Maternal Mood and Comorbid Personality Disorders: Attachment Development from Infancy to Young Adulthood

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Abstract

Maternal psychopathology, particularly maternal mood disorders, is an important developmental context for attachment development, as maternal sensitivity and other caregiving behaviors necessary for a secure attachment may be impaired. While maternal depression in relation to offspring attachment has been well examined, less attention has been given to the impact of maternal psychiatric comorbidity, particularly between maternal mood and personality disorders (PD) on attachment development. Leveraging a prospective longitudinal study of well and psychiatrically ill mothers and two of their children (60 children of well mothers, 75 children of mothers with comorbid mood and PDs, and 57 children of mothers with mood disorders), this study seeks to further examine the role of maternal psychiatric illness on attachment development over three time points, early and middle childhood, and young adulthood. In study 1, I characterized the sample using cross-sectional analyses to predict attachment at each time point. Although I predicted that mothers in the mood and comorbid groups would have offspring with greater incidence of insecure attachment across all developmental periods, my hypotheses were not confirmed as maternal psychiatric mood and comorbid group membership did not predict attachment in early, middle, and young adulthood. The study provided preliminary evidence that maternal bipolar disorder predicted lower log odds of secure attachment in early childhood, and that offspring of mothers with higher Cluster B dimensional scores had increasing logs odds of being securely attached in early childhood. For study 2, I predicted that offspring of mothers with mood disorders would be characterized by greater discontinuity over development, moving towards insecurity over time, and ran exploratory analyses to examine attachment discontinuity in offspring

of mothers in the comorbid group. Results suggest that for offspring of mothers with maternal personality Cluster C diagnosis, attachment across development may be characterized as discontinuous with increasing log odds of secure attachment from early to middle childhood. Offspring of mother with Cluster A dimensional scores also demonstrated decreasing log odds of being securely attached across development. These results expand upon our existing understanding of maternal psychopathology on offspring attachment development, and offers preliminary evidence on attachment in the context of maternal comorbid psychiatric illnesses with PDs. However, results should be considered in light of limitations of the study, including sample size and general sparse findings, and await further replication and extension. This study offers a preliminary understanding of maternal mental illness, beyond maternal depression, and extends the current literature by examining the role of maternal comorbidity on cross sectional and longitudinal offspring attachment outcomes.

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Maternal psychopathology, particularly maternal mood disorders, have long been studied as an important developmental context for development (Bureau, Easterbrooks, & Lyons-Ruth, 2009; Downey & Coyne, 1990; Gelfand & Teti, 1990). One critically important avenue through which maternal depression can impact children's development is through a caregiver's ability to sensitively and responsively parent, imperative to attachment development (Ainsworth et al., 1978). Attachment theory posits that children develop mental representations of themselves and their relationships based on interactions with caregivers in early development (Bowlby, 1969), which in turn promote positive adaptation across novel developmental contexts (Bowlby, 1973; Sroufe, Carlson, Levy, & Egeland, 1999). Attachment development within the role of maternal depression has been well evaluated (Bureau, Easterbrooks, & Lyons-Ruth, 2009; Cicchetti, Rogosch, & Toth, 1998; Downey & Coyne, 1990; Gelfand & Teti, 1990; Goodman & Gotlib, 1999) but the impact of being reared by a mother with a mood disorder, such as bipolar disorder, or a mother with comorbid personality disorders in the context of a mood disorder is under examined as a developmental context. Personality disorders (PDs) are characterized as enduring character-based patterns of psychopathology that emerge in adolescence or adulthood, and frequently co-occur in the context of depression, making this an important gap in our understanding. While there is theory highlighting the role of attachment in the development of PDs, emerging research suggests that parenting in mothers with PDs may be compromised. Thus, maternal comorbidity may be associated with increased risk for

maladaptive development across different developmental periods, which may impact attachment development.

Attachment from Infancy to Adulthood

Bowlby (1969; 1973; 1988) posited that the relationships developed in infancy through interactions with primary caregivers develop into representations of the self and others. These internal working models (IWMs) reflect the quality of the infant-caregiver relationship based on dyadic transactional patterns over time and have wide-reaching implications across the lifespan. If a caregiver is consistent and responsive, a secure attachment is likely to form, whereas unresponsive or inconsistent responses are associated with the development of an insecure attachment (Ainsworth, Blehar, Waters, & Wall, 1978). Attachment is a crucial aspect of development as it influences children's later development as a mechanism through which individuals experience later interpersonal relationships (Simpson, Collins, Tran, & Haydon, 2007) or even through which internalizing and externalizing symptoms may later develop (Lyons-Ruth, Easterbrooks, & Cibelli, 1997; Mickelson, Kessler, & Shaver, 1997; Toth, Rogosch, Sturge-Apple, & Cicchetti, 2009).

In infancy, a secure attachment forms when an infant is able to use a parent as secure base from which to explore the environment and as a haven of safety during times of distress (Ainsworth et al., 1978; Bowlby, 1982). These representations are often measured via observed behavior in infancy by a task known as the Strange Situation (Ainsworth et al., 1978). In this laboratory task, infants and their primary caregiver are separated and reunited to activate infants' attachment behavioral system. Infants are classified as secure in the Strange Situation when their distress is effectively soothed by

their caregiver's return. Insecurity is typified by infants who ignore their caregiver when they return (e.g. insecure-avoidant) or when infants seek and resist their caregiver when they return (e.g. insecure-resistant). Infants who cannot use one of these organized strategies are classified as disorganized (Main & Solomon, 1990). A modified Strange Situation protocol (Cassidy, Marvin, & the MacArthur Working Group on Attachment, 1992) also exists for preschool-aged children in which children are classified as secure if they resume their interaction with caregivers upon return. Children are classified as insecure-avoidant if they maintain neutrality towards their caregiver, and are classified insecure-resistant if they demonstrate fussy, helpless, or resistant behavior upon reunion. Children can also be classified as a combination of avoidant and resistant, classified as insecure-controlling/other. Significant research exists finding that maternal sensitivity is associated with infant secure attachment (Ainsworth et al., 1978; De Wolff & van Ijzendoorn, 1997), and in adolescence maternal sensitivity has mediated the relationship between maternal depression and insecurity (Huang, Lewin, Mitchell, & Zhang, 2012).

As children develop, the attachment system changes as it prioritizes caregiver availability, rather than proximity, as children's self-regulatory capabilities develop (Kerns 2008). Middle childhood is an important developmental period as many biological and social developments occur during this time, and many maladaptive processes, such as psychopathology, often emerge at this period. Additionally, while there are various social developments occurring in middle childhood, research suggests that parents remain the primary attachment figures for children. In a study with 11- to 12-year-olds, children preferred parents over peers in attachment relevant situations (Seibert & Kerns, 2009), which begins to shift in late adolescence (Allen, 2008). While observed attachment in

infancy is well researched, there is no single method commonly used to assess attachment in middle childhood, leaving the developmental period relatively unexplored when compared to others (Bosman & Kerns, 2015; Kerns & Siebert, 2011). In middle childhood a variety of self-report, story stem, and interview procedures exist to assess for attachment in this developmental period, and many of these methods requiring further validation and research (Kern & Seibert, 2011).

Measurement of attachment in adolescence and adulthood falls into two distinct methods: measuring states of mind regarding attachment via the Adult Attachment Interview (Main, Kaplan, & Cassidy, 1985) utilizing narratives about the interviewer's early life, as well as by self-report to examine adult attachment styles in close relationships (Hazan & Shaver, 1987). Both methods have been widely utilized and each have their own methodological limitations (Cassidy & Shaver, 2008; but see Steele, Waters, et al., 2014). Although these attachment style were originally conceptualized as categories, researchers have since utilized a dimensional approach (Brennan, Clark, & Shaver, 1998; Simpson, Rholes, & Nelligan, 1992; Fraley & Waller, 1998). The self-report method traditionally measures security and two dimensions of insecurity in adulthood (avoidance and anxiety), which corresponds to attachment in infancy (avoidant and ambivalent/resistant, respectively). Avoidance is conceptualized as discomfort with closeness and dependence on others. Anxiety is conceptualized as a fear of abandonment, and a strong desire for closeness and protection. On the other hand, security is conceptualized as individuals who are comfortable depending on, and being close to others. Adult attachment styles have been shown to relate to mental representations of parents, such that secure attachment is related to warm positive representation, avoidant

attachment is related to rejecting representations, and anxious attachment is related to mixed representations (Hazan & Shaver, 1987).

Attachment styles has developed from a social and personality psychology perspective that emphasizes the role of internal working models to ongoing interpersonal relationships, and posits that attachment styles have continued to develop from interpersonal experiences across childhood and adolescence (Hazan & Shaver, 1987). Thus, attachment styles measured in adulthood are the product of ongoing interpersonal experiences beginning in childhood but continuing into peer and romantic relationships (Mikulincer & Shaver, 2007), but few studies have examined attachment styles through longitudinal data from which to examine this developmental perspective. One longitudinal study examined associations between the early caregiving environment and later attachment styles at 18 years old, and found that self-reported attachment anxiety and avoidance was associated with developmental antecedents but that the effects were small and the pattern of significance were inconsistent (Fraley, Roisman, Booth-LaForce, et al., 2013). Another longitudinal study examined observed maternal caregiving at 18 months and significantly predicted avoidant attachment at 22 years old (Zayas, Mischel, Shoda, & Aber, 2011). There is also evidence that parent-child interactions in childhood and adolescence were significantly associated with adult attachment styles in adulthood (Dinero, Conger, Shaver, Widaman, & Larsen-Rife, 2009; Salo, Jokela, Lehtimäki, & Keltikangas-Jaärvinen, 2011). As a whole, these longitudinal studies suggest a relatively small association between the quality of the parent-child relationship and adult attachment styles, and more research is needed to understand how attachment styles develop.

Attachment Development in the Context of Maternal Mood Disorders

In order to develop a secure attachment, caregivers are expected to be responsive, emotionally available, and act as a secure base for their child (Ainsworth et al., 1978; Bowlby, 1980). Such parental sensitivity has been well established as a correlate or antecedent of secure attachment (Ainsworth et al., 1978; De Wolff & van Ijzendoorn, 1997). Maternal depression, in particular, may impair sensitive parenting necessary for a secure attachment. During episodes of depression, mothers with depression may withdraw, experience irritability, and depression of varying lengths and severity. In psychiatric outpatients, depressive episodes have been found to last between 6 to 9 months, or longer, and about half of these individuals will experience recurring depression within two years (Coyne, 1994). Further, clinical levels of depression have a lifelong impact, as many individuals with clinical depression will spend approximately 20% of their life in a depressive episode.

Mothers with depression may engage in patterns of behaviors that interfere with the mother-child relationship, including paradoxically exhibiting intrusive behaviors while also withdrawing. Moreover, mothers with depression are at risk for being unresponsive, insensitive, and wary of their parenting abilities. Such behaviors in particular may impede the development of a secure attachment that calls for a consistent, responsive, and sensitive caregiver (De Wolff & van Ijzendoorn, 1997; McElwain & Booth-LaForce, 2006). Maternal depression affects maternal behaviors, which detrimentally impact a child's ability to develop a secure attachment to a caregiver, providing a mechanism by which children may develop an insecure attachment. As this is a well-researched topic, numerous meta-analyses have found that in samples of mothers

with depression, infants have a greater proportion of insecurity and disorganization than offspring of mothers without depression (Atkinson et al., 2000; Martins & Gaffan, 2000; van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Similar patterns have been found across the development, with a study that found that mothers' self-criticism during parent–child interactions mediated the relationship between a mother's depressive symptoms and her child's insecure attachment (Gravener et al., 2012). Another study found that low maternal responsiveness and autonomy support associated with maternal depression was associated with adolescents' avoidant and anxious attachment, respectively (Brenning, Soenens, Braet, & Bal, 2012). Lastly, an epidemiological study in a nationally representative sample found that attachment insecurity in adulthood was related to both maternal and paternal depression, as measured by a structured diagnostic clinical interview (Mickelson, Kessler, & Shaver, 1997). These offspring of depressed parents were more likely to have avoidant and anxious attachment styles, as compared to those who did not have parents with depression.

In comparison, the effects of maternal bipolar disorder on offspring's development has been a relatively understudied area of research. Bipolar disorder is an illness that is often severe and recurrent, and may have a significant impairment on relationships and occupational domains (Goodwin & Jamison, 1990). During an episode of illness, mothers with bipolar disorder may experience high positive affect and mood swings into severe depression. Such episodes of mania may affect the caregiving environment through caregiving insensitivity, unresponsiveness, unpredictability, and frightening behavior. Research focusing on infant offspring of mothers with bipolar disorder is scarce and has been mixed. A longitudinal study using a subsample from this

study that included 112 mothers and their children (aged 15-52 months; DeMulder & Radke-Yarrow, 1991) suggests that insecure attachments occurred in greater proportions in offspring of mothers with bipolar disorder, and that disorganized attachment may be the prevalent attachment classification in offspring of mothers with bipolar disorder. Such findings have been confirmed by other studies that also find greater incidence of insecure attachment (Gaensbauer, Harmon, Cytryn, & McKnew, 1984; Seifer et al. 1996).

Studies asking adolescent offspring to self-report their attachment have found higher rates of insecure attachment and higher avoidant attachment scores in the offspring of bipolar patients than in healthy controls (Kökçü & Kesebir, 2010). Similarly, a study by Erkan and colleagues (2015) found that adolescents of parents with bipolar disorder self-reported higher dismissing attachment scores than peers of parents with no psychiatric diagnosis. Other studies have found no differences in terms of adolescent attachment style on the basis of parents' bipolar diagnosis (Doucette, Horrocks, Grof, Keown-Stoneman, & Duffy et al., 2013). As this is an emerging field, there are limited studies that have been published, and many focus on different developmental periods with differing methods, which may account for some of the mixed or inconsistent findings in relation to attachment at this time period. Further research is needed in this area.

Attachment Development in the Context of Maternal PDs

Personality disorders (PDs) are characterized as enduring character-based patterns of psychopathology that emerge in adolescence or adulthood (APA, 2014). PDs are chronic and associated with impairments and disruptions in various occupational and psychosocial domains (Cummings et al., 2011; Markowitz et al., 2007; Skodol et al.,

2002). PDs frequently co-occur with depression, particularly when depression is chronic (Hirschfield, 1999), and is associated with poorer prognosis, treatment adherence (Pompili et al., 2009), and poor treatment outcomes (Newton-Howes et al., 2006). Similar patterns are found for individuals with PDs comorbid with bipolar disorder, with one study suggesting that bipolar patients with PD have more residual mood symptoms even during remission than patients with bipolar without PDs (George et al., 2003). Due to these difficulties, PDs would be expected to have a negative impact on offspring development, with emerging cross-sectional and longitudinal data demonstrating negative behavioral and emotional outcomes for offspring of mothers with PDs (Abela et al., 2005; Conroy et al., 2018; Kim-Cohen et al., 2005; Rutter & Quinton, 1984). To date, very little research has examined the effects of PD on parenting practices.

Three PDs clusters identified in the DSM-IV (APA, 1994): Cluster A including paranoid, schizoid and schizotypal; Cluster B including antisocial, borderline, histrionic and narcissistic; Cluster C including avoidant, dependent and obsessive compulsive. The DSM-V has retained six PD types: antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal. There has been debate in the field of how to measure PDs, with many in favor of a dimensional approach in order to capture complex comorbidity and capturing a greater range across the clinical and non-clinical spectrum (Lewin et al., 2005). There are drawbacks to a dimensional system as there are questions about the usefulness of data, since elevated scores do not correspond to cut-off scores indicating clinical severity (Skodol et al., 2011). Despite the criticisms of the categorical systems used by previous editions of the DSM (Skodol et al., 2011), proponents of the categorical model argue that it offers clinical utility in relation to treatment approach,

prognosis, and allows classification of patients that may be similarly grouped. Much of the existing research has utilized the categorical model and thus PDs will be referred to in this manner in this study.

Attachment development in the context of Maternal Comorbidity

Mood disorders and PDs are often comorbid, but little attention has been paid to the relative or cumulative effects of the conditions on early child development, which may confer additional risk (Corruble et al., 1996). To my knowledge, the majority of the research examines comorbidity in the context of depression, rather than bipolar disorders. Further, only one study has examined the impact of depression comorbid with PD in relation to attachment, with more research examining general parenting practices. Smith-Nielsen and colleagues (2016) studied attachment in a sample of children with mothers who had postpartum depression and comorbid PDs and found that postpartum depression was associated with attachment insecurity at 13 months only if the mother also had comorbid PD diagnosis. Infants of mothers with postpartum depression with a comorbid PD were not significantly different from infants of well mothers, suggesting that comorbid PD may be crucial in understanding their impact on attachment development. Mothers with maternal depression and comorbid PDs have been found to be less sensitive and child-centered than well mothers, and maladaptive outcomes have been found among mothers with depression comorbid with borderline or antisocial personality disorders (Abela et al., 2005; Kim-Cohen et al., 2005). One study focused on mothers with depression and comorbid PDs found that they were less likely to use recommended infant care practices, and that infants were more dysregulated at two months of age, as compared to well mothers (Conroy, Marks, Schacht, Davies & Moran, 2010). A

longitudinal follow-up of the same subsample examined the impact of comorbid PD and depression on child development from 2 to 18 months, finding higher levels of dysregulated infant behavior for depressed mothers with comorbid PD (Conroy et al. 2012).

Research using a subsample of 89 families and their children across Time 1, 2 and 3 from this study examined the role of maternal depression comorbid with PDs on parenting behavior. DeMulder and colleagues (1995) found that mothers who were affectively ill reported higher rates of PDs symptoms than well mothers, and that mothers with bipolar disorder reported more symptoms than mothers with depression. Parenting behaviors for mothers with an affective illness was associated with PDs and dimensional scores, such that for mothers with depression, a lack of engagement with their child was associated with higher dimensional Cluster A scores, but for mothers with Bipolar disorder a lack of engagement was associated with higher dimensional Cluster C scores (DeMulder et al., 1995). Such findings suggest there are differences in mothers' parenting behaviors according to diagnosis, which needs to be further examined. A significant gap in the literature remains in understanding how maternal depression and comorbid PDs may impact the development of offspring attachment, as to my knowledge no research has examined this topic from infancy to young adulthood. This study seeks to extend these early findings by DeMulder and colleagues (1995) by examining this phenomenon in the sample from infancy to young adulthood by more explicitly considering attachment related constructs.

Attachment over development: Continuity and discontinuity

Bowlby (1982/1988) posited that IWMs that are formed in early childhood become more stable over time, as the IWM is reinforced under a stable parent-child relationship quality. Bowlby additionally suggested that these working models could adapt and change based on changes in the caregiving environment. However, there are still questions about how much change or stability can be expected over time. Research in this area has been extensive, but due to limited sample sizes and the mixed findings, it has been challenging to estimate the stability of attachment longitudinally (Groh et al., 2014). For example, some studies reported stability in security from infancy to adulthood (Hamilton, 2000; Main, 2000, 2001; Main, Hesse, & Kaplan, 2005; Waters, Merrick, et al., 2000) while others have not (Lewis et al., 2000; Weinfield et al., 2000; Zimmerman, Fremmer-Bombik, Spangler, & Grossmann, 1997; for a meta-analysis, see Fraley, 2002).

Additional challenges are met when one considers different theoretical approaches and measurement methods which lead to low correspondence between measures (Bartholomew & Shaver, 1998), further making it difficult to understand attachment stability over time. In the available research, stability is not specifically defined in relation to statistical models. Rather, correlational coefficients and their effect sizes are often used to assess for stability across time, which critics believe that this is a poor system that does not offer enough information about the process leading to change (Fraley et al., 2011). Another criticism is that many longitudinal studies only utilize two time points, making it difficult to understand how attachment may develop and change over time. However, because there are no standard models assessing stability and change across time, it is difficult to identify the magnitude of the effect that should be found

across time, although Fraley and colleagues (2011) have attempted to do just that with their proposed revisionist and prototype models.

Meta-analytic studies on attachment stability have found moderate levels of attachment stability over time (Fraley, 2002; Pinquart, Feubner, & Ahnert, 2013). Pinquart and colleagues (2013) examined stability over longer intervals (up to 29 years) and found that securely attached individuals were more likely to maintain their attachment patterns, as compared to insecurely attached individuals. They also found weak support for long-term stability past 5 years, which may be attributed to the dramatic changes inherent in development throughout childhood and adolescence, favoring the revisionist perspective. Fraley (2002) conducted a meta-analysis examining attachment security and found higher stability was found in low-risk samples (r=.48) as compared to high-risk samples (r=.27) and that levels of stability tended to decline over time (from r =1.0 for retests within one month to r = .27 in studies with intervals between 5 and 21 years). One study by Groh and colleagues (2014) conducted an investigation examining the stability of attachment security from early childhood to late adolescence by levering data from the Study of Early Child Care and Youth Development (SECCYD), and found support for weak stability in attachment security (r = .12). They further examined attachment data dimensionally and categorially, and found both dimensional and categorical data did not demonstrate stability from infancy to late adolescence. Such results were in contrast to prior studies which had examined stability in normative samples and found stability (Hamilton, 2000; Main, 2000, 2001; Main et al., 2006; Waters et al., 2000). As a whole, these findings suggest that change in attachment

patterns may be more common than previously thought, and that correlates of change that may accompany discontinuity are equally important to understand.

Bowlby (1982/1988) suggested these working models could adapt and change based on changes in the caregiving environment, and both improvements and declines in the caregiving quality or environmental context are expected to influence the working models (Sroufe, 1983; Waters et al., 2000). As attachment security may be less stable under contexts of stress, studies of attachment changes have been concerned in examining proximal factors, such as stressful life events, in relation to changes in attachment. One study (Booth-LaForce et al., 2014) examined SECCDY participants who remained secure between early childhood and 18 years old, and those who changed from secure to insecure in that time period. They found that those who became insecure experienced lower levels and a decline of maternal sensitivity, were less likely to live with their fathers, and have greater mother-reported negative life events. Further, they examined attachment continuity in participants who were stably insecure and found that compared to those who were stably secure, they experienced less maternal sensitivity, were less likely to have fathers present in the home, and had greater reported parental depressive symptoms. These results suggest that changes in attachment and continuity occur in a way that is lawful and aligned with theory.

High-Risk Studies. The majority of studies examining changes in attachment over development have been conducted in samples that are considered high-risk, in an attempt to examine lawful change with more distal factors that may account for change. As attachment is thought to remain stable if the environment is stable, research conducted in low- and normative- risk samples has been expected to yield results of continuity.

Various studies are aligned with theory as some studies utilizing community samples find attachment continuity is around 70% and that infant attachment significantly predicts adult attachment (Hamilton, 2000; Waters et al., 2000). In these studies, most individuals are classified as secure across time. Despite what theory suggests, results in normative and low-risk populations have been mixed with some finding continuity (Hamilton, 2000; Main, 2001; Waters et al., 2000) and other finding discontinuity (Lewis, Feiring, & Rosenthal, 2000; Weinfield, Sroufe, & Egeland, 2000). These findings suggest the concepts of equifinality and multifinality, or the concept that development can begin at various different points and lead to similar outcomes, or that development can begin at a similar place and end up in dissimilar trajectories of development (Cicchetti & Rogosh, 2009), are important to consider in attachment development. Such result suggests that stability and change in attachment over time depends on the level of risk, thus research has increasingly focused on examining attachment in different populations (e.g. maltreatment, high-risk, etc.) where the role of the environment is emphasized. While these approaches accounts for the environment, there are various aspects of the caregiving environment that are still under examined, such as maternal illness and comorbidity.

When it comes to examining continuity and discontinuity in high-risk samples, research has suggested that discontinuity may be expected as individuals are posited to develop greater attachment insecurity over time through experiences with caregivers. Two studies using the same sample of high-risk families found that those who were classified as secure in infancy transitioned to insecurity in late adolescence (Weinfield, Sroufe, & Egeland, 2000; Weinfield, Whaley, & Egeland, 2004). They identified various

contextual factors from childhood and early adolescence including maternal life stress, the home environment, and family functioning that were associated with changes in attachment. Thus, these changes were considered to be lawful, meaning that they correspond with aspects of the caregiving environment including parental availability and sensitivity, as well as changes in life circumstances or environments that in turn change these internal working models (Bowlby, 1969, 1980). This is theorized to happen both with declining and improving aspects of the caregiving environment, leading to both changes towards security or insecurity, accordingly. It is important to understand what aspects of the caregiving environment may lead to changes towards or away from security, as well as what direction discontinuity is occurring in to understand how to intervene and promote continuity.

Reflecting the role of experience and the environment in attachment development, the environmental context has been a point of interest in examining attachment continuity and discontinuity. Research has focused on various contexts such as maltreatment (Weinfield et al., 2004), internationally adopted children (Beijersbergen, Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2012), and stressful life events (Booth-Laforce et al., 2014) with mixed findings. Meta-analyses have been conducted with normative and high-risk samples in an attempt to clarify the role of context in continuity and discontinuity. One meta-analysis assessed short and long-term attachment and found that attachment security was less stable in high, rather than low, risk samples as theory would suggest (Fraley, 2002). Two longitudinal samples, the Minnesota Longitudinal Risk and Adaptation Study (MLRAS) characterized as a high-risk sample, and the Study of Early Child Care and Youth Development (SECCYD) characterized as a normative

risk sample, have *both* found that there is discontinuity in attachment from infancy into adolescence or young adulthood (Booth-LaForce et al., 2014; Weinfield, Sroufe, & Egeland, 2000; Weinfield et al., 2004). Such studies suggest that changes in attachment occur in both low- and high-risk samples and thus change may be more normative than originally thought. However, research suggests that most individuals in high-risk samples shift from insecure to secure attachment over time, indicating that this lack of continuity may be a sign of positive change over time in both environment and attachment (see Sutton 2018 for review). However, some argue that this shift may depend on the type of risk being faced (Pinquart et al., 2013). Research suggests that children facing social risk (e.g., maltreatment, divorce, parental depression) demonstrated less stability in secure than insecure attachment while children facing biological risk (e.g., chronic illness, disability) had higher stability in secure attachment.

Attachment in the Context of Maternal Mood Disorders. As maternal depression can be a prolonged illness in which depressive episodes may be recurrent, it can have a profound effect on the caregiving context and should be examined in relation to attachment over development, not just in infancy. Numerous studies have attempted to examine this issue, examining both subclinical and clinically significant levels of maternal depression, and have generally found mixed findings. An early study found instability in attachment security in a low socioeconomic sample sample of infants with mothers who were described as depressed (Egeland & Sroufe, 1981). The rates of security decreased from 57% at 12 months to 0% at 18 months. Similarly, a study by (Gaensbauer, Harmon, Cytryn & McKnew, 1984) found that in a sample of seven infants with at least one parent who had bipolar disorder, six infants had transitioned to

insecurity by 18 months of age. Similar results were found in a subclinical sample as Weinfield, Sroufe, and Egeland (2000) found that individuals in a high-risk sample who transitioned from security to insecurity from infancy to young adulthood were more likely to have a mother with more depressive symptoms than those who were stably secure. However, another study with the same sample focused on security and disorganization specifically and found that maternal depressive symptoms were *not* related to changes in attachment (Weinfield, Whaley, & Egeland, 2004).

In clinical samples, the findings continues to be variable with some studies pointing to stability in insecurity among offspring of mothers with depression (Cicchetti et al., 1999; Toth et al., 2006), while others found that there was discontinuity, although it is not always clear in what direction the change occurred (Belsky et al., 1996; Fihrer & McMahon, 2009; Trapolini et al., 2007). For example, Trapolini et al., (2007) and Toth et al., (2006) found stability in their samples such that the children remained insecure over time. It is important to remember that stability, while theoretically expected, may not be the optimal development for a given population. For example, being insecurely attached in infancy but moving towards security is considered discontinuous development, and may suggest a resilience process. It is equally important to understand the direction that change is occurring and to identify potential correlates of change, as these correlates may be important points of intervention. More research needs to be done in this area to clarify both if stability or discontinuity can be expected, and if there is change occurring, in what direction.

Research examining maternal depression has long been of interest, but there is little research examining the impact of being reared by a mother with other psychiatric

concerns, or comorbid illnesses. When it comes to investigations of the comorbid effects of mothers with comorbid mood and PDs, while there is an emerging body of literature, there is no research that has yet examined how offspring's attachment is developed and is carried over across development.

The Current Study

Attachment relationships develop over the first years of life, becoming increasingly stable over time, but remaining flexible enough to change in response to stressors or adaptive changes in the caregiving environment (Bowlby, 1973, 1980). Theory and past research suggest that due to a history of inconsistent care and lower levels of maternal availability and responsiveness, attachment development may be impaired in offspring of ill mothers. The research to date has focused on maternal depression in relation to attachment development and continuity or discontinuity over time. This proposed study seeks to fill gaps in the existing literature by expanding the focus from mothers with mood disorders to include mothers who also have comorbid PDs. While research on parents with mood and comorbid PDs is increasing, little work has been done in the attachment domain. In addition, this study seeks to examine how attachment operates over time and if it can be characterized by stability or discontinuity. Very little research has examined attachment over more than two important developmental periods, and no research has been done in this domain with offspring of mothers with mood disorders or mothers with comorbid mood and PDs.

The present study uses data collected as a large, prospective longitudinal study on children reared by depressed and well mothers. Data was collected over five data points. The focus of this study on attachment development with relevant data collected at Times

1, 3 and 5 from infancy, middle childhood, and young adulthood, respectively. The present study has two broad aims: first, to examine the relationship between maternal mood disorders and mothers with comorbid mood and PD and offspring attachment across development. Second, to further examine how attachment may change or remain stable over development within the context of maternal mood and personality disorders.

In service of the first aim, I hypothesize that offspring of mothers with mood would show a greater incidence of insecure attachment across all developmental periods (Time 1, 3, and 5) as compared to offspring of well mothers. Likewise, due to the detrimental impact of a comorbid PD, I hypothesize that offspring of mothers with comorbid mood and PD will predict greater levels of attachment insecurity as compared to offspring of mood and well mothers. Follow up exploratory analyses will be conducted to examine the effects of the individual PD clusters and mood diagnoses.

To examine the continuity or discontinuity of attachment related constructs over development, I will use data collected across a span of approximately 15 years starting in early infancy (Time 1), childhood (Time 3) and young adulthood (Time 5). I hypothesize that offspring of mothers with mood disorders will be characterized by greater discontinuity over development, moving towards insecurity over time. Previous findings are mixed but suggest that maternal depression may be associated with lower levels of continuity or insecurity (Cicchetti et al., 1999; Toth et al., 2006; Weinfield et al., 2000). Attachment in offspring of well mothers, on the other hand, is hypothesized to demonstrate more stability over time, remaining secure. As stability has never been examined in populations with comorbid mood and personality disorder, exploratory analyses will be run to examine the stability of attachment across time in offspring of

mothers with comorbid mood and PDs. Follow up exploratory analyses will be conducted to examine the effects of the PDs clusters and maternal mood diagnoses.

Method

Participants

Ninety-eight families were included in this study from a sample of a longitudinal investigation of mothers with major depression or bipolar disorder diagnosis, or no psychiatric illness, and two of their offspring. The current sample includes 60 children of well mothers, 48 children of mothers with bipolar disorder and 84 children of mothers with depression. An older and younger sibling participant (Cohort 1: $N = 98$; $M_{age} = 2.63$ months, $SD = 0.63$, 50% female; Cohort 2: $N = 94$, $M_{age} = 6.35$ months, $SD = 1.06$, 41% female at onset of the study) were recruited from most families. At the time of entry, an older and younger sibling participant were recruited from most families (with the exception of 4 families that had only one child). Participants were 85.4% Caucasian, 11.5% African-American, 2.1% Asian American, and 1% Latino. The average family SES score, based on the Hollingshead (1975) Four-Factor Index of Social Status, was 51 ($SD = 14.84$), which corresponds to technicians and semi-professionals**.**

Families were recruited in the late 1970s through notices placed in the community announcing a study of child development in families of depressed and non-depressed mothers. Families were eligible to participate if mothers met diagnostic criteria for major depressive disorder (MDD), bipolar disorder (BD), or no psychiatric disorder (past or present) at the time of study entry. Mothers were also included in the study based on the age of their children, and if they were primary caregivers of their children with no lengthy separations. Of the families meeting the initial criteria for participation, those

who met criteria for additional psychiatric disorders (excepting secondary anxiety diagnoses in mothers with MDD or BD) were excluded from the study. Initially, 126 families met criteria for participation in the longitudinal study as maternal diagnoses of minor depression were also included, but those families are not included in this study. Attrition rates were 17%, 12%, and 9% for the well, bipolar, and unipolar depressed mothers, respectively.

The families were seen five times from early childhood to young adulthood. A history of maternal depression was repeatedly assessed and confirmed from the first through third waves of data collection to prospectively establish maternal mental health status during the offspring's childhood. There were 192 offspring from both cohorts who participated from Time 1 to Time 5. Of these offspring, 60 were children of well mothers, 75 were children of mothers with comorbid mood and PDs (referred to in this study as the Comorbid Group), and 57 were children of mothers with mood disorders only and no comorbid PDs (referred to in this study as the Mood Group).

Measures

Maternal Depression. Mothers' depression was assessed at the outset of the study (Time 1) and again at Time 3. Initial diagnoses were determined on the basis of the Lifetime Version of the Schedule for Affective Disorders and Schizophrenia (SADS-L) following the Research Diagnostic Criteria for the measure (Spitzer & Endicott, 1977). At Time 3, the mothers completed the Interval-SADS interview and the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders-Ill, Revised (SCID; Spitzer, Williams, Gibbon, & First, 1989). The SADS-L interviews were conducted by professionals (psychiatric nurse, psychiatrist, clinical psychologist) at the

National Institute of Mental Health. The clinicians administering the interviews were blind to earlier diagnoses and had no previous contact with the study participants. Mothers were eligible for inclusion in the study if they met the Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978) for Bipolar Disorder (BD; Bipolar I or II disorder), Major Depressive Disorder (MDD) or did not have a past or current psychiatric disorder. Ten interviews were coded independently by staff at NIMH and NYPI, with 100% agreement on diagnosis for the presence and type of affective disorder (major depressive disorder and bipolar disorder). A "lifetime" diagnosis was assigned to mothers on the basis of clinical assessment at Time 1 and 3. The data was coded as 1 for well mothers, and 2 for mothers with bipolar, and 3 for mothers with unipolar depression. Dummy coded variables were entered into the analyses, referred to as the Depression Dx and Bipolar Dx in the models.

Maternal Personality Disorder. Mothers were administered a semi-structured interview, the Personality Disorder Examination (PDE – Loranger, 1988) at Time 3. This clinical interview assessed symptoms for the diagnosis of personality disorders according to the DSM-III-R. A clinician blind to the mothers' psychiatric history and affective illness diagnosis administered the interviews. Scoring was based on classification of traits and behavior as absent or normal (0), exaggerated or accentuated (1), or criterion level of pathological (2). The behavior or trait needed to be present the last five years and within the last year to earn a positive score. The behavior or trait was also determined to have a significant impact on the mothers' life by eliciting examples and details from mothers. The interview was computer scored and yielded information on presence or absence of each criterion, the number of criteria met for each disorder, and if a diagnosis was

definite, probable, or negative. A dichotomous variable indicating diagnosis presence (referred to a Cluster A Dx, Cluster B Dx, or Cluster C Dx) was created if one or more diagnosis was deemed "definite." A dimensional score was also provided by the interview (referred to as the Cluster A DS, Cluster B DS, or Cluster C DS) variable. A variable was also created to indicate if mothers met criteria for any PD diagnosis (known as PD Count, 1 indicates any diagnosis, 0 indicates well). Due to outliers present in the dimensional scores, Cluster A and Cluster C dimensional scores underwent a Winsorizing transformation, while Cluster B did not demonstrate outliers that necessitated transformation (Hoaglin, Monsteller & Tukey, 1983).

Maternal Comorbidity. Using the maternal depression and maternal personality disorder variables, a maternal comorbidity variable was created. Mothers were classified as: (1) meeting criteria for a mood disorder only, without meeting criteria for a personality disorder called the Mood Group, (2) a comorbid group in which mothers qualified for a mood diagnosis as well as a personality disorder diagnosis called the Comorbid Group, and (3) a well group when mothers did not meet criteria for either a mood or personality disorder. Dummy coded variables were entered into the models.

Maternal depression severity. Based on interviews, clinicians assigned a rating of depression severity at its worst point, as well as a current rating on the Global Assessment Scale (Endicott, Spitzer, Fleiss, & Cohen, 1976) at both Time 1 and 3. Scores summarize mother's symptom severity and overall functioning on a scale of 1-100 (using 10-point intervals as guidelines). High scores represent low symptom severity and good functioning.

Offspring attachment. Attachment and representations of close relationships were measured across three different periods. When the participants were preschool age (Time 1), attachment was assessed using the Strange Situation. The Strange Situation was modified from the original version (Ainsworth, 1978) by introducing the Stranger for a longer period of time before the first separation (extending it to 7 minutes, and the mother and stranger were asked to approach the child in a series of steps). Further, the mother returned to the second reunion carrying a small case of toys. Such changes were made to observe the child's capacities in familiar and unfamiliar situations as well as their approach to a novel nonsocial situation. The videotapes were coded along Cassidy and Marvin (1987, 1989) coding system for children 30 months and older, and for children younger than that Ainsworth's (1978) original system was used. Intercoder agreement for the Cassidy and Marvin (1987, 1989) coding system for the pairs of coders ranged from .67 to .80 before conferencing, and for the Ainsworth guidelines intercoder agreement was .96. Classifications were made into the four main categories: secure, insecure-avoidant, insecure-ambivalent, and insecure-disorganized. From these four classifications a dichotomous variable was developed to indicate secure and insecure categories. Due to the study design and recruitment, the Strange Situation was only administered to cohort 1, as cohort 2 was not in the correct age range to participate in the Strange Situation when recruited.

At Time 3, participants were asked to report on social support and satisfaction family members in a semi structured interview, "My Family and Friends" (MFF; Reid et al., 1989) which was used as a representational measure for this developmental period. In the MFF children are asked to identify those in their social network and rank them on the

basis of who they would go to for support. Children ranked individuals listed (e.g. mothers, fathers, siblings, friends, etc.), in order of who they preferred to turn to for support, with 1 indicating their highest preference on the basis of different scenarios listed. This study included The Emotional Support scale that contains items such as "When you want to share your feelings [e.g. feeling happy, sad, or mad], which person do you go to the most often?" After each ranking, children were asked about how satisfied they were with the support they received on a 6-point scale. Due to such prompts, this scale was thought to be the most likely to elicit attachment relevant information about the mother-child relationship, and is included in the study as a proxy for attachment representations in childhood, consistent with previous approaches in studies of attachment representations in this age group (e.g. Booth, Rubin & Rose-Kransor, 1998; Lewis et al., 2000). Although rankings of peers were also available, rankings of mothers were used in this study as research suggests that in this developmental period mothers continue to be preferred over peers in attachment-relevant situations (Seibert & Kerns, 2009). There is more recent data that attachment-relevant representations continue to develop into adolescence and are influenced by parenting practices and values beyond infancy, further indicating the relevancy of mothers as attachment figures at this developmental period (Vaughn et al., 2016).

In Reid et al.'s (1989) original evaluation of the measure, the authors found good convergent validity and discriminant validity among types of social support and types of relationship by combining data from all items and relationships to compute an intraclass correlation coefficient. Test-retest reliability was good, with alphas of .68 for rankings and .69 for ratings. For use in this study, a variable indicating how often a child ranked

their parent as someone they would go to for support was used with 1 indicating frequent or often and 0 indicating infrequent. A categorical variable was created based on the likelihood rankings given by the children about scenarios in which they would seek out their mothers first. A percent of times offspring sought out their mothers was calculated from participants' responses, and a categorical variable was created with 1 indicating frequent or often and 0 indicating infrequent (frequent = 60 to 100% and infrequent = 40% and below).

At time 5, the Experiences in Close Relationships (ECR; Brennan et al., 1998), a 36-item self-report measure was used to assess for attachment styles in young adulthood. Items are presented to participants about how they generally behave or think in close relationships, independent of what may be currently occurring in a romantic relationship. The measure was rated on a modified 5-point scale, 1 *(disagree strongly)* to 3 *(neutral/mixed)* to 5 *(agree strongly)*. The ECR is scored along two dimensions, Anxiety (conceptualized as fear of abandonment) and Avoidance (conceptualized as discomfort with closeness). The ECR is a well validated scale with internal consistency with coefficient alphas of .91 and .94 for the Anxiety and Avoidance subscales. Categorical classifications for the ECR were derived by discriminant analysis from the Anxiety and Avoidance dimensions to create dismissing, preoccupied, fearful, and secure category classifications (Brennan et al., 1998). From these categorical classification, a variable was created to indicate secure (1) or insecure attachment (0) which included the dismissing, preoccupied, fearful categories.

Covariates. *Socioeconomic Status (Time 1)*. To examine socioeconomic status (SES) of the participants at Time 1, Hollingshead Four-Factor Index of Socioeconomic

Status (Hollingshead, 1975) was utilized, with higher values indicating higher SES. This survey measures and rates social status based on four domains: marital status, educational attainment, occupational prestige, and employed/retired status. These ratings are assigned to each parent or guardian of the participant. Education and occupation scores are weighted to obtain a single score for each parent that ranges from 8 to 66, with higher scores indicating higher SES. Scores were then averaged across parents and guardians for each participant.

Maternal Education (Time 1). As another indicator of societal status, maternal education data was collected at Time 1. Mothers self-reported their highest educational level on a scale from 1 to 9, with 1 representing 6th grade or below, and 9 representing having completed a Ph.D. or MD.

Child Race and Ethnicity (Time 1). Child racial and ethnic identity was collected as part of demographic self-report. Parents identified their children as 1 (Caucasian), 2 (Black or African American), 3 (Asian), 4 (Hispanic), and 5 (other). Race was dummy coded as 1 (Caucasian) and 0 (all other races and ethnicity) and this variable was used in the analyses.

Age. Age across the different assessment periods was calculated based on date of birth.

Cohort. There were two cohorts included in the study, with 1 indicating the younger sibling and 2 indicating the older sibling.

Planned Analyses

Power Analyses. In multilevel analyses, power considerations are typically limited by the group level because the group level is always smaller than the individual

level (Snijders, 2005). There has been debate about what sample size is sufficient in multilevel modeling for accurate estimation, which Maas and Hox (2005) addressed in a simulation study. Their results suggested that estimates of regression coefficient, variance, and standard errors were biased with a group-level sample size of 50 or less. Given that the number of families in this study well exceeds this threshold (N=98), we feel confident that our models are well-powered.

Data Imputation. Due to missing data in the sample, data was imputed using R and the MICE package (van Buren & Groothuis-Oudshoorn, 2011). The MICE package creates multiple imputations for missing data using Fully Conditional Specification, imputing incomplete data by a separate model. This package was chosen due to its ability to impute continuous, categorical, and binary data. According to Bodner (2008), due to the rate of our missing data across variables, 40 imputations are sufficient to account properly model our data. Data was imputed across variables of interest for our analyses. Data imputation was not used to account for data missing due to the study design, specifically for lack of attachment data at Time 1 for cohort 2. Attachment data was not collected for cohort 2, due to children being past the age of for which the Strange Situation could be administered. Thus, data is missing due to study design and not at random, and was not imputed using this method. Imputed data will be used for all planned analyses proposed in Study 1 and Study 2.

Covariates. A set of covariates were included in our analyses to examine the relationship between attachment development in offspring of well, mood, and comorbid mothers. As maternal education was highly correlated with Hollingshead Four-Factor Index of Socioeconomic Status (r = .65), we excluded maternal education from the model

in favor of a more comprehensive SES measure. Models examining attachment at Time 1 in Study 1 did not include age as a covariate due to examining attachment in one cohort at a single time point. Offspring family membership and cohort was utilized to account for the non-independent nature of the data set, and was included within the proposed nested models. In all planned analyses, a set of covariates were used to control for demographic variance: SES, age, and race/ethnicity.

Study 1: Cross Sectional Analyses. Logistic mixed model analyses are planned to examine the main effects of maternal mood and comorbidity status in predicting offspring attachment at Time 1, Time 3 and Time 5, controlling for covariates. Descriptive and preliminary analyses will be conducted in SPSS version 25. In order to examine these mixed models with imputed data, R software and the lme4 package will be used (Bates, Maechler, Bolker & Walker, 2015). Mothers were classified as belonging to the Mood Group if they meet criteria for a mood disorder without PD diagnoses, or the Comorbid Group if they meet criteria for a mood and PD diagnosis, and were in the Well group if they do not meet criteria for either a mood or PD diagnosis; these variables were entered into models as dummy coded variables.

Three cross-sectional analyses will be run to examine attachment at different developmental periods. In the first model Time 1, maternal comorbidity and mood group membership and covariates will be entered as level one predictors of individual differences in Strange Situation attachment at Time 1. Family membership will be entered as a level two predictor to account for the non-independent nature of the data. In the second model examining Time 3, maternal comorbidity and mood group membership and covariates will be entered as level one predictors of individual differences in

representations as reported in My Family and Friends. Family and cohort membership will be entered as level two predictors to account for the non-independent nature of the data. In the third model examining Time 5, maternal comorbidity and mood group membership and covariates will be entered as level one predictors of individual differences in attachment as reported in Experiences in Close Relationship. Family and cohort membership will be entered as level two predictors to account for the non-independent nature of the data.

Follow-up exploratory analyses are planned in order to further clarify the main effects from the proposed models listed above. These exploratory analyses will examine the effects of individual personality clusters using dimensional scores and will also explore the effects of maternal depression and bipolar disorder, to assess which individual clusters and maternal diagnoses may be driving the main effects. Both diagnosis and dimensional scores will be used to assess for PDs in these models in order to leverage two distinct approaches (Skodol et al., 2011). Although the categorical approach will capture the diagnostic level criteria, the dimensional approach may allow for assessing the degree of maladaptation and may allow for more sensitivity than the categorical system.

Study 2: Continuity Analyses. To examine stability of attachment over development, I will use logistic mixed models to examine the fit of a model examining stability of attachment across development on the basis of maternal illness, specifically maternal mood, to examine my hypothesis. Descriptive and preliminary analyses will be conducted in SPSS version 25. In order to examine these mixed models with imputed data, R and the lme4 package will be used (Bates, et al., 2015). The model will examine

if attachment stability can be predicted across development at Time 1, Time 3, and Time 5 as predicted by maternal mood. The model will include age, SES, and race as covariates, and will predict attachment over time. These models will account for the non-independent nature of the data by accounting for between-family variation and within-child variation as level two predictors. The first model will be a reduced model that includes covariates and maternal illness group to test for main effects. The second model will include covariates, main effect variables, and interaction variables to test for moderation of maternal mood group membership on attachment across time. The overall model fit for the regression parameters will be calculated using a likelihood ratio tests to determine whether a model with more estimated parameters was a better relative fit to the data than a more parsimonious model. When the Chi-square difference test is significant, the less parsimonious (i.e., more complex) model will be selected above its more parsimonious predecessor.

Additional exploratory analyses will be conducted and models will be fit to examine moderation on the basis of maternal comorbidity group, maternal diagnosis, and maternal personality clusters at each path. Each of these models will be run in the same method described above. The models will include age, SES, and race as covariates, and will predict attachment over time. These models will account for the non-independent nature of the data by accounting for between-family variation and within-child variation as level two predictors. The first model will be a reduced model that includes covariates and maternal illness group to test for main effects. The second model will include covariates, main effect variables, and interaction variables to test for moderation of maternal psychiatric illness on attachment across time. The overall model fit for the

regression parameters will be calculated using a likelihood ratio tests to determine whether a model with more estimated parameters was a better relative fit to the data than a more parsimonious model. When the Chi-square difference test is significant, the less parsimonious (i.e., more complex) model will be selected above its more parsimonious predecessor.

Results

Descriptive Analyses

There sample included 192 offspring: 60 children of well mothers, 75 children of mothers in the Comorbid Group (mothers with mood and PD diagnoses), and 57 were children of mothers in the Mood Group (mothers with mood diagnoses but not PD diagnoses). Descriptive statistics found that 57.1% of offspring were secure at Time 1, 42.2% of the offspring frequently preferred their mothers at Time 3, and 40.5% of the offspring were secure at Time 5. An ANOVA revealed significant differences by maternal comorbidity group (Table 1). There were differences with SES, such that well, mood, and comorbid groups were all significantly different from each other, with well demonstrating highest SES. When it came to education, there were also significant differences such that well mothers had a significantly higher education than mothers with depression diagnoses. A chi-square revealed that there were significant differences between offspring race and ethnicity classifications and maternal comorbidity group, however there were no differences when race and ethnicity were collapsed into a dichotomous Caucasian or other variable. There were no significant group differences based on age nor based on cohort membership. There was a significant group difference based on Cluster A, Cluster B, and Cluster C dimensional scores, such that all groups

were significant different from each other. When it came to the representational and attachment variables, there was no significant difference by group for the Strange Situation, My Friends and Family, and Experiences in Close Relationships variables, however those in the comorbid group demonstrated marginally significant lower rates of attachment at Time 1.

In our sample there were 17 mothers with Cluster A diagnosis, 51 with Cluster B diagnosis, and 43 with Cluster C diagnosis (Tables 2a, b, and c). ANOVAs and chi-square were run for each Cluster PD individually to compare differences between offspring of mothers with and without the diagnosis. Analyses revealed significant differences by diagnostic status (diagnosis or no) for offspring of mothers with Cluster B and C diagnosis, but not Cluster A diagnosis. For offspring of mothers with a Cluster B diagnosis, there were more female offspring from mothers without Cluster B diagnosis than with Cluster B diagnosis. For offspring of mothers with a Cluster C diagnosis, there was more representation of ethnicity and races in mothers who did not have a diagnosis than those who did. There was also a significant difference in that offspring from mothers who did not meet criteria for a Cluster C diagnosis were more securely attached than those who did meet Criteria for a Cluster C diagnosis.

Bivariate Analyses

Pearson and Spearman correlations, and Phi coefficients were gathered from the variables of interest in the full sample (Table 3). Results demonstrate that SES is positively associated with maternal education and child race, such that Caucasian group membership was associated with higher SES scores. Further, higher SES was negatively associated with maternal Cluster A and B dimensional scores. Higher maternal education

was associated with fewer Cluster A and B dimensional scores. Child sex was negatively associated with child race/ethnicity and positively associated with maternal comorbid group membership. Child race was significantly associated with Cluster A dimensional scores, such that Caucasian ethnicity was associated with higher dimensional scores. Maternal membership in the mood group was positively associated with maternal membership in the comorbid group and negatively associated with Cluster B dimensional scores. Maternal membership in the comorbid group was associated was associated with higher Cluster A, B, and C dimensional scores, and negatively associated with attachment at Time 1.

Study 1: Cross Sectional Analyses.

A multilevel model with observations clustered within family was run first in order to determine if the assumption of independent observations was tenable. Using the lme4 package (Bates, Maechler, Bolker & Walker, 2015), the unconditional mean model was run to calculate the intraclass correlation coefficient (ICC) to quantify the proportion of the between-cluster variation (e.g. the between family variation of being secure) in the total variation (e.g. the between and within family of being secure) using the family ID variable. The ICC was calculated by hand and resulted in an ICC of 0, suggesting an independence of residuals such that the observations do not depend on cluster membership. This suggests that there is no between-family variation, and a single-level logistic regression may be used for these analyses. This null model was run for all of the planned analyses, and the ICC resulted in 0 for all models, unless otherwise noted.

Time 1 Strange Situation Analyses. Because recruitment at Time 1 only included cohort 1, the data can be considered to be independent and no logistic mixed

model is necessary for this data. Two logistic regression was run in order to ascertain the effects of SES, race/ethnicity, and maternal comorbid group on the likelihood that participants were insecure at Time 1. The first logistic regression model was a reduced model that included an intercept term. The second logistic regression model included covariates of interest such as SES and child ethnicity/race, as well as the maternal comorbidity variables included as two dummy coded variables: maternal comorbidity and mood groups (dummy coded as 1 to indicate group membership, 0 to indicate well). Odds ratios were reported in the model. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(4) = 5.11$, $p = .27$ (Table 5).

Follow-up exploratory analyses were planned in order to further asses and clarify any main effects found in the initial analyses by examining the effects of individual personality clusters dimensional scores and maternal depression and bipolar disorder diagnosis on attachment at Time 1. The first logistic regression model was a reduced model that included an intercept term. The second logistic regression model included covariates of interest such as SES and child ethnicity/race, as well as the maternal depression and bipolar disorder diagnosis variables (dummy coded as 1 to indicate diagnosis, 0 to indicate well), and maternal personality clusters dimensional scores. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is significant, $\chi 2(7) = 14.23$, $p = 0.05$ (Table 5a). Thus, for offspring of mothers with bipolar disorder diagnosis there are decreasing log odds of being securely attached, such that their odds of being securely attached decrease by a factor of 0.18 at Time 1. For offspring of mothers with Cluster B

dimensional scores, odds ratios indicate that for a one unit increase in Cluster B dimensional scores the odds ratio of being securely attached increased by a factor of 1.23 at Time 1.

Time 3 My Friends and Family Analyses. Two logistic regression was run in order to ascertain the effects of SES, race/ethnicity, age, and maternal comorbid diagnoses on the likelihood that participants were insecure at Time 3. The first logistic regression model was a reduced model that included an intercept term. The second logistic regression model included covariates of interest such as SES and child ethnicity/race, age, as well as the main variables of interest maternal comorbidity variables included as two dummy coded variables: maternal comorbidity and mood group (dummy coded as 1 to indicate group membership, 0 to indicate well). The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(5) = 5.22$, $p = .38$ (Table 6).

Follow-up exploratory analyses were conducted to examine the effects of individual personality clusters dimensional scores, as well as the effects of maternal depression and bipolar disorder on attachment at Time 3. The first logistic regression model was a reduced model that included an intercept term. The second logistic regression model included covariates of interest such as SES and child ethnicity/race, age, as well as the maternal depression and bipolar disorder diagnosis variables (dummy coded as 1 to indicate diagnosis, 0 to indicate well), and maternal personality clusters dimensional scores. The overall model fit for the regression parameters were calculated

using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(8) = 5.98$, $p = 0.64$ (Table 6a).

Time 5 Experiences in Close Relationship Analyses. Two logistic regression was run in order to ascertain the effects of SES, race/ethnicity, age, and maternal comorbid diagnoses on the likelihood that participants were insecure at Time 5. The first logistic regression model was a reduced model that included an intercept term. The second logistic regression model included covariates of interest such as SES and child ethnicity/race, age, as well as the maternal comorbidity variables included as two dummy coded variables: maternal comorbidity and mood group (dummy coded as 1 to indicate group membership, 0 to indicate well). The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(5) = 5.83$, $p = 0.32$ (Table 7).

Follow-up exploratory analyses were conducted to examine the effects of individual personality clusters dimensional score, as well as the effects of maternal depression and bipolar disorder diagnosis on attachment at Time 5. The first logistic regression model was a reduced model that included an intercept term. The second logistic regression model included covariates of interest such as SES and child ethnicity/race, age, as well as the maternal depression and bipolar disorder diagnosis variables (dummy coded as 1 to indicate diagnosis, 0 to indicate well), and maternal personality clusters dimensional scores. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(8) = 11.98$, $p = 0.15$ (Table 7a).

Study 2: Continuity Analyses.

To examine stability of attachment over development, I used logistic mixed models to examine the fit of a model examining stability of attachment across development. First, a multilevel model with observations clustered within offspring and within family were run in order to determine if the assumption of independent observations are tenable. Using the lme4 package (Bates et al., 2015), the unconditional mean model was run to calculate the intraclass correlation coefficient (ICC) to quantify the proportion of the between-cluster variation (e.g. the between family variation of being secure or between offspring) in the total variation (e.g. the between and within family and offspring variation across time of being secure) using the family and child ID variables. The ICC was calculated by hand and resulted in an ICC of 0, suggesting an independence of residuals such that the observations do not depend on cluster membership. This suggests that there is no between-family nor between-offspring variation, and a single-level logistic regression may be used. This null model was run for all of the planned analyses, and the ICC resulted in 0 for all models, unless otherwise noted.

Continuity Analyses in the context of Maternal Comorbidity. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal mood and comorbid group, and their interaction across time, on the likelihood that participants demonstrated attachment continuity across development. Variables, including age, SES, and child ethnicity/race were included as covariates and maternal comorbidity was added as two dummy coded variables: maternal comorbidity and mood group (dummy coded as 1 to indicate group membership, 0 to indicate well group). To test for moderation across time, interaction variables were created between the maternal comorbidity variables and the variables accounting for time. Two regression

models were run in order to compare the model fit: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests to determine whether a model with more estimated parameters was a better relative fit to the data than a more parsimonious model. The overall model fit suggested the full regression model is not statistically significant, $\chi 2(4) = 5.91$, $p = 0.21$ (Table 8). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity, although quantitatively we see the decreasing odds of attachment over time. Neither maternal comorbidity nor maternal mood were significantly predictive main effects in the model.

Continuity Analyses in the context of Maternal Diagnosis. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal mood diagnosis, and their interaction across time, on the likelihood that participants demonstrated attachment continuity. Variables, including age, SES, and child ethnicity/race were included as covariates and maternal mood was added as a dummy coded variable (coded as 1 to indicate mood diagnosis, 0 to indicate no diagnosis). To test for moderation across time, interaction variables were created between the maternal mood diagnosis and time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the

regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(2) = 2.02$, $p = 0.36$ (Table 9). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity, although quantitatively we see the decreasing odds of attachment over time. Maternal mood diagnosis was not a significantly predictive main effect in the model.

Continuity Analyses in the context of Maternal Mood Diagnosis. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal bipolar or depression diagnosis, and their interaction across time, on the likelihood that participants demonstrated attachment continuity. Variables, including age, SES, and child ethnicity/race were included as covariates and maternal bipolar or depression diagnosis was added as a two dummy coded variables (coded as 1 to indicate the presence of a diagnosis, 0 indicated no diagnosis). To test for moderation across time, interaction variables were created between the maternal bipolar or depression diagnosis variables and the time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(4) = 6.31$, $p = 0.18$ (Table 10). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity, although quantitatively we see the decreasing log odds of attachment over time. Neither

maternal depression or bipolar diagnosis were not a significantly predictive main effects in the model.

Continuity Analyses in the context of Maternal Personality Disorders – Cluster A. A series of exploratory analyses were conducted to examine the impact of personality dimensional scores on attachment development. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal personality dimensional scores, and their interaction across time, on the likelihood that participants demonstrated attachment continuity across time. Variables, including age, SES, and child ethnicity/race were included as covariates and personality dimensional scores were added in the form of personality clusters, specifically Cluster A. To test for moderation across time, interaction variables were created between the maternal personality dimensional score variables and the time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(2) = 4.76$, $p = 0.09$ (Table 11). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity, although quantitatively we see the slight increasing odds of attachment over time. There was a significant main effect, such that for offspring of mothers with Cluster A dimensional scores, there are decreasing log odds of being securely attached and the odds ratios indicates that for every one unit

increase in Cluster A dimensional scores, the odds of being securely attached decrease by a factor of 0.91 (see Figure 1).

A follow-up exploratory analysis was conducted to examine the impact of personality Cluster A diagnosis on attachment development. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal personality Cluster A diagnosis, and their interaction across time, on the likelihood that participants demonstrated attachment continuity across time. Variables, including age, SES, and child ethnicity/race were included as covariates and personality Cluster A diagnosis. To test for moderation across time, interaction variables were created between the maternal personality Cluster A diagnosis variable and the time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(2) = 4.24$, $p = 0.12$ (Table 11a). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity. However, there is a significant main effect, such that for children who are Caucasian there are decreasing log odds of being securely attached, such that their odds of being securely attached decrease by a factor of 0.57.

Continuity Analyses in the context of Maternal Personality Disorders – Cluster B. A series of exploratory analyses were conducted to examine the impact of

personality scores on attachment development. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal personality dimensional scores, and their interaction across time, on the likelihood that participants demonstrated attachment continuity. Variables, including age, SES, and child ethnicity/race were included as covariates and personality dimensional scores were added in the form of personality clusters, specifically Cluster B. To test for moderation across time, interaction variables were created between the maternal personality dimensional score variables and the time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(2) = 3.92$, $p = 0.14$ (Table 12). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity, although quantitatively we see decreasing odds of attachment over time.

A follow-up exploratory analysis was conducted to examine the impact of personality Cluster B diagnosis on attachment development. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal personality Cluster B diagnosis, and their interaction across time, on the likelihood that participants demonstrated attachment continuity across time. Variables, including age, SES, and child ethnicity/race were included as covariates and personality Cluster B diagnosis. To test for moderation across time, interaction variables were

created between the maternal personality Cluster B diagnosis variable and the time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(2) = 4.39$, $p = 0.11$ (Table 12a). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity, although quantitatively we see the increasing odds of attachment over time. There is a significant main effect for child's race, as there are decreasing log odds of being securely attached for offspring who identified as Caucasian, and the odds of being securely attached decreases by a factor of 0.58.

Continuity Analyses in the context of Maternal Personality Disorders – Cluster C. A series of exploratory analyses were conducted to examine the impact of personality scores on attachment development. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal personality dimensional scores, and their interaction across time, on the likelihood that participants demonstrated attachment continuity. Variables, including age, SES, and child ethnicity/race were included as covariates and personality dimensional scores were added in the form of personality clusters, specifically Cluster C. To test for moderation across time, interaction variables were created between the maternal personality dimensional score variables and the time variables. Two regressions were run in order to compare the

fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is not statistically significant, $\chi 2(2) = 2.17$, $p = 0.34$ (Table 13). The reduced model is the most parsimonious fit and the model indicates that the log odds of being securely attached do not statistically differ across time suggesting continuity. There was a significant main effect such that higher Cluster C dimensional scores predicted a decrease by -0.14 in log odds that offspring would be securely attached, or that for a one unit increase in Cluster C dimensional scores the odds of being securely attached decrease by a factor of 0.87.

A follow-up exploratory analysis was conducted to examine the impact of personality Cluster C diagnosis on attachment development. A series of logistic regressions were run in order to ascertain the effects of age, SES, race/ethnicity, and maternal personality Cluster C diagnosis, and their interaction across time, on the likelihood that participants demonstrated attachment continuity across time. Variables, including age, SES, and child ethnicity/race were included as covariates and personality Cluster C diagnosis (coded as 1 to indicate the presence of a diagnosis, 0 indicated no diagnosis). To test for moderation across time, interaction variables were created between the maternal personality Cluster C diagnosis variable and the time variables. Two regressions were run in order to compare the fit of the two models: the first model was a reduced model that included covariates and variables to test for main effects, the second model included covariates, main effect variables, and interaction variables to test for

moderation. The overall model fit for the regression parameters were calculated using a likelihood ratio tests which suggested that the full regression model is statistically significant, $\chi 2(2) = 5.95$, $p = .05$ (Table 13a). Thus, the full model is the most parsimonious fit and the results of the model suggest that there is an interaction between maternal personality Cluster C diagnosis and attachment at Time 3. Post-hoc analyses suggest that offspring of mothers with Cluster C diagnosis have increasing log odds of being securely attached at Time 3, suggesting a pattern consistent with discontinuity (Figure 2). Additionally, there was a main effect that maternal personality Cluster C diagnosis significantly decreases the log odds that offspring would be securely attached across development by -1.60, and for offspring of mothers with a maternal personality Cluster C diagnosis have decreasing odds of being securely attached by a factor of 0.34 (see Figure 3).

Discussion

This study leverages a data set that prospectively examined children and their mothers over the span of approximately 15 years, to examine attachment development in mothers who were well or psychiatrically ill. This data allows the unique opportunity to understand how maternal psychopathology impacts attachment development, a topic that is important as approximately 6.7% of American adults experience one major depressive episode in a given year, 2.8% of the population experiences a bipolar disorder episode (Kessler et al., 2005) and the prevalence of any personality disorder is 9.1% (Lenzenweger et al., 2007). Maternal depression has been well researched and associated with difficulties in parenting, which may in turn impair the development of a secure attachment (DeWolff & van Ijzendoorn, 1997; McElwain & Booth-LaForce, 2006). Less

well understood is attachment development in the context of maternal bipolar disorder, although research suggests that insecure attachments occur in greater proportions in offspring of mothers with bipolar disorder (DeMulder & Radke-Yarrow, 1991). There is a significant gap in the literature concerning the impact of maternal comorbid mood and personality disorder on offspring's attachment development, although there is initial evidence with this sample that parenting for mothers with psychiatric comorbidity is impaired (DeMulder et al., 1995). This study examined attachment development in children with mothers with mood disorders (known as the mood group), comorbid mood and PD diagnoses (known as the comorbid group), and mothers without psychiatric illnesses (known as the well group), using a cross-sectional and longitudinal approach. The results of the current studies fail to support the proposed hypotheses that offspring of mothers within the mood group would show a greater incidence of insecure attachment at all developmental periods and that offspring of mothers with mood disorders would be characterized by greater discontinuity over development. However, these studies do provide preliminary evidence that expand our understanding of attachment development in the context of maternal psychiatric illness, but which require further examination and replication.

Study 1: Cross Sectional Analyses. Due to the gap in knowledge, I wished to first characterize the sample according to attachment at each developmental period. By using a cross-sectional approach to characterize the sample at different time points, I wished to extend and replicate previous cross sectional findings with this sample. Although the data was not independent due to study design that recruited two children from each family, preliminary analyses suggested that there was no between-family

variation and it was appropriate to approach the data as independent. In light of previous research, I hypothesized that offspring of mothers within the mood group would show a greater incidence of insecure attachment at all developmental periods (Time 1, 3, and 5) as compared to offspring of well mothers. Second, I hypothesized that offspring of mothers in the comorbid group would predict greater levels of attachment insecurity as compared to offspring of mothers in the mood group or well mothers. Across the three time points, the results did not confirm my hypotheses, as maternal group membership did not predict attachment in early, middle, and young adulthood. However, exploratory analyses found that there were lower log odds that offspring of mothers with bipolar disorder diagnosis would be securely attached in early childhood at Time 1, and also that offspring of mothers with higher Cluster B dimensional scores had increasing log odds of being securely attached in early childhood at Time 1.

The results related to maternal mood diagnosis are somewhat surprising in light of the broader body of research, as maternal depression was not significantly predictive. However maternal bipolar disorder predicted lower log odds of secure attachment, a finding that is aligned with previous findings within this sample (DeMulder et al., 1991; Radke-Yarrow et al., 1995). DeMulder and colleagues (1991) examined 112 children of 43 mothers with depression, 21 with bipolar disorder, and 45 well mothers, and results indicated that 67% of children of bipolar mothers were classified as insecure, compared to 42% of depressed and well children. Within the bipolar group, disorganized pattern was the predominant classification. Using a different subsample of 95 children and 39 depressed, 24 bipolar, and 32 well mothers, Radke-Yarrow and colleagues (1995) found that well or depressed illness status was not significantly related to attachment security,

but insecure attachment was more prevalent with bipolar mothers (63%) than with well mothers (38%), which was marginally significant. The current study examined a similar sample of 98 children of mothers at a similar time-point to Radke-Yarrow and colleagues (1995), but the focus of the current study was on comorbid maternal mood and PD, and utilized data imputation techniques to estimate a larger sample size. The current study replicated the broader findings of these previous results using an imputed data set, such that 62% of children of mothers with bipolar disorder were classified as insecure, $\chi 2(1) = 5.04$, $p = .03$, and there were decreasing log odds of being securely attached in early childhood. Although the analyses in the current study using Strange Situation data in early childhood does not represent an original contribution to the literature, our analyses are consistent with published reports of this data using a different analytic approach.

More surprising in light of the previous research is the finding that offspring of mothers with Cluster B dimensional scores have increasing log odds of beings securely attached in early childhood. There is a theoretical and empirical link between Cluster B PD and individuals' own attachment difficulties (Fogany et al., 1996; Gunderson, 1996; Levy & Blatt, 1999), however research has not explored attachment development in children of mothers with Cluster B diagnoses, as was done in this study. There is little research relating to attachment in offspring of mothers with PDs, but emerging literature related to parenting in mothers with PDs suggests that mothers with Cluster B diagnoses are less sensitive, engaged, and responsive to their children (Cassidy, Zoccolillo, Hughes, 1996; Cradnell 2003, Newman 2007; see Eyden, Winsper, Wolke, Broome, & MacCallum, 2016 for review). However, research examining mothers with comorbid mood and PDs have found a different pattern of results. In contrast to the broader

literature and theory, a study by Conroy and colleagues (2010) report that when examining the effects of maternal comorbid depression with PDs on parenting, significantly poorer maternal involvement scores were not associated with Cluster B PDs, but were associated with Cluster A and C PDs. They posit that behavioral traits of Cluster B PD might counteract the tendencies of mothers with depression to be less responsive towards their infants. Similarly, a study by DeMulder and colleagues (1995) followed 89 families across early childhood over three time periods, and results indicated that mothers with comorbid PD and bipolar disorder demonstrated greater engagement with their children. The current study is aligned with previous findings in this sample as the current results suggests that for mothers with comorbid mood and PD, early attachment was not impacted by Cluster B traits. However, further examination is warranted as in our current sample, Cluster B traits were disproportionally found in mothers with bipolar disorder. Further, mothers without an Axis I psychiatric mood or PD diagnosis (known as the well mothers) who reported Cluster B traits were included in the Cluster B dimensional score approach, which may additionally impact these results. This finding awaits further replication and should be interpreted cautiously in light of these sample characteristics.

The current analyses indicate significant results in the cross-sectional models examining attachment in early childhood, but similar patterns were not found with the same cross-sectional models conducted at middle childhood and young adulthood, as the results at these time points suggested negative non-significant relationships between attachment and maternal psychopathology. While these analyses did not account for within individual change, it may be that the impact of maternal mental illness and PD on attachment development may be particularly detrimental in early development, when

children are most dependent on their caregivers and secure base behaviors may be affected by a caregiver psychopathology. It may also be that within our sample, for mothers with Cluster B PDs personality disorder symptoms may be adaptive under certain conditions and lead to compensatory behaviors (Radke-Yarrow et al., 1995). These compensatory behaviors may include increased engagement that may buffer the impact of interpersonal deficits associated with maternal psychopathology and benefit attachment development. Further, as previous research suggests, it may be that while some aspects of caregiving are impacted, those associated with the development of a secure attachment, namely maternal sensitivity, may be less sensitive to Cluster B PD traits. Additionally, due to the chronic nature of PDs and the continued effect on offspring development, it may be that detrimental effects on attachment accumulate over time. This may account for why the association was only present in early childhood, and not in middle childhood or young adulthood. Another reason for this pattern may be due in part to a resilience process is occurring in these offspring. From a developmental tasks perspective, offspring are increasingly developing competencies in the social and romantic domain (Collins, & van Dulmen, 2006; Masten et al., 1995; Roisman, Aguilar, & Egeland, 2004), and as such, they may be demonstrating their capacity at compensatory effects for detrimental early experience. Research suggests that garnering support from close friends and romantic partners may even serve to "disrupt" previous maladaptive pathways (Roisman et al., 2004) and may account for why these impacts on attachment were only found in early and not middle childhood or young adulthood.

Study 2: Continuity Analyses. Attachment development is key in understanding typical and atypical development, including the development of peer and romantic

relationships (Collins, & van Dulmen, 2006) and psychopathology development (Toth et al., 2009). Moreover, attachment relationships develop over the first years of life, becoming increasingly stable over time, but remaining flexible enough to change in response to stressors or changes in the caregiving environment (Bowlby, 1973, 1980). Maternal availability and responsiveness may be impaired in psychiatrically ill mothers, but little is known about mothers with comorbid mood and personality disorders. Although the data was not independent due to the study design (recruiting two children from each family), preliminary analyses suggested that there was no between-family or within-child variation, thus it was appropriate to approach the data as independent. This study attempts to fill this important gap in the literature by conducting a prospective longitudinal study of children's attachment when reared by mothers with mood diagnoses (the mood group), comorbid mood and PD (the comorbid group), and well mothers across development, and examining if attachment development may be considered a stable or discontinuous process. I predicted that offspring of mothers with mood disorders would be characterized by greater discontinuity over development, moving towards insecurity over time, while attachment in offspring of well mothers would demonstrate more stability over time, remaining secure. As stability has never been examined in populations with comorbid mood and personality disorder, exploratory analyses were run, with follow-up analyses to examine the patterns found.

The results of this study suggest that for offspring of mothers with maternal personality Cluster C diagnosis, attachment across development may be characterized as discontinuous. Results indicated a moderation effect such that offspring of mothers with Cluster C diagnosis demonstrated increasing log odds of being securely attached from

early to middle childhood. Further, offspring of mothers with Cluster C PDs demonstrated lower attachment in early childhood as compared to those with mothers without PDs, and their increasing log odds places them on a similar trajectory at middle childhood as offspring with mothers without PDs. Cluster C is characterized as the anxious-fearful cluster typified by fearful and obsessional behavior, and excessive dependency on others. Previous research suggests that Cluster C PDs have aversive impacts in early development in relation to emotion regulation (Conroy et al., 2012), poor maternal involvement with infants (Conroy et al., 2010), and also impact parenting behaviors for mothers with bipolar disorder (DeMulder et al., 1995), but no research to my knowledge has examined the impact of Cluster C PDs on attachment development over time. Despite the chronic nature of PDs and effects they may have on attachment development, this change towards increasing odds of security may be due to a resilience process occurring in these offspring with age.

A follow-up analysis examining individual personality clusters within Cluster C found a marginally significantly effect such that the dependent cluster predicted lower log odds of attachment (see appendix, Table 40). This suggests the main effect may be driven by the dependent cluster, which includes dependent behavior on others, and has been previously associated with greater engagement with offspring for mothers with comorbid bipolar disorder (DeMulder et al., 1995). Dependent PD has a low base rate (Torgensen 2009), and has been associated with low to moderate impairment and poor quality of life (Grant et al., 2004). The DSM-IV characterizes it as a pervasive and excessive need to be taken care of that leads to submissive and clingy behavior, and fears of separation (APA, 1994). Research has found that dependent PD can be characterized by two correlated

factors: one that includes attachment/abandonment, emotional neediness, active-emotion, and insecure attachment, and a second one that includes dependency/incompetence, self-perceived incompetence, and passive submissive behavior (Morgan & Clark, 2010). Such behavior may be particularly impactful for attachment development, as they are at odds with secure base behavior which calls for a stronger and wiser caregiver who is effective at providing support and regulation. Of note, dependent PD was removed from inclusion in the DSM-5 due to arguments that there is not sufficient validity and clinical utility for its inclusion. Further, due to the different traits that may emerge (such as submission and assertiveness) some argue that a system which focuses on trait domains more accurately capture dependent PDs (Bornstein et al., 2011).

More in line with predictions, there were also a significant main effect found in our model examining attachment across development. The models suggested that offspring of mothers with Cluster A dimensional scores demonstrated decreasing log odds of being securely attached across development. However, in the current study the proposed moderation models examining interactions between Cluster A and attachment development across time were not significantly predictive. Cluster A PDs include paranoid, schizoid, and schizotypal PDs, and adults with these diagnoses may be socially withdrawn, odd or eccentric. Cluster A PDs are associated with interpersonal impairments including interpreting the actions of others as demeaning or threatening, and indifference or deficits in interpersonal relationships. Additionally, research suggests that Cluster A PDs are associated with schizophrenia, with some arguing that it is part of the schizophrenia spectrum (Kendler, Myers, Torgersen, Neale, & Reichborn-Kjennerud, 2007). Previous research using 89 families from this sample followed across three time

points suggests that in well mothers, higher critical and irritable behavior with their children were related to higher paranoid and schizoid dimensional scores (DeMulder et al., 1995). Higher schizotypal scores were also related to less engagement with children for well mothers, while for mothers with depression, higher Cluster A dimensional scores were related to less engagement. For this study, a follow-up analysis with individual PDs did not find a statistically significant effect, but schizoid PD may be driving the main effect (see appendix, Table 39). While the schizoid PD is one of the least commonly occurring PD, research suggests that it has greater impairment in interpersonal functioning and is associated with a lower quality of life in general (Cramer, Torgersen, & Kringlen, 2006; Grant et al., 2004). Further, schizoid PD is also characterized by social withdrawal and detachment, intimacy avoidance and restricted affect (Skodol et al., 2011). Such behaviors and traits within the context of an attachment relationship may contribute to difficulties in the development of a secure attachment, as suggested by the current study's preliminary finding.

Surprisingly, there was no significant main effect with Cluster B dimensional scores or diagnostic status predicting attachment across development. The evidence from this study failed to show evidence that mothers' Cluster B personality symptoms were associated with attachment over time. That is, models examining Cluster B diagnosis and dimensional scores were not significant, a finding that is surprising due to the extensive theoretical and empirical link between individuals' own attachment and presence of a Cluster B diagnosis (Fogany et al., 1996; Gunderson, 1996; Levy & Blatt, 1999). There is little research relating to attachment in offspring of mothers with PDs, but emerging literature on parenting suggests that mothers with Cluster B diagnoses are less sensitive,

engaged, and responsive to their children (Cassidy, Zoccolillo, Hughes, 1996; Cradnell 2003, Newman 2004; see Eyden, Winsper, Wolke, Broome, & MacCallum, 2016 for review). The finding from the current study is at odds with the extant literature and theory, but previous research utlizing this sample similarly found results inconsistent with the broader literature. One study found that a lack of engagement and critical behavior with their child at Time 1 was associated with antisocial symptoms for mothers with depression; however, for mothers with bipolar disorder, Cluster B symptoms were related to more engagement across early childhood (DeMulder et al., 1995).

The current study found that for the other proposed moderation models examining interactions between maternal Cluster A, B, other psychiatric illnesses, and attachment development across time, the full models with interaction terms were not the most parsimonious fits. The reduced models with covariates and main effects suggested continuity and that there were no differences between groups, as attachment did not differ significantly across time points within the models. This finding is in line with previous research which has identified attachment stability in samples of mothers with depression (Cicchetti et al., 1999; Toth et al., 2006). Within this sample as a whole, descriptive statistics found that 42.9% of offspring were insecure at in early childhood, 57.8% of the offspring infrequently preferred their mothers at middle childhood, and 59.5% of the offspring were insecure at young adulthood. Further, analyses found that for offspring of mothers in the comorbid group, attachment in early childhood was associated with representations in middle childhood and young adulthood, although this was not true for offspring in the well and mood groups. Such findings may suggest that within these

models, some offspring may have been remaining continuously insecure across development, as found in previous high risk samples.

Lastly, there was a significant main effect in the Cluster A and Cluster B models such that Caucasian group membership predicted decreasing log odds of attachment over time. Participants in this sample were 85.4% Caucasian, and in the analyses a dichotomous variable coded as Caucasian or other was included to account for demographic differences. This is an unexpected finding, as attachment is considered to be a universal cross-cultural construct (Bowlby, 1969) and thus ethnic/racial difference were not expected. While there are those who argue that attachment theory and secure base behaviors are based on western values and behaviors, cross-cultural research suggests that basic patterns of attachment and the predominance of secure attachment are found in different cultures, although the specific behaviors may vary (Sagi-Schwartz, van IJzendoorn, Bakermans-Kranenburg, 2008). While there have been some studies that find differences in attachment related to race or ethnicity, authors argue the effects found are mediated by poverty, rather than the race (Bakermans-Kranenburg et al., 2004; van IJzendoorn & Bakermans-Kranenburg, 2010), or other factors, such as immigration stress in a study examining Latino and Asian-American samples (Huang et al., 2012). However, the literature as a whole continues to find evidence that cross-culturally there is a universal component of attachment (Sagi-Schwartz et al., 2008). In the current sample, Caucasian ethnicity and race were associated with higher SES, differing from previous studies that find that lower SES occasionally accounts for associations with insecure attachment. This finding in our sample that Caucasian offspring were more likely to have lower log odds of secure attachment, is an unexpected finding that may be driven by the

overrepresentation in our sample. Further, it may be that within our sample, Cluster A and C PDs were more prevalent among mothers of Caucasian children, driving this effect, although research has not indicated a higher prevalence of these PDs in Caucasian individuals (McGilloway et al., 2010). Chi-square analyses found no differences in Caucasian and other children across Cluster PD diagnoses (Tables 2a and c), but there was a significant association that Caucasian children were associated with higher maternal Cluster A dimensional scores (Table 3).

Limitations. This study was able to harness prospective longitudinal data of development at various times points, which offers an important perspective for development. While the majority of previous studies examining continuity of attachment development rely on two time points, this study had three with which to model change over time, allowing greater insight as to how discontinuity may occur. Another strength is that both dimensional and diagnostic status were used in a sample of women who were diagnosed using clinical interviews. By using both dimensional and diagnosis classification of PDs, this study is better able to draw conclusions about PDs, as dimensional scores allow for researchers to examine their impact on a continuous basis rather than on clinically significant severity solely. Further, dimensional scores allow for more variance in the analyses and to consider degrees of maladaptation, which may offer a more informative approach when examining development. However, a limitation to our data is that there was a relatively small sample of mothers with PDs, resulting in small cell sizes for mothers in each Cluster PD group. Further, a dimensional approach meant that even mothers who did not meet criteria for a psychiatric illness (known in the study

as well mothers) were included in the analyses, which may have impacted results and accounted for some of our surprising results.

Importantly, while we leveraged data imputation methods and the power analysis suggests that this study is adequately powered, this study utilizes a small sample size for the number of variables used in this study. We were able to leverage data imputation for our analyses to account for missing data that was not due to study design, but the use of imputed data undoubtedly introduces bias into the sample. Another important limitation is the number of analyses and models conducted, which may inflate the possibility of a Type 1 error. As a whole, the sparse findings in these studies suggests caution when interpreting these results pending further extension and replication.

A significant limitation of this research is the use of the attachment and representational measures using in the study. While attachment in early childhood was assessed with the Strange Situation, an observational method often considered the gold standard, the MFF measure is administered as a semi-structured interview which is not often used to measure attachment, and the Experiences in Close Relationships (ECR) in young adulthood is a self-report instrument to measure attachment styles. The different methods and theoretical approaches of these instruments may have introduced measurement error and may account in part for the lack of associations between attachment and maternal illness. There are also further limitations to the use of the MFF measure in this study. This semi-structured interview asks questions about close people in a child's life, and has been used to approximate attachment security in this developmental period (e.g. Booth et al., 1998; Lewis et al., 2000), but remains a proxy measure for attachment representations as it was not designed nor validated to measure attachment. In

addition, the ECR measure is used to assess attachment styles in romantic relationships and there was variability in offsprings' romantic relationship experience at the time the data was collected. At Time 5, only a subset of the participants in the sample reported being in a romantic relationship at the time they completed the attachment style questionnaire ($N = 26$, 28% of the total sample), and there were some respondents who had not yet had a romantic relationship. It is difficult to know if being in a romantic relationship at the time of filling out the questionnaire may have impacted attachment.

Lastly, this study is comprised of a community sample with a restricted socioeconomic and racial/ethnic representation, as the sample was primarily a middle-class Caucasian sample. This greatly impacts the generalizability of our results, as SES and racial/ethnic background how impact the relationship between comorbid maternal mental illness and attachment across development.

Conclusions and Implications

This study is the first of its kind to examine the effects of maternal mood comorbid with PDs to examine the longitudinal effects on attachment development. This study was able to leverage data from a prospective longitudinal study of maternal psychopathology on children from early childhood into early adulthood using three time periods. The results of the study provide preliminary evidence that suggests attachment may be characterized as a continuous process for many of the offspring with mothers in the comorbid and mood group, as well as for mothers with PDs, with one possible exception. For offspring of mothers with Cluster C diagnosis, attachment across development may be characterized as discontinuous as offspring had increasing log odds of being securely attached from early to middle childhood. Further, for offspring of

mother with Cluster A dimensional scores, current data provides preliminary support that offspring had decreasing log odds of being securely attached across development. Despite the extensive theoretical and some empirical support, no preliminary significant associations resulted with Cluster B PDs. Lastly, when it came to characterizing the sample at different time points, this study suggests that in early childhood, maternal Cluster B PDs predicted higher logs odds of attachment, while maternal bipolar disorder predicted lower log odds of attachment.

This study is the first of its kind and will need replication and validation in the literature in light of the exploratory analyses and due to many of the predicted findings not being supported. Future studies should examine attachment across development using different methods, including the use of attachment based scripts in middle childhood and adulthood or the AAI in adulthood, which may offer a more robust approach. A better understanding between maternal mental illness and offspring attachment development may offer an important avenue for intervention, as attachment difficulties are associated with psychopathology and difficulties in peer and romantic relationships. Early intervention aimed at mothers with mental illness may be an important opportunity, particularly as these data suggest that offspring's attachment in early childhood was impacted by maternal mental illness, but not at later time points. Further, for intervention aimed at developing resilience in offspring of mother with psychopathology this study provides preliminary evidence suggesting that middle childhood may be an appropriate developmental period to target. This study offers a unique opportunity to examine maternal mental illness, beyond maternal depression, and its detrimental effect on attachment development across time. This study offers an extension of previous

literatures and further allows for understanding the role of maternal comorbidity on cross sectional and longitudinal offspring outcomes which may have important treatment implications.

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Appendices

Table 1. Descriptive data on offspring's attachment and covariates

	Well (*n* = 60)	**Comorbid (*n* = 57)**	**Mood (*n* = 75)**	**Comparison Statistic**
SES	56.4 (10.51)	49.09 (15.18)	47.82 (16.86)	$F(2, 191) = 6.22$**
Education	5.90 (1.02)	5.57 (1.06)	5.33 (1.31)	$F(2, 191) = 3.74$*
Sex	30 (30%) female	36 (48%) female	38 (67%) female	$\chi^2(2) = 5.16$, $p = .08$
Race				
Caucasian	52 (86.67%)	67 (89.33%)	45 (78.94%)	$\chi^2(2) = 12.45$, $p = .05$*
Black	6 (10%)	4 (5.33%)	12 (21.05%)	
Asian	2 (3.33%)	2 (2.67%)	0 (0%)	
Hispanic	0	2 (2.67%)	0 (0%)	
Dichotomous Race				
Caucasian	52 (31.7%)	67 (40.9%)	45 (27.4%)	$\chi^2(2) = 2.91$, $p = .23$
Other	8 (28.6%)	8 (28.6%)	12 (42.9%)	
Cohort 1	30 (30.6%)	38 (38.8%)	30 (30.6%)	$\chi^2(2) = .09$, $p = .96$
Cohort 2	30 (31.2%)	37 (39.4%)	27 (28.7%)	$\chi^2(2) = .09$, $p = .96$
Age T1 C1	2.64 (0.63)	2.55 (0.75)	2.72 (0.41)	$F(2, 97) = 0.63$
Age T1 C2	6.09 (0.82)	6.44 (1.19)	6.54 (1.06)	$F(2, 93) = 1.52$
Age T3 C1	9.48 (1.10)	9.29 (1.05)	9.26 (1.06)	$F(2, 97) = 1.22$
Age T3 C2	12.87 (1.41)	12.97 (1.38)	13.28 (1.51)	$F(2, 93) = 0.61$
Age T5 C1	20.42 (1.64)	19.81 (1.42)	20.78 (1.17)	$F(2, 97) = 2.63$
Age T5 C2	23.58 (2.43)	24.00 (1.75)	24.04 (2.06)	$F(2, 93) = 1.31$
Cluster A DS	1.91 (2.59)a	4.36 (2.26)b	3.34 (2.65)c	$F(2, 191) = 16.63$***
Cluster B DS	1.65 (1.54)a	6.39 (3.02)b	3.28 (2.21)c	$F(2, 191) = 63.72$***
Cluster C DS	2.74 (2.22)	4.67 (1.93)	3.69 (2.15)	$F(2, 191) = 14.305$***

Strange Situation Dichotomous Variable T1	20 (66.67%) secure	17 (44.75%) secure	19 (63.33%) secure	χ^2 (2) = 3.97, p =.14
Friends and Family Mom Ranking T3	24 (42.86%) frequent	32 (46.38%) frequent	20 (36.36%) frequent	χ^2 (2) = 1.27, p =.53
ECR Dichotomous Variable T5	20 (48.78%) secure	21 (38.18%) secure	12 (34.28%) secure	χ^2 (2) = 1.85, p =.40

Note: *$p < .05$, ** $p < .01$, *** $p < .001$.

Mothers were classified as: (1) meeting criteria for a mood disorder, without meeting criteria for a personality disorder called the Mood Group, (2) a comorbid group in which mothers qualified for a mood diagnosis and a personality disorder diagnosis called the Comorbid Group, and (3) a well group with mothers who did not meet criteria for either a mood or personality disorder.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Race/Ethnicity – self-reported data was collected and a dummy coded variable used in the models to indicate Caucasian (1) or other races/ethnicity (0).

Cohort – There were two cohorts included in the study, with 1 indicating the younger sibling and 2 indicating the older sibling.

Age –Calculated based on date of birth and reported here for both cohorts. Reported here for each time point (T1, T3 and T5) and for each cohort separately (C1 and C2 for cohorts 1 and 2 respectively).

Personality dimensional scores (DS) – from semi-structured clinical interview. Post-hoc contrasts indicated that each of the groups were significantly different from one another, indicated by the subscripts.

Strange Situation – Attachment at Time 1, dichotomous variable indicates secure or insecure created from observational data.

Friends and Family Mom Ranking – a dichotomous variable was created from offspring self-report indicating if offspring sought out their mother frequently or infrequently.

ECR - Experiences in Close Relationships, dichotomous variable indicating secure or insecure attachment created from self-reported data.

Table 2a. Descriptive data on offspring's attachment and covariates based on Cluster A PD Diagnosis

	Cluster A Dx		**Comparison Statistic**
	No Dx (*n* = 151)	**Dx (*n* = 17)**	
SES	51.60 (13.93)	44.82 (21.80)	$F(1, 191) = 3.27$
Education	5.62 (1.16)	5.41 (1.00)	$F(1, 191) = 0.53$
Sex	94 females (53.7%)	10 females (58.8%)	$\chi^2(1) = 0.16, p = .69$
Race			$\chi^2(1) = 3.13, p = .37$
Caucasian	151 (87.7%)	13 (76.5%)	
Black	18 (10.3%)	4 (23.5%)	
Asian	4 (2.28%)	0 (0%)	
Hispanic	2 (1.14%)	0 (0%)	
Race			
Caucasian	151 (92.1%)	13 (7.9%)	$\chi^2(1) = 1.20, p = .27$
Other	24 (85.7%)	4 (14.3%)	
Cohort 1	89 (90.8%)	9 (9.2%)	$\chi^2(1) = .03, p = .87$
Cohort 2	86 (91.4%)	8 (9.6%)	$\chi^2(1) = .03, p = .87$
Age T1	4.42 (2.03)	4.80 (2.30)	$F(1, 191) = .55$
Age T3	11.14 (2.25)	10.77 (2.38)	$F(1, 191) = .40$
Age T5	22.10 (2.57)	21.38 (2.73)	$F(1, 191) = .90$
Strange Situation Dichotomous Variable T1	52 (58.4% secure)	37 (41.6% secure)	$\chi^2(1) = 0.65, p = .42$
Friends and Family Mom Ranking T3	68 (41.2% frequent)	68 (41.2% frequent)	$\chi^2(1) = .83, p = .36$
ECR Dichotomous Variable T5	48 (40.7% secure)	48 (40.6% secure)	$\chi^2(1) = .02, p = .88$

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Race/Ethnicity – self-reported data was collected and a dummy coded variable used in the models to indicate Caucasian or other race/ethnicity.

Cohort – There were two cohorts included in the study, with 1 indicating the younger sibling and 2 indicating the older sibling.

Age – Calculated based on date of birth and reported here for both cohorts. Reported here for each time point (T1, T3 and T5) across cohorts.

Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Table 2b. Descriptive data on offspring's attachment and covariates based on Cluster B PD Diagnosis

	Cluster B Dx		Comparison Statistic
	No Dx (*n* = 141)	**Dx (*n* = 51)**	
SES	50.96 (15.09)	51.10 (14.28)	$F(1, 191) = 0.003$
Education	5.57 (1.18)	5.69 (1.05)	$F(1, 191) = 0.35$
Sex	83 females (58.8%)	21 females (20.2%)	$\chi^2(1) = 4.72, p = .03$**
Race			$\chi^2(1) = 5.66, p = .13$
Caucasian	117 (83.0%)	47 (28.7%)	
Black	20 (14.2%)	2 (9.09%)	
Asian	2 (1.42%)	2 (50%)	
Hispanic	2 (1.42)	0 (0%)	
Race			
Caucasian	151 (92.1%)	13 (7.9%)	$\chi^2(1) = 1.20, p = .27$
Other	24 (85.7%)	4 (14.3%)	
Cohort 1	72 (73.4%)	26 (26.5%)	$\chi^2(1) = 0, p = .99$
Cohort 2	69 (73.4%)	25 (26.6%)	$\chi^2(1) = 0, p = .99$
Age T1	4.47 (2.00)	4.41 (2.21)	$F(1, 191) = .03$
Age T3	11.12 (2.23)	11.04 (2.35)	$F(1, 191) = .06$
Age T5	22.29 (2.54)	21.33 (2.59)	$F(1, 191) = 3.33$
Strange Situation Dichotomous Variable T1	41 (73.2%)	15 (26.8%)	$\chi^2(1) = 0, p = .95$
Friends and Family Mom Ranking T3	55 (40.7% frequent)	21 (27.6% frequent)	$\chi^2(1) = .49, p = .47$
ECR Dichotomous Variable T5	41 (43.1% secure)	12 (22.6% secure)	$\chi^2(1) = 1.05, p = .31$

Note. * p < .05. ** p < .01. *** p < .001.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Race/Ethnicity – self-reported data was collected and a dummy coded variable used in the models to indicate Caucasian or other race/ethnicity.

Cohort – There were two cohorts included in the study, with 1 indicating the younger sibling and 2 indicating the older sibling.

Age – Calculated based on date of birth and reported here for both cohorts. Reported here for each time point (T1, T3 and T5) across cohorts.

Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Table 2c. Descriptive data on offspring's attachment and covariates based on Cluster C PD Diagnosis

	Cluster C Dx		**Comparison Statistic**
	No Dx (*n* = 149)	**Dx (*n* = 43)**	
SES	51.17 (14.69)	50.42 (15.53)	$F(1, 191) = 0.09$
Education	5.61 (1.17)	5.58 (1.05)	$F(1, 191) = 0.02$
Sex	80 females (53.6%)	24 females (23.1%)	$\chi^2(1) = 0.06$, $p = .81$
Race			$\chi^2(1) = 10.85$, $p = .02$**
Caucasian	125 (83.8%)	39 (23.7%)	
Black	20 (13.4%)	2 (9.09%)	
Asian	4 (2.7%)	0 (0%)	
Hispanic	0 (0%)	2 (100%)	
Race			
Caucasian	125 (76.2%)	39 (23.8%)	$\chi^2(1) = 1.24$, $p = .27$
Other	24 (85.7%)	4 (14.3%)	
Cohort 1	76 (77.6%)	22 (22.4%)	$\chi^2(1) = 0$, $p = .99$
Cohort 2	73 (77.7%)	21 (22.3%)	$\chi^2(1) = 0$, $p = .99$
Age T1	4.44 (2.06)	4.45 (2.6)	$F(1, 191) = .02$
Age T3	11.08 (2.27)	11.20 (2.26)	$F(1, 191) = .10$
Age T5	21.97 (2.56)	22.18 (2.66)	$F(1, 191) = .17$
Strange Situation Dichotomous Variable T1	48 secure (85.7%)	8 secure (14.3%)	$\chi^2(1) = 5.00$, $p = .03$**
Friends and Family Mom Ranking T3	60 (42.6% frequent)	16 frequent (21.1%)	$\chi^2(1) = .03$, $p = .86$
ECR Dichotomous Variable T5	40 (41.6% secure)	13 secure (24.5%)	$\chi^2(1) = .22$, $p = .64$

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Race/Ethnicity – self-reported data was collected and a dummy coded variable used in the models to indicate Caucasian or other race/ethnicity.

Cohort – There were two cohorts included in the study, with 1 indicating the younger sibling and 2 indicating the older sibling.

Age – Calculated based on date of birth and reported here for both cohorts. Reported here for each time point (T1, T3 and T5) across cohorts.

Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 3. Correlations between variables of interest

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. SES	--	.77**$_b$	-.13	.38**$_b$	-.11$_b$	-.10$_b$	-.17*$_b$	-.29**$_b$	.03$_b$	.001$_b$	-.11$_b$	.01$_b$
2. Education		--	-.04$_b$	.32	-.13$_b$	-.04$_b$	-.22**$_b$	-.20**$_b$	-.02$_b$	-.05$_b$	-.04$_b$	.06$_b$
3. Sex			--	-.14*$_a$	.44$_a$	.16*$_a$	.03	-.05	-.01	0$_a$	-.07$_a$	.21$_a$
4. Race				--	-.02$_a$	-.12$_a$	-.19**	-.10	.02	-.12$_a$	-.03$_a$	-.09$_a$
5. Mood Group					--	.52***$_a$	-.03	-.16*	-.11	.08$_a$	-.08$_a$	-.08$_a$
6. Comorbid Group						--	.52**	.62**	.52**	-.20*$_a$	.07$_a$	-.04$_a$
7. Cluster A DS							--	.52**	.61**	-.07	-.03	-.15
8. Cluster B DS								--	.39**	.07	.03	-.17
9. Cluster C DS									--	-.17	-.09	-.14
10. SS Attachment										--	-.10$_a$	-.27$_a$
11. MFF Mom											--	.07$_a$
12. ECR Attachment												--
Mean	51.00	5.60	1.54	.85	.39	.29	2.96	4.09	3.49	.57	.42	.40
SD	14.84	1.14	.50	.35	.49	.45	2.29	3.17	2.00	.50	.50	.49

Note: * p < .05. ** p < .01. *** p < .001. Pearson, Phi (indicated by subscript a), and Spearman correlations (indicated by subscript b) were used in this table.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Sex – self-reported, coded 1 for male, 2 for female

Race/Ethnicity – self-reported data was collected and a dummy coded variable used indicate Caucasian (1) or other races/ethnicity (0).

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Personality dimensional scores (DS) – continuous scores from semi-structured clinical interview.

Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Table 4. Predicting Strange Situation attachment at Time 1 utilizing a logistic regression

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.76	-1.07		0.93	0.99			1.31
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	3.43	1.23	0.94	1.30	0.56	24.07	0.19
Race	0.50	-0.69	0.73	-0.96	0.11	1.96	0.34
SES	1.00	0	0.02	0.07	0.97	1.03	0.94
Comorbid Group	0.42	-8.88	0.52	-1.70	0.14	1.13	0.09
Mood Group	0.83	-0.18	0.55	-0.32	0.28	2.49	0.74

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Mood Group – dummy coded as mood group (1) and well (0).

Comorbid Group – dummy coded as comorbid group (1) and well (0)

Table 4a. Exploratory analyses predicting Strange Situation attachment at Time 1 utilizing a logistic regression

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-2.07	-1.07		0.65	0.99			1.68
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.62	0.96	1.06	0.91	0.33	22.26	0.36
Race	0.46	-0.79	0.77	-1.00	0.09	1.96	0.32
SES	1.01	0.01	0.01	0.61	0.98	1.04	0.54
Bipolar Dx	0.18	-1.72	0.72	-2.37	0.04	0.71	0.01*
Depression Dx	0.62	-0.48	0.57	-0.84	0.20	1.88	0.40
Cluster A DS	1.05	0.05	0.13	0.34	0.80	1.38	0.73
Cluster B DS	1.23	0.21	0.10	2.23	1.03	1.50	0.03*
Cluster C DS	0.78	-0.24	0.14	-1.64	0.58	1.04	0.10

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Cluster DS – Cluster A, B, or C dimensional scores

Table 5. Predicting My Friends and Family at Time 3 utilizing a logistic regression

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.41	-1.01		-0.85	1.27			1.66
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	4.16	1.43	1.36	1.45	0.61	29.71	0.15
Race	0.86	-0.15	0.48	-0.33	0.33	2.20	0.74
SES	0.99	-0.01	0.01	-0.95	0.97	1.01	0.34
Age	0.91	-0.09	0.07	-1.44	0.79	1.03	0.15
Comorbid Group	1.14	0.13	0.36	0.35	0.55	2.33	0.72
Mood Group	0.72	-0.33	0.40	-0.81	0.33	1.57	0.41

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Comorbid Group – dummy coded as comorbid group (1) and well (0)

Mood Group – dummy coded as mood group (1) and well (0).

Table 5a. Exploratory analyses predicting My Friends and Family at Time 3 utilizing a logistic regression

Deviance Residuals						
Min	**1Q**	**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.40	-1.02	-0.75	1.19			1.88

Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	4.66	-1.53	1.04	1.48	0.61	37.29	0.14
Race	0.88	-0.13	0.48	-0.27	0.34	2.29	0.79
SES	0.99	-0.01	0.01	-0.86	0.97	1.01	0.39
Age	0.91	-0.09	0.07	-1.41	0.79	1.03	0.16
Bipolar Dx	1.22	0.20	0.50	0.41	0.46	3.27	0.68
Depression Dx	0.86	-0.15	0.40	-0.37	0.39	1.90	0.71
Cluster A DS	1.00	0	0.09	0.03	0.83	1.19	0.98
Cluster B DS	1.02	0.03	0.06	0.45	0.91	1.15	0.65
Cluster C DS	0.91	-0.09	0.10	-0.91	0.75	1.11	0.37

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Cluster DS – Cluster A, B, or C dimensional scores

Table 6. Predicting Experiences in Close Relationships at Time 5 utilizing a logistic regression

Deviance Residuals							
Min	**IQ**	**Median**	**3Q**	**95% Confidence Interval**		**Max**	
-1.41	-1.01	-0.85	1.27			1.66	
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	0.11	-2.19	1.36	-1.60	0.01	1.58	0.11
Race	1.18	0.16	0.49	0.33	0.46	3.13	0.74
SES	1.00	0	0.01	-0.24	0.98	1.02	0.80
Age	1.10	0.10	0.06	1.63	0.98	1.24	0.10
Comorbid Group	0.62	-0.47	0.37	-1.28	0.30	1.28	0.20
Mood Group	0.52	-0.66	0.40	-1.65	0.23	1.12	0.10

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Comorbid Group – dummy coded as comorbid group (1) and well (0)

Mood Group – dummy coded as mood group (1) and well (0).

Table 6a. Exploratory analyses predicting Experiences in Close Relationships at Time 5 utilizing a logistic regression

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.40	-1.02		-0.75	1.19			1.88
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	0.31	-1.17	1.50	-0.78	0.02	5.80	0.44
Race	1.02	0.02	0.51	0.04	0.38	2.82	0.97
SES	0.99	0	0.01	-0.10	0.97	1.02	0.92
Age	1.07	0.07	0.06	1.14	0.95	1.21	0.26
Bipolar Dx	0.80	-0.23	0.52	-0.44	0.28	2.22	0.66
Depression Dx	0.80	-0.22	0.41	-0.53	0.35	1.82	0.59
Cluster A DS	0.91	-0.09	0.09	-1.00	0.74	1.09	0.32
Cluster B DS	1.01	0.01	0.06	0.22	0.90	1.14	0.83
Cluster C DS	0.90	-0.10	0.10	-1.04	0.73	1.09	0.30

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Cluster DS – Cluster A, B, or C dimensional scores

Table 7. Logistic regression examining continuity in the context of maternal comorbidity

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.44	-1.05		-0.93	1.27			1.48
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.29	0.83	0.46	1.82	0.94	5.64	0.06
Race	0.88	-0.12	0.30	-0.40	0.49	1.60	0.69
Age	1.01	0.01	0.04	0.17	0.92	1.10	0.86
SES	1.00	-0.004	0.01	-0.57	0.98	1.01	0.67
Time 3	0.48	-0.74	0.45	-1.66	0.19	1.14	0.10
Time 5	0.42	-0.86	0.87	-0.99	0.08	2.33	0.32
Comorbid Group	0.74	-0.30	-0.23	-1.31	0.47	1.16	0.19
Mood Group	0.67	-0.40	0.25	-1.63	0.41	1.08	0.10

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Comorbid Group – dummy coded as comorbid group (1) and well (0)

Mood Group – dummy coded as mood group (1) and well (0).

Table 8. Logistic regression examining continuity in the context of maternal diagnosis

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.43	-1.05		-0.94	1.27			1.45
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.74	0.82	0.45	1.81	0.93	5.57	0.07
Race	0.90	-0.10	0.30	-0.35	0.50	1.62	0.72
Age	1.01	0.01	0.04	0.16	0.92	1.10	0.88
SES	1.00	-0.004	0.01	-0.58	0.98	1.01	0.56
Time 3	0.48	-0.73	0.44	-1.64	0.20	1.15	0.10
Time 5	0.42	-0.85	0.87	-0.97	0.07	2.36	0.33
Mood Dx	0.71	-0.34	0.21	-1.17	0.47	1.06	0.10

Note: * p<0.05, ** p<0.01, *** p<0.001

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Time 3 and 5 – Attachment at these time periods

Mood Dx – dummy coded to indicate presence of any mood diagnosis (1) or well (0)

Table 9. Logistic regression examining continuity in the context of maternal mood diagnosis

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.43	-1.06		-0.92	1.27			1.50
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.25	0.81	0.45	1.78	0.92	5.52	0.08
Race	0.90	-0.10	0.30	-0.33	0.50	1.63	0.73
Age	1.00	0.003	0.04	0.06	0.92	1.09	0.95
SES	1.00	-0.004	0.01	-0.53	0.98	1.01	0.60
Time 3	0.50	-0.70	0.45	-1.57	0.20	1.19	0.12
Time 5	0.46	-0.77	0.88	-0.89	0.08	2.57	0.38
Depression Dx	0.63	-0.45	0.26	-1.78	0.38	1.04	0.08
Bipolar Dx	0.75	-0.28	0.23	-1.23	0.49	1.18	0.22

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – offspring's age

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at these time periods

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Table 10. Continuity Analyses in the context of Maternal Personality Disorders Dimensional Scores – Cluster A

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.52	-1.05		-0.90	1.27			1.64
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.83	1.04	0.46	2.24	1.15	7.10	0.03*
Race	0.77	-0.27	0.30	-0.88	0.42	1.39	0.38
Age	0.99	-0.01	0.04	-0.17	0.91	1.08	0.87
SES	1.00	-0.003	0.01	-0.49	0.98	1.01	0.62
Time 3	0.53	-0.62	0.45	-1.38	0.22	1.30	0.17
Time 5	0.56	-0.58	0.88	-0.67	0.10	3.12	0.51
Cluster A DS	0.91	-0.09	0.04	-2.51	0.84	0.98	0.01*

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Age – offspring's age

Time 3 and 5 – Attachment at these time periods

Cluster DS – Cluster A dimensional scores

Figure 1. Continuity Analyses in the context of Maternal Personality Disorders Dimensional Scores – Cluster A Main Effect

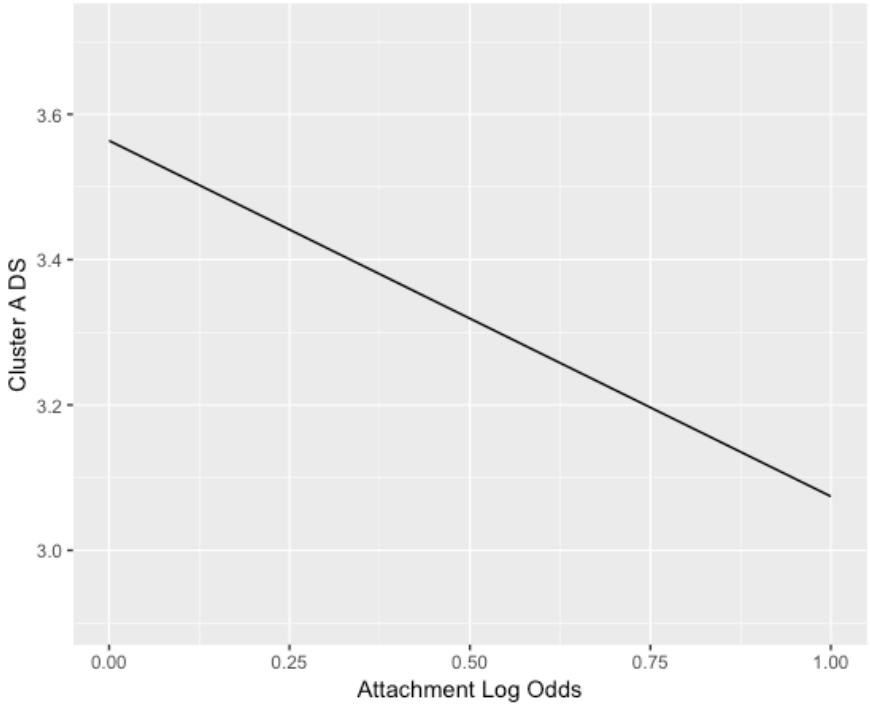


Table 10a. Continuity Analyses in the context of Maternal Personality Diagnosis – Cluster A

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.52	-1.10		-0.94	1.22			1.52
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	1.84	0.61	0.38	1.62	0.88	3.89	0.11
Race	0.57	-0.57	0.27	-2.10	0.33	0.96	0.04*
Age	0.94	-0.07	0.04	-1.77	0.87	1.01	0.08
SES	1.00	0	0.01	0.66	0.99	1.02	0.51
Time 3	1.03	0.03	0.32	0.10	0.55	1.94	0.92
Time 5	2.58	0.94	0.68	1.39	0.68	9.91	0.17
Cluster A Dx	0.92	-0.08	0.30	-0.28	0.51	1.66	0.78

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – offspring's age

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at these time periods

Cluster A Dx – Cluster A diagnosis (1) or well (0)

Table 11. Continuity Analyses in the context of Maternal Personality Disorders Dimensional Scores – Cluster B

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.38	-1.01		-0.99	1.35			1.39
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	1.59	0.46	0.44	1.05	0.67	3.80	0.30
Race	0.86	-0.16	0.30	-0.53	0.48	1.53	0.60
Age	1.01	0.01	0.04	0.12	0.92	1.09	0.91
SES	1.00	-0.001	0.01	-0.14	0.98	1.01	0.89
Time 3	0.49	-0.71	0.44	-1.60	0.21	1.17	0.11
Time 5	0.45	-0.81	0.87	-0.93	0.08	2.44	0.35
Cluster B DS	1.00	<.001	0.03	-0.01	0.94	1.06	0.99

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – offspring's age

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at these time periods

Cluster B DS – Cluster B dimensional scores

Table 11a. Continuity Analyses in the context of Maternal Personality Diagnosis – Cluster B

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.52	-1.08		-0.94	1.22			1.59
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	1.88	0.63	0.37	1.69	0.91	3.95	0.09
Race	0.58	-0.54	0.27	-1.97	0.34	0.99	0.05*
Age	0.93	-0.07	0.04	-1.80	0.87	1.01	0.07
SES	1.00	0.004	0.01	0.65	0.99	1.02	0.52
Time 3	1.04	0.04	0.32	0.13	0.56	1.96	0.89
Time 5	2.64	0.07	0.68	1.42	0.69	10.19	0.16
Cluster B Dx	0.85	-0.17	0.19	-0.86	0.58	1.24	0.39

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – offspring's age

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at these time periods

Cluster B Dx – Cluster B diagnosis (1) or well (0)

Table 12. Continuity Analyses in the context of Maternal Personality Disorders Dimensional Scores – Cluster C

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.46	-1.06		-0.84	1.24			1.65
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.81	1.03	0.44	2.34	1.19	6.76	0.02*
Race	0.83	-0.18	0.30	-0.63	0.46	1.49	0.53
Age	1.00	-0.004	0.04	-0.11	0.91	1.08	0.91
SES	1.00	-0.001	0.01	-0.14	0.99	1.01	0.89
Time 3	0.53	-0.64	0.45	-1.43	0.22	1.27	0.15
Time 5	0.53	-0.63	0.88	-0.72	0.09	2.98	0.47
Cluster C DS	0.87	-0.14	0.04	-3.13	0.80	0.95	0.002**

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – offspring's age

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at these time periods

Cluster C DS – Cluster C dimensional scores

Figure 3. Continuity Analyses in the context of Maternal Personality Disorders Dimensional Scores – Cluster C Main Effect

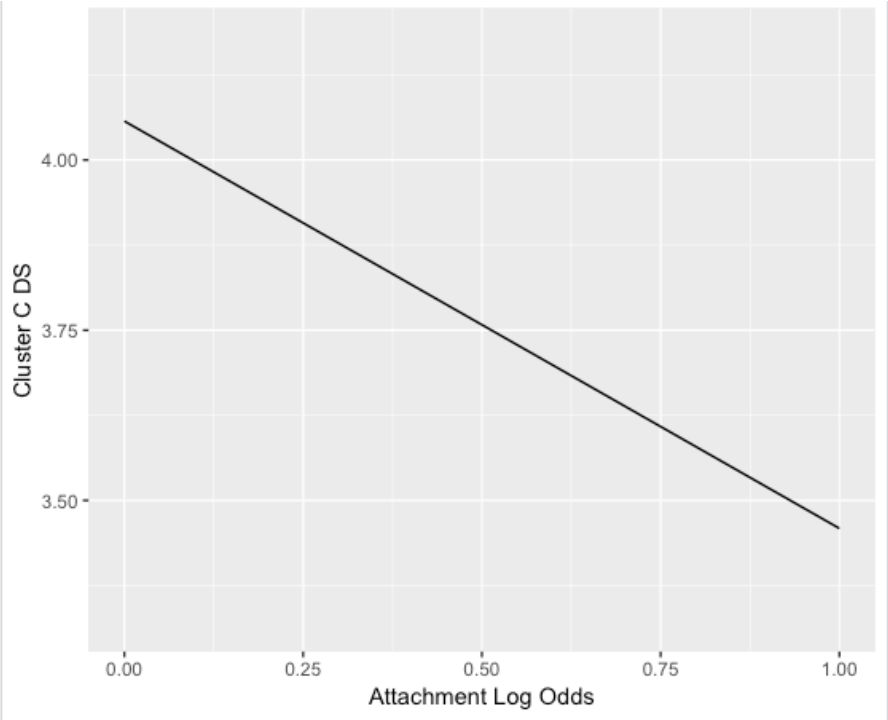


Table 12a. Continuity Analyses in the context of Maternal Personality Diagnosis – Cluster C

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.60	-1.08		-0.87	1.20			1.62
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	2.28	0.83	0.38	2.16	1.08	4.87	0.03*
Race	0.59	-0.52	0.27	-1.91	0.34	1.01	0.06
Age	0.94	-0.07	0.04	-1.74	0.87	1.01	0.08
SES	1.00	0	0.01	0.57	0.99	1.02	0.57
Time 3	0.80	-0.23	0.33	-0.67	0.41	1.55	0.51
Time 5	2.08	0.73	0.69	1.05	0.53	8.14	0.29
Cluster C Dx	0.34	-1.09	0.37	-2.92	0.16	0.69	<.001**
Cluster C x T3	3.24	1.17	0.51	2.30	1.19	8.96	0.02*
Cluster C x T5	2.56	0.94	0.51	1.84	0.94	7.08	0.07

Note: * p<0.05, ** p<0.01, *** p<0.001; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – offspring's age

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at these time periods

Cluster C Dx – Cluster C diagnosis (1) or well (0)

Figure 2. Continuity Analyses in the context of Maternal Personality Diagnosis – Cluster C

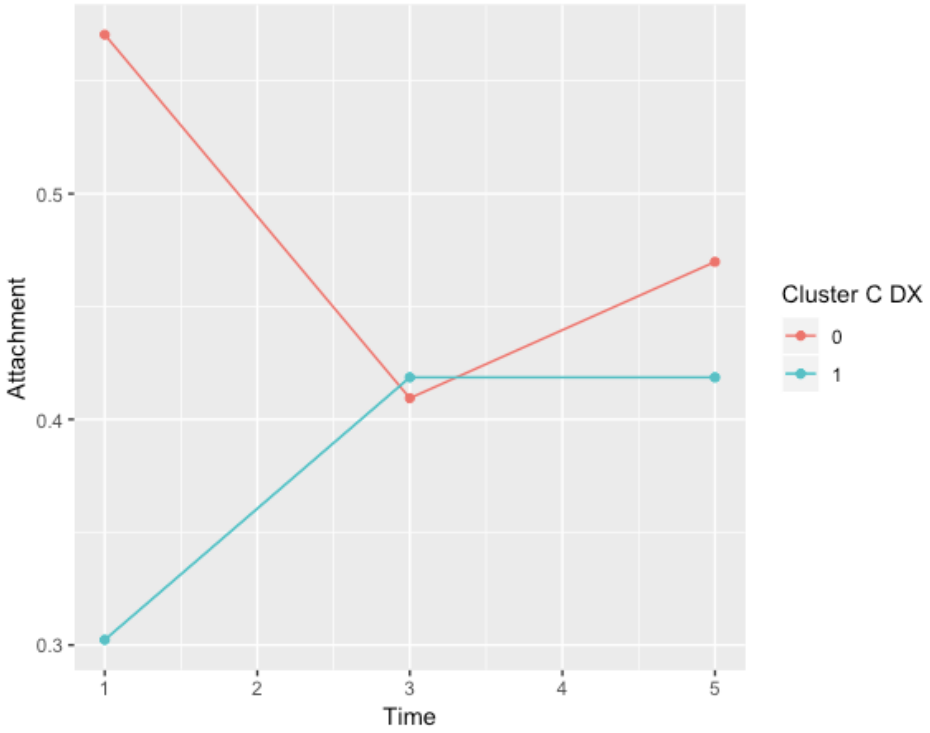
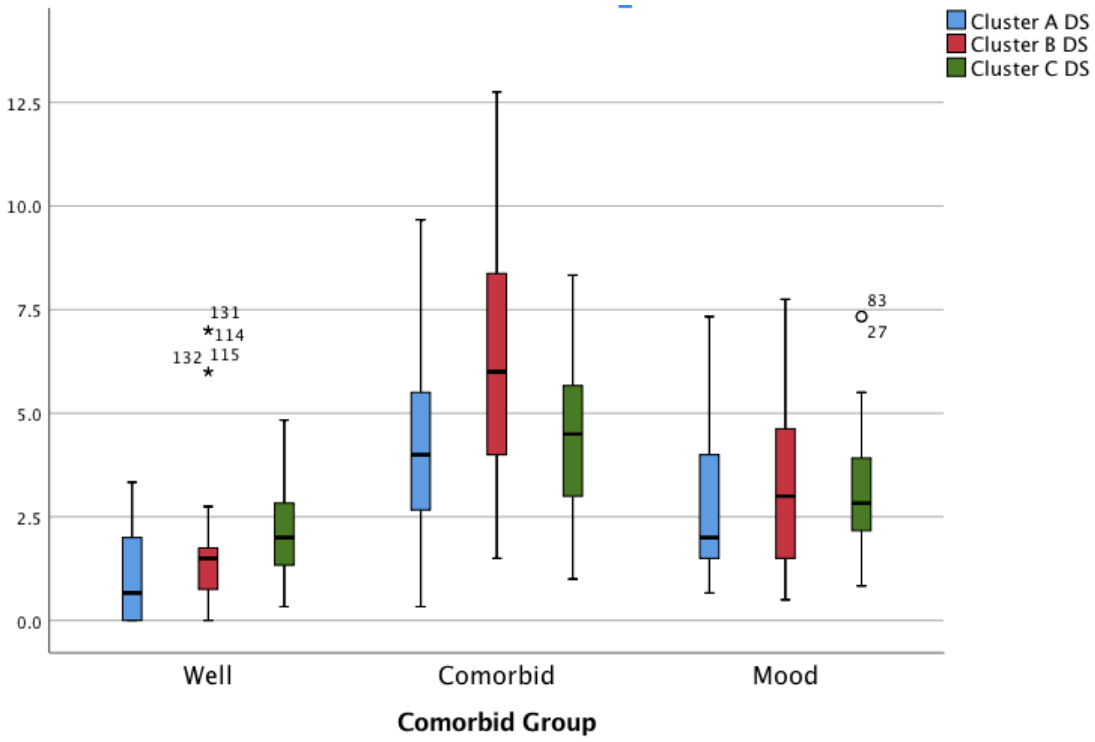
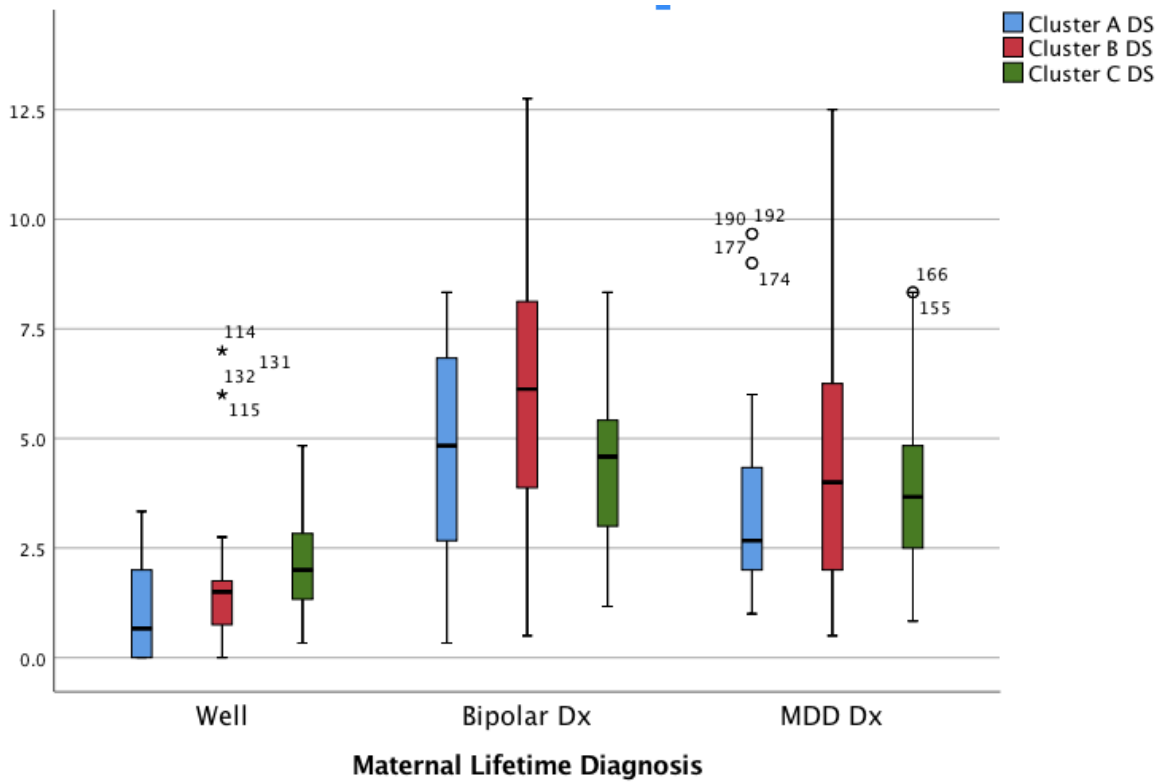


Figure 4. Boxplots examining personality dimensional scores by maternal comorbidity



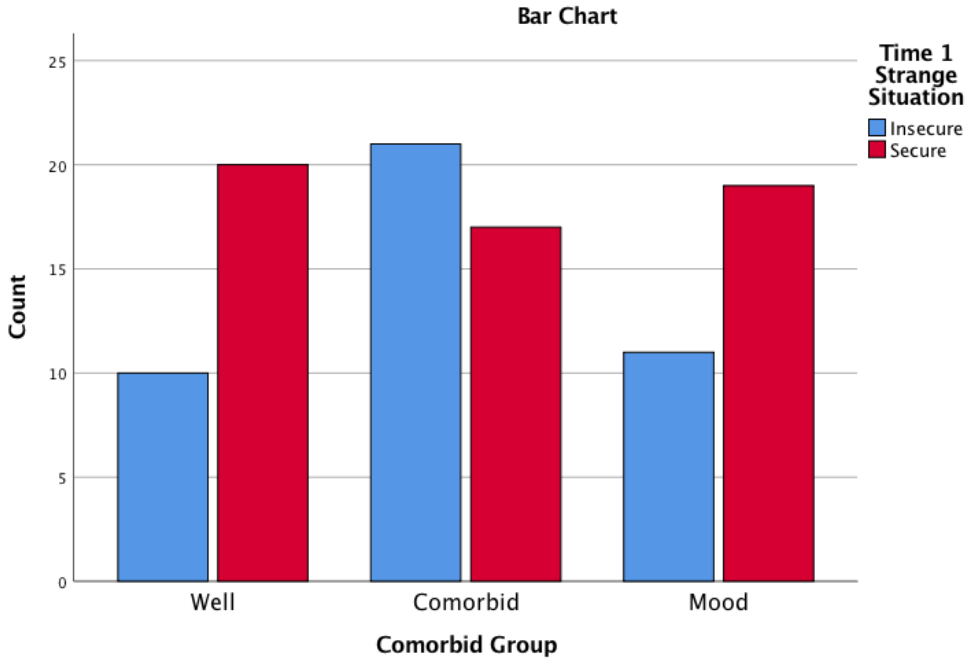
Note: Cluster DS – Cluster A, B, or C dimensional scores by well, comorbid and mood mothers.

Figure 4a. Boxplots examining personality dimensional scores by maternal mental illness



Note: Cluster DS – Cluster A, B, or C dimensional scores by well, Bipolar and MDD mothers.

Figure 5a. Bar graph examining Strange Situation classifications by maternal comorbidity



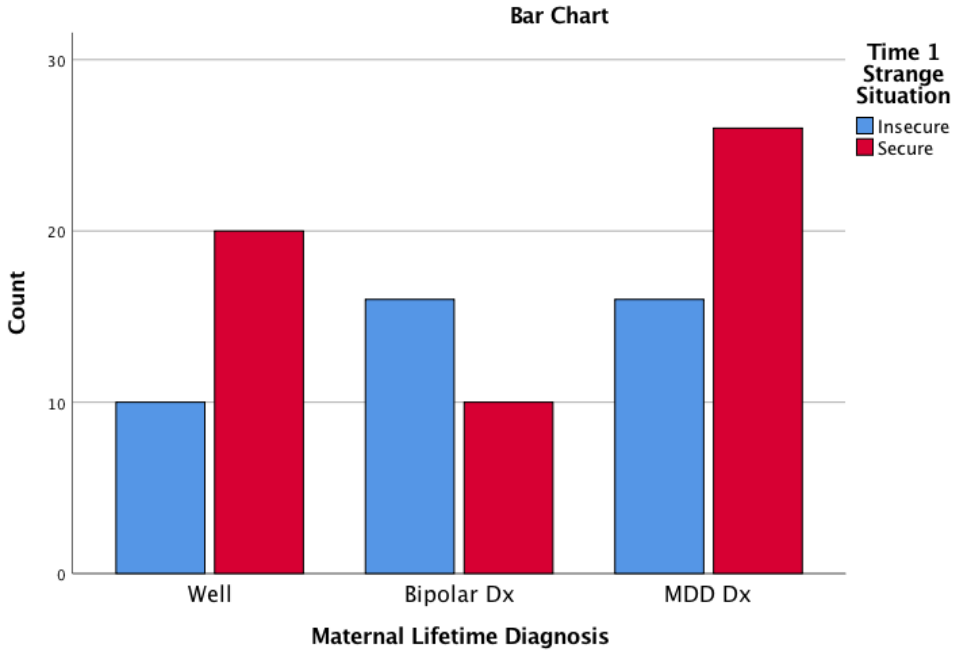
Note: Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Well Group – Mothers who did not meet criteria for a psychiatric diagnosis.

Figure 5b. Bar graph examining Strange Situation classifications by maternal mental illness



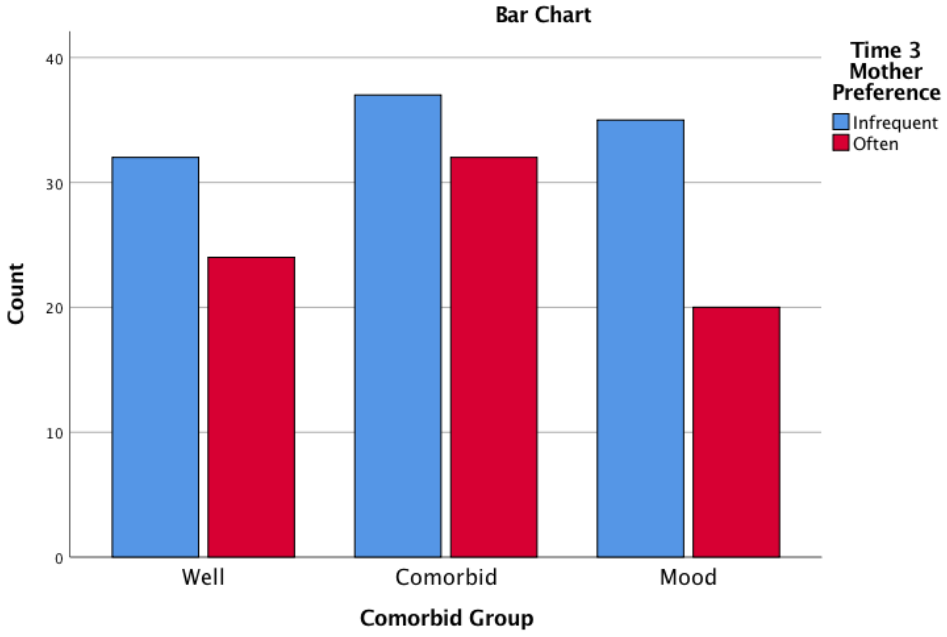
Note: Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

MDD Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Well Group – Mothers who did not meet criteria for a psychiatric diagnosis.

Figure 6a. Bar graph examining My Friends and Family Mother preference classifications by maternal comorbidity



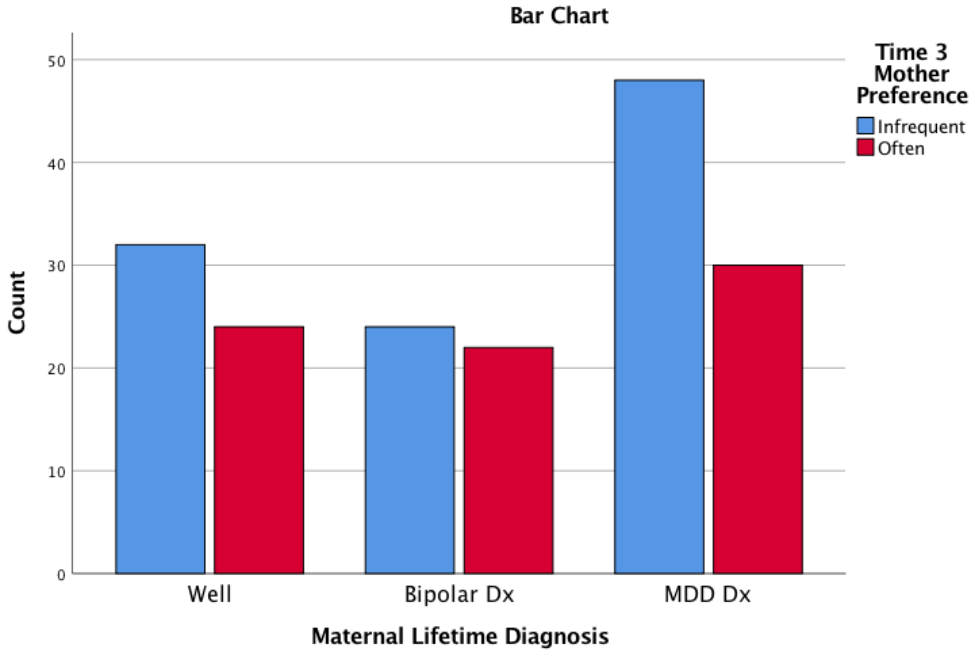
Notes: Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Well Group – Mothers who did not meet criteria for a psychiatric diagnosis.

Figure 6b. Bar graph examining My Friends and Family Mother preference classifications by maternal mental illness



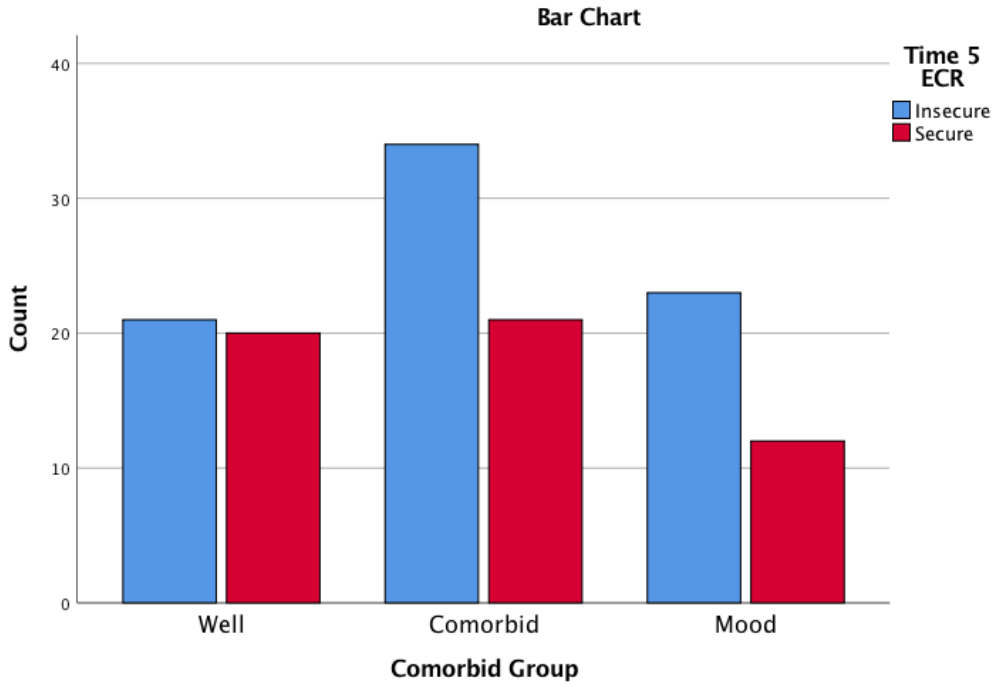
Notes: Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother often (1) or infrequent (0).

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

MDD Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Well Group – Mothers who did not meet criteria for a psychiatric diagnosis.

Figure 7a. Bar graph examining Experience of Close Relationship by maternal comorbidity



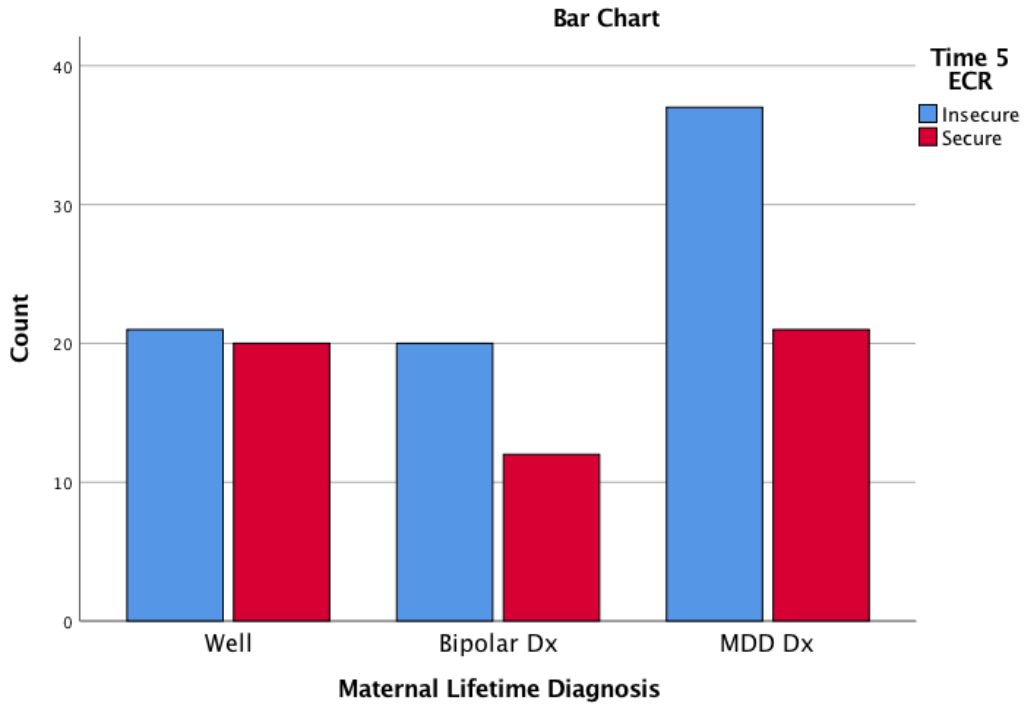
Notes: ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Well Group – Mothers who did not meet criteria for a psychiatric diagnosis.

Figure 7b. Bar graph examining Experience of Close Relationship by maternal mental illness



Notes: ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0).

MDD Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Well Group – Mothers who did not meet criteria for a psychiatric diagnosis.

Table 13. Correlations between variables of interest – Offspring of well and depressed mothers

Variable	1	2	3	4	5	6	7	8	9	10
1. SES	--	.68$_b$**	-.10$_b$	.17$_b$	-.03$_b$	-.37$_b$**	-.07$_b$	0$_b$	-.19$_b$	-.04$_b$
2. Education	.80$_b$**	--	.02$_b$	.14$_b$	-.18$_b$	-.26$_b$	.26$_b$	-.16$_b$	-.06$_b$	-.03$_b$
3. Sex	-.14$_b$	-.05$_b$	--	0$_a$	-.14	-.15	.05	.09$_a$	.11$_a$	-.02$_a$
4. Race	.47$_b$**	.41$_b$**	-.20$_a$	--	-.14	.12	.27*	-.07$_a$	-.17$_a$	-.10$_a$
5. Cluster A DS	-.05$_b$	-.10$_b$	.03	-.16	--	.39**	.30*	.06	-.09	.01
6. Cluster B DS	-.16$_b$	-.02$_b$	-.08	-.08	.35**	--	.35**	.03	-.06	-.27
7. Cluster C DS	.23$_b$ *	.04$_b$	-.05	.04	.51**	.20*	--	-.35	-.26	.02
8. SS Attachment	-.03$_b$	-.03$_b$	-.03$_a$	-.14$_a$	-.03	-.01	-.14	--	-.05$_a$	-.09$_a$
9. MFF Mom	-.09$_b$	-.05$_b$	-.15$_a$	.03$_a$	.18	.05	-.11	-.12$_a$	--	.05$_a$
10. ECR Attachment	-.01$_b$	.05$_b$	.18$_a$	-.11$_a$	-.09	-.05	-.14	-.35$_a$	.06$_a$	--
Mean	51.00	5.60	1.54	.85	2.96	4.09	3.49	.57	.42	.40
SD	14.84	1.14	.50	.35	2.29	3.17	2.00	.50	.50	.49

Note: Above the diagonal is well participants (n =60), below mood dx (n = 132). * $p < .05$. ** $p < .01$. *** $p < .001$. Pearson, Phi (indicated by subscript a), and Spearman correlations (indicated by subscript b) were used in this table.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Sex – self-reported, coded 1 for male, 2 for female

Race/Ethnicity – self-reported data was collected and a dummy coded variable used indicate Caucasian (1) or other races/ethnicity (0).

Personality dimensional scores (DS) – continuous scores from semi-structured clinical interview.

SS Attachment – Strange Situation attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

MFF Mom – Friends and Family Mom Ranking representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

ECR Attachment - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Table 14. Correlations between variables of interest – Offspring of mothers with bipolar and MDD diagnoses

Variable	1	2	3	4	5	6	7	8	9	10
1. SES	--	.82$_b$**	-.21 $_b$	.59$_b$**	-.08 $_b$	-.40 $_b$ **	.16 $_b$	-.06 $_b$	-.06 $_b$	-.10$_b$
2. Education	.74$_b$	--	-.10 $_b$	.52 $_b$**	-.21 $_b$	-.24 $_b$ *	.01 $_b$	-.07 $_b$	.03 $_b$	-.004$_b$
3. Sex	-.03$_b$	.05$_b$	--	-.35$_a$*	-.003	.11	-.22	0 $_a$	-.30$_a$**	.22$_a$
4. Race	.21$_b$	.18 $_b$	.08 $_a$	--	-.10	-.35*	.30*	.04 $_a$	.12$_a$	-.22 $_a$
5. Cluster A DS	-.08$_b$	-.07 $_b$	-.28	-.03	--	.69**	.53**	.01	-.15	-.32
6. Cluster B DS	.39$_b$**	.44 $_b$**	-.19	-.02	.31*	--	.15	.13	-.08	-.33
7. Cluster C DS	.46$_b$**	.11	-.30*	.27	.50**	.33*	--	-.11	-.33*	-.28
8. SS Attachment	.05$_b$	.07 $_b$	-.06$_a$	-.46$_a$*	.20	.46*	.07	--	.02 $_a$	-.30 $_a$
9. MFF Mom	-.13$_b$	-.18 $_b$	.10$_a$	-.15$_a$	-.06	-.15	.01	-.28$_a$	--	-.19 $_a$
10. ECR Attachment	.17$_b$	.16 $_b$	.10$_a$	.10 $_a$	-.18	-.22	-.09	-.38$_a$	.48 $_a$ **	--
Mean	51.00	5.60	1.54	.85	2.96	4.09	3.49	.57	.42	.40
SD	14.84	1.14	.50	.35	2.29	3.17	2.00	.50	.50	.49

Note: Above the diagonal is offspring of mothers diagnosed with MDD disorder (n = 84), below offspring of mothers diagnosed with bipolar disorder diagnosis (n = 48). Pearson, Phi (indicated by subscript a), and Spearman correlations (indicated by subscript b) were used in this table. * $p < .05$. ** $p < .01$. *** $p < .001$.

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Education – self-reported maternal education

Sex – self-reported, coded 1 for male, 2 for female

Race/Ethnicity – self-reported data was collected and a dummy coded variable used indicate Caucasian (1) or other races/ethnicity (0).

Personality dimensional scores (DS) – continuous scores from semi-structured clinical interview.

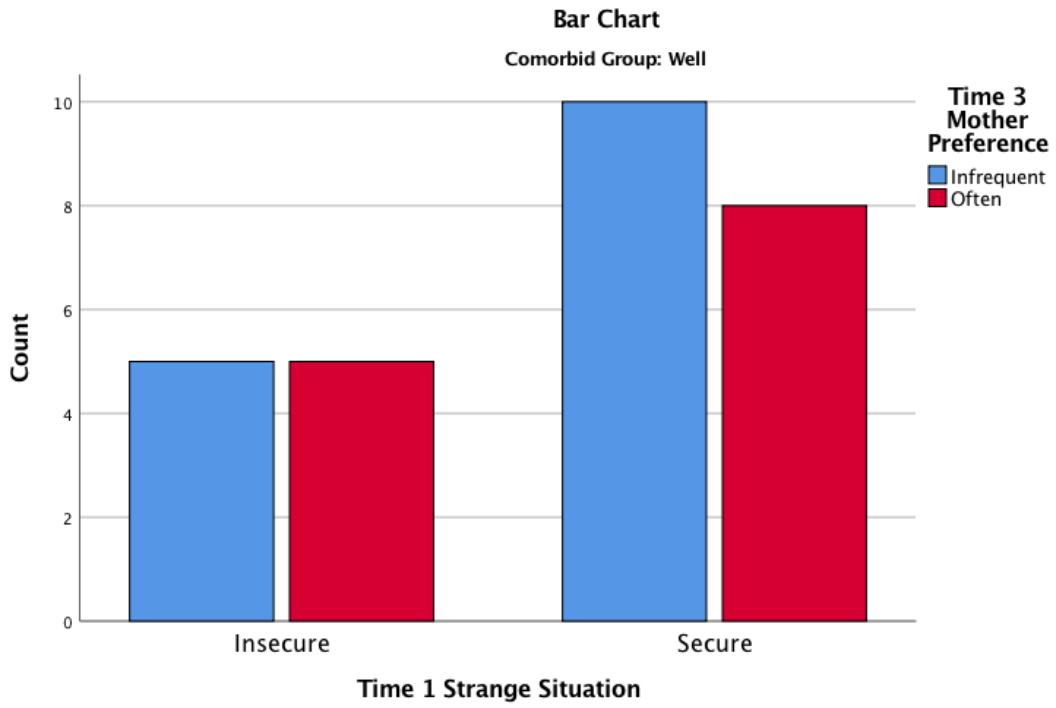
SS Attachment – Strange Situation attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data.

MFF Mom – Friends and Family Mom Ranking representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

ECR Attachment - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment

Table 15a. Attachment across time for offspring of well group mothers Time 1 and Time 3

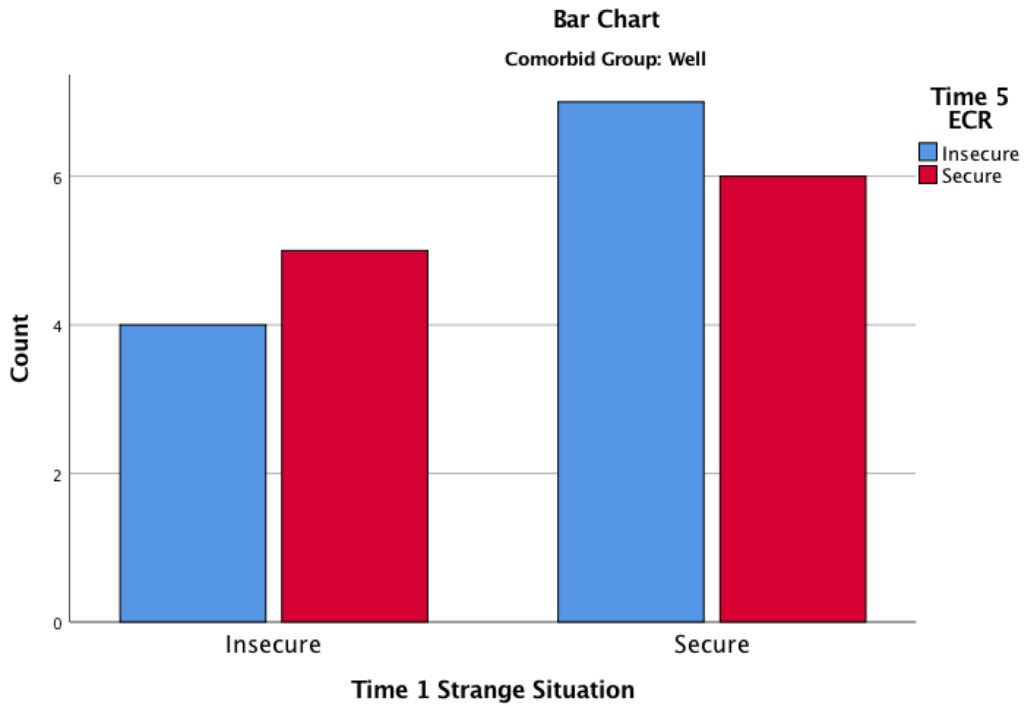
	Time 3 insecure	**Time 3 secure**	**χ2 Statistic**
Time 1 insecure	5	5	
Time 1 secure	10	8	$\chi2(1) = 0.08$, $p = .78$
Total	15	13	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Well Group – Mothers who did not meet criteria for a psychiatric diagnosis; Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 15b. Attachment across time for offspring of well group mothers Time 1 and Time 5

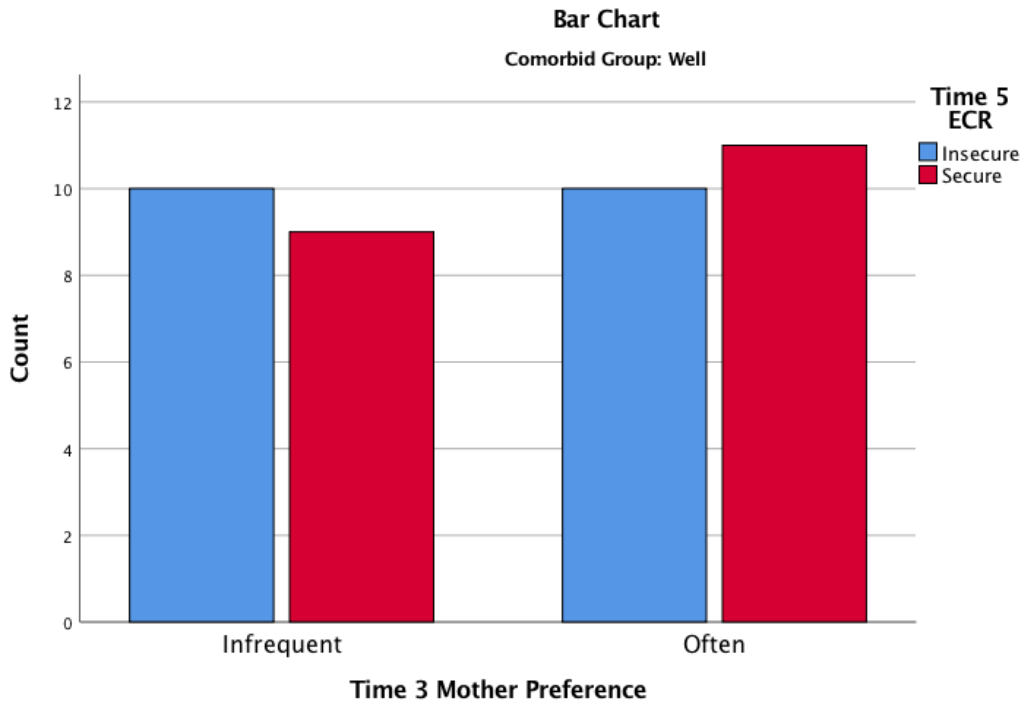
	Time 5 insecure	Time 5 secure	χ2 Statistic
Time 1 insecure	4	5	
Time 1 secure	7	6	$\chi2(1) = 0.19$, $p = .67$
Total	11	11	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Well Group – Mothers who did not meet criteria for a psychiatric diagnosis; Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 15c. Attachment across time for offspring of well group mothers Time 3 and Time 5

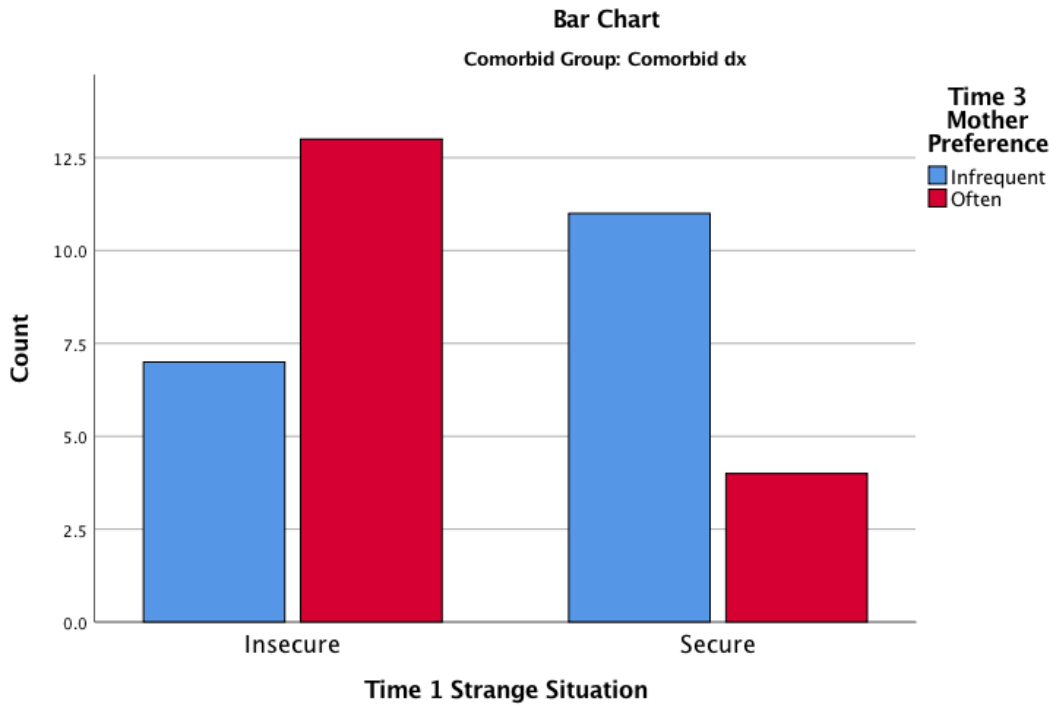
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	10	9	$\chi2(1) = 0.10, p = .75$
Time 3 secure	10	11	
Total	20	20	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Well Group – Mothers who did not meet criteria for a psychiatric diagnosis; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 16a. Attachment across time for offspring of comorbid group mothers Time 1 and Time 3

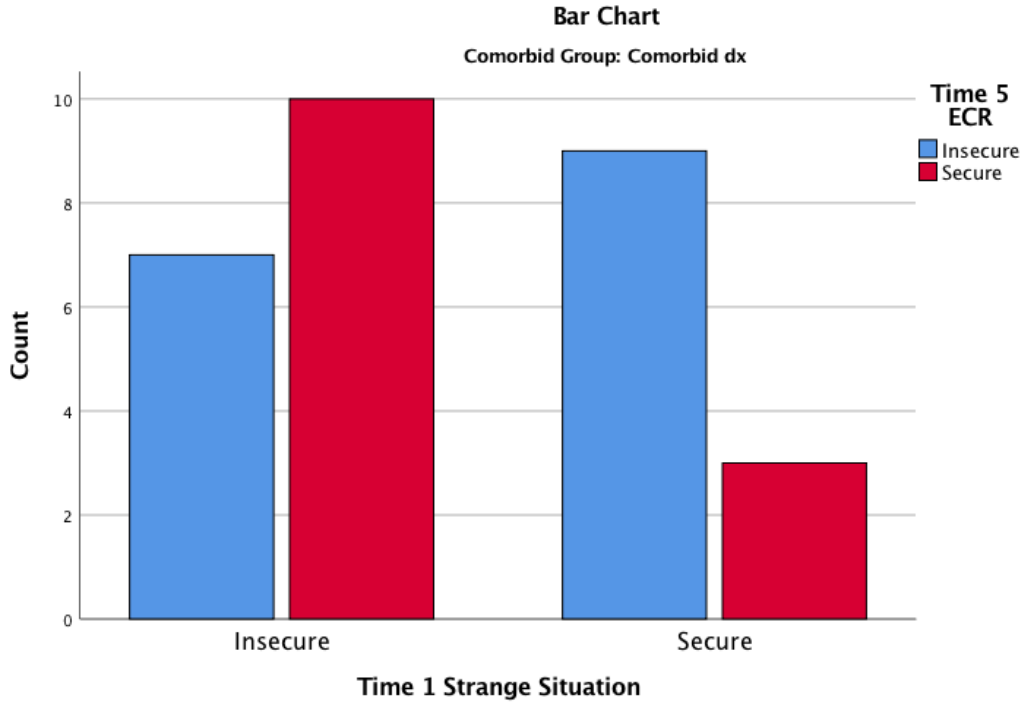
	Time 3 insecure	**Time 3 secure**	**χ2 Statistic**
Time 1 insecure	7	13	
Time 1 secure	11	4	$\chi2(1) = 5.04$, $p = .03$
Total	18	17	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 16b. Attachment across time for offspring of comorbid group mothers Time 1 and Time 5

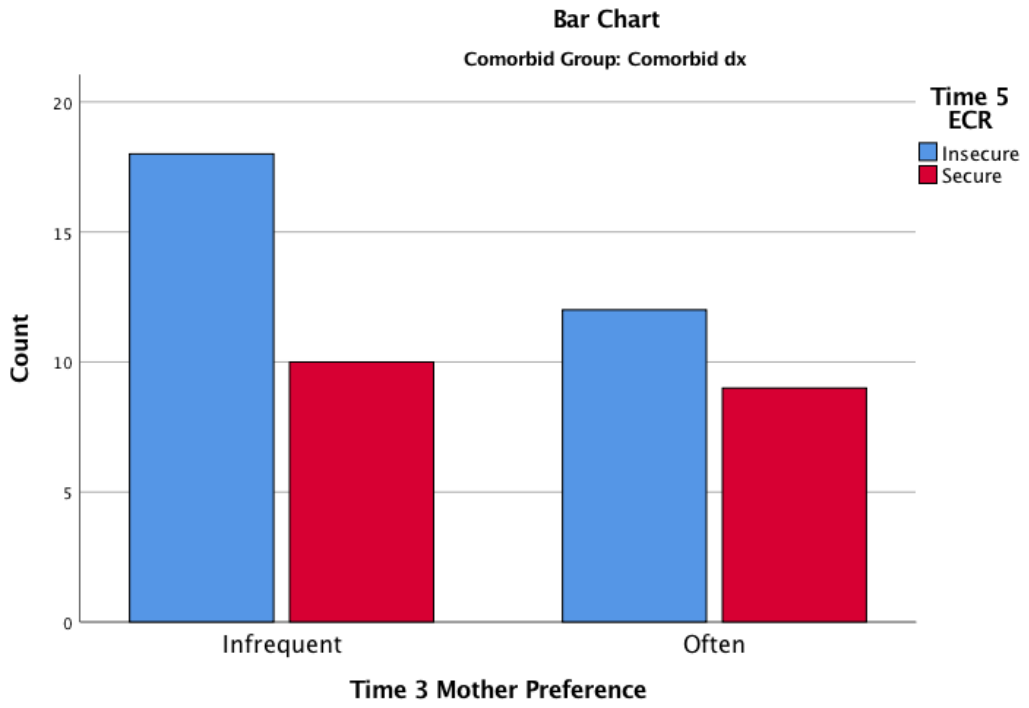
	Time 5 insecure	Time 5 secure	χ2 Statistic
Time 1 insecure	7	10	
Time 1 secure	9	3	$\chi2(1) = 3.25, p = .07$
Total	16	13	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 16c. Attachment across time for offspring of comorbid group mothers Time 3 and Time 5

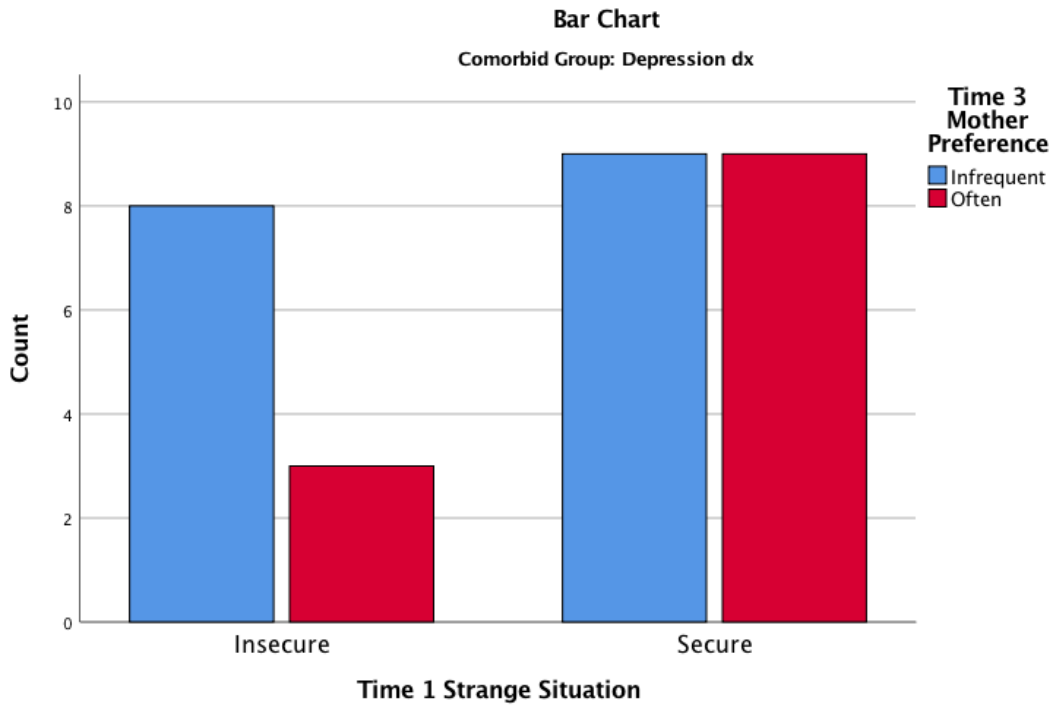
	Time 5 insecure	Time 5 secure	χ2 Statistic
Time 3 insecure	18	10	
Time 3 secure	12	9	$\chi 2(1) = 0.26$, $p = .61$
Total	30	19	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0); Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 17a. Attachment across time for offspring of mood group mothers Time 1 and Time 3

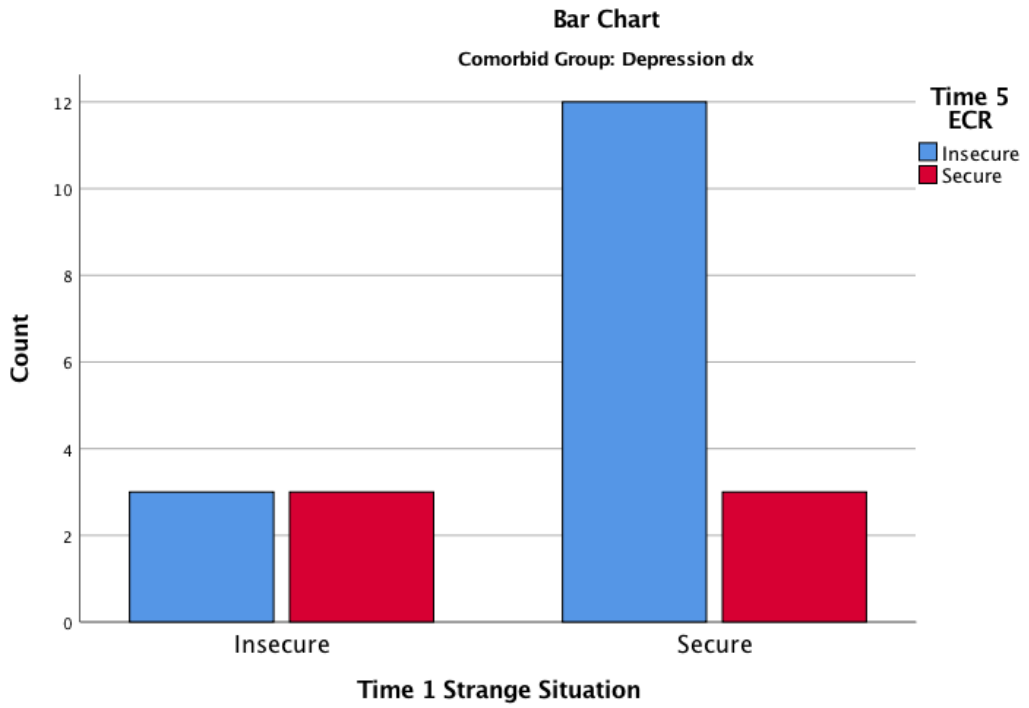
	Time 3 insecure	**Time 3 secure**	**χ2 Statistic**
Time 1 insecure	8	3	
Time 1 secure	9	9	$\chi2(1) = 1.45, p = .23$
Total	17	12	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 17b. Attachment across time for offspring of mood group mothers Time 1 and Time 5

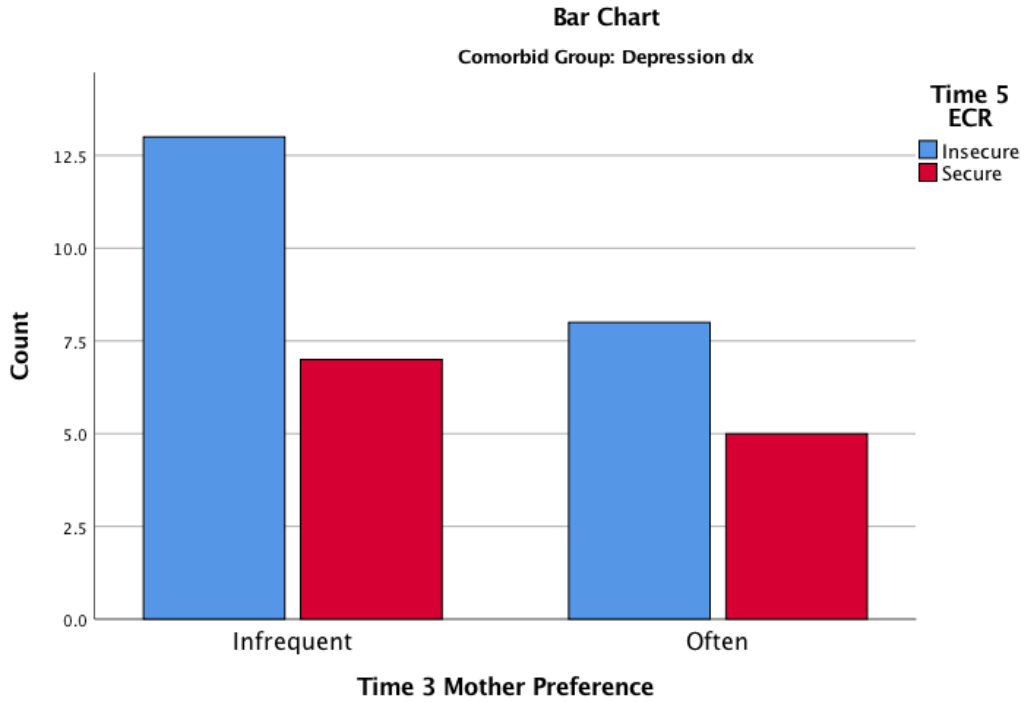
	Time 5 insecure	Time 5 secure	χ2 Statistic
Time 1 insecure	3	3	
Time 1 secure	12	3	$\chi2(1) = 1.89, p = .17$
Total	15	6	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 17c. Attachment across time for offspring of mood group mothers Time 3 and Time 5

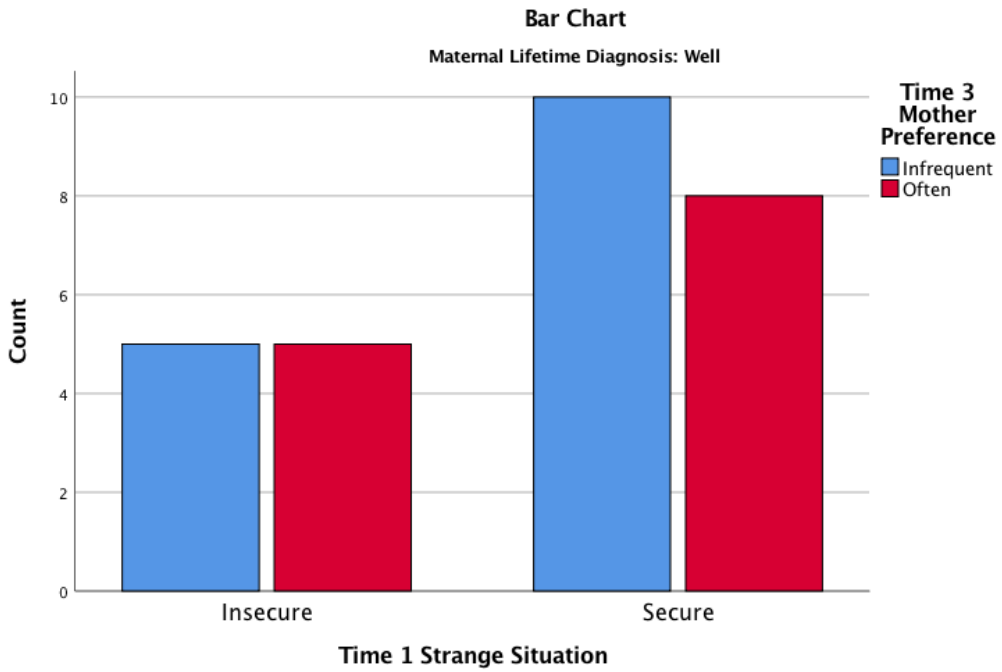
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	13	7	
Time 3 secure	8	5	$\chi2(1) = 0.41, p = .84$
Total	21	12	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0); Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 18a. Attachment across time for offspring of well mothers Time 1 and Time 3

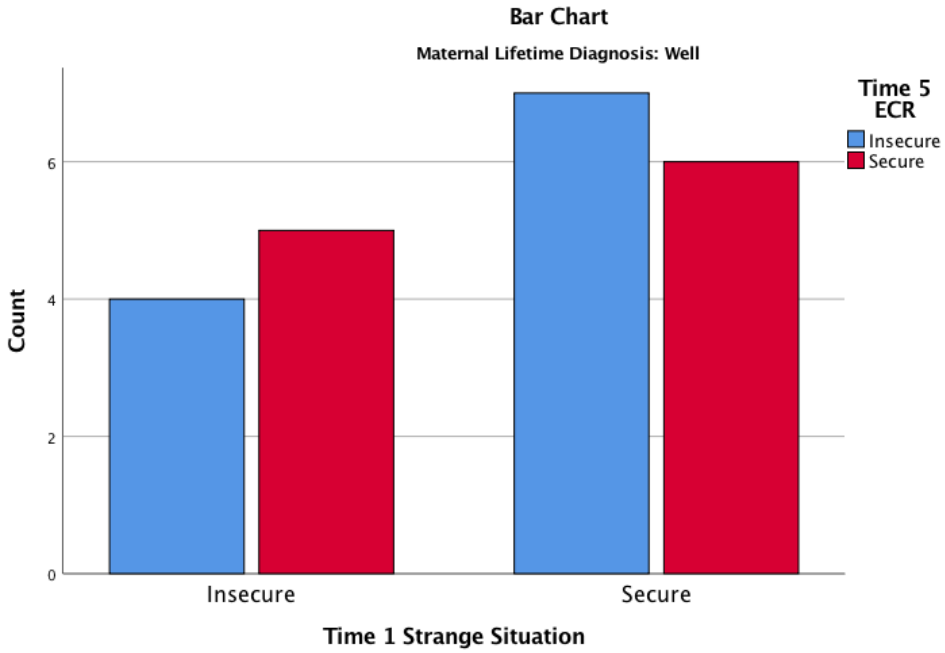
	Time 1 insecure	**Time 1 secure**	**χ2 Statistic**
Time 3 insecure	5	10	
Time 3 secure	5	8	$\chi2(1) = .08$, $p = .77$
Total	10	18	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Well Group – Mothers who did not meet criteria for a psychiatric diagnosis; Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 18b. Attachment across time for offspring of well mothers Time 1 and Time 5

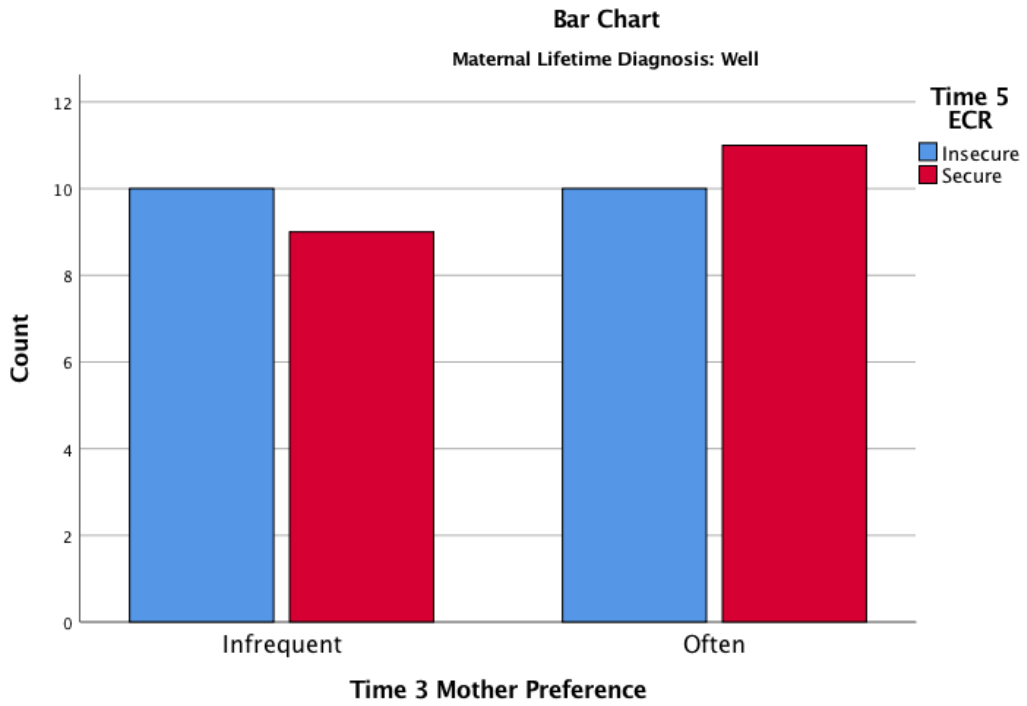
	Time 1 insecure	Time 1 secure	χ2 Statistic
Time 5 insecure	4	7	
Time 5 secure	5	6	$\chi2(1) = .18, p = .67$
Total	9	13	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Well Group – Mothers who did not meet criteria for a psychiatric diagnosis; Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 18c. Attachment across time for offspring of well mothers Time 3 and Time 5

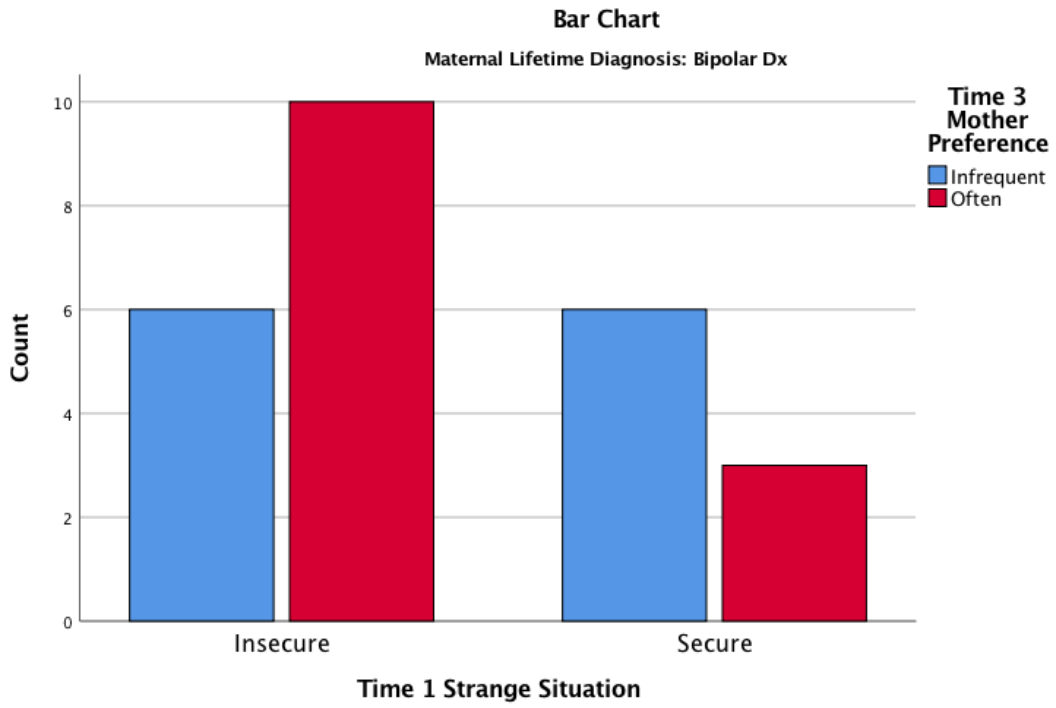
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	10	9	
Time 3 secure	10	11	$\chi2(1) = .10, p = .75$
Total	20	20	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Well Group – Mothers who did not meet criteria for a psychiatric diagnosis; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 19a. Attachment across time for offspring of bipolar mothers Time 1 and Time 3

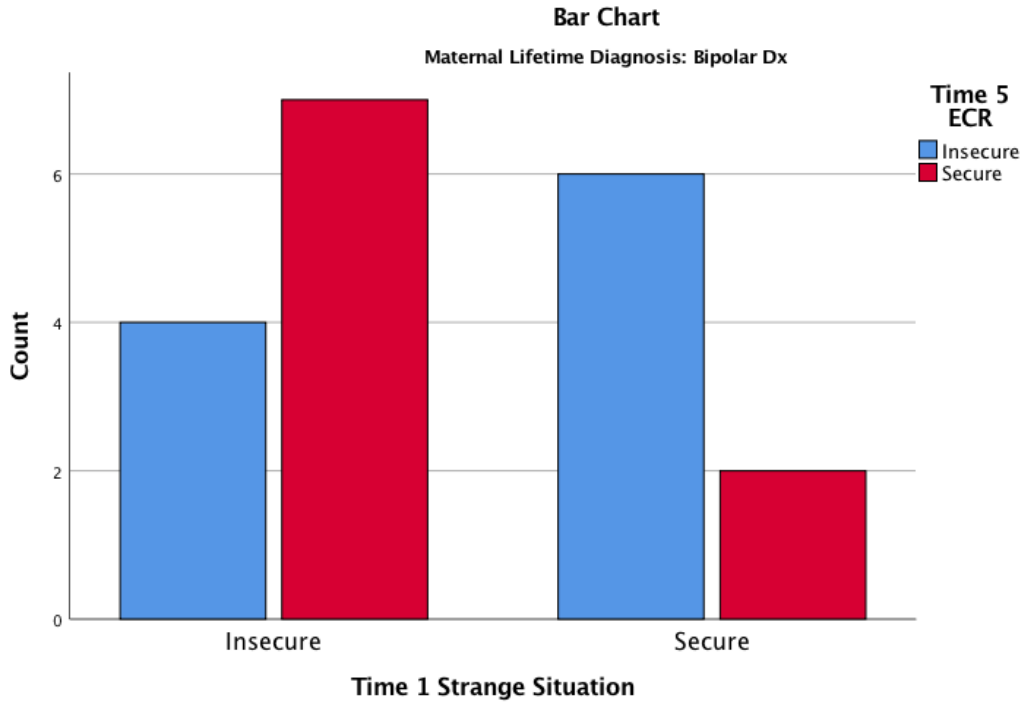
	Time 1 insecure	Time 1 secure	χ2 Statistic
Time 3 insecure	5	5	
Time 3 secure	10	3	$\chi 2(1) = 1.96, p = .16$
Total	16	9	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0). Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 19b. Attachment across time for offspring of bipolar mothers Time 1 and Time 5

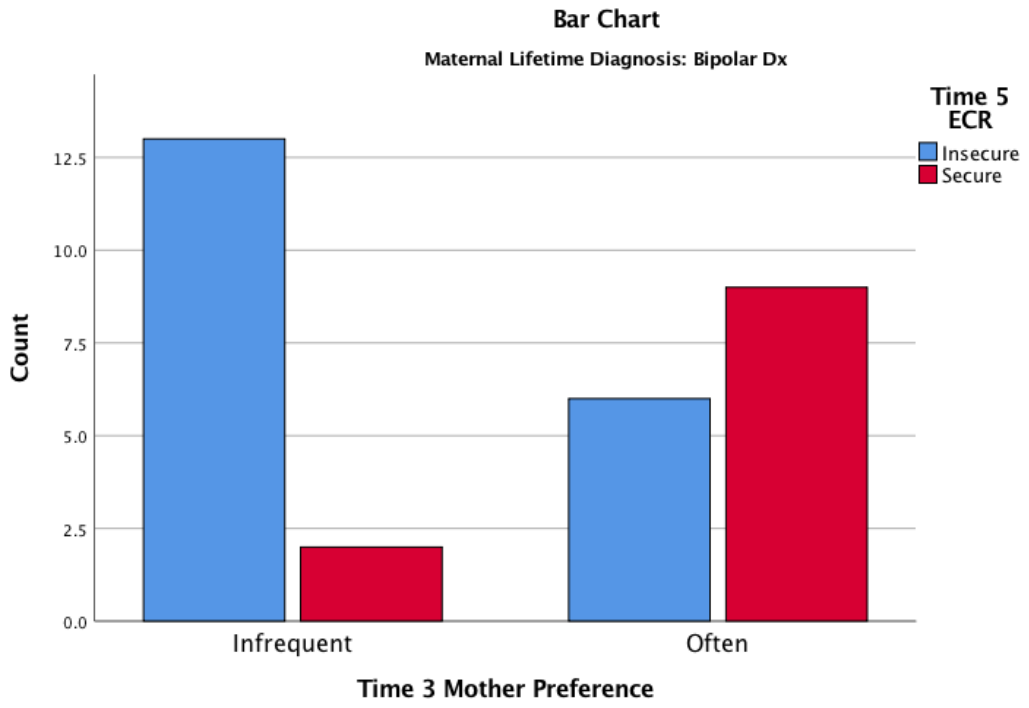
	Time 1 insecure	**Time 1 secure**	**χ2 Statistic**
Time 5 insecure	4	6	
Time 5 secure	7	2	$\chi2(1) = 2.77, p = .10$
Total	11	8	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 19c. Attachment across time for offspring of bipolar mothers Time 3 and Time 5

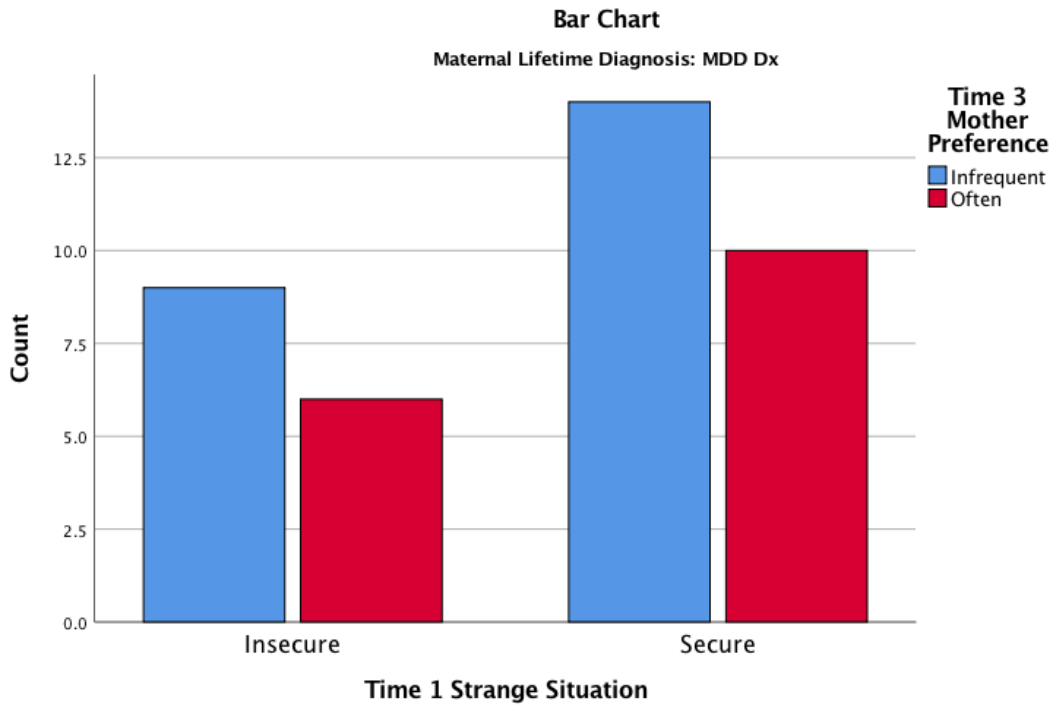
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	13	2	$\chi2(1) = 7.03, p = .01$
Time 3 secure	6	9	
Total	19	11	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Bipolar Dx – dummy coded to indicate bipolar diagnosis (1) or well (0); Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 20a. Attachment across time for offspring of depressed mothers Time 1 and Time 3

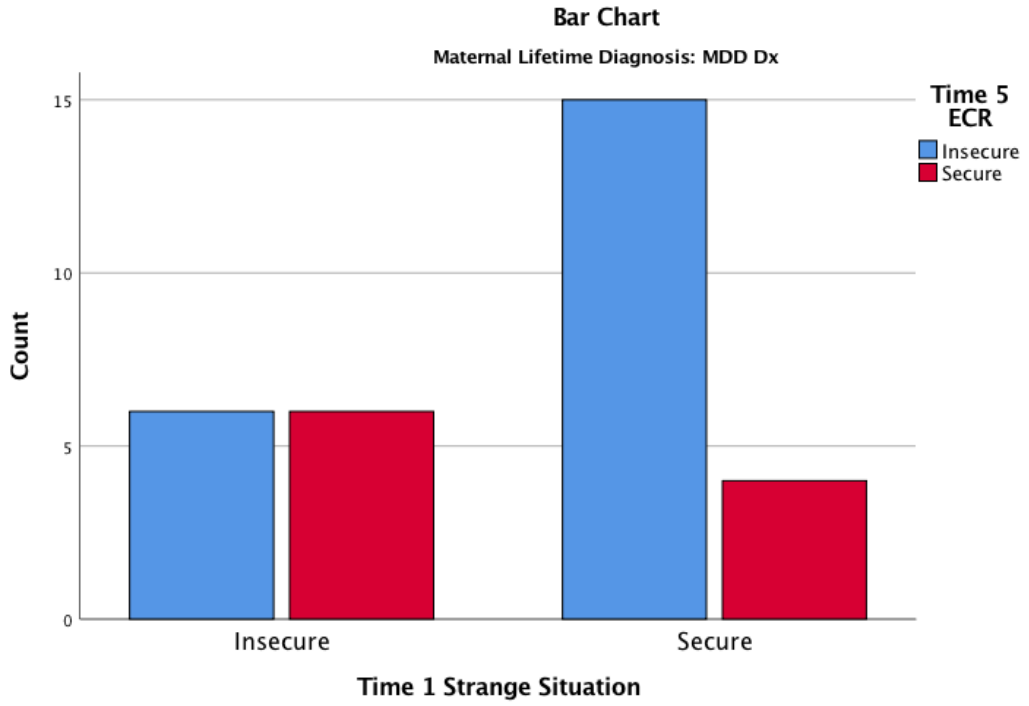
	Time 1 insecure	**Time 1 secure**	**χ2 Statistic**
Time 3 insecure	9	14	
Time 3 secure	6	10	$\chi2(1) = .01, p = .92$
Total	15	24	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 20b. Attachment across time for offspring of depressed mothers Time 1 and Time 5

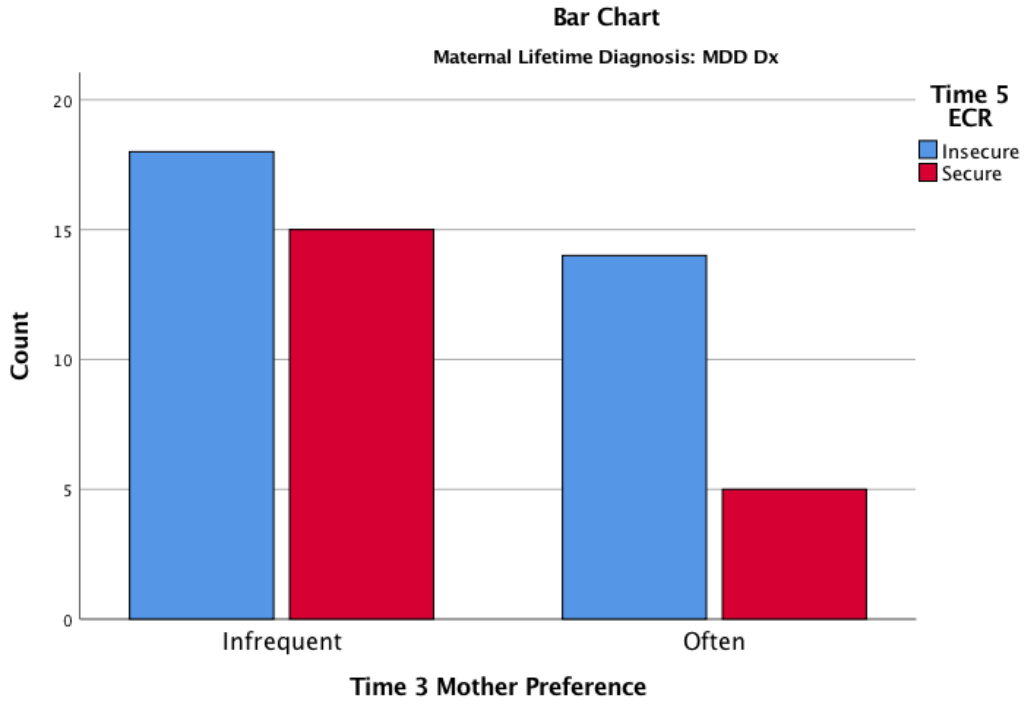
	Time 1 insecure	**Time 1 secure**	**χ2 Statistic**
Time 5 insecure	6	15	
Time 5 secure	6	4	$\chi2(1) = 2.82$, $p = .09$
Total	12	19	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0); Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 20c. Attachment across time for offspring of depressed mothers Time 3 and Time 5

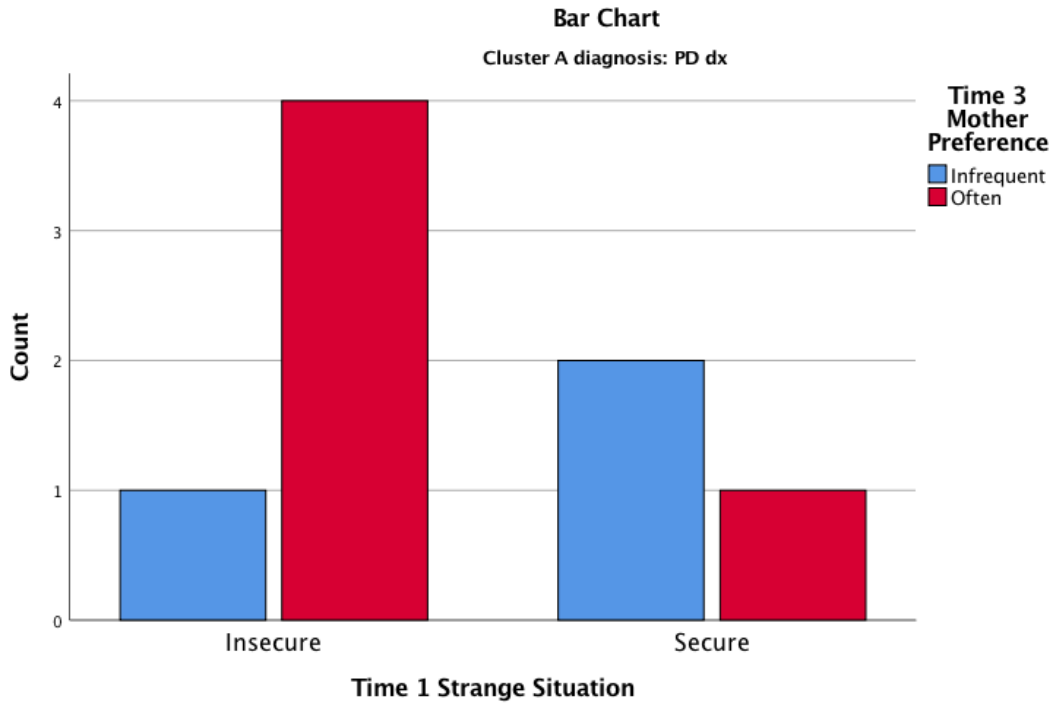
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	18	15	
Time 3 secure	14	5	$\chi2(1) = 1.87, p = .17$
Total	32	20	



Notes: * $p < .05$. ** $p < .01$. *** $p < .001$; Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0); Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 21a. Attachment across time for offspring of mothers with Cluster A PD Time 1 and Time 3

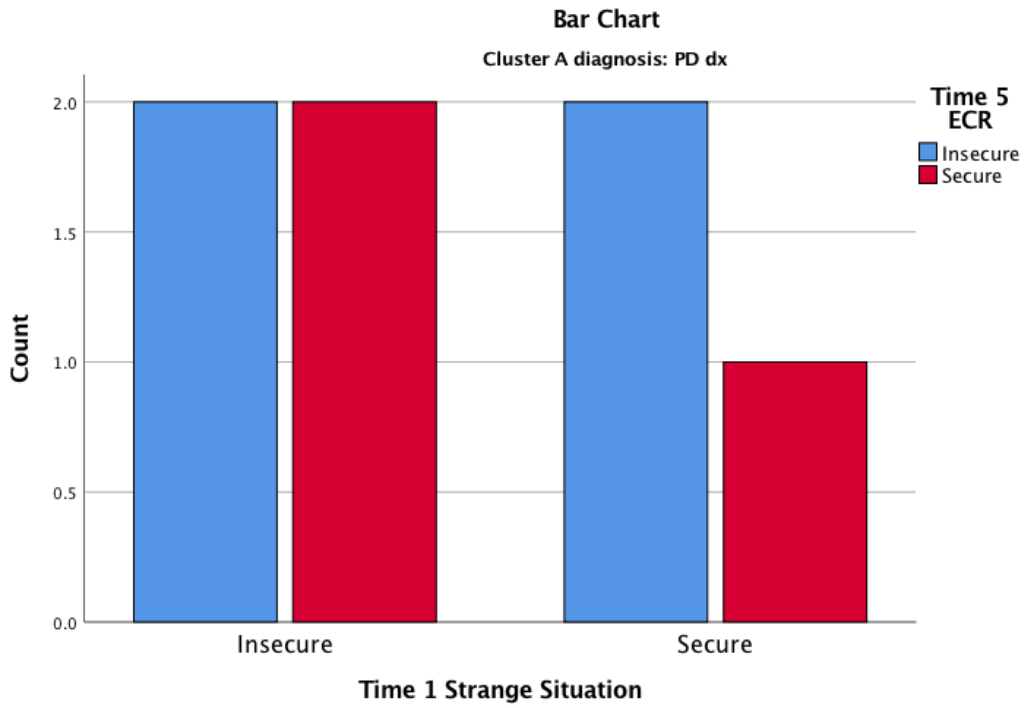
	Time 3 insecure	Time 3 secure	χ2 Statistic
Time 1 insecure	1	4	
Time 1 secure	2	1	$\chi2(1) = 1.74, p = .19$
Total	3	5	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster A PD. Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 21b. Attachment across time for offspring of mothers with Cluster A PD Time 1 and Time 5

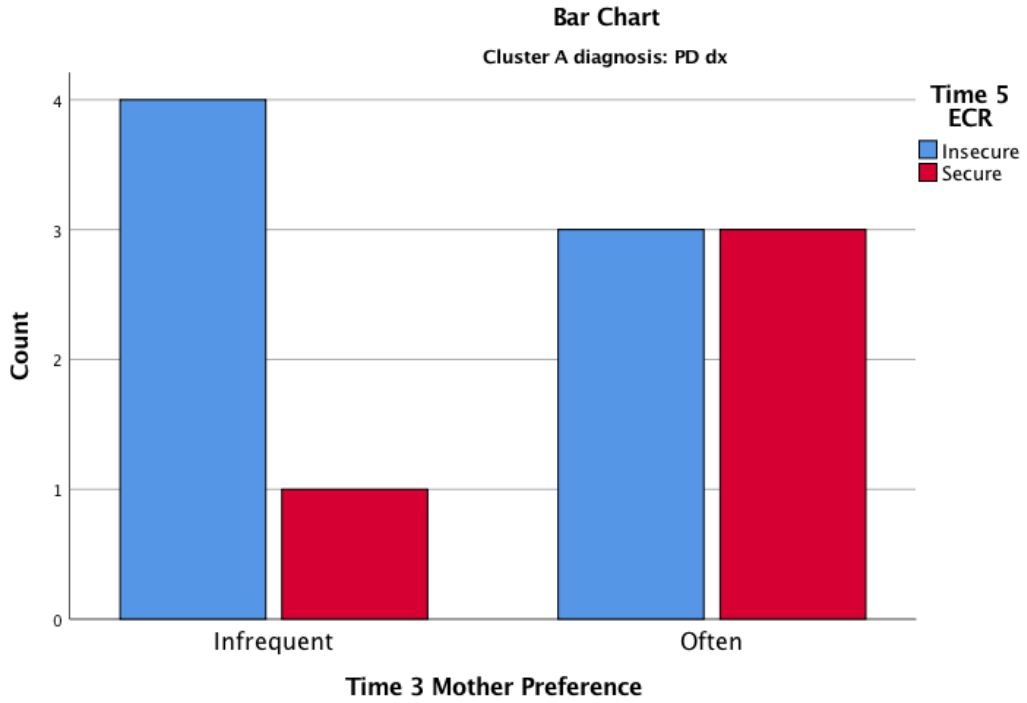
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 1 insecure	3	3	
Time 1 secure	2	2	$\chi2(1) = 0.19, p = .66$
Total	4	3	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster A PD. Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 21c. Attachment across time for offspring of mothers with Cluster A PD Time 3 and Time 5

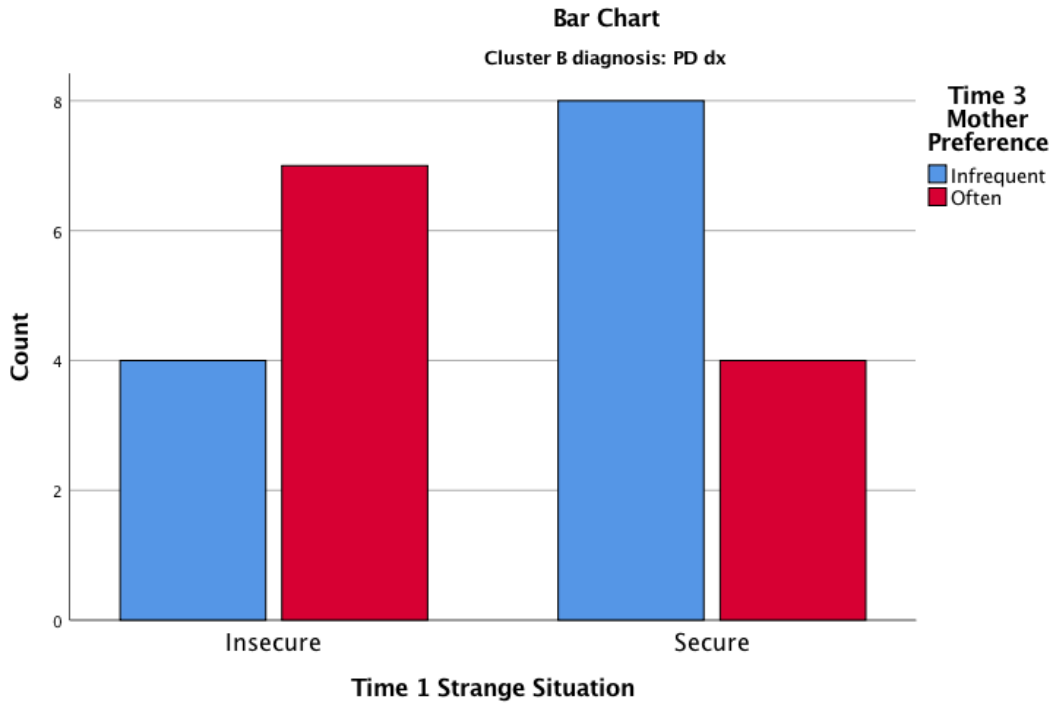
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	4	1	
Time 3 secure	3	3	$\chi2(1) = 1.06, p = .30$
Total	7	4	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster A PD. Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 22a. Attachment across time for offspring of mothers with Cluster B PD Time 1 and Time 3

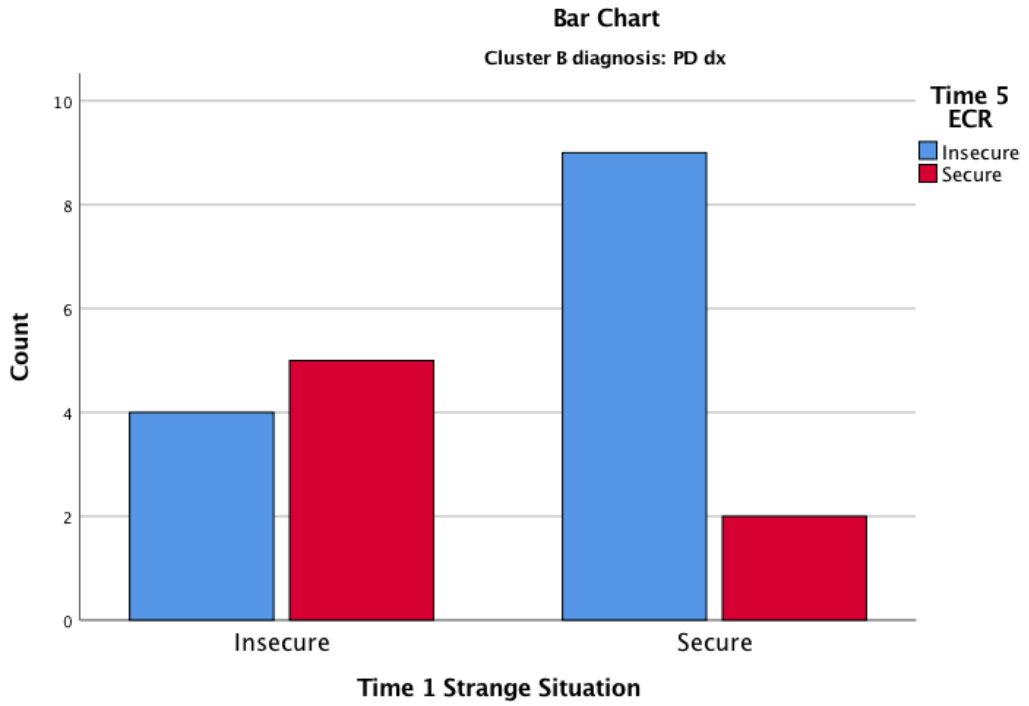
	Time 3 insecure	**Time 3 secure**	**χ2 Statistic**
Time 1 insecure	4	7	
Time 1 secure	8	4	$\chi 2(1) = 2.11, p = .15$
Total	12	11	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster B PD. Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 22b. Attachment across time for offspring of mothers with Cluster B PD Time 1 and Time 5

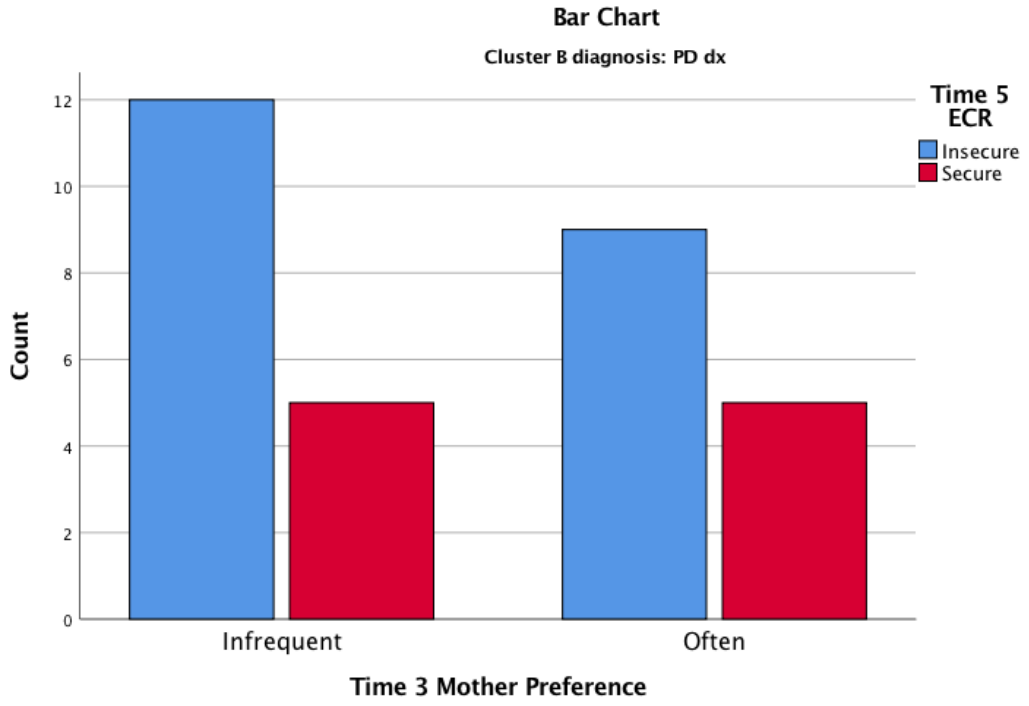
	Time 5 insecure	Time 5 secure	χ2 Statistic
Time 1 insecure	4	5	
Time 1 secure	9	2	$\chi 2(1) = 3.04$, $p = .08$
Total	13	7	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster B PD. Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 22c. Attachment across time for offspring of mothers with Cluster B PD Time 3 and Time 5

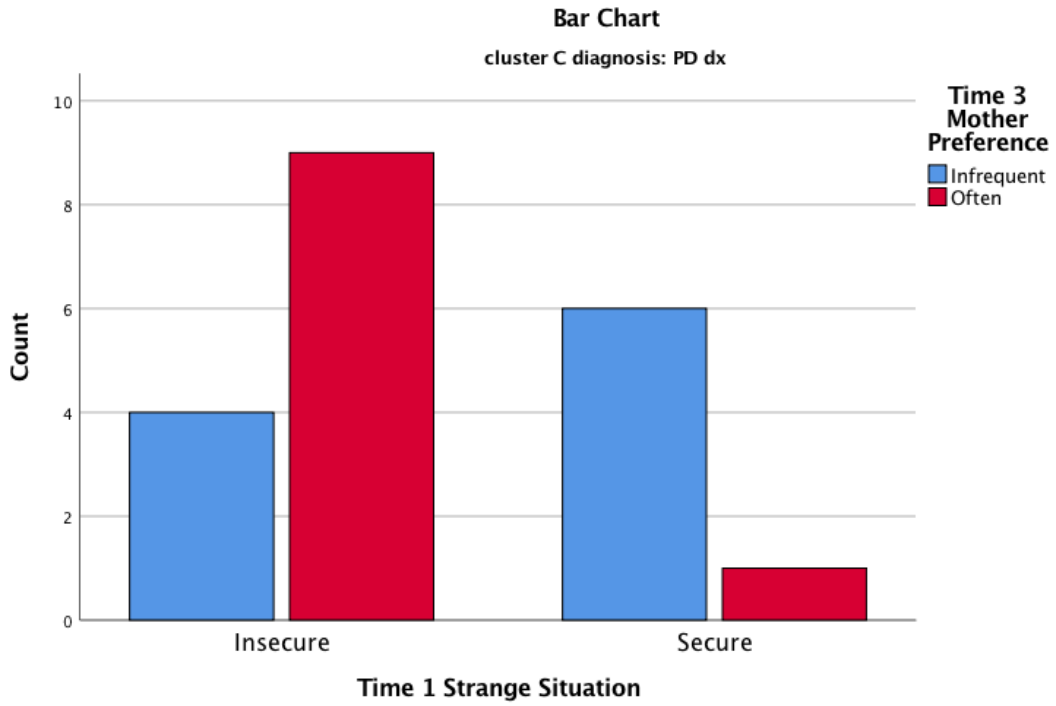
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 3 insecure	12	5	
Time 3 secure	9	5	$\chi2(1) = 0.14, p = .71$
Total	21	19	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster B PD. Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 23a. Attachment across time for offspring of mothers with Cluster C PD Time 1 and Time 3

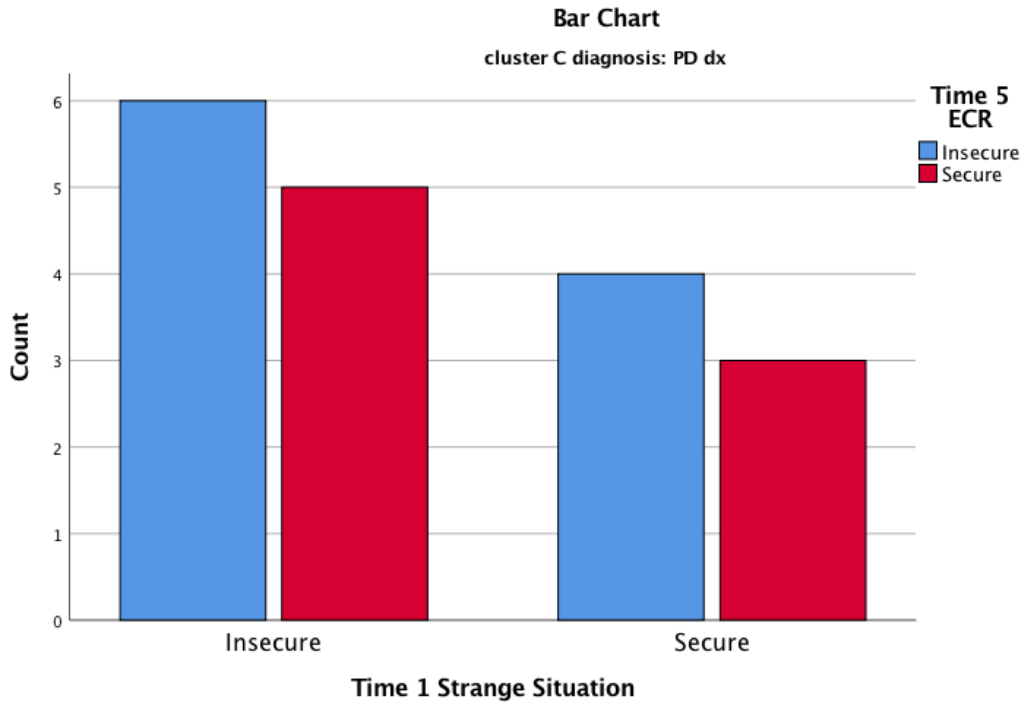
	Time 3 insecure	Time 3 secure	χ2 Statistic
Time 1 insecure	4	9	
Time 1 secure	6	1	$\chi 2(1) = 5.50$, $p = .02$
Total	10	10	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster C PD. Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0).

Table 23b. Attachment across time for offspring of mothers with Cluster C PD Time 1 and Time 5

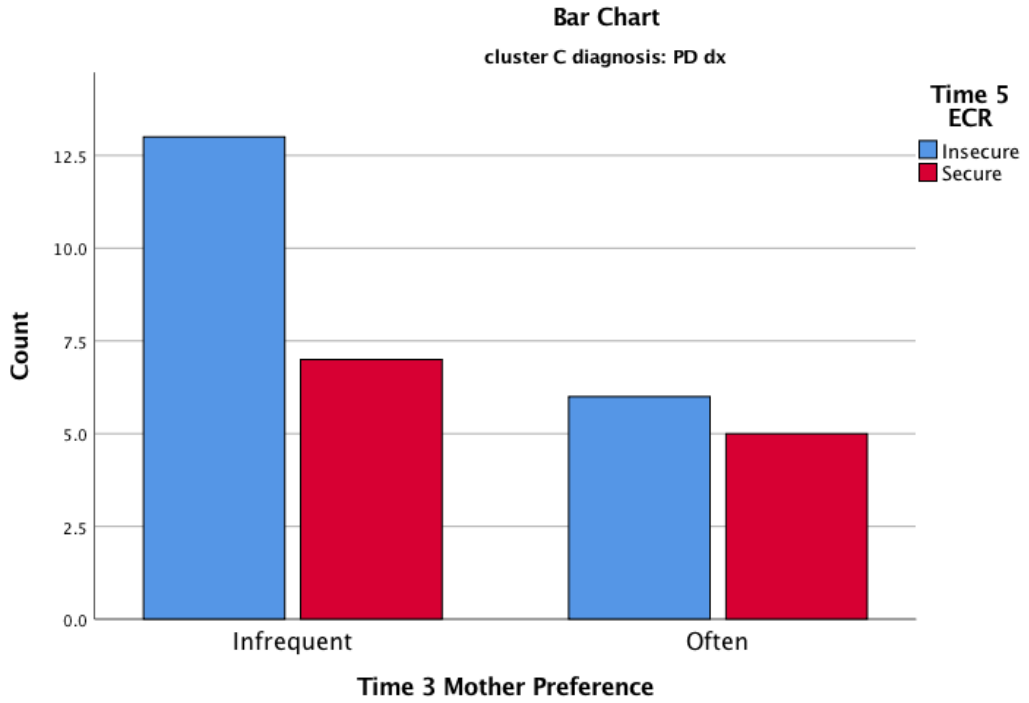
	Time 5 insecure	**Time 5 secure**	**χ2 Statistic**
Time 1 insecure	6	5	
Time 1 secure	4	3	$\chi2(1) = 0.01, p = .91$
Total	10	8	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster C PD. Strange Situation – attachment at Time 1, dichotomous variable indicates secure (1) or insecure (0) created from observational data; ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 23c. Attachment across time for offspring of mothers with Cluster C PD Time 3 and Time 5

	Time 5 insecure	Time 5 secure	χ2 Statistic
Time 3 insecure	13	7	
Time 3 secure	6	5	$\chi2(1) = 0.33, p = .57$
Total	19	12	



Note: * $p < .05$. ** $p < .01$. *** $p < .001$; Conducted with offspring of mothers who met criteria for a Cluster C PD. Friends and Family Mom Ranking – representations at Time 3, a dichotomous variable indicating if offspring sought out their mother frequently (1) or infrequently (0); ECR - Experiences in Close Relationships, attachment at Time 5 dichotomous variable indicating secure (1) or insecure (0) attachment.

Table 24. Exploratory analyses predicting Strange Situation attachment at Time 1 utilizing a logistic regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.60	-1.16	0.81	1.06	1.81
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	1.60	0.72	2.20	0.03*
Race	-0.25	0.50	-0.50	0.62
SES	-0.01	0.01	-0.79	0.43
Depression Dx	0.003	0.38	0.001	0.99
Cluster A DS	-0.10	0.09	-1.09	0.28
Cluster B DS	0.03	0.06	0.45	0.65
Cluster C DS	-0.16	0.10	-1.57	0.12

Note: The logistic regression model was statistically significant $\chi 2(6) = 12.96$, $p = 0.04$;

SE = Standard Error, OR = Odds Ratio; *p<0.05, ** p<0.01, *** p<0.001

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Cluster DS – Cluster A, B, or C dimensional scores

Table 25. Exploratory analyses predicting My Friends and Family at Time 3 utilizing a logistic regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.34	-1.05	-0.92	1.27	1.49
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	0.46	0.70	0.67	0.51
Race	-0.07	0.48	-0.14	0.89
SES	-0.01	0.01	-0.95	0.34
Depression Dx	-0.22	0.37	-0.59	0.55
Cluster A DS	0.01	0.09	0.13	0.89
Cluster B DS	0.05	0.05	0.94	0.35
Cluster C DS	-0.06	0.10	-0.63	0.53

Note: The logistic regression model was not statistically significant $\chi 2(6) = 3.34$, $p = 0.76$; SE = Standard Error, OR = Odds Ratio; *p<0.05, ** p<0.01, *** p<0.001

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Cluster DS – Cluster A, B, or C dimensional scores

Table 26. Predicting My Friends and Family at Time 3 utilizing logistic regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
- 1.44	-1.07	-0.84	1.24	1.62
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	-0.84	1.32	-0.64	0.52
Race	-0.21	0.47	-0.44	0.66
SES	-0.01	0.01	-1.18	0.24
GAF	0.02	0.02	1.28	0.20
Comorbid	0.52	0.49	1.06	0.29
Group				
Mood Group	-0.30	0.42	-0.71	0.48

Note: The logistic regression model was not statistically significant $\chi 2(5) = 6.28$, $p = 0.28$.; SE = Standard Error, OR = Odds Ratio; *p<0.05, ** p<0.01, *** p<0.001

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

GAF – Global Assessment of Functioning scale

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Table 27. Predicting Mother Ranking Preference in My Friends and Family at Time 3 utilizing linear regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
- 8.45	-2.88	-0.57	1.53	86.28
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	4.68	5.65	0.83	0.41
Race	-5.86	2.23	-2.62	0.01**
SES	-0.08	0.05	-1.55	0.12
GAF	0.13	0.07	1.90	0.05
Comorbid	-0.84	2.27	-0.37	0.71
Group				
Mood Group	-3.12	1.94	-1.60	0.11

Note: The linear regression model was statistically significant $\chi 2(5) = 2233.8$, $p < 0.001$;

SE = Standard Error, OR = Odds Ratio; *p<0.05, ** p<0.01, *** p<0.001

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

GAF – Global Assessment of Functioning scale

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Table 28. Predicting Mother Ranking Preference in My Friends and Family at Time 3 utilizing linear regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
- 8.19	-2.39	-0.17	1.72	87.93
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	13.39	3.04	4.37	<.001***
Race	-5.72	2.25	-2.55	0.02*
SES	-0.08	0.05	-1.50	0.14
Comorbid	-3.69	1.72	-2.14	0.03*
Group				
Mood Group	-4.44	1.82	-2.43	0.02*

Note: The logistic regression model was statistically significant $\chi 2(4) = 1902.7$, $p <$ 0.001; SE = Standard Error, OR = Odds Ratio; *p<0.05, ** p<0.01, *** p<0.001

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Table 29. Exploratory analyses predicting Experiences in Close Relationships at Time 5 utilizing a logistic regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.48	-1.06	-0.86	1.25	1.68
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	-0.04	0.71	-0.06	0.95
Race	-0.57	0.49	-1.15	0.25
SES	0.01	0.01	1.13	0.26
Depression Dx	-0.17	0.37	-0.47	0.64
Cluster A DS	-0.07	0.09	-0.83	0.41
Cluster B DS	0.02	0.05	0.41	0.69
Cluster C DS	-0.05	0.10	-0.53	0.59

Note: *p<0.05, ** p<0.01, *** p<0.001; The logistic regression model was not statistically significant $\chi 2(6) = 6.19$, $p = 0.40$; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Depression Dx – dummy coded to indicate depression diagnosis (1) or well (0).

Cluster DS – Cluster A, B, or C dimensional scores

Table 30. Predicting Attachment Avoidance from Experiences in Close Relationships at Time 5 utilizing linear regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.42	-0.53	-0.12	0.38	2.87
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	2.13	0.25	8.42	<.001***
Race	0.25	0.18	1.40	0.16
SES	-0.01	0.004	-1.18	0.24
Comorbid	0.23	0.14	1.71	0.09
Group				
Mood Group	0.58	0.15	3.96	<.001***

Note: *p<0.05, ** p<0.01, *** p<0.001; The linear regression model was statistically significant $\chi 2(4) = 1902.7$, $p < 0.001$; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Table 31. Predicting Attachment Anxiety from Experiences in Close Relationships at Time 5 utilizing linear regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.36	-0.64	-0.08	0.52	2.14
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	3.00	0.28	10.77	<.001***
Race	-0.04	0.20	-0.19	0.85
SES	-0.003	0.004	-0.63	0.53
Comorbid	-0.03	0.15	-0.22	0.83
Group				
Mood Group	-0.04	0.16	-0.25	0.81

Note: *p<0.05, ** p<0.01, *** p<0.001; The linear regression model was not statistically significant $\chi 2(4) = 0.51$, $p = 0.95$; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Table 32. Predicting Attachment Avoidance from Experiences in Close Relationships at Time 5 utilizing linear regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.54	-0.53	-0.16	0.42	2.11
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	3.27	0.47	6.92	<.001***
Race	0.04	0.18	0.24	0.81
SES	-0.01	0.004	-1.41	0.16
GAF	-0.01	0.01	-2.84	0.01**
Comorbid	0.04	0.18	0.21	0.84
Group				
Mood Group	0.40	0.15	2.54	0.02*

Note: The linear regression model was statistically significant $\chi 2(5) = 17.72$, $p < 0.001$;

SE = Standard Error, OR = Odds Ratio

*p<0.05, ** p<0.01, *** p<0.001

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

GAF – Global Assessment of Functioning scale

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Table 33. Predicting Attachment Anxiety from Experiences in Close Relationships at Time 5 utilizing linear regression

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.54	-0.71	-0.04	0.46	2.40
Variable	**Estimate**	**SE**	**Z value**	***p***
Intercept	4.63	0.51	9.02	<.001***
Race	-0.20	0.19	-0.85	0.40
SES	-0.01	0.005	-1.26	0.21
GAF	-0.03	0.01	-3.74	<.001***
Comorbid	-0.58	0.19	-2.98	<.01**
Group				
Mood Group	-0.37	0.17	-2.17	0.03*

Note: $p < 0.001$ *p<0.05, ** p<0.01, *** p<0.001; The linear regression model was statistically significant $\chi 2(5) = 14.05$; SE = Standard Error, OR = Odds Ratio

Race/Ethnicity – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

SES – Hollingshead Four-Factor Index of Socioeconomic Status

GAF – Global Assessment of Functioning scale

Comorbid Group – Mothers in the comorbid group met criteria for a mood diagnosis and personality disorder diagnosis dummy coded as comorbid group (1) and well (0)

Mood Group – Mothers in the Mood Group met criteria for a mood disorder, without meeting criteria for a personality disorder, dummy coded as mood group (1) and well (0).

Table 34. Examining attachment stability in the context of maternal Personality Disorders.

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.53	-1.05	-0.89	1.26	1.66
Variable	**Estimate**	**SE**	**Z value**	**P values**
Race	-0.23	0.31	-0.76	0.45
Age	-0.01	0.04	-0.14	0.89
SES	-0.003	0.01	-0.52	0.60
Time 3	-0.63	0.45	-1.40	0.16
Time 5	-0.60	0.88	-0.69	0.49
Cluster A DS	-0.09	0.04	-2.26	0.02*
PD Count	-0.10	0.20	-0.52	0.60

Note: * p<0.05, ** p<0.01, *** p<0.001 The linear regression model was not statistically significant $\chi 2(4) = 7.41$, $p = 0.12$; SE = Standard Error, OR = Odds Ratio

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – age of offspring

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at Time 3 and Time 5

Cluster A DS – Cluster A dimensional scores

PD Count – Mothers were included if they met criteria for any PD diagnosis

Table 35. Examining attachment stability in the context of maternal Personality Disorders.

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.43	-1.04	-0.93	1.30	1.50
Variable	**Estimate**	**SE**	**Z value**	**P values**
Intercept	0.39	0.44	0.89	0.38
Race	-0.08	0.30	-0.26	0.79
Age	0.01	0.04	0.21	0.84
SES	-0.0001	0.01	-0.123	0.90
Time 3	-0.73	0.44	-1.66	0.10
Time 5	-0.87	0.87	-1.00	0.32
Cluster B DS	0.03	0.04	0.86	0.39
PD Count	-0.34	0.24	-1.48	0.14

Note: * p<0.05, ** p<0.01, *** p<0.001 The linear regression model was not statistically significant $\chi 2(4) = 7.98$, $p = 0.09$; SE = Standard Error, OR = Odds Ratio

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – age of offspring

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at Time 3 and Time 5

Cluster B DS – Cluster B dimensional scores

PD Count – Mothers were included if they met criteria for any PD diagnosis

Table 36. Examining attachment stability in the context of maternal Personality Disorders.

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.46	-1.06	-0.84	1.24	1.65
Variable	**Estimate**	**SE**	**Z value**	**P values**
Intercept	1.03	0.44	2.34	0.02*
Race	-0.18	0.30	-0.60	0.55
Age	-0.005	0.04	-0.11	0.91
SES	-0.001	0.01	-0.15	0.88
Time 3	-0.64	0.45	-1.43	0.15
Time 5	-0.64	0.88	-0.72	0.47
Cluster C DS	-0.13	0.05	-2.89	0.004**
PD Count	-0.02	0.20	-0.11	0.92

Note: * p<0.05, ** p<0.01, *** p<0.001. The linear regression model was not statistically significant $\chi 2(4) = 4.41$, $p = 0.35$; SE = Standard Error, OR = Odds Ratio

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – age of offspring

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at Time 3 and Time 5

Cluster C DS – Cluster C dimensional scores

PD Count – Mothers were included if they met criteria for any PD diagnosis

Table 37. Examining attachment stability in the context of maternal Personality Disorders.

Deviance Residuals				
Min	**1Q**	**Median**	**3Q**	**Max**
-1.42	-1.04	-0.94	1.31	1.44
Variable	**Estimate**	**SE**	**Z value**	**P values**
Intercept	0.55	0.41	1.37	0.17
Race	-0.10	0.30	-0.33	0.74
Age	0.01	0.04	0.14	0.89
SES	-0.001	0.01	-0.26	0.79
Time 3	-0.72	0.44	-1.62	0.11
Time 5	-0.83	0.87	-0.95	0.34
PD Count	-0.23	0.19	-1.20	0.23

Note: * p<0.05, ** p<0.01, *** p<0.001. The linear regression model was not statistically significant $\chi 2(2) = 2.59$, $p = 0.27$; SE = Standard Error, OR = Odds Ratio

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – age of offspring

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at Time 3 and Time 5

PD Count – Mothers were included if they met criteria for any PD diagnosis

Table 38. Follow up for Maternal Personality Disorders diagnoses – Cluster A

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.50	-1.11		-0.93	1.21			1.75
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	1.78	0.58	0.38	1.54	0.86	3.76	0.12
Race	0.58	-0.53	0.27	-1.96	0.34	1.00	0.05*
Age	0.93	-0.06	0.04	-1.71	0.87	1.10	0.09
SES	1.00	0	0.01	0.63	0.99	1.02	0.53
Time 3	1.02	0.02	0.32	0.05	0.54	1.91	0.96
Time 5	2.47	0.90	0.68	1.32	0.65	9.53	0.19
Paranoid Dx	1.30	0.26	0.45	0.58	0.53	3.20	0.57
Schizoid Dx	0.39	-0.94	0.72	-1.30	0.08	1.47	0.19
Schizotypal Dx	0.93	-0.07	0.42	-0.17	0.40	2.14	0.87

Note: * p<0.05, ** p<0.01, *** p<0.001; $\chi 2(6) = 4.70$, $p = 0.31$; SE = Standard Error, OR = Odds Ratio

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – age of offspring

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at Time 3 and Time 5

Paranoid Dx – Paranoid diagnosis

Schizoid Dx – Schizoid diagnosis

Schizotypal Dx – Schizotypal diagnosis

Table 39. Follow up for Maternal Personality Disorders diagnoses – Cluster C

Deviance Residuals							
Min	**1Q**		**Median**	**3Q**	**95% Confidence Interval**		**Max**
-1.53	-1.11		-0.88	1.21			1.67
Variable	**OR**	**Estimate**	**SE**	**Z value**	**Lower Bound**	**Upper Bound**	**P values**
Intercept	1.84	0.62	0.38	1.61	0.88	3.92	0.11
Race	0.59	-0.52	0.27	-1.90	0.34	1.01	0.06
Age	0.93	-0.06	0.04	-1.73	0.87	1.01	0.08
SES	1.00	0	0	0.69	0.99	1.02	0.49
Time 3	1.02	0.02	0.32	0.07	0.54	1.92	0.95
Time 5	2.52	0.92	0.69	1.35	0.66	9.72	0.18
Obsessive Dx	0.94	-0.10	0.29	-0.35	0.51	1.58	0.73
Avoidant Dx	0.82	-0.20	0.36	-0.57	0.40	1.65	0.57
Dependent Dx	0.53	-0.63	0.34	-1.86	0.27	1.02	0.06

Note: * p<0.05, ** p<0.01, *** p<0.001; $\chi 2(6) = 6.51$, $p = 0.36$; SE = Standard Error, OR = Odds Ratio

Race – dummy coded to indicate Caucasian (1) or other race/ethnicity (0).

Age – age of offspring

SES – Hollingshead Four-Factor Index of Socioeconomic Status

Time 3 and 5 – Attachment at Time 3 and Time 5

Obsessive Dx – Obsessive diagnosis

Avoidant Dx – Avoidant diagnosis

Dependent Dx – Dependent diagnosis