009;197:383–390.
45. Selby EA, Braithwaite SR, Joiner TE, et al. Features of borderline personality disorder, perceived childhood emotional invalidation, and dysfunction within current romantic relationships. Journal of Family Psychology. 2009;22:885–893.
46. Kochanska G, Philibert RA, Barry RA. Interplay of genes and early mother-child relationship in the development of self-regulation from toddler to preschool age. Journal of Child Psychology and Psychiatry 2009;50:1331–1338.
47. Zimmerman P, Mohr C, Spangler G. Genetic and attachment influences on adolescents' regulation of autonomy and aggressiveness. Journal of Child Psychology and Psychiatry 2009;50:1339–1347.

48. van IJzendoorn MH, Caspers K, Bakermans-Kranenburga MJ, Beach SRH, Philibert R. Methylation Matters: interaction between methylation density and serotonin transporter genotype predicts unresolved loss or trauma. Biol Psychiatry. 2010;68(5):405–407.
49. Hobson RP, Patrick MPH, Hobson JA, al. e. How mothers with borderline personality disorder relate to their year-old infants. British Journal of Psychiatry. 2009;195:325–330.
50. Macfie J, Swan SA. Representations of the caregiver-child relationship and of the self, and emotion regulation in the narratives of young children whose mothers have borderline personality disorder. Development and Psychopathology 2009;21:993–1011.
51. Herr NR, Hammen C, Brennan PA. Maternal borderline personality disorder symptoms and adolescent psychosocial functioning. Journal of Personality Disorders 2008;22:451–465.
52. Baumgartner T, Heinrichs M, Volanthen A, Fischbacher U, Fehr E. Oxytocin Shapes the Neural Circuitry of Trust and Trust Adaptations in Humans. Neuron. 2008;58:639–650.
53. •• King-Casas B, Sharp C, Lomax-Bream L, Lohrenz T, Fonagy P, Montague PR. The rupture and repair of cooperation in borderline personality disorder. Science. 2008;321(5890):806–810. *This article seems to capture an aspect of the core disturbance that leads to painful and chaotic experiences in the lives of individuals experiencing BPD. Using an ecologically valid paradigm in which two individuals interact, it is clear that individuals with BPD face great difficulties in seeking harmony in interpersonal relationships. In addition, the study shines a light on the nature of difficulties individuals with BPD have in psychotherapy relationships—prone to lapses in collaboration, frequent ruptures, and potential difficulty with repair.*
54. Ditzen B, Schaer M, Gabriel B, Bodenmann G, Ehlert U, Heinrichs M. Intranasal oxytocin increases positive communication and reduces cortisol levels during couple conflict. Biological Psychiatry. 2009;65:728–731.
55. Buchheim A, Heinrichs M, George C, Pokorny D, Koops E, Henningsen P, O' Connor M-F, Gundel H. Oxytocin enhances the experience of attachment security. Psychoneuroendocrinology. 2009;34(9):1417–1422.
56. Domes G, Heinrichs M, Michel A, Berger C, Herpertz SC. Oxytocin improves "mind reading" in humans. Biological Psychiatry. 2007;61(6):731–733.
57. Fonagy P, Target M. Attachment and reflective function: their role in self-organization. Development and Psychopathology. 1997;9 (4):679–700.
58. Theodoridou A, Rowe AC, Penton-Voak IS, Rogers PJ. Oxytocin and social perception: Oxytocin increases perceived facial trustworthiness and attractiveness. Hormones and Behavior. 2009;56:128–132.
59. Domes G, Czieschnek D, Weidler F, Berger C, Fast K, Herpertz SC. Recognition of facial affect in borderline personality disorder. Journal of Personality Disorders. 2008;22(2):135–147.
60. Simeon D, Bartz JA, Ketay S, Braun A, Hamilton H, Crystal S, Vicens V, Hollander E. Impact of oxytocin on stress-related dysphoria in borderline personality disorder (abstract). Biological Psychiatry. 2009;65(suppl 8):2445.
61. Bartz JA, Simeon D, Hamilton RK, Crystal S, Vicens V, Holander E. Effects of oxytocin in adults with borderline personality disorder and healthy controls (abstract). Biological Psychiatry. 2009;65(suppl 8):2445.
62. Stanley B, Siever LJ. The interpersonal dimension of borderline personality disorder: Toward a neuropeptide model. The American Journal of Psychiatry. 2010;167(1):24–39.
63. Posner MI, Rothbart MK. Developing mechanisms of self-regulation. Development and Psychopathology. 2000;12(3):427–441.
64. Minzenberg MJ, Poole JH, Vinogradov S. A neurocognitive model of borderline personality disorder: Effects of childhood sexual abuse and relationship to adult social attachment disturbance. Development and Psychopathology. 2008;20:341–368.
65. • Koenigsberg HW, Siever LJ, Lee H, Pizzarello S, New AS, Goodman M, Cheng H, Flory J, Prohovnik I. Neural correlates of emotion processing in borderline personality disorder. Psychiatry Research. 2009;172:192–199. *This is an important research report in that it signals the possibility that individuals with BPD may tend to use a fear circuit when confronted with emotional stimuli. This possibility should promote research that might bridge current foci of the nature of the disorder—emotion regulation dysfunction and mentalization deficit. Emotion regulation deficits may be the result of difficulty engaging in more reflective processes, particularly in emotional contexts.*
66. Austin MA, Riniolo T, Porges SW. Borderline personality disorder and emotion regulation: Insights from the Polyvagal Theory. Brain and Cognition. 2007;65:69–76.
67. Levy KN, Meehan KB, Reynoso JS, Lenzenweger MF, Clarkin JF, Kernberg OF. The relation of reflective function to neurocognitive functioning in patients with borderline personality disorder. Journal of the American Psychoanalytic Association. 2005;53(4):1305–1309.
68. Levy KN, Clarkin JF, Kernberg OF. Change in attachment and reflective function in the treatment of borderline personality disorder with transference focused psychotherapy. Journal of Consulting and Clinical Psychology. 2006;74:481–501.
69. Slade A. Attachment theory and research: Implications for theory and practice of individual psychotherapy. In: Cassidy J, Shaver P, eds. Handbook of Attachment Theory and Research. New York: Guilford Press; 1999.
70. Steele H, Steele M, Murphy A. Use of the Adult Attachment Interview to measure process and change in psychotherapy. Psychotherapy Research. 2009;19(6):633–643.
71. Levy KN, Kelly KM. Using interviews to assess adult attachment. In: Obegi JH, Berant E, eds. Attachment Theory and Research in Clinical Work with Adults. New York: Guilford; 2009:121–151.
72. Gunderson JG. Disturbed relationships as a phenotype for borderline personality disorder. American Journal of Psychiatry. 2007;164(11):1637–1640.
73. Bateman A, Fonagy P. Effectiveness of partial hospitalization in the treatment of borderline personality disorder: a randomized controlled trial. American Journal of Psychiatry. 1999;156(10):1563–9.
74. Bateman A, & Fonagy, P. Randomized Controlled Trial of Outpatient Mentalization-Based Treatment Versus Structured Clinical Management for Borderline Personality Disorder. American Journal of Psychiatry. 2009.
75. Levy KN, Meehan KB, Kelly KM, Reynoso JS, Weber M, Clarkin JF, Kernberg OF. Change in Attachment Patterns and Reflective Function in a Randomized Control Trial of Transference-Focused Psychotherapy for Borderline Personality Disorder. Journal of Counseling & Clinical Psychology. 2006;74(6):1027–1040.
76. McBride C, Atkinson L, Quilty LC, Bagby RM. Attachment as moderator of treatment outcome in major depression: A randomized control trial of interpersonal psychotherapy versus cognitive behavior therapy. Journal of Consulting and Clinical Psychology. 2006;74(6):1041–1054.
77. Clarkin JF, Levy, K. N., Lenzenweger, M. F, and Kernberg, O. F. Evaluating Three Treatments for Borderline Personality Disorder: A Multiwave Study. American Journal of Psychiatry. 2007;164 (6):922–928.
78. Doering S, Horz S, Rentrop M, Fischer-Kern M, Schuster P, Benecke C, Buchheim A, Martius P, Buchheim P. Transference-focused psychotherapy v. treatment by community psychotherapists for borderline personality disorder: randomised controlled trial. The British Journal of Psychiatry. 2010;196:389–395.

79. Kellogg S, Young J. Schema Therapy for Borderline Personality Disorder. Journal of Clinical Psychology. 2006;62:445–458.
80. Linehan MM, Schmidt HI, Dimeff LA, Craft JC, Kanter J, Comtois KA. Dialectical behavior therapy for patients with borderline personality disorder and drug-dependence. American Journal on Addictions. 1999;8(4):279–292.
81. Cortina M, Marrone M. Patient-therapist attachment: Impact on the therapeutic process and outcome. Attachment theory and the psychoanalytic process. London, England: Whurr Publishers, Ltd.; 2003:127.
82. Levy K, N., Edell WS, McGlashan TH. Depressive Experiences in Inpatients with Borderline Personality Disorder. Psychiatric Quarterly. 2007;78:129–143.
83. Fonagy P, Tallandini-Shallice M. On Some Problems of Psychoanalytic Research in Practice. Bulletin of the Anna Freud Centre. 1993;16:5–22.