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AN INTEGRATIVE ATTACHMENT THEORY FRAMEWORK OF PERSONALITY DISORDERS

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Over the last two decades, John Bowlby's attachment theory has increasingly become recognized as a clinically and theoretically useful approach for conceptualizing and understanding fundamental aspects of personality disorders (PDs). Attachment difficulties are characteristic of virtually all PDs and are often a central feature of personality pathology (Levy, 2005). For example, impoverished relationships are a cardinal feature of schizoid, avoidant, narcissistic, and antisocial PDs, whereas those with borderline personality disorder (BPD) and dependent PD struggle with feelings of aloneness and are preoccupied by fears of abandonment and the dissolution of close relationships. Furthermore, intense and stormy relationships are one of the central features of BPD (Levy, 2005), but those with dependent pathology appear incapable of functioning without the aid of others (Bornstein, 1993). A number of clinical theorists and researchers have recently begun to conceptualize these interpersonal aspects of PDs as stemming from impairments in the

underlying attachment organization (e.g., Fonagy et al., 1996; Gunderson, 1996; Levy & Blatt, 1999).

In this chapter, we articulate an attachment theoretical perspective on the development, psychopathology, and treatment of PDs. We begin with a brief review of Bowlby's theory of attachment and an overview of the evidence with respect to the major claims of attachment theory. Next, we discuss the theoretical, conceptual, and clinical links between attachment theory and PDs. We then present recent work linking attachment theory and PDs, with a focus on implications for underlying mechanisms of personality pathology. We conclude by articulating the implications of these findings for understanding PDs and noting salient issues that suggest further research.

ATTACHMENT THEORY

Attachment theory is concerned with the affective bond that emerges between child and caregiver early in development, as well as the implications of this bond for an individual's self-concept, self-regulation, and relationships throughout the life span (Bowlby, 1973, 1977). John Bowlby was a British psychiatrist and psychoanalyst who trained as a physician early last century. Although his work emerged out of an object relations tradition within psychoanalysis, he also used a combination of other scientific disciplines, including ethology, cognitive psychology, and developmental psychology, to explain affectional bonding between infants and their caregivers as well as the long-term effects these early "attachment" experiences have on the development of both personality and psychopathology. Integrating ideas from these disciplines, Bowlby postulated that the caregiver–infant attachment bond is a complex, instinctually guided behavioral system that has functioned throughout human evolution to protect the infant from danger and predators and to ensure that offspring reached sexual maturity, increasing the likelihood of reproduction. However, the survival gain of attachment lies not only in eliciting protection from caregivers but also in enhancing the infant's survival by providing comfort in times of stress and the experience of psychological containment of aversive affect states required for the development of a coherent and symbolizing self (Fonagy, 1999).

Bowlby contended that all infants become attached to their caregivers; however, he postulated that there were differences in the quality of the attachment between infants and caregivers. Bowlby hypothesized that the *felt security* provided through the attachment relationship in infancy is based on the caregiver's reliable and sensitive provision of love, comfort, and fulfillment of emotional needs, as well as food and warmth. This security is expressed in two main ways: the use of the caregiver as a safe haven to turn

to in times of distress and the use of the caregiver as a secure base from which to explore one's environment. Bowlby postulated that differences in infant–caregiver relationships would lead to distinctive patterns of attachment (and therefore of safe haven and secure base behaviors). Those caregivers who provided reliable and sensitive care would produce infants characterized by secure attachment, who would turn to caregivers when scared, cold, or needing emotional support and would otherwise be able to explore the environment with a sense that the caregiver was looking out for them. Those providing less reliable and sensitive care would produce infants who would display insecure attachment patterns characterized by an inability to use the caregiver for emotional support in times of distress or to explore their environment during stress-free times.

On the basis of Bowlby's writings, a seminal study by Ainsworth, Blehar, Waters, and Wall (1978) identified three major styles of attachment in infancy—secure, avoidant, and anxious-ambivalent—and linked these styles to caregivers' parenting behavior. Later, a fourth category, disorganized-disoriented, was added (Main & Solomon, 1986, 1990). The disorganized baby displays disorganized and/or disoriented behaviors in the parent's presence, suggesting a temporary "collapse" of a behavioral strategy. The findings from Ainsworth's lab have been replicated and extended in many subsequent studies in over 10,000 infants (Bakermans-Kranenburg & van IJzendoorn, 2009), and these differences in attachment are consistently associated with differences in caretaker warmth and responsiveness (van IJzendoorn, 1995). Additionally, a number of longitudinal studies have found impressive levels of influence of infant attachment styles on subsequent functioning and adaptive potential, as well as a high degree of continuity between attachment during infancy and attachment in adulthood (Fraley, 2002).

Bowlby proposed that through repeated transactions with their attachment figures, infants form mental representations of the self and others and develop expectations about interpersonal relations, which he called *internal working models* (IWMs). This concept is central to Bowlby's theory and the idea that attachment is stable over time. These IWMs or mental representations include expectations, beliefs, emotional appraisals, and rules for processing or excluding information (i.e., defenses). IWMs can be partly conscious or partly unconscious and need not be completely consistent or coherent. According to Bowlby, they organize personality development and subsequently direct and shape future relationships by acting as a template or heuristic that contributes to shaping thoughts, feelings, and behaviors in future relationships.

The continuity of these mental models over time is rooted in the complementary nature of working models of self and other and concomitant expectations regarding one's role in interpersonal relationships. For example, an infant whose needs are typically left unmet may develop a model of

others as unreliable and uncaring. Consequently, the neglected infant and child may, as an adult, believe each new person will prove to be inaccessible, uncaring, and unresponsive. Conversely, the child whose needs have been addressed in a consistent loving and supportive manner may subsequently regard others as dependable and trustworthy.

Longitudinal studies have found, consistent with Bowlby's hypothesis that attachment patterns tend to remain stable over time, that attachment classifications demonstrate considerable stability between infancy and young adulthood. Experiences in relationships during the intervening period of time contribute to the continuity or discontinuity of attachment patterns for any given individual (Fraley, 2002). Such contributions suggest that although attachment patterns are rooted in early experiences with caregivers, later relationships can influence these patterns.

Relation Between Attachment and Other Perspectives

Bowlby's IWMs are very similar to the psychoanalytic concept of mental representations proposed by other object relations theorists; however, there are two notable exceptions. First, Bowlby emphasized that IWMs were constantly being updated, whereas the psychoanalytic concept of mental representations at that time conceptualized these representations as being relatively static. Second, Bowlby stressed the realistic aspects of IWMs, writing that IWMs "are tolerably accurate reflections of the experiences those individuals actually had" (Bowlby, 1973, p. 235), whereas dominant theories of the time focused on the fantasy and distorted aspects of representations (Klein, 1948). Although Bowlby emphasized the realistic aspects of IWMs, he also understood that IWMs could be distorted in cases of severe psychopathology as seen in individuals with PD, especially those with BPD. His emphasis on the accurate aspects of IWMs was in part a reaction to Klein's emphasis on fantasy, distortion, and dismissiveness of actual experience but was also due to his focus on normative development. Accordingly, despite Bowlby's emphasis on their realistic aspects, his concept of IWMs is highly consistent with the work of Blatt (1974) on mental representations and that of Kernberg (1976) on object relations, with their focus on structural and defensive aspects of representation. Kernberg's concept of an object relation dyad (ORD) is similar to Bowlby's IWM in that both stress that representations of self and others are complementary and mutually confirming. Both concepts include unconscious aspects and affective aspects of experience and acknowledge that IMW/ORD need not be consistent, coherent, or integrated. In fact, Bowlby stressed that individuals could have multiple and inconsistent representations that could oscillate and were often dealt with through what he called *defensive exclusion*, a process remarkably similar to Kernberg's

concept of splitting. These representational concepts from attachment and object relations theory are consistent with the concept of cognitive schemas as well as Mischel's (Mischel & Shoda, 1995) cognitive-affective personality system model, although representation in attachment and object relations theory includes both conscious and unconscious components and more explicitly emphasizes structural and developmental aspects of representation.

Assessment of Attachment in Adulthood

Attachment patterns are commonly assessed and described within the context of two independent research traditions: a developmental psychological tradition and a social psychological tradition. The developmental psychological tradition generally assesses attachment organization with the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), which uses questions about experiences with childhood caregivers and how these experiences influenced one's adult personality. There are three main AAI classifications: secure, preoccupied, and dismissing. Secure individuals value attachment relationships and seem able to deal effectively with potentially invasive feelings about the past or future. Preoccupied individuals appear overwhelmed by negative emotions related to past attachment relationships. Dismissing individuals appear to defend against the awareness of painful feelings related to attachment relationships, and they often overvalue their sense of independence while devaluing close relationships. A fourth category, unresolved/disorganized, is assigned when individuals demonstrate lapses in the monitoring of speech or reasoning when discussing traumatic experiences and is thought to represent a lack of resolution of these experiences.

The social psychological tradition uses self-report measures to assess adult attachment with questions concerning an individual's attitudes about or behaviors in close relationships. Although the first self-report measures used a categorical model based on AAI classifications (Hazan & Shaver, 1987), the dimensions of anxiety and avoidance have more recently been used to define a model with four categories (Bartholomew & Horowitz, 1991): secure (low anxiety and low avoidance), preoccupied (high anxiety and low avoidance), dismissing-avoidant (low anxiety and high avoidance), and fearful-avoidant (high anxiety and high avoidance). Individuals high in attachment anxiety display intense worry in relationships, are particularly anxious about being abandoned, and use emotion regulation strategies that intensify affect related to attachment relationships. By contrast, individuals high in avoidance overvalue independence, are uncomfortable with closeness, and use emotion regulation strategies that inhibit affect related to attachment relationships. The AAI and self-report categories display poor correspondence

with one another, but the dimensional scales derived from each measure are significantly related (Shaver, Belsky, & Brennan, 2000).

Regardless of how attachment patterns are assessed, attachment insecurity is associated with distress, impaired interpersonal functioning, and psychopathology (Crowell, Fraley, & Shaver, 1999). This association is consistent with Bowlby's (1977) view that attachment insecurity was central to the development of disordered personality traits and other psychopathology. This may be because attachment anxiety contributes to hypervigilance toward cues related to attachment or threat, but avoidance contributes to distancing from such cues. Given this pattern, attachment insecurity could contribute to an impaired ability to effectively invest in non-attachment-related activities, to self-regulate, and to respond to conflicts within relationships. Such contribution may be consistent with the disturbances observed in personality pathology, particularly in an interpersonal context.

AN ATTACHMENT THEORETICAL PERSPECTIVE ON PERSONALITY DISORDERS

Bowlby (1973) believed that early attachment experiences, repeatedly elaborated over time, had long-lasting effects, tended to persist across the life span, and are among the major determinants of personality. Bowlby further postulated that insecure attachment lies at the center of disordered personality traits. He believed that working models of attachment were related to "many forms of emotional distress and personality disturbance" (Bowlby, 1977, p. 201) and that attachment difficulties underlie "a whole range of adult dysfunctions," including "personality disorders" (Bowlby, 1977, p. 206). For instance, Bowlby suggested that anxious ambivalent attachment, with its "tendency to make excessive demands on others and to be anxious and clingy when they are not met," could be linked to "dependent and hysterical personalities," and that avoidant attachment—a product of caretakers' rebuffing a child's bids for comfort or protection—with a corresponding "blockage in the capacity to make deep relationships . . . may later be diagnosed a narcissistic" personality (Bowlby, 1973, p. 124) or even develop as "psychopathic personalities" (Bowlby, 1973, p. 14).

More recent work has expanded upon Bowlby's hypotheses by characterizing the links between specific attachment styles and personality in more detail. One approach, as outlined by Levy and Blatt (1999; Blatt & Levy, 2003), combines cognitive-developmental psychoanalytic theory with attachment theory to propose that more and less adaptive forms of attachment exist within both dismissing and preoccupied attachment patterns, denoting different developmental levels based upon the degrees of differentiation and

integration of representational or working models that underlie these patterns. Further, these different developmental levels are believed to be associated with particular personality styles or types of personality pathology. Levy and Blatt proposed in particular that preoccupied attachment runs along a relatedness continuum from individuals without PD to those with BPD, with gregarious individuals and individuals with hysterical personality styles in the middle of the continuum. By contrast, Levy and Blatt noted that avoidant attachment runs along a self-definitional continuum: from individuals without PD who are striving for personal development to those who are more obsessive, followed respectively by those with avoidant PD, then those with narcissistic PD, and finally—at the lowest developmental levels—to those with BPD and antisocial PD. The clinical characteristics of several PDs will be discussed in terms of their predominant attachment styles based on this delineation by Levy and Blatt (1999) and later empirical research.

Although some disorders have most often been found to correspond to a preoccupied style (e.g., dependent and histrionic PDs), a dismissive style (e.g., schizoid and antisocial PDs), or a fearful style (e.g., avoidant PD), other PDs can be characterized by aspects of both preoccupied and dismissing dynamics. Or they may be sufficiently heterogeneous to be characterized by an avoidant type and a preoccupied type, as is the case with narcissistic and borderline personalities. A number of studies have found evidence for two types of narcissistic patients, those characterized by a grandiose presentation that would be more characteristic of dismissive attachment and those characterized by a vulnerable presentation that would be more characteristic of an anxious-preoccupied attachment. Following Kernberg's proposal that the grandiose and vulnerable presentations are two sides of the same coin, Levy (2012) described how narcissistic patients can vacillate between more dismissive presentations and more dependent presentations. Likewise, many clinical writers have noted that those with BPD quickly vacillate between disparate mental states. Levy and Kelly (2008) specifically noted how those with BPD can show indications of preoccupied and avoidant attachment on the AAI, as they can provide narratives that are both highly enmeshed (a preoccupied characteristic) and derogating (a dismissive characteristic) when speaking about the same situation.

RESEARCH ON ATTACHMENT AND PERSONALITY DISORDERS

In this section, we examine the growing body of research on attachment and PDs as it bears on the conceptual framework and clinical dynamics proposed by Bowlby and others. We first review clinical studies, mostly concerning the association between attachment and PDs, but also those studies

that focused on basic neurocognitive and neuroscience research that either examined attachment and PD processes directly or examined constructs relevant to understanding the relationship between attachment and personality. Finally, we discuss the developmental psychopathology and psychotherapy literature relevant to attachment processes in patient groups with PD.

Association Between Attachment and Personality Disorders

Research has largely supported theoretical assertions of an overlap between PDs and insecure attachment. Much attention in the literature has been given to insecure attachment and BPD (Levy, 2005) and antisocial personality to a lesser extent. There are fewer data on attachment variables and other PDs, and what is available tends to compare dimensions of self-reported adult romantic attachment to self-reported PD symptoms (for exceptions, see Barone, 2003; Levy et al., 2006; Rosenstein & Horowitz, 1996). Within that literature, a negative relationship between attachment security and overall personality pathology has been found consistently, but the relationships between specific PDs and insecure attachment types are less consistent. Findings from both self-report and interview measures suggest that preoccupied attachment tends to be associated with histrionic, dependent, and avoidant PDs, whereas dismissing attachment tends to be associated with narcissistic, antisocial, schizoid, and paranoid PDs. Fearful attachment is associated with paranoid, schizotypal, avoidant, borderline, obsessive–compulsive, and narcissistic PDs. These findings were confirmed in a meta-analysis examining AAI distributions in clinical samples (Bakermans-Kranenburg & van IJzendoorn, 2009).

Despite some differences across studies, the findings tend to converge across both interview and self-report measures and various age groups and samples. Both preoccupied and dismissing attachment are associated with BPD, and in general preoccupied attachment is uniquely associated with the anxiety-based PDs such as dependent and Avoidant PDs; whereas dismissing attachment is associated with antisocial and narcissistic PDs and some of the Cluster A PDs (especially schizoid and paranoid PDs). Fearful avoidance has sometimes been associated with Cluster A PDs and sometimes with Cluster C PDs. However, some inconsistencies in the findings remain regarding the relationship between specific PDs and specific dimensions, or styles, of attachment. These inconsistencies suggest that other factors may be contributing to these inconsistencies. Much of this research has focused on BPD, with less attention focused on other PDs. However, the findings related to BPD may have important implications for other PDs and could guide future research.

Although the association between BPD and attachment anxiety has been fairly consistent, the association between BPD and attachment

avoidance has been less so. Some studies have found no significant relationships (e.g., Meyer, Pilkonis, & Beevers, 2004), and others have found a relationship only when attachment anxiety is also high (e.g., Levy, Meehan, Weber, Reynoso, & Clarkin, 2005). In light of these inconsistencies, some researchers have suggested that the relationship between specific attachment patterns and BPD may be indirect; studies have shown that certain personality traits, such as impulsivity, aggression, and trait negative affect (Scott, Levy, & Pincus, 2009), serve as mediators that can help to explain the relationship between adult attachment and BPD. Rejection sensitivity and negative views of self have also been shown to mediate the attachment–BPD relationship (Boldero et al., 2009). Other findings suggest that fearful forms of attachment (i.e., the combination of attachment anxiety and avoidance) are associated with reactive aggression, attachment avoidance is associated with self-harm, and attachment anxiety is associated with anger and irritability in patients with BPD (Critchfield, Levy, Clarkin, & Kernberg, 2008). Additionally, there is evidence that preoccupied attachment interacts with anger and social dysfunction to predict BPD (Morse et al., 2009).

Taken together, these findings suggest the presence of a significant but indirect relationship between adult attachment and BPD that is consistent with the main tenets of attachment theory. In times of distress, securely attached adults tend to seek support from attachment figures in the form of physical contact, supportive comments, and emotional support, all of which are behaviors analogous to the secure base and safe haven behavior observed in children by Bowlby (1988). However, in insecurely attached adults, these distress-reducing behaviors are disrupted. As a result, such individuals are more vulnerable to experiencing intense feelings of anger, aggression, and impulsivity, all of which are primary characteristics of BPD (Levy et al., 2006). Thus, one's attachment style appears to be related to aspects of personality and personality traits, which are in turn related to personality pathology such as BPD. Additionally, the hypersensitivity to rejection and negative views of self observed in BPD can be understood in the context of Bowlby's conceptualization of internal working models of the self and other in relationships (Bowlby, 1973). It appears that some of the attachment-related difficulties experienced by individuals with BPD may be due in part to the presence of internal working models of others that are characterized by an expectation that others will be rejecting and by an internal working model of the self that is negative.

Another possible reason for the inconsistent findings with regard to BPD is the heterogeneity of the disorder (Johansen, Karterud, Pedersen, Gude, & Falkum, 2004). Because BPD is a polythetic disorder in which five of nine criteria are needed for the diagnosis, there are 256 different ways to meet criteria for BPD. Given the heterogeneity of BPD, we would suggest

that different attachment processes may be prominent in some patients with BPD having a particular clinical presentation, whereas other attachment processes may be prominent in other patients with BPD characterized by a different clinical presentation. Levy (2005; Levy et al., 2005) noted that those with BPD are characterized by aspects of both preoccupied and dismissing attachment processes.

Psychophysiological and Neurobiological Correlates of Attachment and Personality Disorders

Consistent with Bowlby's notion of attachment as a biologically based behavioral system, a line of research has developed that focuses on understanding the biological correlates of attachment through the use of psychophysiology measures such as electrodermal activity (skin conductance) and heart rate. Beginning in the late 1970s, Sroufe and Waters (1977) demonstrated that both secure and insecurely attached children experienced an increase in heart rate during the separation phase of the Strange Situation. During the reunion phase, securely attached children's heart rate returned to baseline quickly, whereas avoidantly attached children's heart rate continued at an elevated rate. This finding provided some of the first evidence that avoidant children, who appear calm and indifferent, are actually stressed by the situation and employ behavioral strategies (e.g., ignoring the parent, engaging a toy) aimed at reducing or defending against distress, albeit ineffectively.

More recently, researchers have studied similar processes in adults by collecting psychophysiology data during attachment-relevant tasks designed to activate the attachment system, such as the AAI. Dismissing adults who minimize negative emotions related to attachment experiences through the use of deactivating strategies experience higher levels of conflict and inhibition, as evidenced by an increased skin conductance response, particularly on AAI questions that ask about separation (or threatened separation) from and rejection by parents (Dozier & Kobak, 1992). Across multiple studies, dismissing attachment appears to be related to skin conductance increases in response to attachment-related stressors, whereas preoccupied attachment tends to be unrelated to such increases (e.g., Diamond, Hicks, & Otter-Henderson, 2006). There is also evidence that both dismissing and preoccupied adults demonstrate a greater divergence between their self-reported reactivity and their psychophysiological reactivity (Diamond et al., 2006), supporting the notion that the defensive strategies employed by insecurely attached individuals may effectively help to regulate behavioral responses to attachment-related stressors but do not seem to aid in the regulation of physiological arousal.

Although little research has directly examined attachment-related differences in psychophysiological reactivity among individuals with PD, there is some evidence to suggest that these individuals may be particularly vulnerable to experiencing breakdowns in defensive behavioral strategies aimed at reducing distress in response to attachment-related stressors, as evidenced by physiological reactivity. For example, high levels of life stress and high symptom load have been shown to moderate the relationship between attachment avoidance and vagal withdrawal (Ehrenthal, Irgang, & Schauenburg, in press). High life stress and high symptom load predicted a larger vagal withdrawal, which is indicative of less adaptive self-regulation. Given that individuals with PDs tend to experience high levels of life stress and a multitude of other symptoms (Zanarini et al., 1998), it seems likely that these individuals may be at particular risk for breakdowns in adaptive processes that help minimize distress in the face of attachment-related stressors.

Oxytocin, Attachment, and Personality Disorders

Oxytocin is a neuropeptide that has a primary function in facilitating labor and contractions during childbirth, as well as lactation after childbirth. Additionally, human and animal research suggests that oxytocin plays an important role in affiliative behaviors and in the development and maintenance of close attachments (Heinrichs & Domes, 2008). Intranasally administered oxytocin has been shown to increase accuracy in the recognition of emotions in faces, particularly for more complex emotions (Domes, Heinrichs, Michel, Berger, & Herpetz, 2007); to increase judgments of the trustworthiness and attractiveness of faces (Theodoridou, Rowe, Penton-Voak, & Rogers, 2009); and to increase trust in a social trust game (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005). Additionally, among insecurely attached but healthy populations, oxytocin may help to increase feelings of secure attachment and decrease feelings of insecure attachment (Buchheim et al., 2009).

However, when insecure attachment exists simultaneously with certain types of psychopathology, as is often the case in BPD and other PDs, the generally positive effects of oxytocin do not seem to persist. In contrast, it appears that oxytocin may actually have an opposite effect on individuals with BPD in that it decreases, rather than increases, feelings of trust and cooperation (Bartz et al., 2011). These findings raise the important question of why oxytocin appears to function differently in individuals with BPD than in healthy populations. One possible explanation is that oxytocin actually functions differently at a biological level. However, given that the response of biological systems (e.g., the hypothalamic–pituitary–adrenal axis) following oxytocin administration is similar in individuals with BPD and healthy controls (Simeon et al., 2011), this explanation is unlikely.

It is more plausible and consistent with an attachment theoretical perspective that individuals with BPD respond differently than healthy individuals to the feelings elicited by oxytocin because they experience and interpret the feelings of closeness elicited by oxytocin differently. Whereas these feelings are typically experienced as positive and comforting and responded to with increased prosocial behaviors such as trust and cooperation, those with BPD experience the feelings of closeness as dangerous. They respond with fear, anxiety, and increased vulnerability and thus become less trusting and cooperative and more antagonistic. This interpretation is consistent with and sheds light on psychotherapy findings indicating that supportive interventions, particularly validations, which are typically experienced positively in patients without PD, result in increased disorganization in individuals with BPD (Prunetti et al., 2008).

Neuroscience Research

In the context of the experimental psychopathology and psychophysiological research reviewed above, the growing area of research using functional magnetic resonance imaging (fMRI) technology can help us to begin to understand the relationship between PDs and attachment at yet another level of analysis. There is a vast neuroscience literature relevant for understanding the neurological basis of PDs. However, rather than providing a comprehensive review of this literature, the following section focuses on select literature that has direct implications for understanding the neural correlates of attachment and PDs. As is the case with the previously reviewed literature, much of the research on PDs and attachment using fMRI technology has focused on BPD; however, some research also exists on antisocial, narcissistic, and schizotypal PDs. We begin by examining research relevant for understanding the neural basis of attachment-related constructs in healthy populations, then discuss the implications of attachment-related neuroscience research in the context of BPD, and follow with a brief review of relevant literature on other PDs.

Attachment and fMRI in Healthy Populations

According to Bowlby, the attachment system is automatically activated in response to real or imagined physical or psychological threats and motivates individuals to seek or maintain support and proximity from their attachment figures (that is, other individuals who are trusted to provide support and safety in times of distress). Experimental studies have supported this assumption among healthy populations by showing that individuals are able to more quickly identify proximity-related words (Mikulincer, Birnbaum, Woddis, & Nachmias, 2000), as well as the names of their attachment figures

(Mikulincer, Gillath, & Shaver, 2002), in a lexical decision-making task when primed with threat-related words. Additionally, there are important attachment style differences such that attachment anxiety is associated with heightened accessibility of attachment figure representations, and attachment avoidance is associated with decreased accessibility when the threat-related prime is *separation*. These findings can be interpreted as evidence that in the context of threat, proximity-related thoughts, as well as thoughts of one's attachment figures, become activated and are readily accessible, but that one's attachment style may influence the degree to which these representations are accessible.

More recent research using fMRI has taken these findings a step further and identified attachment style differences in specific brain regions that are associated with attachment security. Canterberry and Gillath (2013) found that when anxiously attached participants were primed with security words (e.g., comfort, embrace, love, support), compared to insecure words (e.g., loss, lonely, rejected, abandon), they had increased activation in areas of the brain (e.g., posterior cingulate, paracentral, inferior parietal, orbitofrontal cortex, superior frontal) that would suggest they experienced the secure primes with more emotional intensity and at the same time had difficulty regulating the emotions. Among avoidantly attached participants, increased activation was observed in areas of the brain associated with memory (e.g., parahippocampal gyrus), suggesting the possibility that these individuals may be making repeated memory retrieval attempts due to a lack of easily accessible secure representations. Additionally, these individuals showed increased activations in the amygdala and insula, areas that are associated with processing of salient or aversive emotional stimuli. Thus, not only are differences in activation of the attachment system evident at the behavioral level, but there is evidence from neural imaging studies to suggest that these differences are reflected at the level of the brain.

Also relevant for understanding individual differences in attachment styles is research on the ways in which attachment style may influence one's reactions to emotionally salient social cues, such as facial expressions. According to Bowlby, IWMs, or mental representations of the self and others, include expectations, beliefs, emotional appraisals, and rules for processing or excluding information that direct and shape thoughts, feelings, and behaviors in future relationships. Thus, when one is confronted with emotionally salient information, the structure of one's IWM of the self and other may influence the ways in which that information is evaluated and responded to, and these differences should be evident at the neural level. It appears in particular that anxiously attached individuals are particularly sensitive to cues of social punishment, as reflected by increased activation in the left amygdala in response to negative feedback in the form of angry faces during social game,

whereas avoidantly attached individuals show decreased responsiveness to social reward, as evidenced by reduced activation in the striatum and ventral tegmental areas in response to positive feedback in the form of smiling faces (Vrtička, Andersson, Grandjean, Sander, & Vuilleumier, 2008). These findings are consistent with theoretical assertions of attachment theory and behavioral observations showing that anxiously attached individuals tend to show a hypervigilance for emotionally salient social cues (Dozier & Kobak, 1992; Mikulincer & Shaver, 2007; Rom & Mikulincer, 2003; Zeijlmans van Emmichoven, van IJzendoorn, de Ruiter, & Brosschot, 2003), whereas individuals with avoidant attachment styles tend to downplay the importance of emotionally relevant information (Dozier & Kobak, 1992). There is some evidence that purposefully distancing oneself, or downregulating one's response to emotional stimuli, may help to regulate emotional response to social situations (Koenigsberg et al., 2010).

Attachment and fMRI in Populations With Personality Disorder

There are a few perspectives, using fMRI, that are relevant for thinking about the relationship between attachment and PDs. One such perspective views *mentalization*, or the ability to understand oneself and others in terms of mental states, as an important capacity that contributes to one's ability to function in close relationships (Fonagy & Bateman, 2008). These authors view failures in the capacity to mentalize as a core feature of BPD. From this perspective, mentalization emerges from the attachment relationship and fully develops in the context of a secure attachment. However, when the attachment relationship is not secure, particularly in the context of malevolence or traumatic experiences that are common in BPD, the attachment system can become disorganized. Fonagy, Luyten, and Strathearn (2011) argued that "the disorganization of attachment relationships . . . disorganizes the self-structure, creating incoherence and splitting, which makes stress particularly hard to manage" (p. 49). As a result, they argued, the attachment system can become hyperreactive and generate intense emotional states. In the context of these intense emotional states, the capacity to reflect and assess the intentions of the self and others becomes impossible and may contribute to some of the interpersonal difficulties experienced by individuals with BPD.

These theoretical assertions are consistent with our knowledge of emotional arousal and stress regulation. Fonagy et al. (2011) argued that as arousal and stress increase, a switch occurs in which processing goes from cortical systems important for the use of executive function and controlled processing (i.e., mentalizing) to subcortical systems related to automatic responding (i.e., nonmentalizing). Neuroimaging evidence suggests that when individuals try to suppress negative thoughts, attachment anxiety may be associated with a reliance on brain areas relevant for memory and emotion processing

(e.g., hippocampus, anterior temporal pole, dorsal anterior cingulate) and with less reliance on areas of the brain related to emotion regulation (e.g., orbitofrontal cortex; Gillath, Bunge, Shaver, Wendelken, & Mikulincer, 2005). In patients with BPD, behavioral inhibition appears to be limited in the context of negative emotion, as evidenced by decreased activation in prefrontal brain regions and increased amygdala activity in these individuals compared with controls (Silbersweig et al., 2007).

Thus, individuals with BPD, who tend to have insecure attachment styles and are prone to intense emotional states and a hyperreactivity of the attachment system, may have a lower set point for switching from cortical to subcortical neural systems and therefore from controlled to automatic, or non-mentalizing, modes. Given the proneness to switch to nonmentalizing modes and therefore to experience failures in mentalization, it follows that at the behavioral level, this may be manifested by a decreased ability to understand the emotional states of others and to respond in an emotionally and behaviorally appropriate manner. There is evidence from numerous fMRI studies that individuals with BPD tend to respond to emotional stimuli with increased activation, compared with controls, in subcortical areas of the brain (e.g., amygdala; New et al., 2012). Hazlett et al. (2012), contrasting patients with BPD with patients who had schizotypal PD and healthy controls, found that patients with BPD had a slower return to baseline activity in the amygdala following the onset of pleasant and unpleasant (but not neutral) photographs. This finding suggests that individuals with BPD have long-lasting reactions to emotional cues. Further, patients with BPD reported low levels of self-reported affect suggesting a lack of understanding of their own emotional state.

Other Personality Disorders

There is little neuroscience literature directly relevant for understanding the relationship between attachment and other PDs. However, a few studies providing evidence for neural correlates consistent with key features of each PD have implications for understanding the ways in which individuals may function in attachment relationships. For example, Narcissistic PD has been shown to be associated with structural and functional abnormalities in areas of the brain associated with empathy: Individuals with Narcissistic PD have decreased gray matter and activation during an empathy task (Fan et al., 2011; Schulze et al., 2013).

Developmental Psychopathology Research

Much developmental psychopathology research has examined how attachment influences the development of PDs. Most of this research has focused on BPD. In general, these studies have examined how attachment

experiences interact with other dispositional factors (e.g., genetics, temperament) to influence the development of PD features. Some studies also examine this topic by looking at a range of psychological outcomes in the children of parents with PDs.

Prospective longitudinal studies on BPD symptomatology illustrate how early attachment experiences, particularly when examined along with other dispositional traits, appear to be powerful predictors of later borderline personality pathology and likely influence personality development via their influence on the elaboration and consolidation of mental representations over the life span (or, rather, through disturbances in this process). Carlson, Egeland, and Sroufe (2009) followed a group of individuals from infancy to adulthood and found that—in addition to infant temperament and disposition—a number of early relationship and representational 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 father presence (12–64 months), and overall family stress (3–42 months) were predictive of later BPD symptoms. Disturbance in emotion regulation, behavior, attention, relationship functioning, and self-representation in adolescence were also predictive of adult borderline symptoms. Using a similar design, Crawford, Cohen, Chen, Anglin, and Ehrensaft (2009) examined the trajectory of BPD symptoms over time with a particular focus on the effect of maternal separations prior to age 5. Extended early separations (i.e., those lasting 1 month or more) 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.

Additional studies have further explored the relationship between attachment and the development of BPD in adolescence and early adulthood; these studies have generally found that attachment anxiety is particularly related to negative outcomes during this period. For example, measured in early adolescence, preoccupied attachment predicts increased risky sexual behavior and aggression (both features of BPD) over the course of adolescence, as well as steeper rates of growth in these behaviors (Kobak, Zajac, & Smith, 2009). Further, one investigation of potential pathways between attachment, personality features, and borderline symptoms (Scott et al., 2009) 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 contribute to the development of BPD when they occur in the context of high levels of attachment anxiety.

Other studies have examined how attachment and early relationship experiences more generally interact with genes and underlying biological systems to contribute to the development of personality pathology. Research on a polymorphism in the serotonin transporter gene (*5-HTTLPR*), wherein a short allele (either homozygous or heterozygous) has been implicated in different areas of behavioral dysregulation, has been one fruitful area of study. Kochanska, Philibert, and Barry (2009) found a strong interaction between infant attachment organization and alleles of this gene with regard to self-regulation in early childhood, with security of attachment a strong predictor of good regulatory capacities for those with the short *5-HTTLPR* allele. Zimmerman, Mohr, and Spangler (2009) found a similar pattern in adolescents with regard to regulation of autonomy and aggression. Both of these studies suggest that attachment may affect the expression of genes related to dysregulation. Taken together, these studies reflect how constitutional factors may combine with attachment-related experiences to influence how an individual is affected by external stressors and perturbations. That is, individuals with high constitutional disadvantage likely have a lower threshold for environmental perturbations to overwhelm their capacity to assimilate and accommodate to their environment, whereas those with a lower constitutional load may be resilient to greater perturbations and require greater disruption to develop personality pathology.

To better understand the development and transmission of personality pathology, researchers have focused on the offspring of parents with PDs. Findings from these studies suggest that child–parent interactions are often atypical and disturbed among these parents, affecting later attachment and functioning, particularly in the areas of psychosocial function and emotion regulation.

In a Still Face paradigm study, Crandell, Patrick, and Hobson (2003) found that mothers with BPD were more likely to act insensitively, vacillating between intrusive and disengaged behaviors. In turn, their infants showed more dazed looks and looking away during the Still Face portion of the protocol and also showed lowered affect and continued dazed looks during the play after the Still Face. On follow-up, 80% of the infants of the mothers with BPD showed signs of disorganized attachment, including frightened and disoriented behavior during attachment bids, further illustrating the continuing nature of this style of interaction as well as its impact (Hobson, Patrick, Crandell, García-Pérez, & Lee, 2005). Newman, Stevenson, Bergman, and Boyce (2007) showed that infants of mothers with BPD were similarly detached and lacked attentiveness toward their mothers, also suggesting that these ways of relating were reflective of disturbances in attachment between mother and child.

Other studies (e.g., Macfie & Swan, 2009) have found that children of mothers with BPD provided narratives about parent figures with significantly

more role reversal, fear of abandonment, and more negative parent–child relationship expectations than did children of mothers without BPD. 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 than did controls.

Psychotherapy Research

Bowlby conceptualized attachment theory as having relevance for psychotherapy, particularly as manifested in the relationship between therapist and patient. He described the therapist's function as "provid[ing] the patient with a secure base from which to explore both himself and also his relations with all those with whom he has made or might make, an affectional bond" (Bowlby, 1977, p. 421). In other words, Bowlby theorized that the role of the therapist was "to provide the patient with a temporary attachment figure" and that this role would serve several therapeutic goals. That is, the therapist would help the patient explore past and present attachments, as well as how these attachments inform the patient's IWMs and how they affect the patient's relationships both inside and outside of therapy. This kind of exploration would allow patients to revise IWMs and to internalize the relationship with the therapist as a safe haven they can return to internally during times of distress. Many existing psychotherapies employ techniques or principles that are concordant with these tenets of attachment theory, and interventions that are more explicitly based on attachment theory are increasingly being developed. In the realm of PD treatment, some existing empirically supported interventions are either explicitly or implicitly based on attachment theory, and the techniques employed in these treatments echo the therapeutic roles proposed by Bowlby. In addition, a growing body of research has focused on how patient attachment affects the process and outcome of psychotherapy for PDs as well as how patient attachment may change over the course of treatment.

Attachment-Based Treatments for Personality Disorders

As noted earlier, attachment theory acts as an underlying theoretical basis for multiple treatments for PDs. Most of these treatments are designed for BPD. One such treatment, mentalization-based therapy (Fonagy & Bateman, 2008), is explicitly based upon attachment theory. Fonagy and Bateman (2008) proposed that those with BPD are not able to develop the capacity to reflect on the intentional behavior in the self and others by reflecting on mental states within the context of an early attachment relationship. The primary goal of treatment is to foster the development of this capacity, with the idea that doing so in turn leads to more stability in terms of one's sense of

self and in relationships with others. Mentalization-based therapy has demonstrated efficacy over short-term and long-term follow-up with regard to reduction of depressive symptoms, suicidality, parasuicidality, and length of inpatient stays as well as improvement in social functioning (see Fonagy & Bateman, 2008, for a review).

Otto Kernberg's (1976) theory of BPD, upon which transference-focused psychotherapy (TFP; Clarkin, Yeomans, & Kernberg, 2006) is based, is not explicitly grounded in attachment theory, but much of it is consistent with the central tenets of this theory. In particular, Kernberg theorized that BPD is characterized by unintegrated and undifferentiated representations of self and others (i.e., identity diffusion), as well as the use of immature defenses and poor reality testing. In terms of development, Kernberg has noted, the representational difficulties at the core of BPD result from disturbances in the internalization of early attachment relationships. Accordingly, a primary goal of TFP is for the patient to develop more integrated and differentiated representations of self and others, largely through analysis of the transference that emerges between therapist and patient. The efficacy of TFP in contributing to symptomatic change in patients with BPD has been demonstrated in two randomized controlled trials (Clarkin, Levy, Lenzenweger, & Kernberg, 2007; Doering et al., 2010), and Levy et al. (2006) showed its efficacy with regard to changes in attachment representations and security.

Attachment and the Process and Outcome of Psychotherapy for Personality Disorders

A number of researchers and theorists have examined how client attachment affects psychotherapy process and outcome for clients with PDs and how client attachment patterns can change as a result of treatment. These studies typically assess client attachment prior to treatment and examine how it relates to later outcomes. Unsurprisingly, a general finding has been that secure attachment prior to treatment predicts better treatment outcomes across treatments for patients with PDs (Meyer, Pilkonis, Proietti, Heape, & Egan, 2001; Strauss et al., 2006). However, many clients with PDs present with more insecure or disorganized attachment classifications, and research suggests that different attachment patterns (e.g., anxious vs. avoidant) may differentially predict trajectories of treatment engagement, process, and outcome. Therefore, understanding how these different attachment styles may impact treatment is important in making predictions about the course of treatment for these individuals.

Clinical and theoretical writers have suggested that clients with PDs who are more anxiously attached (particularly those with preoccupied attachment) may initially present as very engaged and interested in pursuing treatment (Levy & Blatt, 1999). Empirical studies have indicated that individuals

with high levels of attachment anxiety are more likely to report their distress and seek help for emotional difficulties (Vogel & Wei, 2005). Additionally, preoccupied individuals appear to use medical services more frequently; for instance, preoccupied individuals with Cluster B PDs report longer medical hospitalizations than do matched individuals of other attachment classifications (Hoermann, Clarkin, Hull, & Fertuck, 2004). Although preoccupied clients may appear more disclosing and dependent on clinicians, they are not more compliant with treatment recommendations (Riggs, Jacobvitz, & Hazen, 2002). Additionally, there is evidence that anxious attachment may be especially predictive of poorer treatment outcomes among both preoccupied and fearful-avoidant clients with a variety of PDs (Fonagy et al., 1996; Strauss et al., 2006). By contrast, more avoidantly attached individuals tend to report less distress and are reluctant to seek help (Vogel & Wei, 2005), and they tend to be less compliant with treatment recommendations and to develop weaker therapeutic alliances than do individuals of other attachment classifications (Mallinckrodt, Porter, & Kivlighan, 2005). In spite of this, some evidence suggests that dismissing attachment at the onset of treatment may predict better outcomes than will more anxious attachment patterns, at least in a sample of patients with mixed diagnoses (Fonagy et al., 1996). Additional work with samples with PD is needed to determine whether these findings generalize to such samples.

Researchers have begun to investigate how client attachment may change during the course of treatment for PDs. Levy et al. (2006) examined changes in attachment status in 90 patients with BPD who were randomized to one of three treatments: TFP, dialectical behavior therapy, or a modified psychodynamic supportive psychotherapy. After a year of treatment, 31.8% (seven of 22) of patients who received TFP changed from insecure to secure with regard to attachment, and this change was not observed in the other treatments. Additionally, this finding was replicated in a randomized controlled trial of TFP (Doering et al., 2010) by Buchheim, Hörz, Rentrop, Doering, and Fischer-Kern (2012).

Another recent study examined shifts in attachment as a result of short-term inpatient treatment in a sample of women diagnosed with BPD, avoidant PD, or both disorders. Strauss, Mestel, and Kirchmann (2011) found that although patients experienced symptom reduction, there was little evidence of a shift in attachment security, suggesting that shifts from insecure to secure attachment are less likely in short-term treatment than in long-term treatment. Taken together, these findings suggest that psychotherapy may indeed impact client attachment in clients with BPD, but that this impact may differ depending on treatment length or other characteristics.

In addition to considering attachment as a moderator or outcome of treatment, some preliminary work has indicated that attachment-related

constructs may also be used to examine psychotherapy process. Samstag, Muran, Wachtel, Slade, and Safran (2008) used the narrative coherence coding system from the AAI on sessions that were randomly selected from the first third of treatment to examine psychotherapy process as a predictor of treatment outcome in a sample of clients who were primarily diagnosed with Cluster C PDs (with comorbid depression and/or anxiety). Coherence ratings were significantly higher in clients who experienced better outcomes than in those who experienced poor outcomes or dropped out of treatment. These findings suggest that more coherent narratives in psychotherapy sessions may indicate particularly fruitful collaboration within the client–therapist dyad. It is also possible that client characteristics, including attachment, may influence the level of narrative coherency, which may in turn influence the course of psychotherapy.

CONCLUSION

Attachment theory provides a cogent and empirically based model for PDs that has both parsimony and breadth. It can explain both the intrapsychic and interpersonal aspects in ways that are consistent with research findings from a host of studies across multiple domains of knowledge, such as evolutionary biology, ethology/comparative psychology, developmental psychology, experimental social-personality psychology, and neuroscience (Levy, Beeney, & Temes, 2011).

Additionally, attachment theory not only is consistent with but also has broadly influenced and enhanced a number of theoretical orientations including psychodynamic (Eagle & Wolitzky, 2009), interpersonal (Klerman, Weissman, Rounsaville, & Chevron, 1984), cognitive (McBride & Atkinson, 2009), and behavioral (Sterkenburg, Janssen, & Schuengel, 2008). Moreover, attachment theory provides a framework for thinking integratively across these different clinical orientations.

The advantage of an attachment theory perspective, compared with that of psychoanalysis, object relations theory, and interpersonal theory, is its strong developmental evidence base. Although it is conceptually rich, is very nuanced, and is developing an increasing evidence base, psychoanalysis is particularly weak in terms of direct tests of developmental concepts. Attachment theory provides a crisp and testable framework for which much evidence exists. Similarly, although research on interpersonal theory has established a solid psychometric base and revealed important findings regarding person perception and interpersonal dynamics in individuals with PD, it does not have the broad evidence base of attachment theory, particularly with regard to development, non-self-reported outcomes, and longitudinal

continuity and discontinuity. For these reasons we feel that attachment theory offers a parsimonious, broad, and integrative framework for conceptualizing normative personality development as well as PDs. Attachment theory is a rich theoretical model with a strong evidence base and thus is a promising approach for conceptualizing and studying PDs in the 21st century.

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