Lorenzini, N; Fonagy, P; (2013) Attachment and Personality Disorders: A Short Review. **FOCUS: The Journal of Lifelong Learning in Psychiatry** , 11 (2) 155 - 166. 10.1176/appi.focus.11.2.155.

RESEARCH ARTICLE

Attachment and personality disorders: a short review

Nicolas Lorenzini, MSc, MPhil and Peter Fonagy, PhD, FBA

University College London and Anna Freud Centre, London, UK

Correspondence to Peter Fonagy, Department of Clinical, Educational and Health Psychology, University College London, Gower Street, London WC1E 6BT, UK

E-mail: psfonagy@ucl.ac.uk

ABSTRACT

Attachment theory is a biopsychosocial model referring to a person's characteristic ways of relating in close relationships, such as with parents, children, and romantic partners. These ways of relating are learned during early infancy and mold subsequent intimate relationships. An adult who is securely attached has internalized a reliable relationship to his/her caregivers in infancy, and thus is capable of adapting to different social contexts and, more importantly, of maintaining an adequate equilibrium between self-regulation and interpersonal regulation of stress. Insecure adult attachment styles are divided into 1) anxious/preoccupied (individuals are hypersensitive to rejection and show compulsive care- and attention-seeking behavior); 2) Avoidant/dismissing (individuals are hyposensitive to social interactions, and are socially isolated); and 3) unresolved/disorganized (individuals are unable to cope under stress, thus suffering pervasive affective dysregulation). This review discusses the theoretical, psychological, neuroscientific, and developmental aspects of attachment from an evidence-based perspective. It provides an updated account of the science regarding attachment and its relevance to the etiology, diagnosis, and treatment of mental illness. It examines the privileged relation between attachment and personality disorders (PDs) from multiple angles in order to introduce the most recent psychotherapeutic advances, based on attachment research, for the treatment of PDs, particularly borderline PD. Three effective,

evidence-based psychotherapeutic interventions are described: Mentalization-Based Treatment, Transference-Focused Psychotherapy and Schema-Focused Therapy.

Introduction: Attachment and its relevance to personality disorders

Attachment theory, conceived by John Bowlby (1), refers to a person's characteristic ways of relating in intimate relationships to "attachment figures", often one's parents, children, and romantic partners (2, 3). From birth, the interactions of an infant with his/her primary caregivers will establish a base for personality development and will mold subsequent close relationships, expectations of social acceptance, and attitudes to rejection. A secure base is formed when the attachment figure (usually the mother) provides stability and safety in moments of stress, which allows the infant to explore his/her surroundings. Thus, the child creates a set of mental models of him/herself and others in social interactions ("internal working models"), based on repeated interactions with significant others (4). These early attachment relations are crucial for the acquisition of capacities for affect and stress regulation, attentional control, mentalization, and for the infant's sense of self-agency (5).

The attachment literature has been dominated by operationalized assessments of characteristic patterns of relating. Most influential were observations of individual differences in infants' attachment security assessed by the Strange Situation procedure (6). When briefly separated from their caregivers and left with a stranger in an unfamiliar setting, infants show certain behavioral patterns. Three distinct attachment patterns have been identified from the application of this procedure: secure (63% of

[Page 156 →]

children tested), anxious/resistant or ambivalent (16%), and avoidant (21%). In adults, attachment style is respectively classified as secure/autonomous (58% of the nonclinical population), avoidant/dismissing (23%), and anxious/preoccupied (19%) (7, 8); these

classifications stem from the Adult Attachment Interview (AAI) (9, 10), which elicits attachment narratives from the subject's childhood. Further work has revealed a fourth pattern of disorganized attachment, which is often termed unresolved/disorganized for adults and disoriented/disorganized for infants (2). Adults showing this pattern are also classified within one of the three primary categories (5).

During the Strange Situation, a securely attached infant readily explores his/her new surroundings in the primary caregiver's presence, shows anxiety in the stranger's presence, is distressed by the caregiver's brief absence, rapidly seeks contact with the caregiver upon reunion, and is reassured by renewed contact, rapidly resuming exploration. Likewise, an adult categorized as secure/autonomous during the AAI coherently integrates attachment memories into a meaningful narrative and shows appreciation for attachment relationships.

An avoidant infant is less anxious at separation, may not seek contact with the caregiver on his/her return, and may not prefer the caregiver to the stranger. In adults, avoidant/dismissing AAI narratives will lack coherence; patients will be unable to recall specific memories in support of general arguments and will idealize or devalue their early relationships (5). These behaviors appear as the result of a "hyper-deactivation" of the attachment system. This hyper-deactivation is characterized by the inhibition of proximity-seeking behaviors and the determination to handle stress alone. This implies a clear attempt to inhibit negative emotions through a noninterpersonal way of regulating them (11).

An anxious/resistant infant shows limited exploration and play, seems highly distressed by the separation, and does not easily settle after reunion. Correspondingly, an anxious/preoccupied adult's AAI narratives will lack coherence, and will show confusion, anger, or fear in relation to early attachment figures (5). This corresponds to the hyperactivation of proximity-seeking and protection-seeking strategies, to a (chronic)

hypersensitivity to signs of possible rejection of abandonment, and to an intensification of undesirable emotions (11).

A disoriented/disorganized infant will show undirected or bizarre behavior such as freezing, hand clapping or head banging. The infant may try to escape the situation. Comparably, an unresolved/disorganized adult's narratives about bereavements or childhood traumas will contain semantic and/or syntactic confusions. This corresponds to the breakdown of strategies to cope with stress, leading to partial or even pervasive emotion dysregulation.

These styles remain relatively stable during life and do not show gender differences or variations with language or culture (8). There is a 68–75% correspondence between attachment classification in infancy and in adulthood (5). The most important predictor of style change during life is negative early life events, such as loss of a parent, parental divorce, life-threatening illness of parent or child, parental psychiatric disorder, physical maltreatment, or sexual abuse (12-14).

Although attachment processes are normative and necessary for human (and mammalian) survival, attachment theory is increasingly being used to investigate and intervene in personality disorders (PDs) (8, 15-17). PDs are enduring behaviors (18); their features include an intrapersonal component (dysregulation of arousal, impulse, and affect), an interpersonal component (dysfunctional relationship patterns), and a social component (which creates conflicts with others and with social institutions) (16). Attachment theory accounts for these four characteristics of PDs (19) and provides an ideal standpoint to understand these disorders, integrating psychological (20), psychiatric (21), genetic (22), developmental (23-25), neuroscientific (25-28), and clinical (2, 29-31) perspectives.

There is a large body of literature addressing the relation between PDs and attachment theory and research. This review approaches this relation from an evidence-based perspective, highlighting implications for the treatment of PDs.

Attachment classification and personality disorder diagnosis

Many of the features of insecure attachment in adulthood resemble the signs and symptoms of PD (16). There have been numerous studies of attachment patterns in people with PDs, particularly of the DSM-IV cluster B (32), which indicate that such individuals show higher rates of insecure attachment than the general population (33). Conversely, secure attachment is rarely associated with borderline PD (BPD) and avoidant PD (19, 34).

Adults presenting a preoccupied style are more sensitive to rejection and anxiety, and are prone to histrionic, avoidant, borderline, and dependent PDs. Conversely, the hypoactivation of attachment shown by dismissing individuals is associated with schizoid, narcissistic, antisocial, and paranoid PDs (8, 19, 35-38).

BPD is strongly associated with preoccupied attachment in the presence of unresolved trauma (6, 8, 15, 19, 36, 39)

[Page 157 →]

and with unresolved attachment patterns (19). Studies have found that 50–80% of BPD patients fit either or both of these attachment styles (11, 40). This makes sense in light of both the approach-avoidance social dynamics and sensitivity to rejection (preoccupied dimension), and the cognitive–linguistic slippage (incoherent/disorganized dimension),

evident in BPD patients (19). Misunderstanding of social causality and thought disturbances are distinctive features of BPD (41-43). In behavioral terms, BPD patients exhibit angry withdrawal and compulsive care-seeking. This implies a lack of the capacity to use and obtain relief from new attachment figures, which has important implications within a close helping relationship like the therapeutic exchange: BPD patients will be more attentive to the failures than the efforts of the therapist (15, 40, 44, 45). The same associations between attachment styles and pathological personality features are found in adolescents (19, 23, 46).

Most research assessing the relation between attachment and PDs does not control for comorbidity on either Axis I or II, which could result in diffuse patterns of association (11, 19). In the case of BPD, different Axis I comorbidities are associated with different attachment styles: BPD with comorbid anxiety or mood disorders tends to be associated with preoccupied attachment, while BPD with comorbid substance or alcohol abuse tends towards a dismissing style. In spite of these differences, the unresolved/disorganized attachment style seems to be common in BPD overall, which explains the pathognomonic emotional dysregulation of BPD patients (11). These research limitations accentuate the value of the new efforts toward dimensional rather than categorical diagnostic systems (21, 47), and for person-centered rather than symptom-centered ways of addressing mental disorders (11, 19, 21, 38, 48-50). Such ways of understanding and conceptualizing psychopathology (and particularly PDs) (38) are necessarily longitudinal, because only a developmental perspective can offer an insight into the processes underlying symptomatic manifestations and allow clinicians to assess a particular patient’s risks and strengths, account for high rates of comorbidity, tailor interventions, and maintain a fruitful therapeutic relationship (11, 26, 44, 51, 52).

Relations between attachment history and development of personality disorder

It is likely that various developmental pathways lead to a given attachment style and its concomitant psychopathological risks, involving complex interactions between biological and psychosocial factors.

The stable nature of attachment styles accounts for the development of enduring strategies to regulate emotion and social contact. Securely attached individuals trust their attachment figures and perceive little environmental threat. As a result, they can defend themselves against environmental challenges and are able to process emotions in a fluid and nondefensive way; hence, they are the group least troubled by PDs. These individuals continue seeking effective attachment relations through their whole lifespan (53). Dismissing individuals, chronically lacking support from attachment figures, habitually deny or dismiss environmental threats (54). They may therefore have a higher threshold for experiencing negative emotions or perceiving attachment needs, exhibiting what Bowlby called “compulsive self-reliance” (55). Preoccupied individuals, who are wary following a history of inconsistent support from caregivers, are likely to have a lower threshold for perceiving environmental threat and, therefore, stress. This is likely to contribute to frequent activation of the attachment system, with the concomitant distress and anger such activation can cause. Hence, they are likely to manifest compulsive care-seeking and over-dependency. Unresolved/disorganized individuals – the adult analogue of disorganized/disoriented infants – frequently have parents who are themselves abusive or unresolved regarding their own losses or abuse experiences (56-59). These individuals appear to be the most troubled in terms of PDs (17).

Twin studies have shown that genetic factors account for 45% of individual differences in adult attachment anxiety and 36% in attachment avoidance (22). The influence of genetic factors in attachment security has been estimated at between 23% and 45% and underscores the bidirectional nature of the development of attachment relationships: infants and children co-create patterns of relating with their caregivers. There is great

overlap between genetic factors influencing both attachment style and personality traits (60-63). Nevertheless, to the extent that these are separable, environmental factors ubiquitously appear to be the most important influence in the development of attachment. Among external factors, the most important is the secure presence of an effective primary caretaker who is sensitive to the infant's verbal and nonverbal cues and is able to respond to them without being overwhelmed by anxiety. A child who is securely attached has had his/her acute affective states consistently reflected back to him/her in an accurate, but not overwhelming, manner (26, 54, 64). This process equips the infant with an increasing

[Page 158 →]

capacity for mental processing, particularly *mentalization*, the capacity to understand the social world and one's internal world in terms of mental states; that is, the capacity to imagine that others have a mind that is essentially like one's own (39, 51, 57, 58, 65-67). This capacity means that an individual with a healthy personality interprets and responds to another's feelings, not just to their own experience. In this sense, the emergence of spoken language about feelings seems to be related to the attachment figure's ability to put the child's mental experience into words: securely attached children seem to acquire speech more rapidly and remain more verbally competent than insecure children (29, 68). Conversely, insecure attachment leads to developmental impairment of the internal state lexicon and subsequent alexithymia in adulthood (69). Effective therapies must therefore include a component that allows patients to recognize, label, and verbally communicate their feelings (26, 70-72).

Good-quality interactions with early caregivers are the critical element in the development of secure attachment. In turn, secure emotional attachment is more crucial for the

development of a healthy personality than intellectual stimulation of the infant (25). It is thus unsurprising that there is a high prevalence of childhood trauma in both insecurely attached individuals and PD patients (8, 45, 73-76). Childhood trauma is more strongly correlated with an incoherent/disorganized adult attachment style more than just with the general category of attachment insecurity (19, 36).

Rates of childhood trauma among individuals with PDs are high (73% report abuse, of which 34% is sexual, and 82% report neglect). Compared with healthy adults, PD patients are four times as likely to have suffered early trauma (14). Childhood physical abuse increases the risk for adult antisocial, borderline, dependent, depressive, passive-aggressive, and schizoid PDs (38). Infantile neglect is associated with risks for antisocial, avoidant, borderline, narcissistic, and passive-aggressive PDs (14, 54, 77). BPD is more consistently associated with childhood abuse and neglect than other PD diagnoses (14, 24, 51, 66, 73, 76, 77). Obsessive-compulsive PD has been associated with sexual abuse by noncaretakers (77).

However, not all people who have suffered childhood trauma develop adult psychopathology. The effects of trauma are influenced by attachment (75) and by biological dispositions, which are examined in the next section. For example, female victims of maltreatment and sexual abuse in adolescence or adulthood are at greater risk of developing posttraumatic symptoms if they have an anxious attachment style (78). Likewise, female victims of childhood trauma are more likely to develop somatization symptoms if they are fearfully attached (79). If traumatic events provoke activation of the attachment system, then individuals who tend to respond to these experiences through the inhibition of mentalizing function and emotional regulation are less likely to resolve these events, and more likely to manifest personality pathology later in life (80).

Neurobiological correlates of attachment and personality disorders

New technologies in human and animal neurosciences have enabled the investigation of both attachment and PDs from an enriching and novel perspective. A seminal discovery has been the identification of neural correlates of the innate predisposition to, and later need for, attachment relations. There is a common neurobiology of mother–infant, infant–mother, and romantic-partner attachment, linked to opioid alkaloids that are capable of reproducing the same neurological and behavioral effects as substance addiction (81, 82). Following these discoveries, two major neural systems have been shown to play a critical role in attachment behaviors: the dopaminergic reward-processing system and the oxytocinergic system (26). The role of the dopaminergic reward system in attachment behavior is understood as an evolutionary mechanism to motivate reproductive mating, maternal care and, ultimately, offspring survival. It leads individuals to seek close relations with other humans and produces satisfaction when they are attained. The areas of the brain recruited by this system include the striatum, a key projection of midbrain dopamine neurons that includes the putamen and caudate head (26).

Oxytocin is a neuroactive hormone produced in the hypothalamus and projected to brain areas that are associated with emotions and social behaviors. It plays an important role in the activation of the dopaminergic reward system (oxytocin receptors are located in the ventral striatum, a key dopaminergic area) and the deactivation of neurobehavioral systems related to social avoidance (26, 28). Oxytocin receptors are found in areas known to be recruited in attachment and other social behaviors, such as the bed nucleus of the stria terminalis, hypothalamic paraventricular nucleus, central nucleus of the amygdala, ventral tegmental area, and lateral septum. These areas are also rich in vasopressin (V1a) receptors, but oxytocin has been studied more extensively because it can be synthesized in the laboratory and safely administered to human subjects;

[Page 159 →]

therefore, experimental oxytocin research has been popular over the past decade. The experimental administration of vasopressin agonists in studies of attachment has not yielded significant results (83).

Oxytocin is a facilitator of attachment (24, 84): it enhances sensitivity to social cues (85-87), accelerates social connectedness (88), improves social memory (89, 90), and facilitates the encoding and retrieval of happy social memories (91). By attenuating activity in the extended amygdala (92), oxytocin also acts to neutralize negative feelings towards others, and enhances trust (88, 93, 94). Oxytocin can inhibit hypothalamic–pituitary–adrenal (HPA) axis activity when the attachment system is activated (26): secure attachment leads to “adaptive hypoactivity” of the HPA axis, which, in turn, reduces social anxiety (53).

It must be noted that these positive effects of oxytocin are not universal. The administration of oxytocin to adults has been shown to facilitate prosocial behavior toward members of their in-group only, and to enhance trust toward reliable and neutral peers but not peers who have proven to be unreliable (95, 96). The effects of oxytocin administration are also personality-dependent: individuals with alexithymia seem to improve their social abilities to a greater extent than people who do not show this trait (97).

Correspondingly, insecure attachment is closely bound to the divergent effects of oxytocin. The neuropeptide is found in lower concentrations among maltreated children and adults with a history of early separation, and in insecurely attached mothers during the puerperal period, which further hampers the establishment of secure attachment in their children (26). In the case of insecurely attached BPD patients, oxytocin decreases trust and the

likelihood of cooperative responses, and reduces dysphoric responses to social stress (27, 98).

In conclusion, oxytocin does not uniformly facilitate trust and prosocial behavior; its behavioral effects are mediated by the social context, personality traits, and the quality of early attachment (27, 99). This highlights the need to address PDs and mental health in general as an indivisible combination of environmental, psychological, and physical factors (25, 76).

This integrated, biopsychosocial perspective for understanding PDs is still novel. Most research has focused on BPD and antisocial PD (45, 100). For example, early maltreatment is more likely to produce adult antisocial behavior only in males with a polymorphism in the gene involved in the production of the neurotransmitter-metabolizing enzyme monoamine oxidase A (MAO_A). Males with high MAO_A activity show less antisocial behavior even if they have experienced early maltreatment. This indicates that certain genotypes can moderate sensitivity to stressors (101). In monkeys, impulsive aggression is correlated with low cerebrospinal fluid concentrations of 5-hydroxyindoleacetic acid (5-HIAA), which is involved in serotonergic metabolism. However, this inherited characteristic is modulated by attachment experiences: monkeys reared by mothers show higher concentrations of 5-HIAA than those reared by peers (102, 103). People with an avoidant attachment style show decreased activity of the striatum and ventral tegmental area, suggesting lack of response to social rewards. Conversely, people with a preoccupied attachment style show increased activity in the left amygdala, suggesting increased sensitivity to social punishment (104). In these cases attachment moderates the relation between genotype, nervous activity, and pathologic behavior.

As described in the previous section, early trauma has implications for attachment and personality pathology. The hippocampus is particularly vulnerable to stress, given its many glucocorticoid receptors. BPD patients show reduced hippocampal and amygdalar

volumes, especially if they have suffered early trauma (45, 105-107). Relational trauma promotes hemispheric lateralization, which adversely affects the early integration of brain hemispheres (108, 109). As a consequence, affective experiences, which are usually stored in the right front lobe, are split from the cognitive functions of the left hemisphere, explaining in part the emotional dysregulation found in BPD patients (26, 45, 100, 109, 110). Childhood trauma produces persistent sensitization of the HPA axis, which regulates stress responses. This effect is particularly noticeable in BPD females who have been abused (111, 112). The HPA axis is intimately linked with serotonergic function, which could explain the divergent effects of selective serotonin reuptake inhibitors (SSRIs) in BPD patients (113, 114).

These complex interactions between “nature” and “nurture” put the concept of attachment in a privileged position from which to understand the etiology, development, and treatment of PDs (45, 110, 115, 116). Attachment is becoming a central concept in the development, planning, and assessment of psychotherapeutic interventions. At the same time, researchers are starting to assess the effects of psychotherapy on attachment, and relating them to process and outcome (31, 117, 118).

Links between attachment style and treatment outcome

Considering that empirical evidence demonstrates that insecure attachments are risk factors for PDs

[Page 160 →]

and other mental illnesses, researchers have taken an interest in the relationship between attachment and psychotherapeutic success.

It is widely accepted that attachment characteristics influence psychotherapeutic outcomes, but results are inconsistent (119, 120). Most studies show that securely

attached patients obtain better results (2, 34, 120-123), but others indicate better outcomes for avoidant and disorganized patients (39).

The largest meta-analysis on the influence of attachment on psychotherapeutic outcome in various diagnoses (including PDs) and heterogeneous psychotherapeutic orientations consistently found that while attachment anxiety negatively affects outcome, attachment avoidance has no effect. This meta-analysis confirmed that higher attachment security predicts better therapeutic outcomes (2).

Besides symptomatic outcomes, attachment is associated with drop-out. Adult avoidant attachment constitutes a risk for drop-out because patients are not fully committed, attached, or engaged with the therapist or the treatment (38, 124). Psychotherapy can be seen as a threat to these patients' defensive apathy, and increases negative transference (124, 125). Contrastingly, preoccupied patients are at risk of drop-out after perceived abandonments such as emergency cancellations or scheduled vacations. Fearfully preoccupied individuals are prone to drop-out in response to feeling attached to or dependent on the therapist and treatment (126).

Attachment also influences the therapeutic alliance, which in turn has important effects on outcome (127). While secure patients perceive their therapists as responsive and emotionally available, avoidant/fearful patients are reluctant to make personal disclosures, feel threatened, and suspect that the therapist is disapproving. Preoccupied patients long for more contact with the therapist and wish to expand the relationship beyond the bounds of therapy (44, 128).

Following Bowlby's attachment theory, not only protection-seeking but also caregiving behavior is influenced by attachment (129). Therefore, the therapist's attachment style also influences the process and outcome of treatment. Therapists with anxious attachment styles create strong therapeutic alliances, but the quality of the alliance decreases with

time when patients show interpersonal distress (130, 131). Sessions between an avoidant therapist and an anxious patient attain less depth (121).

Some studies have shown changes in patients' attachment resulting from treatment. One of the authors (PF) reported on a sample of BPD patients under psychodynamic treatment. After treatment, 40% of the sample was classified as secure; none of the patients had that classification at pretreatment (132). Patients with various diagnoses showed an increase in attachment security after 21 sessions of psychodynamic psychotherapy (133). A multisite study of several inpatient group psychotherapies found consistent improvement (compared with controls) of attachment security after 9 weeks' treatment, which was maintained at 1-year follow-up (119). In a randomized controlled trial of Transference-Focused Psychotherapy (TFP), Dialectical Behavior Therapy (DBT) and supportive therapy, only TFP showed an increased number of patients classified as secure after treatment (118). A successful treatment does not necessarily imply attaining a secure attachment style: female BPD patients whose attachment style changes from ambivalent to avoidant have shown better symptomatic results at the end of short-term therapy (31).

Attachment-oriented interventions

Although there is a great deal of interest in clinical applications of attachment theory, most clinical research in PDs is conceptual and case-study-based (117). For BPD, however, there has been more extensive research, including randomized controlled trials (RCTs), and meta-analyses of published studies. The American Psychiatric Association's guidelines for the treatment of BPD recommend psychotherapy as primary treatment, complemented by symptom-targeted pharmacotherapy (134). SSRIs are recommended for tackling emotional dysregulation and impulsivity, and antipsychotics for cognitive-perceptual symptoms. SSRIs could reduce HPA axis hyperactivation, contributing to the

patient's capacity to reflect on mental states without overreacting to them and thus facilitating psychotherapeutic interventions (45).

Mentalization-Based Treatment (MBT)

Mentalization is the process by which we make sense of each other and ourselves, implicitly and explicitly, in terms of subjective states and mental processes (135). Mental disorders in general can be seen as the mind misinterpreting its own experience of itself and therefore of others (136). The concept of mentalization is rooted in attachment theory. It postulates that one's understanding of others depends on whether one's own mental states were adequately understood by caring, attentive, non-threatening adults. Problems in affect regulation and attentional control stemming from dysfunctional attachment relationships (40, 74, 137) are mediated through a failure to develop a robust mentalizing capacity (26, 64, 66, 71, 136, 138-142).

[Page 161 →]

Under stressful conditions, and in the face of activation of their flawed attachment system, BPD patients temporarily lose their mentalization capacity, consequently misunderstanding social causality and showing cognitive and emotional dysregulation (26, 135, 140). MBT aims to stabilize the patient's sense of self and help him/her maintain an optimal level of arousal in the context of a well-managed (i.e. neither too intense nor too detached) attachment relationship between patient and therapist (140, 143). The therapist must be aware of the hypersensitivity of such patients to interpersonal anxiety, which could overwhelm the patient's mentalization capacity, putting the therapeutic relationship at risk (5, 136, 140, 144-146).

Despite MBT's psychoanalytic origins, interventions are taken from various psychotherapeutic approaches. This plurality, together with the minimal amount of training and supervision necessary (147-150), makes MBT appealing to professionals from various orientations. MBT interventions are designed to stress the attachment relationship within controlled conditions and to lend special attention to the therapeutic relationship. For a detailed description of the techniques and therapeutic stance, we recommend reading the treatment manuals (143, 151).

Mentalization theory is now being applied to the treatment of numerous disorders (e.g., posttraumatic stress disorder, eating disorders, antisocial PD, and depression) in a number of contexts (inpatient, partial hospitalization (38, 147-149) and outpatient (152)), and in different groups of patients (adolescents, families (153), and substance abusers (136)) (65). MBT has been manualized for PDs (143, 151) and shown to be efficacious in RCTs (147-149, 152).

MBT for inpatients with severe BPD has shown to be superior to routine general psychiatric care in improving depressive symptoms, decreasing suicidal and self-harm acts, reducing inpatient days, and improving social and interpersonal function. Improvements started 6 months into treatment and continued to increase to the end of the 18-month treatment (147). Follow-up every 3 months after the end of treatment showed that patients kept improving to 18 months (148). A further follow-up of the same study, 8 years after initial randomization, showed that MBT patients maintained their gains and showed better social and vocational status and less symptomatology than controls (149). The higher costs of implementing MBT were offset by less inpatient care during treatment and decreased service utilization during follow-up (154). In an outpatient setting, an RCT of MBT versus structured clinical management showed faster change for MBT patients in suicide attempts, severe self-harm incidents, self-reported interpersonal functioning, and psychiatric symptoms (152).

An 18-month, group-based MBT treatment for antisocial PD is currently being tested (38). Preliminary results show reduced self-reported aggression and reduced psychiatric symptomatology after the first 6 months of treatment. However, the authors warn about the difficulty of engaging these patients. Another unpublished study of MBT for antisocial PD is currently being carried out at a high-security hospital in England (38).

Transference-Focused Psychotherapy (TFP)

TFP is a manualized psychodynamic treatment for patients with BPD (155). It is based on both object-relations and attachment theories: representations of self and others, together with their affective valence, are derived from the internalization of attachment relationships with caregivers. The degree of differentiation and integration of these representations are disturbed in individuals with BPD (150, 156).

The primary goal of TFP is to reduce symptomatology and self-destructive behavior by modifying representations of self and others as they are enacted in the therapeutic relationship, and, ultimately, change the patient's underlying personality organization. TFP is a structured treatment consisting of twice-weekly 45-minute sessions over 3 years. Its primary focus is on the predominant affect-laden themes that emerge in the therapeutic (transference) relationship, while monitoring the patient's life outside sessions. The therapist uses techniques of clarification, confrontation, and transference interpretation (i.e., interpretation of the current patient–therapist interactions, which unveil the patient's disparate perceptions of self and others including the therapist). In contrast to MBT, TFP considers interpretation as the route to integration of these disparate perceptions and representations, and activation of the attachment system is not avoided (124, 157). In turn, the integration of these representations and their concomitant emotions enables the development of a more complex capacity to think about the thoughts, feelings, intentions,

and desires of self and others (i.e., mentalization) (158). This leads to increased modulation of affect, coherence of identity, greater capacity for intimate relationships, reduction in self-destructive behaviors, and general improvement in functioning (118, 150, 156).

TFP is well tolerated, and has positive outcomes in parasuicidal behaviors, emergency room visits, hospitalizations, hospital days, and global functioning (159).

[Page 162 →]

TFP in outpatient settings has shown to be more effective than treatment as usual (118), and its results are comparable to those of DBT (160) in suicidality after 1 year of treatment, and superior in outcomes of violence and irritability (161). After 3 years of treatment, studies show reductions in BPD symptoms and pathologic personality traits, and improvement of general quality of life (162, 163). TFP has also demonstrated structural changes in attachment and mentalization (118, 158).

Schema-Focused Therapy (SFT)

Stemming from a cognitive-behavioral orientation, SFT conceptualizes BPD patients psychologically and emotionally as young children (164). Their inner world is understood as being formed by four pathologic self-schemas that have become fixed as a result of the interplay between genetic endowment and inappropriate parenting (165). These schemas are evident in BPD patients at different moments (71). Patients can act as detached protectors (showing emotional withdrawal and behavioral avoidance), punitive parents (self-harm), abandoned/abused children (frightened isolation), or angry/impulsive children (expressing rage directed toward those who did not meet their childhood emotional needs)

(164). These same schemas exist in antisocial patients, together with the powerful presence of a “healthy adult” schema, an executive function for higher cognitive skills (166). SFT techniques are cognitive, behavioral, and experiential. The most important is “limited reparenting” by the therapist: the practitioner attempts to meet the patient’s unfulfilled emotional needs by being warm and sympathetic, self-disclosing, giving extra sessions and telephone or email exchanges, or praising the patient. The idea is to develop a therapeutic relationship that is both a contrast and an antidote to the abusive relationships the patient experienced as a child, while maintaining professional and therapeutic boundaries (164, 165). Once this bond is achieved, cognitive techniques attempt to change unhealthy schemas and the patient is encouraged to practice new behaviors outside the session. SFT is a twice-weekly therapy lasting at least 2 years.

Outcomes of SFT have been found to be superior to TFP in reduction of borderline symptoms and general psychopathology, and in quality of life improvement. SFT also showed lower drop-out rates and better quality of therapeutic alliance (162, 167). SFT was also shown to be slightly more cost-effective than TFP (168). These results are limited due to several methodological flaws of the trial (150). Another study found that adding 8 months of group SFT to treatment as usual (individual psychotherapy) showed no drop-out and increased the success rate from 16% to 94%. Symptomatic gains were maintained at 6-month follow-up (169). An ongoing trial of SFT with forensic patients presenting antisocial, borderline, narcissistic, and paranoid PDs has preliminarily shown good symptomatic outcomes and low attrition rates (170). SFT has also shown good outcomes in interpersonal problems in people diagnosed with agoraphobia and cluster C PDs (171).

Across pathologies, different treatments work for different subgroups. It could be argued that while MBT is a more generic approach that is optimal for BPD patients with multiple personality problems that might undermine focusing on specific attachment relationships,

TFP and SFT are more focused, efficacious attempts at exploring particular significant interpersonal relationship representations.

Conclusion

Attachment theory overarches the psychological, psychiatric, social, and neuroscientific work on PDs. Its usefulness has been shown in the scientific field, and it is being translated into clinical settings. Practitioners can profit from the use of simple measures of attachment in order to tailor their interventions to maximize gains and minimize iatrogenic effects, which are all too common in the treatment of PDs (2, 19, 23, 29, 117, 122). Many mental health interventions have the potential to activate the attachment system of vulnerable patients but lack a structure to contain the emotional and behavioral consequences of the stress aroused, ranging from drop-out to suicide (150, 167). Therefore, it is necessary to modify treatment settings in order to offer a “secure base” from which to start a curative change in relationship representations (136, 158, 172).

References

1. Bowlby J: Attachment and Loss. Volume 1: Attachment. London, UK, Hogarth Press/Institute of Psychoanalysis, 1969

2. Levy KN, Ellison WD, Scott LN, Bernecker SL: Attachment style. J Clin Psychol 2011; 67:193-203

3. Hazan C, Shaver PR: Romantic love conceptualized as an attachment process. J Pers Soc Psychol 1987; 52:511-524

4. Bowlby J: Attachment and Loss. Volume 2. Separation: Anxiety and Anger. New York, NY, Basic Books, 1973

5. Fonagy P, Luyten P, Bateman A, Gergely G, Strathearn L, Target M, Allison E: Attachment and personality pathology, in Psychodynamic Psychotherapy for Personality Disorders: A Clinical Handbook. 1st ed. Edited by Clarkin JF, Fonagy P, Gabbard GO. Washington, DC, American Psychiatric Publishing, 2010, pp 37-88

6. Ainsworth MS, Blehar MC, Waters E, Wall S: Patterns of Attachment: A Psychological Study of the Strange Situation. Oxford, UK, Lawrence Erlbaum, 1978

7. Main M, Kaplan N, Cassidy J: Security in infancy, childhood, and adulthood – a move to the level of representation. Monogr Soc Res Child Dev 1985; 50:66-104

8. Bakermans-Kranenburg MJ, van IMH: The first 10,000 Adult Attachment Interviews: distributions of adult attachment representations in clinical and non-clinical groups. Attach Hum Dev 2009; 11:223-263

9. Hesse E: The Adult Attachment Interview: protocol, method of analysis, and empirical studies, in Handbook of Attachment: Theory, Research and Clinical Applications. 2 ed. Edited by Cassidy J, Shaver PR. New York, NY, Guilford Press, 2008, pp 395-433

10. George C, Kaplan J, Main M: Adult Attachment Interview: Unpublished rating manual. Department of Psychology, University of California at Berkeley. 1994

11. Barone L, Fossati A, Guiducci V: Attachment mental states and inferred pathways of development in borderline personality disorder: a study using the Adult Attachment Interview. Attach Hum Dev 2011; 13:451-469

12. Waters E, Merrick S, Treboux D, Crowell J, Albersheim L: Attachment security in infancy and early adulthood: a twenty-year longitudinal study. Child Dev 2000; 71:684-689

13. Waters E, Hamilton CE, Weinfield NS: The stability of attachment security from infancy to adolescence and early childhood: general introduction. Child Dev 2000; 71:678-683

14. Johnson JG, Cohen P, Brown J, Smailes EM, Bernstein DP: Childhood maltreatment increases risk for personality disorders during early adulthood. Arch Gen Psychiatry 1999; 56:600-606

15. Aaronson CJ, Bender DS, Skodol AE, Gunderson JG: Comparison of attachment styles in borderline personality disorder and obsessive-compulsive personality disorder. Psychiatr Q 2006; 77:69-80

16. Adshead G, Sarkar J: The nature of personality disorder. Adv Psychiatr Treat 2012; 18:162-172

17. Brennan KA, Shaver PR: Attachment styles and personality disorders: Their connections to each other and to parental divorce, parental death, and perceptions of parental caregiving. J Pers 1998; 66:835-878

18. Association AP: Diagnostic and Statistical Manual of Mental Disorders. 4th ed, text revision. Washington, DC, American Psychiatric Association, 2000

19. Westen D, Nakash O, Thomas C, Bradley R: Clinical assessment of attachment patterns and personality disorder in adolescents and adults. J Consult Clin Psychol 2006; 74:1065-1085

20. Zheng L, Chai H, Chen W, Yu R, He W, Jiang Z, Yu S, Li H, Wang W: Recognition of facial emotion and perceived parental bonding styles in healthy volunteers and personality disorder patients. Psychiatry Clin Neurosci 2011; 65:648-654

21. Widiger TA, Huprich S, Clarkin J: Proposals for DSM-5: introduction to special section of Journal of Personality Disorders. J Pers Disord 2011; 25:135

22. Picardi A, Fagnani C, Nistico L, Stazi MA: A twin study of attachment style in young adults. J Pers 2011; 79:965-991

23. Adshead G, Brodrick P, Preston J, Deshpande M: Personality disorder in adolescence. Adv Psychiatr Treat 2012; 18:109-118

24. Baird AA, Veague HB, Rabbitt CE: Developmental precipitants of borderline personality disorder. Dev Psychopathol 2005; 17:1031-1049

25. Braun K, Bock J: The experience-dependent maturation of prefronto-limbic circuits and the origin of developmental psychopathology: implications for the pathogenesis and therapy of behavioural disorders. Dev Med Child Neurol 2011; 53 (Suppl 4):14-18

26. Fonagy P, Luyten P, Strathearn L: Borderline personality disorder, mentalization, and the neurobiology of attachment. Infant Ment Health J 2011; 32:47-69

27. Bartz J, Simeon D, Hamilton H, Kim S, Crystal S, Braun A, Vicens V, Hollander E: Oxytocin can hinder trust and cooperation in borderline personality disorder. Soc Cogn Affect Neurosci 2011; 6:556-563

28. Insel TR, Young LJ: The neurobiology of attachment. Nat Rev Neurosci 2001; 2:129-136

29. Adshead G: Written on the body: deliberate self-harm as communication. Psychoanalytic Psychotherapy 2010; 24:69-80

30. Fossati A: Adult attachment in the clinical management of borderline personality disorder. J Psychiatr Pract 2012; 18:159-171

31. Strauss BM, Mestel R, Kirchmann HA: Changes of attachment status among women with personality disorders undergoing inpatient treatment. Counsel Psychother Res 2011; 11:275-283

32. Bender DS, Farber BA, Geller JD: Cluster B personality traits and attachment. J Am Acad Psychoanal 2001; 29:551-563

33. Cassidy J, Shaver PR: Handbook of Attachment: Theory, Research, and Clinical Applications. 2nd ed. New York, NY, Guilford Press, 2008

34. Meyer B, Pilkonis PA, Proietti JM, Heape CL, Egan M: Attachment styles and personality disorders as predictors of symptom course. J Pers Disord 2001; 15:371-389

35. Fossati A, Feeney JA, Donati D, Donini M, Novella L, Bagnato M, Carretta I, Leonardi B, Mirabelli S, Maffei C: Personality disorders and adult attachment dimensions in a mixed psychiatric sample: a multivariate study. J Nerv Ment Dis 2003; 191:30-37

36. Barone L: Developmental protective and risk factors in borderline personality disorder: a study using the Adult Attachment Interview. Attach Hum Dev 2003; 5:64-77

37. Choi-Kain LW, Fitzmaurice GM, Zanarini MC, Laverdiere O, Gunderson JG: The relationship between self-reported attachment styles, interpersonal dysfunction, and borderline personality disorder. J Nerv Ment Dis 2009; 197:816-821

38. McGauley G, Yakeley J, Williams A, Bateman A: Attachment, mentalization and antisocial personality disorder: The possible contribution of mentalization-based treatment. European Journal of Psychotherapy & Counselling 2011; 13:371-393

39. 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. J Consult Clin Psychol 1996; 64:22-31

40. Agrawal HR, Gunderson J, Holmes BM, Lyons-Ruth K: Attachment studies with borderline patients: a review. Harv Rev Psychiatry 2004; 12:94-104

41. Westen D: Clinical assessment of object relations using the TAT. J Pers Assess 1991; 56:56-74

42. Westen D, Lohr N, Silk K, Gold L, Kerber K: Object relations and social cognition in borderlines, major depressives, and normals: a thematic apperception test analysis. Psychol Assessment 1990; 2:355-364

43. Shedler J, Westen D: Dimensions of personality pathology: an alternative to the five-factor model. Am J Psychiatry 2004; 161:1743-1754

44. Bachelor A, Meunier G, Laverdiere O, Gamache D: Client attachment to therapist: relation to client personality and symptomatology, and their contributions to the therapeutic alliance. Psychotherapy (Chic) 2010; 47:454-468

45. Gabbard GO: Mind, brain, and personality disorders. Am J Psychiatry 2005; 162:648-655

46. Hulbert CA, Jennings TC, Jackson HJ, Chanen AM: Attachment style and schema as predictors of social functioning in youth with borderline features. Personal Ment Health 2011; 5:209-221

47. Miller JD, Levy KN: Personality and personality disorders in the DSM-5: introduction to the special issue. Personal Disord 2011; 2:1-3

48. Widiger TA, Trull TJ: Plate tectonics in the classification of personality disorder: shifting to a dimensional model. Am Psychol 2007; 62:71-83

49. Tackett JL, Balsis S, Oltmanns TF, Krueger RF: A unifying perspective on personality pathology across the life span: developmental considerations for the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders. Dev Psychopathol 2009; 21:687-713

50. Luyten P, Blatt SJ: Looking back towards the future: is it time to change the DSM approach to psychiatric disorders? The case of depression. Psychiatry 2007; 70:85-99

51. Fonagy P, Target M, Gergely G, Allen JG, Bateman AW: The developmental roots of borderline personality disorder in early attachment relationships: A theory and some evidence. Psychoanalytic Inquiry 2003; 23:412-459

52. Shah PE, Fonagy P, Strathearn L: Is attachment transmitted across generations? The plot thickens. Clin Child Psychol Psychiatry 2010; 15:329-345

53. Nolte T, Guiney J, Fonagy P, Mayes LC, Luyten P: Interpersonal stress regulation and the development of anxiety disorders: an attachment-based developmental framework. Front Behav Neurosci 2011; 5:55

54. Bennett CS: Attachment theory and research applied to the conceptualization and treatment of pathological narcissism. Clin Soc Work J 2005; 34:45-60

55. Bowlby J: Attachment and Loss. Volume 3: Loss, Sadness and Depression. London, UK, Hogarth Press/Institute of Psychoanalysis, 1980

56. Botbol M: Towards an integrative neuroscientific and psychodynamic approach to the transmission of attachment. J Physiol Paris 2010; 104:263-271

57. Fonagy P, Target M: Bridging the transmission gap: an end to an important mystery of attachment research? Attach Hum Dev 2005; 7:333-343

58. Slade A, Grienenberger J, Bernbach E, Levy D, Locker A: Maternal reflective functioning, attachment, and the transmission gap: a preliminary study. Attach Hum Dev 2005; 7:283-298

59. Lyons-Ruth K, Block D: The disturbed caregiving system: relations among childhood trauma, maternal caregiving, and infant affect and attachment. Infant Ment Health J 1996; 17:257-275

60. Crawford TN, Livesley WJ, Jang KL, Shaver PR, Cohen P, Ganiban J: Insecure attachment and personality disorder: a twin study of adults. Eur J Personality 2007; 21:191-208

61. Torgersen AM, Grova BK, Sommerstad R: A pilot study of attachment patterns in adult twins. Attach Hum Dev 2007; 9:127-138

62. Brussoni MJ, Jang KL, Livesley WJ, Macbeth TM: Genetic and environmental influences on adult attachment styles. Pers Relationship 2000; 7:283-289

63. Donnellan MB, Burt SA, Levendosky AA, Klump KL: Genes, personality, and attachment in adults: a multivariate behavioral genetic analysis. Pers Soc Psychol Bull 2008; 34:3-16

64. Bouchard MA, Target M, Lecours S, Fonagy P, Tremblay LM, Schachter A, Stein H: Mentalization in adult attachment narratives: reflective functioning, mental states, and affect elaboration compared. Psychoanal Psychol 2008; 25:47-66

65. Allen JG, Fonagy P, Bateman A: Mentalizing in Clinical Practice. Arlington, VA, American Psychiatric Publishing, 2008

66. Fonagy P, Bateman A: The development of borderline personality disorder--a mentalizing model. J Pers Disord 2008; 22:4-21

67. Fonagy P, Target M: The mentalization-focused approach to self pathology. J Pers Disord 2006; 20:544-576

68. Meins E: Security of Attachment and the Social Development of Cognition. Essays in Developmental Psychology. Hove, UK, Psychology Press, 1997

69. Picardi A, Toni A, Caroppo E: Stability of alexithymia and its relationships with the 'big five' factors, temperament, character, and attachment style. Psychother Psychosom 2005; 74:371-378

70. Allen JG: Mentalizing as a conceptual bridge from psychodynamic to cognitive-behavioural therapies. European Psychotherapy 2008; 8:103-121

71. Zanarini MC: Psychotherapy of borderline personality disorder. Acta Psychiatr Scand 2009; 120:373-377

72. Fonagy P, Bateman AW: Mentalizing and borderline personality disorder. J Ment Health 2007; 16:83-101

73. Buchheim A, Erk S, George C, Kachele H, Kircher T, Martius P, Pokorny D, Ruchsow M, Spitzer M, Walter H: Neural correlates of attachment trauma in borderline personality

disorder: a functional magnetic resonance imaging study. Psychiatry Res 2008; 163:223-235

74. Lyons-Ruth K, Yellin C, Melnick S, Atwood G: 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. Dev Psychopathol 2005; 17:1-23

75. Riggs SA, Sahl G, Greenwald E, Atkison H, Paulson A, Ross CA: Family environment and adult attachment as predictors of psychopathology and personality dysfunction among inpatient abuse survivors. Violence Vict 2007; 22:577-600

76. Teicher MH, Andersen SL, Polcari A, Anderson CM, Navalta CP: Developmental neurobiology of childhood stress and trauma. Psychiatr Clin North Am 2002; 25:397-426, vii-viii

77. Battle CL, Shea MT, Johnson DM, Yen S, Zlotnick C, Zanarini MC, Sanislow CA, Skodol AE, Gunderson JG, Grilo CM, McGlashan TH, Morey LC: Childhood maltreatment associated with adult personality disorders: findings from the Collaborative Longitudinal Personality Disorders Study. J Pers Disord 2004; 18:193-211

78. Sandberg DA, Suess EA, Heaton JL: Attachment anxiety as a mediator of the relationship between interpersonal trauma and posttraumatic symptomatology among college women. J Interpers Violence 2010; 25:33-49

79. Waldinger RJ, Schulz MS, Barsky AJ, Ahern DK: Mapping the road from childhood trauma to adult somatization: the role of attachment. Psychosom Med 2006; 68:129-135

80. Bateman AW, Fonagy P, editors. Mentalizing in Mental Health Practice. Washington, American Psychiatric Press, Inc, 2012

81. Panksepp J: Affective Neuroscience: The Foundations of Human and Animal Emotions. Oxford, UK, Oxford Unversity Press, 1998

82. Insel TR: Is social attachment an addictive disorder? Physiol Behav 2003; 79:351-357

83. Insel TR: The challenge of translation in social neuroscience: a review of oxytocin, vasopressin, and affiliative behavior. Neuron 2010; 65:768-779

84. Buchheim A, Heinrichs M, George C, Pokorny D, Koops E, Henningsen P, O'Connor MF, Gundel H: Oxytocin enhances the experience of attachment security. Psychoneuroendocrinology 2009; 34:1417-1422

85. Strathearn L, Fonagy P, Amico J, Montague PR: Adult attachment predicts maternal brain and oxytocin response to infant cues. Neuropsychopharmacology 2009; 34:2655-2666

86. Strathearn L, Iyengar U, Fonagy P, Kim S: Maternal oxytocin response during mother-infant interaction: associations with adult temperament. Horm Behav 2012; 61:429-435

87. Guastella AJ, Mitchell PB, Dadds MR: Oxytocin increases gaze to the eye region of human faces. Biol Psychiatry 2008; 63:3-5

88. Bartz JA, Hollander E: The neuroscience of affiliation: forging links between basic and clinical research on neuropeptides and social behavior. Horm Behav 2006; 50:518-528

89. Baumgartner T, Heinrichs M, Vonlanthen A, Fischbacher U, Fehr E: Oxytocin shapes the neural circuitry of trust and trust adaptation in humans. Neuron 2008; 58:639-650

90. Rimmele U, Hediger K, Heinrichs M, Klaver P: Oxytocin makes a face in memory familiar. J Neurosci 2009; 29:38-42

91. Guastella AJ, Mitchell PB, Mathews F: Oxytocin enhances the encoding of positive social memories in humans. Biol Psychiatry 2008; 64:256-258

92. Petrovic P, Kalisch R, Singer T, Dolan RJ: Oxytocin attenuates affective evaluations of conditioned faces and amygdala activity. J Neurosci 2008; 28:6607-6615

93. Theodoridou A, Rowe AC, Penton-Voak IS, Rogers PJ: Oxytocin and social perception: oxytocin increases perceived facial trustworthiness and attractiveness. Horm Behav 2009; 56:128-132

94. Heinrichs M, von Dawans B, Domes G: Oxytocin, vasopressin, and human social behavior. Front Neuroendocrinol 2009; 30:548-557

95. De Dreu CKW, Greer LL, Handgraaf MJJ, Shalvi S, Van Kleef GA, Baas M, Ten Velden FS, Van Dijk E, Feith SWW: The neuropeptide oxytocin regulates parochial altruism in intergroup conflict among humans. Science 2010; 328:1408-1411

96. Mikolajczak M, Gross JJ, Lane A, Corneille O, de Timary P, Luminet O: Oxytocin makes people trusting, not gullible. Psychol Sci 2010; 21:1072-1074

97. Luminet O, Grynberg D, Ruzette N, Mikolajczak M: Personality-dependent effects of oxytocin: greater social benefits for high alexithymia scorers. Biol Psychol 2011; 87:401-406

98. Simeon D, Bartz J, Hamilton H, Crystal S, Braun A, Ketay S, Hollander E: Oxytocin administration attenuates stress reactivity in borderline personality disorder: a pilot study. Psychoneuroendocrinology 2011; 36:1418-1421

99. Bartz JA, Zaki J, Bolger N, Ochsner KN: Social effects of oxytocin in humans: context and person matter. Trends Cogn Sci 2011; 15:301-309

100. Gabbard GO: Neurobiologically informed psychotherapy of borderline personality disorder, in Psychodynamic Psychotherapy Research. Edited by Levy RA, Ablon JS, Kächele H. New York, NY, Springer, 2012, pp 257-268

101. Caspi A, McClay J, Moffitt TE, Mill J, Martin J, Craig IW, Taylor A, Poulton R: Role of genotype in the cycle of violence in maltreated children. Science 2002; 297:851-854

102. Barr CS, Newman TK, Shannon C, Parker C, Dvoskin RL, Becker ML, Schwandt M, Champoux M, Lesch KP, Goldman D, Suomi SJ, Higley JD: Rearing condition and rh5-HTTLPR interact to influence limbic-hypothalamic-pituitary-adrenal axis response to stress in infant macaques. Biol Psychiatry 2004; 55:733-738

103. Higley JD, Suomi SJ, Linnoila M: CSF monoamine metabolite concentrations vary according to age, rearing, and sex, and are influenced by the stressor of social separation in rhesus monkeys. Psychopharmacology (Berl) 1991; 103:551-556

104. Vrticka P, Andersson F, Grandjean D, Sander D, Vuilleumier P: Individual attachment style modulates human amygdala and striatum activation during social appraisal. PLoS One 2008; 3:e2868

105. Ruocco AC, Amirthavasagam S, Zakzanis KK: Amygdala and hippocampal volume reductions as candidate endophenotypes for borderline personality disorder: a meta-analysis of magnetic resonance imaging studies. Psychiatry Res 2012; 201:245-252

106. Hall J, Olabi B, Lawrie SM, Mcintosh AM: Hippocampal and amygdala volumes in borderline personality disorder: A meta-analysis of magnetic resonance imaging studies. Personal Ment Health 2010; 4:172-179

107. Weniger G, Lange C, Sachsse U, Irle E: Reduced amygdala and hippocampus size in trauma-exposed women with borderline personality disorder and without posttraumatic stress disorder. J Psychiatry Neurosci 2009; 34:383-388

108. Schore AN: Relational trauma and the developing right brain: an interface of psychoanalytic self psychology and neuroscience. Ann N Y Acad Sci 2009; 1159:189-203

109. Miskovic V, Schmidt LA, Georgiades K, Boyle M, Macmillan HL: Adolescent females exposed to child maltreatment exhibit atypical EEG coherence and psychiatric impairment: linking early adversity, the brain, and psychopathology. Dev Psychopathol 2010; 22:419-432

110. Pally R: The neurobiology of borderline personality disorder: the synergy of "nature and nurture". J Psychiatr Pract 2002; 8:133-142

111. DeSantis SM, Baker NL, Back SE, Spratt E, Ciolino JD, Moran-Santa Maria M, Dipankar B, Brady KT: Gender differences in the effect of early life trauma on hypothalamic-pituitary-adrenal axis functioning. Depress Anxiety 2011; 28:383-392

112. Rinne T, de Kloet ER, Wouters L, Goekoop JG, DeRijk RH, van den Brink W: Hyperresponsiveness of hypothalamic-pituitary-adrenal axis to combined dexamethasone/corticotropin-releasing hormone challenge in female borderline personality disorder subjects with a history of sustained childhood abuse. Biol Psychiatry 2002; 52:1102-1112

113. Rinne T, de Kloet ER, Wouters L, Goekoop JG, de Rijk RH, van den Brink W: Fluvoxamine reduces responsiveness of HPA axis in adult female BPD patients with a history of sustained childhood abuse. Neuropsychopharmacology 2003; 28:126-132

114. Ni X, Chan D, Chan K, McMain S, Kennedy JL: Serotonin genes and gene-gene interactions in borderline personality disorder in a matched case-control study. Prog Neuropsychopharmacol Biol Psychiatry 2009; 33:128-133

115. Hruby R, Hasto J, Minarik P: Attachment in integrative neuroscientific perspective. Neuro Endocrinol Lett 2011; 32:111-120

116. Siever LJ, Weinstein LN: The neurobiology of personality disorders: implications for psychoanalysis. J Am Psychoanal Assoc 2009; 57:361-398

117. Davila J, Levy KN: Introduction to the special section on attachment theory and psychotherapy. J Consult Clin Psychol 2006; 74:989-993

118. 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. J Consult Clin Psychol 2006; 74:1027-1040

119. Kirchmann H, Steyer R, Mayer A, Joraschky P, Schreiber-Willnow K, Strauss B: Effects of adult inpatient group psychotherapy on attachment characteristics: an observational study comparing routine care to an untreated comparison group. Psychother Res 2012; 22:95-114

120. Sauer EM, Anderson MZ, Gormley B, Richmond CJ, Preacco L: Client attachment orientations, working alliances, and responses to therapy: a psychology training clinic study. Psychother Res 2010; 20:702-711

121. Romano V, Fitzpatrick M, Janzen J: The secure-base hypothesis: global attachment, attachment to counselor, and session exploration in psychotherapy. J Couns Psychol 2008; 55:495-504

122. Conradi HJ, De Jonge P, Neeleman A, Simons P, Sytema S: Partner attachment as a predictor of long-term response to treatment with couples therapy. J Sex Marital Ther 2011; 37:286-297

123. Meredith PJ, Strong J, Feeney JA: Adult attachment variables predict depression before and after treatment for chronic pain. Eur J Pain 2007; 11:164-170

124. Levy KN, Meehan KB, Weber M, Reynoso J, Clarkin JF: Attachment and borderline personality disorder: implications for psychotherapy. Psychopathology 2005; 38:64-74

125. Marmarosh CL, Gelso CJ, Markin RD, Majors R, Mallery C, Choi J: The real relationship in psychotherapy: relationships to adult attachments, working alliance, transference, and therapy outcome. J Couns Psychol 2009; 56:337-350

126. Chen-Chieh Huang T: Psychotherapy engagers versus non-engagers: attachment style, outcome expectations, need for therapy, session duration, and therapist helping skills in intake sessions. College Park, MD, University of Maryland; 2011

127. Barber JP, Connolly MB, Crits-Christoph P, Gladis L, Siqueland L: Alliance predicts patients' outcome beyond in-treatment change in symptoms. J Consult Clin Psychol 2000; 68:1027-1032

128. Saypol E, Farber BA: Attachment style and patient disclosure in psychotherapy. Psychother Res 2010; 20:462-471

129. Bowlby J: A Secure Base: Parent-Child Attachment and Healthy Human Development. New York, NY, Basic Books, 1988

130. Dinger U, Strack M, Sachsse T, Schauenburg H: Therapists' attachment, patients' interpersonal problems and alliance development over time in inpatient psychotherapy. Psychotherapy (Chic) 2009; 46:277-290

131. Sauer EM, Lopez FG, Gormley B: Respective contributions of therapist and client adult attachment orientations to the development of the early working alliance: a preliminary growth modeling study. Psychother Res 2003; 13:371-382

132. Fonagy P, Steele M, Steele H, Leigh T, Kennedy R, Mattoon G, Target M: Attachment, the reflective self, and borderline states: the predictive specificity of the Adult Attachment Interview and pathological emotional development, in Attachment Theory: Social, Developmental, and Clinical Perspectives. Edited by Goldberg S, Muir R, Kerr J. Hillsdale, NJ, Analytic Press, 1995, pp 233-279

133. Travis LA, Binder JL, Bliwise NG, Horne-Moyer HL: Changes in clients' attachment styles over the course of time-limited dynamic psychotherapy. Psychotherapy 2001; 38:149-159

134. Association AP: Practice guideline for the treatment of patients with borderline personality disorder. . Am J Psychiatry 2001; 158 (Suppl 1):1-52

135. Bateman A, Fonagy P: Comorbid antisocial and borderline personality disorders: mentalization-based treatment. J Clin Psychol 2008; 64:181-194

136. Bateman A, Fonagy P: Mentalization based treatment for borderline personality disorder. World Psychiatry 2010; 9:11-15

137. Sroufe LA, Egeland B, Carlson E: The Development of the Person: the Minnesota Study of Risk and Adaptation from Birth to Adulthood. New York, NY, Guilford, 2005

138. Bateman AW, Fonagy P: Mentalization-based treatment of BPD. J Pers Disord 2004; 18:36-51

139. Fonagy P: Attachment and borderline personality disorder. J Am Psychoanal Assoc 2000; 48:1129-1146

140. Fonagy P, Luyten P: A developmental, mentalization-based approach to the understanding and treatment of borderline personality disorder. Dev Psychopathol 2009; 21:1355-1381

141. Levy KN: The implications of attachment theory and research for understanding borderline personality disorder. Dev Psychopathol 2005; 17:959-986

142. Weinfield NS, Sroufe LA, Egeland B: Attachment from infancy to early adulthood in a high-risk sample: continuity, discontinuity, and their correlates. Child Dev 2000; 71:695-702

143. Bateman A, Fonagy P: Mentalization-Based Treatment for Borderline Personality Disorder: A Practical Guide. New York, NY, Oxford University Press, 2006

144. Gabbard GO, Horowitz MJ: Insight, transference interpretation, and therapeutic change in the dynamic psychotherapy of borderline personality disorder. Am J Psychiatry 2009; 166:517-521

145. Gabbard GO, Horwitz L, Allen JG, Frieswyk S, Newsom G, Colson DB, Coyne L: Transference interpretation in the psychotherapy of borderline patients: a high-risk, high-gain phenomenon. Harv Rev Psychiatry 1994; 2:59-69

146. Prunetti E, Framba R, Barone L, Fiore D, Sera F, Liotti G: Attachment disorganization and borderline patients' metacognitive responses to therapists' expressed understanding of their states of mind: A pilot study. Psychother Res 2008; 18:28-36

147. Bateman A, Fonagy P: Effectiveness of partial hospitalization in the treatment of borderline personality disorder: a randomized controlled trial. Am J Psychiatry 1999; 156:1563-1569

148. Bateman A, Fonagy P: Treatment of borderline personality disorder with psychoanalytically oriented partial hospitalization: an 18-month follow-up. Am J Psychiatry 2001; 158:36-42

149. Bateman A, Fonagy P: 8-year follow-up of patients treated for borderline personality disorder: mentalization-based treatment versus treatment as usual. Am J Psychiatry 2008; 165:631-638

150. Levy KN, Meehan KB, Yeomans FE: An update and overview of the empirical evidence for transference-focused psychotherapy and other psychotherapies for borderline personality disorder, in Psychodynamic Psychotherapy Research. Edited by Levy RA, Ablon JS, Kachele H. New York, NY, Springer, 2012, pp 139-167

151. Bateman A, Fonagy P: Psychotherapy for Borderline Personality Disorder: Mentalization-Based Treatment. New York, NY, Oxford University Press, 2004

152. Bateman A, Fonagy P: Randomized controlled trial of outpatient mentalization-based treatment versus structured clinical management for borderline personality disorder. Am J Psychiatry 2009; 166:1355-1364

153. Midgley N, Vrouva I: Minding the Child: Mentalization-Based Interventions with Children, Young People and their Families. London, UK, Routledge, 2012

154. Bateman A, Fonagy P: Health service utilization costs for borderline personality disorder patients treated with psychoanalytically oriented partial hospitalization versus general psychiatric care. Am J Psychiatry 2003; 160:169-171

155. Clarkin JF, Yeomans F, Kernberg OF: Psychotherapy of Borderline Personality: Focusing on Object Relations. Arlington, VA, American Psychiatric Publishing, 2006

156. Kernberg OF, Yeomans FE, Clarkin JF, Levy KN: Transference focused psychotherapy: overview and update. Int J Psychoanal 2008; 89:601-620

157. Hoglend P, Hersoug AG, Bogwald KP, Amlo S, Marble A, Sorbye O, Rossberg JI, Ulberg R, Gabbard GO, Crits-Christoph P: Effects of transference work in the context of therapeutic alliance and quality of object relations. J Consult Clin Psychol 2011; 79:697-706

158. 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. J Clin Psychol 2006; 62:481-501

159. Clarkin JF, Foelsch PA, Levy KN, Hull JW, Delaney JC, Kernberg OF: The development of a psychodynamic treatment for patients with borderline personality disorder: a preliminary study of behavioral change. J Pers Disord 2001; 15:487-495

160. Linehan MM, Comtois KA, Murray AM, Brown MZ, Gallop RJ, Heard HL, Korslund KE, Tutek DA, Reynolds SK, Lindenboim N: Two-year randomized controlled trial and follow-up of dialectical behavior therapy vs therapy by experts for suicidal behaviors and borderline personality disorder. Arch Gen Psychiatry 2006; 63:757-766

161. Clarkin JF, Levy KN, Lenzenweger MF, Kernberg OF: Evaluating three treatments for borderline personality disorder: a multiwave study. Am J Psychiatry 2007; 164:922-928

162. Giesen-Bloo J, van Dyck R, Spinhoven P, van Tilburg W, Dirksen C, van Asselt T, Kremers I, Nadort M, Arntz A: Outpatient psychotherapy for borderline personality disorder: randomized trial of schema-focused therapy vs transference-focused psychotherapy. Arch Gen Psychiatry 2006; 63:649-658

163. 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. Br J Psychiatry 2010; 196:389-395

164. Kellogg SH, Young JE: Schema therapy for borderline personality disorder. J Clin Psychol 2006; 62:445-458

165. Young JE, Klosko JS, Weishaat ME: Schema Therapy: A Practitioner's Guide. New York, NY, Guilford Press, 2003

166. Lobbestael J, Arntz A, Sieswerda S: Schema modes and childhood abuse in borderline and antisocial personality disorders. J Behav Ther Exp Psychiatry 2005; 36:240-253

167. Spinhoven P, Giesen-Bloo J, van Dyck R, Kooiman K, Arntz A: The therapeutic alliance in schema-focused therapy and transference-focused psychotherapy for borderline personality disorder. J Consult Clin Psychol 2007; 75:104-115

168. van Asselt AD, Dirksen CD, Arntz A, Giesen-Bloo JH, van Dyck R, Spinhoven P, van Tilburg W, Kremers IP, Nadort M, Severens JL: Out-patient psychotherapy for borderline personality disorder: cost-effectiveness of schema-focused therapy v. transference-focused psychotherapy. Br J Psychiatry 2008; 192:450-457

169. Farrell JM, Shaw IA, Webber MA: A schema-focused approach to group psychotherapy for outpatients with borderline personality disorder: a randomized controlled trial. J Behav Ther Exp Psychiatry 2009; 40:317-328

170. Bernstein D, Arntz A: S18-04 Schema focused therapy for forensic patients with personality disorders: New research findings. Eur Psychiatry 2009; 24 (Suppl 1):S94

171. Gude T, Hoffart A: Change in interpersonal problems after cognitive agoraphobia and schema-focused therapy versus psychodynamic treatment as usual of inpatients with agoraphobia and Cluster C personality disorders. Scand J Psychol 2008; 49:195-199

172. Fonagy P, Bateman A: Progress in the treatment of borderline personality disorder. Br J Psychiatry 2006; 188:1-3