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An Attachment Theoretical Framework for Personality Disorders

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Personality disorders are highly prevalent, associated with considerable morbidity, and difficult to treat. Intrapersonal and interpersonal difficulties are central to the pathology observed in personality disorders. Attachment theory provides a broad yet parsimonious explanatory framework for understanding the development, maintenance, and treatment of personality pathology. Attachment theory conceptualizes human behaviour in ways consistent with multiple scientific traditions, including evolutionary, developmental, and neuropsychological domains. The relevant literature has focused predominately on borderline personality disorder, although a few studies have examined attachment associations with other personality disorders, such as narcissistic and avoidant personality disorders. The authors first outline attachment theory and discuss assessment of attachment patterns from both developmental and social psychological viewpoints. Next, the authors present empirical support for attachment theory and its associations with personality, including studies of developmental, physiological, neurobiological, and genetic correlates of personality pathology. They then look at psychotherapy research relevant to (a) underlying components of current psychotherapies, (b) the relation between attachment and both therapy process and treatment outcome, and (c) changes in attachment styles as a result of personality disorder treatment. Finally, the authors call for future research to delve deeper into specific relationships between attachment constructs and personality pathology, as well as to address personality disorders more broadly.

Keywords: attachment theory, personality disorder, psychopathology, psychotherapy

In this article, we propose that John Bowlby and Mary Ainsworth's attachment theory provides a cogent, empirically based, clinically useful, and theoretically coherent model for understanding many of the intrapsychic and interpersonal aspects that are central to personality disorders (PDs). This theoretical framework brings both parsimony and breadth to the conceptualisation of the etiology, maintenance, and treatment of PDs. Further, attachment theory is consistent with research findings from a host of studies across multiple domains of knowledge, including evolutionary biology, ethology/comparative psychology, developmental psychology, experimental social-personality psychology, and neuroscience (Fonagy, Luyten, & Strathearn, 2011; Levy, Beeney, & Temes, 2011).

Difficulties with attachment are often at the heart of most PDs (Levy, 2005). Antisocial (AS), narcissistic (N), avoidant (AV), and schizoid (SZ) PDs, for example, are characterised by impoverished interpersonal relationships. On the other hand, those with borderline personality disorder (BPD) and dependent personality disorder (DPD) tend to struggle with intense feelings of aloneness and fears of abandonment (Gunderson & Lyons-Ruth, 2008). Individuals with BPD tend to have intense and stormy relationships (Levy, 2005), whereas those with dependent pathology appear incapable of functioning without the aid of others (Bornstein, 1993). Such interpersonal challenges have been hypothesised to stem from underlying maladaptive attachment schemas (e.g., Fonagy et al., 1995; Gunderson, 1996; Levy & Blatt, 1999). Our goal is to outline and elaborate on attachment theory as a foundation for the etiology and pathology of PDs and to highlight the implications of this theory for treatment. We begin with a review of attachment theory and its empirical basis, reviewing findings from neurobiological and developmental literatures linking attachment and PDs. We then examine the role of attachment in psychotherapy process and outcome. Finally, we summarise the implications of attachment theory for understanding PDs and present directions for future research.

Attachment Theory

Early interactions between child and caregiver are at the core of attachment theory. The affective bond that develops between caregiver and infant is the developmental nucleus of identity formation, intrapersonal regulation, and interpersonal attitudes (Bowlby, 1973, 1977). The attachment bond, according to Bowlby, is a complex, behavioural system that has functioned throughout human evolution to protect the infant from danger by seeking security from a caregiver guardian, thus enhancing the infant's likelihood of survival and eventual reproduction. At the same time, this bond promotes comfort during stressful periods, reducing negative affect and allowing the infant to develop a healthy, realistic, and coherent sense of self (Fonagy, 1999).

Although this adaptive form of attachment is perhaps ideal, Bowlby suggested that other modes of attachment exist. He hypothesised that security of attachment derives from a caregiver's

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reliable and sensitive provision of love and comfort, as well as food and warmth. Infants with a caregiver who meets their biological and psychological needs turn to their caregiver when experiencing distress, fear, or other needs (safe haven), while otherwise exploring their surroundings with a sense that the caregiver is looking out for them (secure base). However, if the infant's needs are not met by a caregiver, then adaptive attachment is disrupted. These infants are unable to garner support from their caregiver when distressed or are limited in their ability to explore during stress-free times. Thus, differences in styles of behaviour surrounding the caregiver as safe haven and secure base reveal underlying disparities in the formation of the infant–caregiver bond.

Ainsworth, Blehar, Waters, and Wall (1978) adapted Bowlby's conceptualisation of attachment differences in a seminal study using what they termed the "Strange Situation," a procedure consisting of several separation and reunion episodes between an infant and his or her caregiver. On the basis of the infant's behaviour in response to these episodes, Ainsworth et al. identified three major attachment styles: secure, anxious–ambivalent, and avoidant. Securely attached children seek closeness to their caregiver, indicate distress at separation, and show moderate interest in a stranger. Anxious–ambivalent children exhibit heightened distress at separation, are difficult to comfort when the caregiver returns, and require constant attention from and closeness to their caregiver. Avoidant children do not appear distressed by separation from their caregiver, may ignore their caregiver on her return, and treat a stranger and their caregiver similarly. A fourth attachment style—disorganized–disoriented—was later added by Main and Solomon (1986, 1990). Disorganization is characterised by confused and disoriented behaviours on the part of the infant, suggesting a temporary "collapse" of a behavioural strategy. In a meta-analysis of the Strange Situation including over 2,000 infants studied by multiple research groups, these same four categories of attachment behaviour were found (van IJzendoorn & Kroonenberg, 1988). These styles have been directly linked to differences in caregiver warmth and responsiveness (van IJzendoorn, 1995).

Central to attachment theory is the concept of "internal working models" (Bowlby, 1973; Bretherton & Munholland, 2008), mental schemas of self and other that guide interactions, provide expectations about interpersonal relations, and generate emotional appraisals and rules for processing or excluding information. These working models emerge from early infant–caregiver interactions that entrain the infant's conceptualisation of what resources and support can be reliably obtained from others and how to function independently given such support. An infant whose needs are met and who is nurtured emotionally by a caregiver will develop working models of others as reliable and supportive. However, an infant who is unsupported or ignored by a caregiver may construct schemas of others as inaccessible and uncaring and may continue into adulthood with this negative working model.

Bowlby (1973) suggested that internal working models become components of individuals' personality structure and tend to remain stable over time. A meta-analysis of longitudinal studies of attachment found that early childhood attachment was moderately predictive of individuals' attachment style in adulthood (Fraley, 2002), although there was some variability across studies. Given the relative stability of internal working models, insecure attachment in infancy may become maladaptive if the child or adult remains unable to connect emotionally with others who could provide support. Fortunately, later relationships may continue to alter these models, correcting for unhealthy views of self and others, and leading to more adaptive interpersonal interactions (Fraley, 2002).

Attachment in Adulthood

Both developmental and social psychological research traditions have focused on the evaluation of adult attachment schemas. Developmental psychologists generally assess attachment patterns through the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). The AAI queries individuals about childhood experiences with caregivers in an attempt to understand how these experiences influenced one's adult personality and interpersonal attitudes. Similar to the four styles identified in infants, adult attachment patterns are categorised by the AAI as secure, preoccupied, dismissing, and unresolved/disorganized attachment. Secure adults value attachment relationships and seem to be able to deal effectively with potentially invasive feelings about the past or future. Preoccupied individuals appear overwhelmed by anxiety and negative emotions related to close relationships. Dismissing adults distance themselves from attachment figures, apparently defending against painful feelings related to attachment relationships. Unresolved/disorganized individuals exhibit lapses in monitoring reasoning or speech when discussing events such as loss or trauma; these lapses are thought to reflect intrusions from contradictory internal working models (Hesse & Main, 2000), indicating a disorganized attachment pattern.

The social psychological tradition generally uses self-report measures to assess adults' current attitudes and behaviours toward significant others. These measures generate scores on dimensions of anxiety and avoidance, creating four categories (Bartholomew & Horowitz, 1991). Secure adults score low on both anxiety and avoidance, preoccupied individuals are high in anxiety and low in avoidance, dismissing–avoidant individuals are low in anxiety and high in avoidance, and fearful–avoidant adults score high on both anxiety and avoidance. Although attachment categories show poor consistency between the AAI and self-report measures (Crowell, Fraley, & Shaver, 1999), anxiety and avoidance correlate well across measures (Shaver, Belsky, & Brennan, 2000). It should also be noted that the negative assumptions about relationships characteristic of BPD and likely other PDs (Arntz, Dietzel & Dreessen, 1999) may impact how individuals with PDs respond to self-report measures, making it difficult to establish whether attachment style influences personality pathology or vice versa. The use of longitudinal studies and measures such as the AAI (which is not scored based on content) therefore remain essential for understanding the relationship between attachment and personality pathology.

These two areas of research present complementary views of security and insecurity of attachment. Insecurity, regardless of how it is measured, is associated with distress, impaired interpersonal functioning, and psychopathology (Crowell et al., 1999; Mikulincer & Shaver, 2007), as is unresolved attachment (Creasey, 2002; Riggs et al., 2007). Bowlby (1977) theorized that attachment insecurity led to personality disorders. Attachment anxiety may lead to debilitating worry in close relationships and an inability to regulate intense negative affect, whereas avoidance potentially contributes to distrust in relationships and distancing

behaviours, resulting in emotional suppression. Unresolved attachment may present additional difficulties, such as lapses into dissociated states of mind (Lyons-Ruth, Bronfman, & Parsons, 1999). Such intra- and interpersonal problems are consistent with the disturbances seen in personality pathology.

An Attachment Theoretical Perspective on Personality Disorders

Bowlby (1973) linked specific PDs to specific styles of insecurity, suggesting that anxious attachment could be linked to "dependent and hysterical personalities" (p. 124) and that avoidant attachment may later emerge as NPD and "psychopathic personalities" (p. 14). Recent work has developed Bowlby's hypotheses. The integrative theory of Levy and Blatt (1999; Blatt & Levy, 2003) proposes that more or less adaptive forms of attachment, composed of working models of varying levels of differentiation and integration, exist within both dismissing and preoccupied attachment patterns. Levy and Blatt attributed levels of adaptiveness to different levels of psychological development. Blatt and Levy proposed that preoccupied individuals fall along a continuum, with nonpersonality-disordered individuals at one end and those with BPD at the other. Histrionic PD (HPD) and DPD lie between these two anchors at different levels of adaptiveness. Similarly, dismissing attachment can describe individuals without PDs (high adaptiveness), with obsessive–compulsive PD (OCPD) or AVPD (moderate adaptiveness) and with BPD or ASPD (low adaptiveness).

Research on Attachment and Personality Disorders

Having outlined the theoretical processes underlying PDs, we now review the empirical literature supporting the conceptual framework proposed by Bowlby and others. First, we examine studies of clinical samples, focusing on those describing associations between PDs and attachment, as well as research on physiological and neuropsychological substrates of attachment and PDs. We then discuss the developmental psychopathology literature that addresses attachment and PD development and conclude by summarising psychotherapy research focused on attachment processes in the treatment of PDs.

Associations Between Attachment and Personality Disorders

A large body of empirical research has shown support for the theoretical connection between attachment insecurity and personality pathology (Levy, 2005). Much attention has been given to insecure attachment and BPD, as well as ASPD and AVPD to a much lesser extent. The data relating attachment variables and PDs tend to compare dimensions of self-reported adult attachment to self-reported PD symptoms (see Barone, 2003; Levy et al., 2006; Rosenstein & Horowitz, 1996 for exceptions). Although attachment insecurity appears highly associated with personality pathology, the relationships between specific PDs and attachment patterns are less clear. Self-report and interview-based studies have identified connections between preoccupied attachment and HPD, DPD, and AVPD; between dismissing attachment and paranoid PD (PPD), NPD, ASPD, and SZPD; and between fearful attachment and schizotypal PD (STPD), PPD, AVPD, BPD, OCPD, and NPD (Levy, 2005). Bakermans-Kranenburg and van IJzendoorn (2009) confirmed these findings in a meta-analysis of AAI distributions in clinical samples. They also found that unresolved attachment was associated with BPD and similar disorders. Although literature on most PDs is lacking, the findings related to attachment and BPD may have important implications for other PDs and could guide future research.

Attachment anxiety and BPD have been linked in a host of studies (see Levy, 2005, for a review), whereas the association between avoidance and BPD is less consistent, with some studies finding no relationship between these constructs (e.g., Meyer, Pilkonis, & Beevers, 2004). However, other research has shown correlations between attachment avoidance and BPD when anxiety was also high (Levy, Meehan, Weber, Reynoso, & Clarkin, 2005), suggesting that fearful attachment may contribute to BPD. Further research has hypothesised mediators between different styles of attachment and BPD. Aggression, impulsivity, and trait negative affect (Scott, Levy, & Pincus, 2009), as well as rejection sensitivity and negative views of self (Boldero et al., 2009) have been identified as intermediary variables in the attachment–BPD relationship. The relation between preoccupied attachment and BPD appears to be mediated by anger, irritability, and social dysfunction (Critchfield, Levy, Clarkin, & Kernberg, 2008; Morse et al., 2009), whereas avoidance is associated with self-harm (Critchfield et al., 2008). The connection between fearful attachment and BPD can be explained in part by reactive aggression (Critchfield et al., 2008). Finally, the contradictory and fragmented internal working models associated with unresolved attachment may be consistent with the unstable sense of self and others characteristic of BPD (Liotti, 2000); some authors have argued that disorganized attachment in childhood may directly contribute to a later diagnosis of BPD (e.g., Fonagy, Gergely, Jurist, & Target, 2002). These findings suggest that attachment styles may contribute significantly to BPD, although the pathways underlying this connection are unclear. Thus, one's attachment style appears to underlie personality traits in adulthood, including the maladaptive characteristics of PDs. For example, children who distrust or who depend excessively on others may see themselves as negative or worthless as adults. Such working models can be seen in adults with BPD who are hypersensitive to rejection and exhibit high levels of self-blame.

Psychophysiological Correlates of Attachment and Personality Disorders

Consistent with Bowlby's notion of attachment as a biologically influenced behavioural system, a line of research has sought to understand the biological and physiological underpinnings of attachment using measures of electrodermal activity and heart rate. Early research in this vein revealed differences in heart-rate changes between secure and insecure children in the Strange Situation, such that secure infants experienced an increase in heart rate during the separation phase but a quick return to baseline during the reunion phase, whereas avoidantly attached children's heart rate continued at an elevated rate (Sroufe & Waters, 1977). These findings were the first to indicate that avoidant children, who appear calm and indifferent (e.g., choosing to engage with toys over interacting with the caregiver), may in fact engage in

these behaviours to defend against internal distress and downregulate negative affect, albeit ineffectively.

These findings have been replicated in adults during the AAI. Avoidant adults show increased electrodermal activity when queried about potential abandonment or rejection in past attachment relationships (Dozier & Kobak, 1992). Similar to the results in children in the Strange Situation, these data suggest that dismissing adults may have difficulties with intense negative emotion related to significant others, despite reporting disinterest. Several studies have corroborated these findings, revealing that dismissing individuals experience increased electrodermal activity in response to attachment-related stressors, whereas preoccupied individuals do not show such a response (e.g., Diamond, Hicks, & Otter-Henderson, 2006). Although anxious and avoidant adults may not exhibit the same patterns of physiological response, evidence suggests that both groups demonstrate a divergence between their self-reported and physiological reactivity (Diamond et al., 2006), indicating that defensive strategies used by insecure individuals may help regulate behavioural responses but may be ineffective in reducing physiological arousal.

Little research has tested specific differences in physiological reactivity to attachment cues among individuals with PDs. One study found that the combination of attachment avoidance, stressful life events, and psychopathological symptoms predicted larger vagal withdrawal, suggesting impaired self-regulation (Ehrenthal, Irgang, & Schauenburg, in press). These findings imply an interaction between attachment insecurity and the high levels of life stress and symptom complexity commonly experienced by those who develop personality pathology (Daley, Hammen, Davila, & Burge, 1998; Zanarini et al., 1998). Attachment insecurity may then explain maladaptive emotion regulation processes found in PDs. However, future research must study the associations between attachment and these physiological and pathological correlates directly in individuals with PDs to confirm these potential connections.

Oxytocin, Attachment, and Personality Disorders

The pituitary hormone oxytocin has been studied as a possible factor underlying the formation and maintenance of attachment bonds (Heinrichs & Domes, 2008). Intranasally administered oxytocin has been shown to increase ratings of attractiveness and trustworthiness of faces (Theodoridou, Rowe, Penton-Voak, & Rogers, 2009) and heighten levels of trust in a social trust game (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005). Emotion recognition in face stimuli is also enhanced by oxytocin (Domes, Heinrichs, Michel, Berger, & Herpertz, 2007). Furthermore, among insecurely attached but healthy individuals, oxytocin may increase secure and decrease insecure attachment attitudes (Buchheim et al., 2009).

However, research on the effects of oxytocin in insecurely attached individuals with BPD has not revealed the same positive effects. Instead, oxytocin may have the opposite effect in BPD individuals, decreasing feelings of trust and cooperation (Bartz et al., 2011). It is possible that oxytocin reacts differently with the biology of those with BPD, although this is unlikely given that oxytocin administration produces similar responses in biological systems such as the hypothalamic–pituitary–adrenal axis between individuals with BPD and healthy controls (Simeon et al., 2011). A more likely explanation, and one supported by the theoretical literature on attachment, is that individuals with BPD and healthy controls respond differently to the feelings elicited by oxytocin. For healthy individuals, feelings of closeness and intimacy associated with oxytocin are generally seen as positive. However, individuals with BPD may view the same feelings of closeness as threatening, thus experiencing decreases in trust and collaboration after receiving oxytocin.

Neuroscience Research

Alongside psychophysiological research, studies using functional magnetic resonance imaging (fMRI) have also contributed to our consideration of personality pathology development. Although most of this research focuses on BPD, a small body of literature has examined ASPD, NPD, and STPD. We first address fMRI research relevant to attachment in healthy individuals, followed by attachment-related research in the context of BPD, and we conclude with a brief review of related studies of other PDs.

Attachment and fMRI in healthy populations. Imaging studies of healthy adults have discovered several differences in brain activity patterns associated with different attachment styles. Canterberry and Gillath (2013) found that anxiously attached individuals exhibited greater activation in areas of the brain associated with the experience and regulation of emotions (e.g., posterior cingulate cortex, inferior parietal lobule) when primed with secure attachment words like *comfort* compared with insecure words such as *abandon*. These patterns of activation are consistent with the implication that preoccupied adults respond with heightened emotional sensitivity to secure primes while at the same time reveal difficulties downregulating intense affect. Canterberry and Gillath likewise discovered increases in activation among avoidant individuals in brain regions devoted to memory (e.g., parahippocampal gyrus), suggesting repeated memory retrieval attempts because of a lack of easily accessible secure representations. Activation also increased in the amygdala and insula, areas associated with processing salient or aversive emotional stimuli. These findings suggest that not only do insecurely attached individuals exhibit behavioural dysregulation but they also reveal hypersensitivity to emotional cues and difficulties with emotion regulation on the neural level.

Another important area of research that is relevant for understanding individual differences in attachment styles focuses on neural activation patterns underlying socioemotional behaviour and its modulation of cognitive processes underlying PDs. Vrtička and Vuilleumier (2012) provided a review of recent research on the underlying neurobiological substrates of adult attachment styles. They suggested that subcortical limbic brain regions are involved in social approach and cortical limbic regions are responsible for social aversion and that these systems modulate both emotion regulation and the ability to conceptualise the mental state of others. Each of these domains is differentially regulated in anxious or avoidant attachment styles; for example, avoidant adults show hypoactivity in the subcortical limbic system and associated deficits in social approach behaviour.

Specific research has found that anxiously attached individuals display hyperactivity in the amygdala to images of angry faces, indicative of extreme sensitivity to cues of social punishment, whereas avoidant adults show hypoactivity in the ventral tegmen-

tum and striatal areas to images of smiling, suggesting a blunted response to social reward (Vrticka, Andersson, Grandjean, Sander, & Vuilleumier, 2008). These findings correspond with behavioural observations of attachment-related differences in responses to social cues, in which anxiously attached individuals exhibit heightened reactivity to emotionally salient social cues (Dozier & Kobak, 1992; Mikulincer & Shaver, 2007; Rom & Mikulincer, 2003; Zeijlmans van Emmichoven, van IJzendoorn, De Ruiter, & Brosschot, 2003), whereas avoidant individuals tend to downplay the importance of emotionally relevant information (Dozier & Kobak, 1992). Further evidence suggests that purposefully distancing oneself, or downregulating one's response, may help to regulate intense negative affect in social situations (Koenigsberg et al., 2010). Taken together, these data suggest that avoidantly and anxiously attached adults may use different strategies to regulate similar negative responses to interpersonal interactions.

Attachment and fMRI in BPD. The ability to conceptualise the mental states of self and others, known as "mentalizing," has been theorized to be a core feature of personality development. Fonagy and Bateman (2008) hypothesised that failures in the capacity to mentalize lead to the interpersonal challenges associated with BPD. These authors suggested that insecure attachment formation in childhood, often resulting from traumatic experiences that are common in BPD, leads to problems with identity formation and difficulties with emotion regulation (Fonagy et al., 2011). These conditions may be an especially important contributor to unresolved attachment, given the high rates of maltreatment in individuals with this attachment classification (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Such intense affect disrupts the normal development of the ability to mentalize and may contribute to the problems experienced by individuals with BPD.

Results of fMRI research have empirically supported these theories. A recent study by Fonagy et al. (2011) provides insight into the neurological processes underlying impaired mentalization in BPD. Fonagy et al. suggested that mentalizing occurs in cortical brain regions responsible for executive function and inhibition and that negative affect shifts this neural activity to subcortical areas related to automatic responding. Evidence indicates that suppression of negative emotion is associated with hypoactivity in frontal regions associated with emotion regulation (e.g., orbitofrontal cortex) and hyperactivity in the hippocampus, dorsal anterior cingulate cortex, and other subcortical regions relevant to memory and emotion (Gillath, Bunge, Shaver, Wendelken, & Mikulincer, 2005). As personality pathology is often characterised by intense negative affect, emotional suppression of this affect may induce switching from cortical (mentalizing) to subcortical (nonmentalizing) regions, resulting in deficits in mentalization capacity in individuals with PDs. In BPD, the experience of negative emotion has been linked to decreased prefrontal activation and increased amygdala activity compared with healthy controls (Silbersweig et al., 2007). These findings have been replicated by studies showing that individuals with BPD tend to respond to emotional stimuli with hyperactivity in the amygdala and other subcortical brain regions compared with controls (Hazlett et al., 2012; New, Perez-Rodriguez, & Ripoll, 2012). Thus, insecure attachment, which is common in BPD and other PDs, may potentiate negative affect, increasing subcortical autonomic activity and decreasing the engagement of regulatory processes essential for the ability to understand the mental states of others and respond in an emotionally and behaviourally appropriate manner. However, no research has examined such associations directly to determine whether these connections are causative or correlational in nature.

Other personality disorders. Little research has examined neuropsychological correlates of attachment in PDs other than BPD. One recent study found that patients with BPD had a slower return to baseline activity in the amygdala following emotionally valenced photographs than those with STPD, although both groups showed similar responses to neutral stimuli (Hazlett et al., 2012). These findings may be a result of the heightened emotional reactivity in BPD compared with STPD, which is characterised instead by thought disturbance and problems with reality testing. Furthermore, this study may highlight underlying differences in attachment schemas associated with the processing of interpersonally salient cues.

Imaging studies have also examined attachment constructs in NPD. Brain regions associated with the ability to empathize exhibit functional as well as structural abnormalities in narcissistic individuals. Compared with healthy controls, individuals with NPD display smaller gray matter volumes in the left anterior insula, rostral and medial cingulate cortex, and dorsolateral and medial prefrontal cortex, areas implicated in the ability to empathize (Schulze et al., 2013). Similarly, compared with those with low levels of narcissism, individuals high in narcissism exhibit decreased activation in the right anterior insula during a task requiring the use of empathy, again suggesting deficiencies in the capacity to empathize in narcissistic adults (Fan et al., 2011). Given the importance of empathy in fostering interpersonal relationships, attachment patterns may therefore be disrupted in patients with NPD.

Developmental Psychopathology Research

Much developmental psychopathology research has examined the etiology of PDs. The predominance of this literature has focused on BPD, evaluating the effect of the interaction between early attachment experiences and other dispositional factors (e.g., genetics, temperament) on the development of PD features. Other research has examined these variables as predictors of PD symptoms in "at risk" children of personality-disordered parents.

Studies have evaluated the interaction between genes and early attachment-related experiences. Research on a polymorphism in the serotonin transporter gene (5-HTTLPR) suggests that a short allele (either homozygous or heterozygous) results in deficits in self-regulation but that attachment security may serve as a protective factor that counters this genetic risk. Kochanska, Philibert, and Barry (2009) determined that infant attachment security is predictive of later ability to self-regulate but only in infants with the short 5-HTTLPR allele. This study was adapted by Zimmermann, Mohr, and Spangler (2009), who found that securely attached adolescents with the same short allele exhibited successful regulation of autonomy and aggression. These findings implicate attachment in the expression of genes associated with self-regulation. Although a short 5-HTTLPR allele may constitute an underlying risk factor for dysregulation, attachment security is associated with resilience to underlying risk and healthy personality development. Although the difficulties associated with PDs extend beyond problems with self-regulation, the interaction between genetic risk factors and

attachment in predicting self-regulatory deficits may be one component of PD etiology.

The interaction between attachment schemas and childhood traits in predicting BPD symptomatology has also garnered much attention in the developmental psychopathology tradition. A prospective longitudinal study of infants followed to adulthood determined that adult BPD symptoms were predicted by both infant temperament and interpersonal variables (Carlson, Egeland, & Sroufe, 2009). In particular, disorganized infant attachment, maltreatment, maternal hostility and boundary confusion, family disruption related to father presence, and overall family stress were predictive of later BPD symptoms. Disturbances in emotion regulation, behaviour, attention, relationship functioning, and self-representation in adolescence were also predictive of adult borderline symptoms. Extended maternal separations before 5 years old have likewise been shown to predict the appearance and course of BPD symptoms in early adolescence (Crawford et al., 2006). Similar to Carlson et al.'s (2009) findings, child abuse as well as middle-school temperament and attachment attitudes in adolescence were also associated with BPD development. Of these predictors, only temperament acted as a partial mediator between preschool separations and BPD traits.

Research has further elucidated specific connections between preoccupied attachment and symptoms of BPD. Early adolescent attachment anxiety predicts both the presence and frequency of risky sexual behaviour and aggression (both features of BPD) over the course of adolescence (Kobak, Zajac, & Smith, 2009). Another study discovered negative affect and trait impulsivity fully mediated the association between early anxious attachment and adult BPD symptoms (Scott et al., 2009). This finding suggests that the combination of childhood temperament and attachment anxiety may contribute to the development of BPD.

Research has also parsed out direct developmental predictors in early and middle childhood from childhood maltreatment in the trajectory of both BPD and ASPD. Using longitudinal data from 56 families with children tracked from age 18 months up to 20 years of age, Lyons-Ruth and her colleagues found that both childhood abuse severity as well as disorganized attachment at age 8, but not during infancy, significantly predicted BPD and ASPD symptoms in late adolescence (Lyons-Ruth, Bureau, Holmes, Easterbrooks, & Brooks, 2013; Shi, Bureau, Easterbrooks, Zhao, & Lyons-Ruth, 2012). However, analyses indicated a significant overlap between childhood abuse and attachment disorganization in BPD, suggesting that abuse and attachment disruption may be interrelated and the specific effects of each on BPD symptoms may be difficult to disentangle. Maternal withdrawal during infancy predicted both BPD symptoms, including suicidality and self-harm, and ASPD symptoms in late adolescence, above and beyond the effects of childhood abuse. Aguilar, Sroufe, Egeland, and Carlson (2000) also showed that early psychosocial risk differentiated between onset of ASPD symptoms in childhood versus adolescence. These studies further confirm that early attachment disruptions contribute to the development of later PD pathology.

Another line of developmental psychopathology research has concentrated on the offspring of parents diagnosed with PDs, thus selecting a sample of at-risk children to understand the transmission of personality pathology. Studies have shown that child–caregiver interactions are often disturbed among parents with PDs and are likely to result in insecure attachment in their children, a predictor of later dysregulation. The Still-Face paradigm (Gusella, Muir, & Tronick, 1988) has been used to study emotion-laden behaviours on the part of infants and their caregivers. This task consists of three 2-min episodes: *normal play*, in which the caregiver interacts with the child as usual; *disengagement*, wherein the caregiver assumes a neutral face and does not interact with the infant; and *reunion*, consisting of the caregiver resuming a normal interaction with the child. Research using this paradigm has shown that mothers with BPD were more likely to act insensitively, vacillating between intrusive and disengaged behaviours during normal play, than healthy mothers (Crandell, Patrick, & Hobson, 2003). In turn, their infants responded during the disengagement period with dazed looks, avoiding eye contact with the mother. Furthermore, these infants reacted to reunion with lowered affect and continued disinterest. Ten months later, 80% of the infants of the mothers with BPD showed signs of disorganized attachment, suggesting that early atypical interactions between mother and child influence later attachment insecurity (Hobson, Patrick, Crandell, Garcia-Perez, & Lee, 2005; Newman, Stevenson, Bergman, & Boyce, 2007).

Further research by Macfie and Swan (2009) found that children of mothers with BPD report more fear of abandonment and negative parent–child relationship expectations than children with healthy mothers. Children of mothers with BPD also presented more difficulties with emotion regulation than healthy controls, including increased intrusion of traumatic material, difficulties with reality testing, and lower narrative coherence when describing relationships. Such findings emphasise the importance of the interaction between the parent–child relationship and insecure attachment patterns in the development of personality pathology in children of parents with BPD.

Psychotherapy Research

In his exposition, Bowlby described attachment theory as having relevance for psychotherapy. He envisioned the therapist as providing a patient with a secure base (Bowlby, 1977). The therapist as an attachment figure can then assist the patient in exploring past and present attachment relationships and understanding how such relationships contribute to current internal working models and his or her difficulties. Through such exploration, patients can revise internal working models and develop adaptive views of self and other.

Bowlby's conjectures resonate with many modalities of psychotherapy used today, and therapeutic methods relying directly on attachment theory are gaining traction in the current therapeutic milieu. Empirically based treatments for PDs often rely heavily, although not always explicitly, on attachment theory. The contributions of attachment constructs to treatment process and outcome are also of interest to psychotherapy research.

Attachment-based treatments for personality disorders. As the preponderance of PD research has focused on BPD, most attachment-based treatments are designed for those with BPD. One such treatment, mentalization-based treatment (MBT; Fonagy & Bateman, 2008), is explicitly based on attachment theory. The primary goal of MBT is to foster the capacity to mentalize to revert the harmful effect of attachment insecurity on personality development. Studies have demonstrated the efficacy of MBT on BPD symptoms, including suicidality, self-injury, social dysfunction,

and depressivity. This treatment has also been shown to have lasting effects, with continued symptom reduction through long-term follow-up (see Fonagy & Bateman, 2008, for a review).

Another empirically supported treatment for BPD that is influenced by attachment theory (although not as explicitly as MBT) is Kernberg's transference-focused psychotherapy (TFP; Clarkin, Yeomans, & Kernberg, 2006). Kernberg theorized that "identity diffusion," defined as unintegrated and undifferentiated representations of self and other, characterizes borderline pathology. Kernberg posited early attachment insecurity as a developmental precursor of difficulties with representation and identity formation in BPD. TFP uses the transferential and countertransferential processes between client and therapist to enhance the coherence and integration of patients' representations of themselves and others. Several randomized controlled trials of TFP have shown its efficacy for a range of symptoms of BPD (e.g., Clarkin, Levy, Lenzenweger, & Kernberg, 2007; Doering et al., 2010).

Attachment and the process and outcome of psychotherapy for personality disorders. In addition to contributing to the conceptual foundation of several treatments for PDs, attachment has also been shown to influence the process and outcome of PD treatment. Unsurprisingly, attachment security is shown to predict beneficial response to treatment (Meyer, Pilkonis, Proietti, Heape, & Egan, 2001; Strauss, Mestel, & Kirchmann, 2011). Nevertheless, given that the majority of individuals with personality pathology exhibit attachment insecurity, it is vital to understand how different insecure styles predict differential response to treatment to better predict outcome and tailor interventions to specific clients' needs.

Clinical and theoretical writers suggest that personality-disordered individuals who are anxiously attached may present as very engaged and interested in pursuing treatment (Levy & Blatt, 1999). The empirical literature tends to support these theoretical assertions, finding that attachment anxiety predicts personality-disordered individuals' likelihood of seeking treatment for emotional distress and reporting such distress in therapy (Hoermann, Clarkin, Hull, & Fertuck, 2004; Vogel & Wei, 2005). However, although preoccupied individuals may be more likely to seek care and disclose personal distress than others, they do not show greater compliance in treatment (Riggs, Jacobvitz, & Hazen, 2002). Additionally, higher levels of attachment anxiety predict poor treatment outcome even among those in attachment categories defined by high anxiety (i.e., preoccupied, fearful; Fonagy et al., 1996; Strauss et al., 2006).

By contrast, attachment avoidance is associated with a reluctance to seek medical care and lower levels of reported distress (Vogel & Wei, 2005). Dismissing individuals also show treatment noncompliance beyond that of other attachment classifications, as well as poorer alliance with therapists (Mallinckrodt, Porter, & Kivlighan, 2005). It is interesting to note, however, in a non-PD clinical sample, dismissing attachment at the beginning of treatment has been found to be more predictive of beneficial treatment response than anxious attachment (Fonagy et al., 1996). If replicated in individuals with PDs, these findings may have important implications for understanding treatment trajectories for specific individuals.

Attachment changes in psychotherapy. Perhaps the most promising findings regarding the intersection of attachment and personality pathology come from recent studies examining changes in attachment through PD treatment. Levy et al. (2006) examined changes in attachment status in 90 patients with BPD who were randomized to one of three treatments: TFP, dialectical behaviour therapy, or a modified psychodynamic supportive psychotherapy. After a year of treatment, 28.6% of the insecurely attached patients who received TFP changed from insecure to secure with regard to attachment, a change not observed in the other treatments. This finding was replicated in another recent randomized controlled trial of TFP (Buchheim, Hörz, Rentrop, Doering, & Fischer-Kern, 2012), suggesting that treatment that focuses on the transferential relationship between the client and the therapist may be able to improve underlying maladaptive attachment schemas associated with personality pathology.

Attachment shifts have also been examined in short-term psychodynamically oriented inpatient treatment with women diagnosed with BPD, AVPD, or both. Strauss et al. (2011) found that patients in all three conditions experienced symptom reduction, although there was no increase in attachment security for any group. In light of the previously mentioned research (Buchheim et al., 2012; Levy et al., 2006), there are several possible explanations for these findings: Focus on the transference in therapy, an emphasis of TFP, may be key to attachment changes; attachment shifts may require long-term therapeutic interventions to take place; other selection biases may be at play in populations receiving inpatient treatment that make them less likely to show significant changes in attachment style. Additionally, studies that showed change in attachment assessed attachment with the AAI whereas Strauss et al.'s study used a different interview and coding system based on interviewer's clinical ratings. Although studies of TFP provide promising indications of the ability to impact attachment schemas through personality treatment, research must further elucidate what forms of treatment are likely to effect change and what types of PDs are conducive to such change.

Summary and Conclusions

Attachment theory provides a cogent and empirically based model for understanding important aspects of PDs that have both parsimony and breadth. Attachment theory is consistent with research from a breadth of scientific domains, including ethology, evolutionary biology, cognitive, developmental, and social psychology, and neuroscience (Fonagy et al., 2011; Levy et al., 2011). Within the realm of clinical psychology, attachment constructs provide important theoretical implications for the cognitive (McBride & Atkinson, 2009), behavioural (Sterkenburg, Janssen, & Schuengel, 2008), psychodynamic (Eagle & Wolitzky, 2009), and interpersonal traditions (Klerman, Weissman, Rounsaville, & Chevron, 1984). As early attachment disturbance is largely implicated in the development of psychopathology, these sometimes disparate orientations each incorporate aspects of attachment theory into conceptualisations of treatment (Eagle, 2006).

Given both its breadth and parsimony, attachment theory provides an ideal integrative framework for conceptualising normative personality development as well as personality disorders and their treatment. Attachment styles provide nuanced predictions of engagement in and response to treatment. Therapy for personality-disordered populations has been shown to enhance security of attachment, which may lead to a wealth of positive intrapsychic and interpersonal outcomes. Although many areas still require

much further research, especially with regard to the development and treatment of PDs other than BPD, attachment theory is a promising approach for clinicians and researchers alike.

Résumé

Très fréquents, les troubles de la personnalité, difficiles à traiter, sont associés à une importante morbidité. Les difficultés intrapersonnelles et interpersonnelles sont centrales dans la pathologie observée dans les troubles de la personnalité. La théorie de l'attachement fournit un vaste cadre explicatif qui demeure parcimonieux pour la compréhension du développement, du maintien et traitement de la pathologie personnelle. La théorie de l'attachement conceptualise le comportement humain de façons qui correspondent à de multiples traditions scientifiques, notamment ceux de l'évolution, du développement et de la neuropsychologie. La littérature pertinente s'est principalement centrée sur le trouble de la personnalité limite, quoique quelques études aient examiné les rapports avec d'autres troubles de la personnalité, comme la personnalité narcissique et la personnalité évitante. D'abord, les auteurs présentent la théorie de l'attachement, pour discuter de l'évaluation des types d'attachement d'un point de vue développemental et de la psychologie sociale. Ensuite, les auteurs présentent l'appui empirique pour la théorie de l'attachement et ses associations à la personnalité, dont des recherches sur les corrélations développementales, physiologiques, neurobiologiques et génétiques avec la pathologie personnelle. Puis, ils ont dépouillé la recherche sur les psychothérapies actuelles portant sur : a) les résultats sous-jacents, b) la relation entre l'attachement et à la fois le processus thérapeutique et les résultats des traitements; c) les changements de types d'attachement comme suite au traitement d'un trouble de la personnalité. En dernier lieu, les auteurs exigent des futures recherches qu'elles explorent les relations précises entre les construits de l'attachement et la pathologie personnelle, de même que les troubles de personnalité en général.

Mots-clés : théorie de l'attachement, trouble de la personnalité, psychopathologie, psychothérapie.

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