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Predictors of Father Involvement during Infancy in the Context of Maternal Depression

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Predictors of Father Involvement during Infancy in the Context of Maternal Depression

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Abstract

The aim of the present study was to examine predictors of father involvement with 3-month old infants in families where the mother has a history of anxiety or depression. The present study used Doherty and colleagues' (1998) conceptual model of predictors of father involvement to study fathering in 71 families with 3-month old infants. All of the mothers had a history of depression or anxiety. Results were that maternal depression, maternal satisfaction with father responsibility, infant temperament, and family size were significantly correlated with at least one of the indices of father involvement proposed by Lamb (2000, 2010): engagement, accessibility, or responsibility. Higher levels of maternal depression during the first six weeks postpartum were correlated with higher levels of father engagement during the week. Higher levels of maternal satisfaction with father responsibility and a higher number of additional children in the family were independently associated with higher levels of father accessibility on the weekends. Lastly, surgency/extraversion in the infants was negatively correlated with father accessibility on the weekends. This study, consistent with Doherty and colleagues' (1998) model, highlights the importance of using a multi-variable model to examine predictors of fathering during the first three months of infancy, and the value of extending this model to the study of families in which the mother has a history of depression or anxiety.

Although previous research examining parenting during infancy has focused almost exclusively on mothers and the impact of maternal parenting on infant development, more recent research has begun to focus on fathering and the predictors of father involvement during infancy. According to some studies, fathers often have a less defined role in the lives of their children compared to mothers, especially when their children are infants (Doherty, Kouneski, & Erickson, 1998; Lamb, 2000; Simons, Lorenz, Wu, & Conger, 1993). As a result, paternal involvement may be quite variable during this developmental period, and this variability may be related to infant outcomes (Beitel & Parke, 1998; Simons et al., 1993). Many factors that predict father involvement have been found in the general population. Little research however, has examined predictors of involvement in partners of women with a history of depression or anxiety. Studying this population is important because infants need sensitive and responsive care for healthy development (Sroufe, Egeland, Carlson, & Collins, 2005). Given that depression in mothers is associated with problems in parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000), the father may be able to provide the proper care, if he is involved. The goal of the present study is to better understand predictors of variability in father involvement during infancy, specifically in families where mothers have a history of depression or anxiety.

Father Involvement during Infancy

The first three months of infancy constitute a critical time for development and growth (Davies, 2011). By the third month of life, infants are sleeping less and are increasingly alert and aware of their environment and the people in it. Over the course of the first three months, significant developments occur in increasing self-regulation and mutual regulations, stability of temperament, and increasing responsiveness to caregivers. During these early months, the infant is completely dependent on his or her caregivers for support and nurturing, and thus may be

particularly sensitive to the effects of parenting relative to later developmental periods (Davies, 2011). Furthermore, parents exert the greatest influence on their child early in development because there are fewer competing influences in the child's life during infancy (Connell & Goodman, 2002). Because of this, identifying predictors of higher levels of paternal involvement during early infancy is of particular importance.

Less involved parenting by fathers when mothers are depressed is also of concern. Infants have a higher potential to be exposed to more of a negative affect from the mother when she has been depressed, compared to infants whose mothers are not and have not been depressed. Maternal depression during pregnancy and post-partum, even if it does not continue through childhood, has long-term effects on the infant (Field, 2010). Depressed mothers have fewer face-to-face interactions with their young infants, and when they do interact, these interactions are characterized by more hostility and less responsiveness by the mother (Field, Healy, Goldstein, & Perry, 1988; Lovejoy et al., 2000). A review of the literature suggests that more hostility and less responsiveness could contribute to the disturbances in interactions seen in depressed mothers and their infants (Field, 2010).

Indeed, father involvement has been found to buffer maternal depression, lessening the possible negative effects of maternal depression on the infant. In one recent study of families with depressed mothers, the researchers found that the availability of support from the father during the first two years of his infant's life had a protective effect on the behavioral development of the infant, compared to fathers who were not available (Letourneau, DufFett-Leger, & Salmani, 2009). Furthermore, previous research reports that when the father is involved when the mother is depressed, the child has more positive developmental outcomes than when the father is not involved (Chang, Halpern, & Kaufman, 2007; Pleck, 2007). To our

knowledge, however, no previous studies have explored what predicts father involvement in these families.

Defining Father Involvement

Even in the broader literature on fathering, researchers have been challenged to define paternal involvement. Based on a review of the literature on father involvement, Lamb (2000, 2010) defined three components of paternal involvement during infancy and childhood – engagement, accessibility, and responsibility. Engagement is when the father is in direct interaction with his infant. This component is quantified by the amount of time the father is involved in caretaking or play activities with his infant (Lamb, 2010). Examples include feeding, playing, or talking face to face with the infant.

Lamb's (2000, 2010) second component is accessibility. When the father is accessible, he is in the same location as the infant, but is not providing direct care or having a direct interaction with the infant. For example, he may be providing support for the mother or indirectly caring for the infant by cleaning the infant's room or preparing food or a bath.

Lamb's third component of father involvement is responsibility. Responsibility defines who is in charge of planning and scheduling an activity or caring for the infant. The responsible parent is not necessarily the parent who actually completes the activity. When a father is responsible for the infant in this sense, he could be planning and scheduling doctor's appointments, deciding when the infant should go to sleep, or deciding on a daycare center for the infant (Lamb, 2000, 2010).

Even with a clear definition of father involvement as being composed of these three components, one issue that arises in the measurement of father involvement is accurately accounting for variations in paternal involvement over the course of a week. Previous literature

suggests that father engagement and accessibility are not consistent across the week, with fathers tending to be more involved on the weekends compared to weekdays (Mehall, Spinrad, Eisenberg, & Gaertner, 2009; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). Additionally, research has found that some predictors of father involvement have more of an influence during the week than on the weekend, for example father's employment (Yeung et al., 2001). In order to account for this difference in involvement, researchers suggest interviewing fathers about both a random weekend day and a random weekday (Mehall et al., 2009; Yeung et al., 2001). Very little research has been done on the difference in predictors for father involvement during the week and during the weekend; therefore the present study will use the same predictors across both weekdays and weekend days.

An additional issue in the measurement of father involvement is the source of the information. In regard to engagement and accessibility, studies have found that fathers provide more accurate information about themselves and their activities than mothers do on most topics, including fathers' involvement with their infants (Marsiglio, Booth, & Crouter, 1998). Fathers, rather than mothers, are typically the reporters of their own engagement and accessibility, most likely because engagement and accessibility can be directly viewed and quantified (Lamb, 2010). The concept of responsibility is a more subjective rating. A review article on father involvement reports that when a concept is subjective rather than objective, such as responsibility, it is beneficial to have multiple informants rather than a single informant (Marsiglio, Amato, Day, & Lamb, 2000).

In contrast to studies of fathers' engagement and accessibility, most studies on paternal responsibility have relied on the mothers' reports of the fathers' responsibility, instead of the fathers' self-reports (Smith & Howard, 2008). Findings on reports of responsibility suggest that

it may be essential to measure each parent's report of their own responsibility, as well as each parent's perceptions of their partner's responsibility. Previous studies have examined each parent's self-report of responsibility (Mezulis, Hyde, & Clark, 2004), but few have included both self-reports of responsibility and reports from both parents on perceived responsibility of the other parent. This is potentially important because some researchers have found differences between mothers' and fathers' perceptions of their partners' responsibility compared to their perceptions of their own responsibility (McBride & Mills, 1993). Other researchers found the mother's perceptions of the father's responsibility for the infant to be associated with the father's responsibility, as defined by father's reports of responsibility and observation of father's involvement (Beitel & Parke, 1998). In the context of maternal depression specifically, having both parents' perceptions of responsibility is essential because how the mother perceives the father's responsibility could have an impact on her psychological well-being (Lamb, 2010). Having the father report on his own involvement – engagement, accessibility, and responsibility – in addition to having the mother report on responsibility is crucial to get a full understanding of paternal involvement in the family.

Predictors of Father Involvement

With conceptual and operational definitions of father involvement having been addressed, attention has turned to predicting father involvement. Doherty and colleagues (1998) provided a conceptual framework for predicting father involvement during infancy. This model, based on a review of the literature, was intended as a guide for future research and practice. Doherty and colleagues (1998) highlight this model over previous models of father involvement because it includes fathering both inside and outside of marriage and focuses on factors that will help create and maintain a strong father-child bond. Furthermore, the model includes maternal

psychopathology as a predictor of father involvement. The model highlights multiple components that interact and influence father involvement. The present study focused on three of the four major components of the model, which have not been examined in families of mothers with histories of depression or anxiety: factors of the mother, infant temperament, and contextual factors (Doherty et al., 1998; Mehall et al., 2009).

Maternal Factors. The first component, and main focus of the present study, is factors of the mother. This refers to the mother's psychological well-being and the mother's expectations of the father's involvement. Doherty and colleagues (1998) suggest that these factors could influence father involvement because the father's involvement is often contingent upon the mother's attitudes toward, expectations of, and support for the father's involvement. Mothers serve as partners, but they also can serve as gatekeepers (Doherty et al., 1998). Consistent with the findings of Beitel and Parke (1998), this model suggests that mothers' expectations of and satisfaction with their partners' involvement could be associated with the fathers' actual involvement. Doherty and colleagues (1998) do not suggest a specific direction for how maternal psychological well-being may be associated with father involvement. An aim of this study is to explore the association between maternal depression and father involvement.

Among aspects of maternal psychological well-being, maternal depression has been of particular interest given known associations with the development of psychopathology in children (S. H. Goodman et al., in press) and with marital conflict (Whisman, Uebelacker, & Weinstock, 2004; Whitton & Whisman, 2010). Yet, recent research that has tested this theorized role of maternal depression in the prediction of father involvement has yielded mixed results. One study of low-income families found that when mothers suffered from more psychological distress symptoms (including somatization, anxiety, and depressive symptoms), fathers tended to

help more with the infant, having higher levels of involvement in parenting compared to partners of mothers not suffering from psychological distress symptoms (Coley & Hernandez, 2006). Thus, in low-income samples, fathers may be more involved in the life of their infant when their partners are experiencing psychological distress.

Other studies, however, using a measure of depression rather than a broader indicator of distress, found that maternal depression and paternal involvement are negatively associated. A study with new mothers and their partners found that partners of women who were experiencing post-partum depression believed parenting to be more stressful than partners of women who were not experiencing post-partum depression. In turn, the fathers whose partners were experiencing post-partum depression were less involved in the lives of their infants than the fathers whose partners were not experiencing post-partum depression (J. H. Goodman, 2008). This study sampled mostly Caucasian, upper-to-middle class, educated mothers and their partners. Thus, a possible reason for the discrepant findings between Coley and Hernandez (2006) and Goodman (2008) could be this difference in populations sampled or in the measure of depression, specifically, relative to psychological distress. The sample in the present study is most similar to that of Goodman (2008). Therefore, we predict that depression will be negatively associated with father involvement.

In order to completely understand how maternal depression is related to father involvement, and given that maternal depression, even if it only occurs during early infancy, can have a long-term effect on the infant (Field, 2010), the present study will explore the impact of maternal depression on father involvement during both the first few weeks post-partum and concurrently with father involvement at three-months post-partum.

Infant Temperament. The second possible predictor is infant temperament. Doherty and colleagues (1998) propose that a more difficult infant temperament is associated with lower levels of father involvement. There has been considerable research on the construct of infant temperament, which in the present study is defined as individual differences in self regulation and reactivity that are relatively enduring and influenced by hereditability and experience (Gartstein & Rothbart, 2003; Rothbart, Ahadi, & Evans, 2000). The literature suggests that infant temperament could be more strongly associated with father involvement than mother involvement because involvement in childcare is, in many cases, more voluntary for the father than for the mother (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Mehall et al., 2009).

Research has found that infant temperament is related to father involvement. For example, fathers of less sociable pre-school girls were less involved in their daughters' lives (McBride, Schoppe, & Rane, 2002). An extensive review of the research in this area suggests that infants of depressed mothers display more negative affectivity and have greater difficulty self-regulating their emotions compared to infants of non-depressed mothers (S. H. Goodman, 2007). Additionally, Mehall and colleagues (2009) suggest that the challenges associated with caring for infants with difficult temperaments may prevent the parents from having a healthy, active engagement with their infants. Because infants of depressed mothers are at a greater risk for developing a negative and difficult temperament, exploring the association between father involvement and infant temperament is crucial. To our knowledge, no previous studies have looked at the association between father involvement and infant temperament in families with a history of depression or anxiety in the mother.

Contextual Factors. The third component in Doherty and colleagues' (1998) predictive model, contextual factors, refers to the income, employment status of both parents, and family size. According to Doherty and colleagues (1998), fathers' involvement is more contextually sensitive than mothers' involvement, and more influenced by changes in economics and family life. They suggest that this could be because cultural norms are stricter for the mother-infant relationship than for the father-infant relationship. One study of mothers experiencing depressive episodes found that families with depressed mothers experienced more contextual difficulties than families without a depressed mother (Cicchetti, Rogosch, & Toth, 1998). This study did not look at father involvement specifically, but the researchers suggest that fathers could potentially help by limiting negative contextual risks and reducing a negative parenting environment (Cicchetti et al., 1998).

The present study focused on the contextual factor of family size, as researchers have found fathers to be particularly sensitive to changes in family size (Aldous, Mulligan, & Bjarnason, 1998; Mehall et al., 2009). Fathers in larger families have been found to be less involved with the infant of the family than in smaller families where the infant has fewer siblings (Aldous et al., 1998; Mehall et al., 2009). The researchers suggest that fathers could be less involved with the infant because he is more involved with the older children (Mehall et al., 2009). To our knowledge, no present research has explored the association between contextual factors and father involvement in families with mothers who have a history of depression or anxiety.

Co-parental Relationship. Although not examined in the present study, the fourth component of Doherty's model is the co-parental relationship. This includes the quality of the parents' marriage and satisfaction with the division of childcare tasks. According to Doherty and

colleagues (1998), fathers' parenting involvement is particularly sensitive to the marital relationship because couples typically engage in more negotiation over what fathers will do for the infant than what mothers will do (Beitel & Parke, 1998; Simons et al., 1993). The researchers also suggest that the father tends to withdraw from the infant when he is not getting along with the mother (Doherty et al., 1998). Results of several studies support the finding that marital satisfaction is associated with father involvement during the child's first years of life (Lee & Doherty, 2007; Mehall et al., 2009). In regard to findings in samples of women experiencing post-partum depression, one study found that marital difficulties, especially those concerning parenting, negatively impacted father involvement during infancy, with more marital conflict being correlated with less father involvement (Misri, Kostaras, Fox, & Kostaras, 2000). Because previous research has explored the co-parental relationship as a predictor of father involvement, but no research has focused on the other three predictors of maternal factors, infant temperament, and contextual factors, the present study will only focus on the latter three.

Doherty and colleagues (1998) suggest that these components create a dynamic set of predictors that are both additive and interactive. Each predictor can influence and be associated with other predictors in the model. Additionally, the researchers theorized that adding the predictors together will further explain the variance in father involvement (Doherty et al., 1998). Research has supported this notion, finding that higher levels of infant regulation (as reported by the mother on the Infant Behavior Questionnaire) were associated with higher levels of marital satisfaction as reported by both parents (Mehall et al., 2009). Higher levels of father involvement were additively explained by higher levels of infant regulation and higher levels of marital satisfaction (Mehall et al., 2009). This is consistent with Doherty and colleagues' (1998) notion that the predictors of father involvement will be related in complex ways.

Summary and Hypotheses

In order to effectively study predictors of father involvement, the present study focused on how maternal characteristics (maternal psychological well-being and maternal satisfaction with father involvement), infant temperament, and contextual factors (family size) predict and additively explain father engagement, accessibility, and responsibility in families with a history of maternal depression or anxiety. Very little is known about the predictors of father involvement in the context of maternal depression. Yet, this is an important field of study given that previous research indicates that, in the context of maternal depression, positive father involvement is associated with positive outcomes in the children (Chang et al., 2007; Pleck, 2007). Furthermore, fathers' involvement with their three month old infants is particularly important because this is a time of critical development and growth for the infant (Davies, 2011). Given this, the present study focused on father involvement at three months post-partum.

Additionally, previous studies have focused only on one or two predictors at a time; to our knowledge, no previous studies have simultaneously examined three factors as predictors of father involvement. Further exploration of these findings in the context of Doherty and colleagues' (1998) theoretical framework could help explain discrepant findings in father involvement and provide insight as to why some fathers have higher levels of involvement when their partner is experiencing depression whereas others have lower levels of involvement.

The current study had two main hypotheses. First, maternal characteristics, infant temperament, and contextual factors will each be associated with fathers' involvement as defined by Lamb's (2000, 2010) components of engagement, accessibility, and responsibility. With regard to maternal characteristics, we focused on two components: maternal depression and maternal satisfaction with father involvement, given Doherty and colleagues' (1998) theory, and

the support from previous research on their association with father involvement (Beitel & Parke, 1998; Coley & Hernandez, 2006; J. H. Goodman, 2008). We expected higher levels of depression to be associated with lower father involvement. Furthermore, we predicted higher levels of maternal satisfaction with father responsibility to be associated with higher father involvement. For the second predictor, infant temperament, we expected a more difficult infant temperament to be associated with lower father involvement, given Doherty and colleagues' (1998) theory and findings in previous literature that a more difficult temperament can prevent parents from having healthy interactions with their infant (Mehall et al., 2009). Finally, consistent with previous research on the association between a larger family size and less father involvement (Aldous et al., 1998; Mehall et al., 2009), we hypothesized that a higher number of additional children in the family would be negatively associated with father involvement.

The second hypothesis, consistent with Doherty and colleagues' (1998) model, is that the predictors will be associated with each other and will additively explain the extent of father involvement. Given that previous research findings support this theory (Mehall et al., 2009), we hypothesized that each predictor would independently explain father involvement, as defined by Lamb (2000, 2010).

Method

Procedure

This research was part of the *Perinatal Stress and Gene Influences: Pathways to Infant Vulnerability Study*, an ongoing longitudinal research project investigating the effects of maternal perinatal depression on infants. Participants were recruited from the following sources: (1) the referrals of practitioners at local obstetrical practices in response to study advertisements, (2) women referred for clinical evaluation at the Emory University Women's Mental Health

Program or the Grady satellite clinic in Atlanta, and (3) women who had been excluded from research studies at the Emory Mood and Anxiety Disorders Program due to a positive pregnancy test. Potential participating women completed an initial checklist and a telephone interview. Inclusion criteria consisted of women ages 18-45 fulfilling *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994) criteria for Major Depressive Disorder (MDD), Panic Disorder (PD), Obsessive Compulsive Disorder (OCD), Generalized Anxiety Disorder (GAD), or Post-Traumatic Stress Disorder (PTSD); planning pregnancy or currently pregnant (less than 16 weeks gestation); having written and verbal fluency in English; having the ability to give informed consent and comply with study procedures; and able to identify the biological father of the baby. Only women meeting the inclusion criteria were included in the study. Women were excluded from the study if they had active suicidality or homicidality, psychotic symptoms, primary diagnosis of bipolar disorder, schizophrenia, currently active eating disorder, active substance abuse disorder or positive urine drug screen, illness requiring treatment that can influence outcomes (e.g. epilepsy, asthma, autoimmune disorders), or abnormal thyroid stimulating hormone or anemia. The fathers of the babies underwent a separate consent process. The father was included if he was older than 17 years of age, had written and verbal fluency in English, had the ability to give informed consent and comply with study procedures.

Following intake into the study, data were collected from the participating women about their mood, social support, marital/dyadic satisfaction, and other constructs at multiple time points during pregnancy and at multiple time points postpartum. The mothers completed a battery of measures, including the Structured Clinical Interview for the DSM-IV (SCID-I/P; First, Spitzer, Gibbon, & Williams, 1995), the Beck Depression Inventory-First Edition (BDI-I;

Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), and the Dyadic Adjustment Scale (Spanier, 1989) at each data-collection point during pregnancy. The BDI was also administered at multiple time points in the first 3 months postpartum. These measures were administered in order to determine whether the women were currently in a depressive episode and to assess the severity of depressive symptoms. Postpartum data collection included three times (at 3-, 6- and 12-months of age) when mothers and babies participated in a lab visit and one time (at 6-month of age) when researchers accompanied the mother and baby on the baby's routine pediatrician visit. Data collected from the 3-month lab visit were the focus of this report.

The mother completed the Infant Behavior Questionnaire – Revised Edition (*IBQ-R)* (Gartstein & Rothbart, 2003) either just prior to or during her three, six, and twelve-month postpartum visits to the laboratory. At the lab visit the mother completed the Parental Responsibility Questionnaire (PRS) (McBride & Mills, 1993; Montague & Walker-Andrews, 2002) and the BDI-II (Beck, Steer, & Brown, 1996).

Measures of father involvement were administered at the post-natal collection points of three, six, and twelve months. The measures of father involvement were based on the widely-used construct as defined by Lamb, Pleck, Charnov, & Levine (1985), and included three components: Engagement, Accessibility, and Responsibility. For father data, fathers completed the measures over the phone in most cases, unless they accompanied the mother and child to the laboratory visit. Interviewers received consented father's contact information from the mother of the baby. Once the mother had scheduled her visit to come into the lab, the interviewer began calling the father. If the father did not answer, the interviewer left a message asking the father to return the phone call. If the father did answer and was not free to talk, he was asked when would be a good time to schedule the interview. If the father did not return the phone call, he was

phoned every three days, continuing until the infant was four months of age and considered to be outside of the window of age eligibility for this study.

The responsibility scale was administered to both the mother and the father at each of the three collection points. In most cases, the father completed the scale during the phone interview, and the mother completed the scale at the laboratory session. In all cases, the mother and father were asked to fill out the scale separately so neither partner's responses were influenced by the other.

Participants

Of the 142 participating mothers of 3-month old babies, 59.86% of fathers consented to participate and 84.7% of consenting fathers completed the measures when their infant was 3 months old. Thus, participants were 71 women and their partners/husbands, all of whom had a 3-month-old infant (42.9 % female). Nearly half (45.7%) of the families had at least one additional child. There were two significant differences between families in which fathers consented to participate in the study and families in which fathers did not consent. The consented fathers had lower Hollingshead socioeconomic status (SES) (M = 56.98, SD = 6.59) scores than fathers not consented (M = 52.17, SD = 10.44), $t(115.73) = 3.23$, $p = .002$. Additionally, consented fathers had fewer additional children (M = 1.00, SD = .85) compared to fathers who were not consented (M = .57, SD = .75), $t(126.74) = 3.36$, $p = .001$. Among consented fathers, there were no significant differences in demographic variables (maternal and paternal age, marital status, maternal race, maternal and paternal total education, Hollingshead, maternal work situation, or number of children in the family) or fathers' and mothers' psychiatric diagnostic status for consented fathers who participated in the study at three-months postpartum and consented fathers who did not participate in the study at three-months postpartum.

Demographic characteristics of the sample are shown in Table 1. The interpretation of the average Hollingshead for this sample was medium level business person or a minor professional. Demographic information was only available for a limited subset of fathers (n=20).

Measures

Beck Depression Inventory (BDI-I; Beck et al., 1961). The BDI is a self-report measure of depression with well-established reliability and validity. The measure has been found to have strong internal consistency, concurrent validity, discriminant validity, and construct validity (Beck, Steer, & Garbin, 1988). The questionnaire includes 21 items, each of which corresponds to a specific symptom of depression. Respondents rate each item on a 4-point scale (0-3) based on their emotional experiences over the past week. Total scores indicative of the respondent's current depression severity are computed by summing the ratings on all items. Based on work by the developers of the scale, depression scores ranging from 0-9 are interpreted to indicate no depression, scores from 10-18 indicate mild to moderate depression, scores from 19-29 indicate moderate to severe depression, and scores from 30-63 indicate severe depression.

Structured Clinical Interview for DSM-IV Axis I Disorders–Patient Edition (SCID-I/P; First et al., 1995). The SCID is a semi-structured interview used to diagnose Axis I Disorders of the DSM-IV. The SCID was administered by trained research assistants during the initial screening and subsequent visits. Reliability of the interviews was ensured by a senior psychiatric nurse who independently scored the audiotapes of each interview. The interview was used to determine whether the mother met criteria for major depressive disorder or anxiety disorder prior to the pregnancy and then currently at the time of each subsequent interview.

Infant Behavior Questionnaire, Revised (IBQ-R) (Gartstein & Rothbart, 2003). The IBQ-R is an analytically derived factor measure of infant temperament, based on the definition of

temperament proposed by Rothbart and Derryberry (1981). The questionnaire contains 191 items and is typically completed by a parent, in our case the mother. The items ask the respondent to rate the infant's behavior during the past week in a variety of domains. Sample questions include: *When the baby was upset about something, how often did s/he stay upset for up to 10 minutes or longer? When being dressed or undressed during the last week, how often did the baby squirm and/or try to roll away? After sleeping, how often did the baby cry if someone doesn't come within a few minutes?* These items are scored on a 7-point scale, from 1 (Never) to 7 (Always). The IBQ-R yields 14 scales (Activity Level, Approach, Cuddliness/Affiliation, Duration of Orienting, Falling Reactivity, Fear, Frustration/ Distress to Limitations, High Intensity Pleasure, Low Intensity Pleasure, Perceptual Sensitivity, Sadness, Smiling and Laughter, Soothability, and Vocal Reactivity) that cluster into three overarching factor scores: Orienting/Regulatory Capacity, Surgency/Extraversion, and Negative Affectivity. Each scale is scored by calculating the mean of items determined to correspond to the construct. The number of items for each scale range from 10 to 18. Orienting/regulatory capacity is calculated as the mean of the following four scales: Low Intensity Pleasure, Cuddliness/Affiliation, Duration of Orienting, and Soothability. Surgency/extraversion is calculated as the mean of the following six scales: Approach, Vocal Reactivity, High Intensity Pleasure, Smiling and Laughter, Activity Level, and Perceptual Sensitivity. Negative affectivity is calculated as the mean of the following four scales: Falling Reactivity, Fear, Frustration/Distress to Limitations, and Sadness. Gartstein and Rothbart (2003) also reported inter-rater reliability between primary and secondary caregivers from a small sample ($n = 26$) for all three scales, orienting/regulatory Capacity ($r = .31$), surgency/extraversion ($r = .49$), and negative affectivity ($r = .70$). For hypothesis testing, the construct of difficult temperament was operationally defined as being high in

surgency/extraversion, high in negative affectivity, or low in orienting/regulatory capacity.

Beck Depression Inventory – Second Edition (BDI-II) (Beck et al., 1996). The BDI-II is a 21-item self-report scale assessing the intensity of depressive symptoms in the previous two weeks; higher scores reveal more severe levels of depression symptoms. Each item corresponds with a particular symptom of depression and is rated on a scale of 0-3. Summary scores range from 0-63. Based on the work by the developers of the scales, scores ranging from 0-13 indicate minimal depression, 14-19 indicate mild depression, 20-28 indicate moderate depression, and 29-63 indicate severe depression. The BDI-II has demonstrated high internal consistency ($\alpha = .93$, among outpatients) and adequate validity (Beck et al., 1996). In addition to evidence for reliability and consistency in clinical and nonclinical samples (Steer, Ball, Ranieri, & Beck, 1999; Whisman, Perez, & Ramel, 2000), the BDI-II also serves well as a screening test during pregnancy (Steer et al., 1999; Steer, Scholl, & Beck, 1990).

Father Involvement

Child Development Supplement to the Panel Study of Income Dynamics Time Diary (Hofferth, David-Kean, Davis, & Finklestein, 1998). A time diary interview was administered to fathers and yielded the data to calculate hours of fathers' engagement, time the father spends in one-to-one activity with the child, and accessibility, time the father is available but not directly engaged in activity with the child. Hofferth and colleagues (1998) administered the time diaries only to the mothers because mothers tend to be more reliable reporters about their baby's activities. However, fathers are better able to provide information about themselves and their activities than mothers on most topics (Marsiglio et al., 1998). Therefore, data on father engagement and accessibility were collected directly from the fathers. When the infant was three-months old, the father was invited to participate in a semi-structured interview about the

previous weekday and a randomly selected weekend day. Because an interview was equally likely to fall on any given weekday, interviewing the parent about the prior weekday resulted in random selection of days. Fathers were asked about the baby's activities for 24 hours, beginning at midnight of the previous day or weekend day. For each activity reported, they were asked (a) the time the activity began and ended; (b) who was doing that activity with the baby; and (c) who else was there but not directly involved in the activity. After reporting about the day, the father was asked how typical this weekday/weekend day was compared to other recent weekday/weekend days, on scale of 1-10 (10 being the most typical, 1 being the least). Scores were calculated by adding together the amount of time the father was engaged with the infant and the amount of time fathers were accessible, but not engaged with the infant for both the weekday and the weekend day. Both calculations were in fractions of hours (i. e. one hour and 45 minutes was 1.75 hours).

The validity of the time diary data has been assessed extensively in previous literature (Juster, 1985), and is generally considered preferable to other methods, such as "beeper" studies, in which the parent is asked to report their activities at random times signaled by a beeper, or more brief questionnaires that simply ask the parent to estimate hours spent accessible to or engaged with the child. Furthermore, the time diary has been specifically used to measure Lamb and colleagues' (1985) components of father involvement (Hofferth et al., 1998; Yeung et al., 2001).

Parental Responsibility Scale (PRS): (McBride & Mills, 1993) and *Child Care Activity Questionnaire* (CCAQ): (Montague & Walker-Andrews, 2002). These scales were combined in order to assess responsibility. The CCAQ is derived from the PRS, resulting in some overlap between the two measures. Our final measure took the original fourteen items from the PRS and

added the nine additional unique questions from the CCAQ. Finally, we divided one question of the M-PRS (*Determine appropriate time and putting child to bed at night*) into two questions (*Determine appropriate time for putting child to bed at night* and *Put baby to bed at night*). The PRS lists common childcare tasks in which parents of young children typically participate. Previous studies have found moderate internal consistency for this scale, with Cronbach alphas of 0.77 and 0.79 for mothers and fathers, respectively (McBride et al., 2002). Cronbach's alphas for items of the CCAQ fall in the range of 0.72-0.80 for fathers and 0.72-0.88 for mothers (Montague & Walker-Andrews, 2002). The final 24 item measure is scored on a scale of 1 (mother almost always responsible) to 5 (father almost always responsible). Each of the 24 responsibility items also included a question on how, in an ideal world, the parent would like for the division of responsibility to be. This resulted in three scores for each parent: one showing the current perceived division of responsibility, one showing the ideal division of responsibility, and one, a score derived from the previous two, showing the difference between perceived responsibility and ideal responsibility. Parental satisfaction with partner involvement was defined by the difference score of responsibility. The larger the difference in the scores, the less satisfied parents were with their partners' responsibility. Scores for perceived responsibility and ideal responsibility potentially ranged from 24 to 120, with higher scores indicating a higher degree of perceived or desired father responsibility. Both the mother and the father were told that the definition of responsibility for this measure was which parent remembers, plans, and schedules the task, not the parent that may actually complete the task

Results

Descriptives

Means, standard deviations, and ranges were computed for all study variables and are shown in Table 2.

Pearson correlations were computed to examine overall patterns of associations among the study variables. The results for correlations among parenting variables are displayed in Table 3. Although not the focus of this study, it was interesting to note that mothers' perceived parental responsibility and fathers' perceived parental responsibility were significantly correlated, whereas previous research has not found a strong association between maternal and paternal perceived responsibility (McBride & Mills, 1993). Results of correlations among fathering variables are shown in Table 4. Father weekday engagement was negatively correlated with father weekday accessibility. Similarly, father weekend engagement was negatively correlated with father weekend accessibility. Father involvement did not differ for fathers of sons, relative to fathers of daughters, by father age, by marital status, by mothers' employment, or by socioeconomic status.

Hypothesis Testing

We tested each of the individual predictors of father involvement by running Pearson Correlations in order to examine each predictor's association with the six indices of father involvement: weekday engagement, weekend engagement, weekday accessibility, weekend accessibility, perceived responsibility, and desired responsibility. That is, each hypothesized predictor was tested in association with six scores indicating father involvement. Table 5 shows the results of the correlation tests of association between each of the predictors and each of the six scores indicating father involvement.

For the first predictor, maternal characteristics, it was predicted that maternal depression would be associated with lower father weekday and weekend engagement, weekday and weekend accessibility, and responsibility. As seen in Table 6, maternal BDI Area Under the Curve (AUC) scores from birth to six weeks post-partum were highly correlated with maternal

scores on the BDI-II at three months post-partum, r(59) = .50, $p < .001$. Both scores were used in the analysis of the hypothesis.

Results did not support the hypothesis that maternal depression would be associated with lower father involvement. We found a significant positive correlation between maternal depression from birth to six weeks post partum and only one of the indices of father involvement: father weekday engagement, r(61) = .26, $p = .04$. In contrast to our prediction, higher levels of maternal depression from birth to six weeks post partum were significantly associated with higher levels of father engagement with their three-month old infants during weekdays. There were no significant correlations between maternal depression symptom levels at three months and any of the indices of father involvement.

The next hypothesis regarding maternal characteristics was that maternal satisfaction with father responsibility would be positively correlated with father weekday and weekend engagement, weekday and weekend accessibility, and responsibility. Maternal satisfaction with father responsibility was positively correlated with only one of the six indices of father involvement, father accessibility on the weekend, r(68) = .26, $p = .03$. Consistent with the hypothesis, higher levels of maternal satisfaction with father involvement were associated with higher levels of father accessibility on the weekends.

For the second predictor, infant temperament, it was hypothesized that higher levels of difficult temperament would be associated with lower father weekday and weekend engagement, weekday and weekend accessibility, and responsibility. Only one of the three temperament factor, surgency/extraversion, was significantly associated with any of the indices of father involvement. Consistent with hypotheses, higher surgency/extraversion (characterized by more infant activity and reactivity) was correlated with lower father accessibility during the week,

r(62) = -.32, $p < .01$. Interestingly, the surgency/extraversion construct was also marginally significantly correlated with father accessibility on the weekends. Higher surgency/extraversion was correlated with lower father accessibility on the weekends, r(63) = -.24, $p = .06$.

For the last predictor, contextual factors, it was hypothesized that having a higher number of additional children in the family would be negatively associated with father weekday and weekend engagement, weekday and weekend accessibility, and responsibility with the infant. Contrary to prediction, having a higher number of additional children in family was associated with fathers being more accessible to the infant on the weekend, r(67) = .30, $p = .01$.

Next, we tested the second hypothesis, that the four predictors of father involvement would be associated with each other and that they would additively explain variance in father engagement, accessibility, and responsibility with the infant. Results from correlation tests are shown in Table 6. In addition to maternal depression AUC scores from birth to six weeks being positively correlated with maternal depression scores at three-months, as previously mentioned, the orienting/regulation factor of infant temperament was positively correlated with the surgency/extraversion factor, r(64), $p < .001$. No other predictors of father involvement were correlated with each other.

In terms of each predictor additively explaining variance in father involvement, we found that the predictors of number of additional children and maternal satisfaction with responsibility were both significantly correlated with higher levels of father accessibility on the weekends. To test the hypothesized additive relationship among predictors, a linear regression was used to determine if these two predictors independently explained father accessibility on weekend. Results from this analysis can be seen in Table 7. The demographic variable, number of additional children was added to the linear regression equation first, explaining 12.2% of the

variance in father accessibility. Maternal satisfaction was added in the second step. In this model, both variables were significant predictors of father accessibility on the weekend, and the two variables combined explained a total of 18.0% of the variance in father accessibility on the weekend. Thus, these results indicate that the number of additional children and maternal satisfaction with father responsibility are significant, independent predictors of father accessibility on the weekends. A higher number of additional children in family and higher levels of maternal satisfaction with father responsibility independently predict higher levels of father accessibility on the weekends.

Discussion

Although recent research has focused on how father involvement can serve to lessen the possible negative effects of maternal depression on the infant (Chang et al., 2007; Letourneau et al., 2009), limited research has explored what could predict father involvement when the mother has a history of depression or anxiety (Coley & Hernandez, 2006; J. H. Goodman, 2008). The present study explored three of Doherty and colleagues' (1998) possible predictors for father involvement during infancy among families in which all of the mothers had a history of depression or anxiety prior to the birth of the infant: maternal characteristics, infant temperament, and contextual factors. The present study hypothesized that maternal characteristics, infant temperament, and contextual factors would predict father involvement. Furthermore, it was hypothesized that the predictors would additively explain father involvement. Overall, the findings indicate that maternal depression, maternal satisfaction with father responsibility, infant temperament, and number of children in the family are all associated with at least one aspect of father involvement: weekday or weekend engagement, weekday or weekend accessibility, or perceived/desired responsibility. Caution should be taken in the

interpretation of these results, as it is possible that Type I error could have occurred due to the number of statistical tests run relative to the number of significant findings.

Research on the role of maternal depression predicting father involvement has yielded mixed findings. Some studies found lower levels of father involvement when the mother is depressed (J. H. Goodman, 2008), while others found that fathers have higher levels of involvement (Coley & Hernandez, 2006). Given that the sample in the present study was more similar to that of J. H. Goodman (2008), the present study predicted that higher levels of maternal depression would be associated with lower levels of father involvement. However, we found no support for this hypothesis. Rather, the one significant finding was in the opposite direction, more consistent with Coley and Hernandez (2006). Maternal depression from birth to six weeks was positively associated with father weekday engagement with their three-month-old infants. The higher the levels of the mother's depression in the early postpartum, the more the father was not only home, but also directly interacting with his three-month old infant. This finding is consistent with and builds upon the findings of Coley and Hernandez (2006), who found that, among low-income families, more maternal psychopathology symptoms were associated with higher levels of father involvement (Coley & Hernandez, 2006). Thus, our finding is important to the field because previously, this finding was only apparent in low-income families. The present study replicated the finding in a more middle-class sample of fathers. Furthermore, the study by Coley and Herdandez (2006) used a broad measure of maternal distress, whereas the present study measured depression symptoms, specifically.

This finding of more father weekday engagement with higher levels of maternal depression symptoms was specific to depression across the early postpartum time period. Future studies should explore this finding in order to find out why early postpartum depression has a

greater association with later father involvement at three months postpartum than postpartum depression at three months with father involvement at three months. The finding provides clarity to Doherty and colleagues' (1998) model, which did not predict a direction for the association between maternal depression and father involvement. Lastly, this finding has important implications for three-month old infants. Previous studies have reported that mothers experiencing depression often have interactions with their infants characterized by hostility and limited responsiveness (Field et al., 1988). Because the fathers in the present study have higher levels of engagement when the mother experienced higher levels of depression, the fathers could have the opportunity to serve as a buffer to the negative effects of maternal depression. Previous research on maternal depression and aspects of fathering found that the availability of support from the father during the first few years of life had a protective effect on the behavioral development of the infant (Letourneau et al., 2009).

In addition to predicting that maternal depression would be associated with father involvement, the present study explored an additional maternal factor – maternal satisfaction with father responsibility. This hypothesis stated that maternal satisfaction with father responsibility would be positively associated with father involvement. Partially supporting our hypothesis, we found that higher levels of maternal satisfaction with father responsibility were associated with higher levels of father accessibility on the weekend. This finding is consistent with Doherty and colleagues' (1998) model. Their theory suggested that fathers are particularly sensitive to conflict, thus it would stand to reason that when mothers are satisfied with the division of responsibility in caring for the infant, the fathers would be more involved with the infant than if the mothers were not satisfied, as this could create conflict. It is important to point out that higher levels of father accessibility indicate that the father was home or in the same

location as the infant, but not involved in a direct activity with the infant. However, previous research suggests that accessibility can refer to times when the father is participating in activities that indirectly support the infant, such as cleaning the infant's room, preparing bottles or a bath, or even working from home, providing financial support (Lamb, 2000, 2010). Overall, our finding is consistent with previous research, which has indicated that mothers' satisfaction with fathers' involvement is associated with fathers' reports of their own involvement (Beitel & Parke, 1998) and extends the finding to families of mothers with history of depression or anxiety.

Infant temperament was the second predictor explored in the present study. Previous literature suggested that father involvement can be particularly vulnerable to infant affect due to the notion that father involvement is more voluntary for the father than for the mother (Cabrera et al., 2000; Mehall et al., 2009). Doherty and colleagues (1998) suggested, and the present study predicted, that a more difficult infant temperament would be associated with lower father involvement. This hypothesis was partially supported. In fact, the surgency/extraversion scale was the only one of the three aspects of infant temperament associated with father involvement, and with only one aspect of father involvement. The higher the infant scored in surgency/extraversion, the less the father was accessible during the week. Being high in surgency/extraversion indicates that the mother rated the child as high in approach, vocal reactivity, intensity activity level, and perceptual sensitivity. In other words, these infants were high in activity and reactivity. Infants rated high in surgency/extraversion are typically more alert and are highly stimulated by even the slightest change in the environment (Gartstein & Rothbart, 2003). The finding that infants with higher levels of surgency/extraversion are associated with fathers being less accessible during the week is of concern given previous

findings that more difficult infants are likely to have less healthy and active interactions with their caregivers (Mehall et al., 2009).

For the last predictor, contextual factors, the hypothesis predicted an association between the number of additional children in the family and father involvement. Given that previous literature indicated that the role of the father in the life of his child is more contextually sensitive than that of the mother (Doherty et al., 1998), the present study hypothesized that more children in the family would be associated with less father involvement. This hypothesis was not supported. Having more additional children in the family was actually associated with higher father accessibility, although only on weekends. The finding is interesting in that it is specific to accessibility rather than engagement, where engagement means that the father was involved directly with the infant. Fathers had been theorized to be less involved in caring for their infant because they are caring for their older children (Mehall et al., 2009). Future studies might benefit from expanding the measurement of accessibility to include data on the father's activities. If the father is only accessible to, but not engaged with, the infant on the weekends, and this is because he is involved in activities that support the mother, such as caring for the older children, this could still be beneficial to the mother and the infant. Research has found that mothers with depression report more contextual difficulties in their families compared to reports from mothers without depression, but that father involvement could help reduce these contextual risks (Cicchetti et al., 1998). It seems that fathers in the present study have the opportunity to reduce some of the contextual risks because they are more accessible to the infant when there are a higher number of additional children in the family, thus giving them the possibility to indirectly support the mother and the infant.

In addition to the theory that maternal factors, infant temperament, and contextual factors would predict father involvement, Doherty and colleagues (1998) also theorized that the predictors of father involvement would be associated with each other and would additively explain father involvement. In the present study, the two measures of maternal depression were associated with each other and two aspects of infant temperament were associated with each other, but different predictors of father involvement were not found to be significantly correlated with each other.

Two predictors – number of children in the family and maternal satisfaction with father responsibility – were both positively associated with the same index of father involvement – accessibility on the weekends. A higher number of additional children in the family and higher levels of maternal satisfaction with father responsibility were independently associated with higher levels of father accessibility on the weekends. This indicates that these two predictors separately add to the variance in father accessibility on the weekend and support the hypothesis that the predictors of father involvement independently explain father accessibility. Interestingly, the surgency/extraversion aspect of infant temperament was marginally negatively associated with father accessibility on the weekends. Future studies should further explore father accessibility on the weekends, as this seems to be a particularly sensitive index of father involvement.

Although the predictors of father involvement were not correlated with each other, the different indices of father involvement were. Specifically, father weekday engagement was negatively correlated with father weekday accessibility and father weekday engagement was negatively correlated with father weekend accessibility. The constructs of engagement and accessibility are unique indices of father involvement because they are mutually exclusive. In

the present study, when the father was engaged with the infant, he was not considered to be accessible; similarly, when he was accessible to the infant, he was not considered to be engaged. This created a ratio score, in that the more the father was in engaged during the 24-hour period, the less of an opportunity he had to be accessibility to the infant.

Strengths and Limitations

This study improved upon previous research by including fathers' own reports of engagement and accessibility and both fathers' and mothers' reports of perceived responsibility and desired responsibility in a study of the predictors of father involvement with their three month old babies in families where mothers have a history of depression or anxiety. Additionally, in order to limit the shared-variance, fathers and mothers reported separately on different variables. Fathers reported their own perceived and desired responsibility, engagement, and accessibility, while mothers reported on their own depression, perceived and desired responsibility and the infants' temperament. The present study added to previous findings that father involvement when the mother is depressed buffers the risk of negative outcomes for the infant by examining predictors of higher levels of father involvement. Lastly, the present study examined multiple predictors described in Doherty and colleagues' (1998) theory, whereas other studies typically tested one or two predictors.

Although the present study had many strengths, the limitations of the study should be noted. First of all, caution should be used when interpreting the results of this study, as Type I error needs to be accounted for due to the number of significant findings relative to the number of statistical tests run. One limitation was that engagement and accessibility data were collected only from the father. It would be beneficial for future studies to collect measures on all three of Lamb's (2000, 2010) components of involvement from both the mother and the father. This

would allow researchers to compare mothers' perceptions of engagement, accessibility, and responsibility to fathers' perceptions of the three components. This is potentially important because Lamb (2010) suggests that, in the context of maternal depression, mothers' perceptions of father involvement could have an impact on the mothers' psychological well-being. Finally, caution should be used when generalizing the findings of this study. Because the nature of this study was to explore fathering predictors in a sample of women with a history of depression or anxiety, the findings cannot be generalized beyond this population.

Implications and Future Directions

There are many implications based on the findings of this study. First, the findings of this study indicate that there is no single predictor of father involvement and predictors differ depending on the component of father involvement. Future research testing interventions designed to enhance father involvement in families with depressed mothers might benefit from taking a broad approach to the targets of intervention, incorporating a multi-variable model.

More research is also needed to explore additional predictors in Doherty and colleagues' (1998) model, beyond those examined in the present study. Marital satisfaction from both the mother and the father and father psychological status are also proposed as having an influence on father involvement (Doherty et al., 1998). Additionally, future studies should look at the predictors of father involvement longitudinally. The present study had only one time point, but planned analyses from this same study will examine how the predictors change and develop over time in relation to father involvement and to each other. It is possible that different predictors have more or less of an influence during later infant development relative to early infancy. This could potentially be important for interventions aimed at helping fathers increase their involvement with their infant by focusing on different predictors at different time periods.

Lastly, depression in fathers, both during the prenatal and post-partum periods, has only recently become a topic of interest (Davis, Davis, Freed, & Clark, 2011; Paulson & Bazemore, 2010; Ramchandani, Stein, Evans, & O'Connor, 2005; Ramchandani et al., 2008). The studies that have explored depressed fathers' interactions with their infants have found that these fathers have more negative interactions compared to nondepressed fathers (Davis et al., 2011). Furthermore, paternal depression has a moderate positive correlation with maternal depression (Paulson & Bazemore, 2010). However, even when maternal depression is controlled for, children of fathers who were depressed during the postnatal period are at an increased risk for behavioral problems by age three-and-a-half (Ramchandani et al., 2005). Future studies should examine both maternal and paternal depression and its effects on infant development. Exploring how maternal and paternal depression affect families and infant development is critical for development of interventions with these possibly at-risk families. Furthermore, a recent study found that factors similar to those that are hypothesized to predict father involvement also predict postpartum depression in fathers – lower education level, additional children, and maternal prenatal depression (Ramchandani et al., 2008). Given this, exploring predictors of father involvement in fathers experiencing depression could be critical for fostering a healthy developmental trajectory in infants.

Conclusions

Results of the present study contribute significantly to the research on father involvement and even more so to the research on fathering in the context of maternal history of depression and anxiety. The three predictors of maternal factors, infant temperament, and contextual factors were all significantly correlated with different aspects of father engagement, accessibility, or responsibility. Furthermore, these findings were apparent as early as three-months postpartum,

indicating that studying father involvement during early infancy, specifically in families where mothers have a history of depression or anxiety, may provide critical information useful in facilitating the healthy development of the infant. The findings also indicate that there is no single predictor of father involvement in families of mothers with histories of depression or anxiety, and thus father involvement must be viewed as a complex construct.

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Table 1
Demographic Data

Maternal Data (n=70)	M (SD)/ %	Range
Age	33.54 (4.45)	23.3 – 44
Years of Education	16.86 (1.85)	13 – 21
Hollingshead	52.82 (10.16)	23 – 66
Marital Status		
Married	92.9%	
Not married, living with partner	2.9%	
Not married, not living with partner	4.3%	
Employment		
Employed Full time	64.6%	
Employed Part time	17.1%	
Race/Ethnicity		
White	88.6%	
African American	8.6%	
Asian	2.9%	

Father Data (n=20)	M (SD)/ %	Range
Age	35.79 (6.30)	26 – 52.9
Hollingshead	53.17 (9.87)	26 – 66
Race/Ethnicity		
White	75%	
African American	15%	
Asian	2.9%	
Native American	5%	

Table 2
Descriptive Statistics Mean

Variable	n	M (SD)	Range
Maternal Variables			
BDI-II at 3months post-partum	68	9.66 (7.95)	0 - 35.00
Satisfaction with father responsibility	71	12.54 (10.51)	0 - 45.00
Number of additional children	70	.61 (.82)	0 - 4.00
Infant Variables (IBQ-R)			
Surgency/Extraversion	64	4.20 (.07)	2.58 - 5.60
Negative Affectivity	64	3.53 (.37)	2.72 - 4.39
Orienting/Regulation	64	5.14 (.55)	4.13 - 6.80
Paternal Variables			
Father engagement – Weekday (hrs)	80	4.18 (3.15)	0 - 13.00
Father engagement – Weekend (hrs)	79	8.31 (3.90)	0 - 22.67
Father accessibility – Weekday (hrs)	80	11.12 (4.14)	0 - 21.00
Father accessibility – Weekend (hrs)	79	12.75 (4.16)	.67 - 24
Perceived responsibility	80	51.27 (9.82)	25 - 72
Desired responsibility	80	56.26 (10.03)	35 - 72

Table 3

Parenting Variable Correlations

Variable	1	2	3	4	5	6	7	8	9
1. Fathers' perceived responsibility	-								
2. Mothers' perceived responsibility	.61**	-							
3. Fathers' desired responsibility	.77**	.49**	-						
4. Fathers' satisfaction with responsibility	-.49**	-.30*	.17	-					
5. Mothers' satisfaction with responsibility	-.16	-.62**	-.15	.04	-				
6. Father weekday engagement	.10	.22	.02	-.11	-.14	-			
7. Father weekend engagement	-.07	.06	-.18	-.12	-.18	.42**	-		
8. Father weekday accessibility	-.02	.01	.02	.06	.10	-.29**	-.45**	-	
9. Father weekend accessibility	.01	-.14	.02	.02	.26*	-.39**	-.58**	.54**	-

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

Table 4

Correlations of Fathering Variables

Variable	1	2	3	4	5	6
1. Father weekday engagement	-					
2. Father weekend engagement	.42***	-				
3. Father weekday accessibility	-.29**	-.45***	-			
4. Father weekend accessibility	-.39***	-.58***	.54***	-		
5. Father perceived responsibility	.10	-.07	-.02	.01	-	
6. Father desired responsibility	.02	-.18	.02	.04	.77**	-

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

Table 5

Correlations of Predictors and Fathering Variables

Variable	Maternal Depression Birth-6wks	Maternal Depression 3-months	Maternal Satisfaction w/ Father Responsibility	Infant Negative Affectivity	Infant Surgency/ Extraversion	Infant Orienting/ Regulating	Additional Children
Father weekday engagement	.26*	.03	-.14	-.03	.00	.04	-.15
Father weekend engagement	.19	.08	-.18	.05	.18	.01	-.19
Father weekday Accessibility	-.10	-.01	.10	.04	-.32**	-.17	.17
Father weekend Accessibility	-.09	.03	.26*	.07	-.24	-.08	.30*
Father perceived responsibility	.16	.11	-.16	.12	.09	.06	-.14
Father desired responsibility	.08	.07	-.15	.06	.13	-.02	-.13

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

Table 6

Correlations of Predictors

Variable	1	2	3	4	5	6	7
1. Maternal depression: Birth-6wks	-						
2. Maternal Depression: 3-months	.50**	-					
3. Maternal Satisfaction with father involvement	-.10	.18	-				
4. Infant Negative Affectivity	.08	.17	.12	-			
5. Infant Surgency/Extraversion	.06	.01	-.14	.19	-		
6. Infant Orienting/Regulation	-.01	.05	.03	-.06	.58**	-	
7. Additional children	.09	-.09	-.02	.21	-.23	-.10	-

Note: ** $p < .01$

Table 7
Predictors of Father Accessibility

	Maternal Satisfaction with Father Responsibility		
		Model 2	
Variable	Model 1 *B*	*B*	95% CI
Constant	11.64***	10.46**	8.80, 12.12
Additional Children	1.88**	1.90**	.65, 3.14
Maternal Satisfaction with Father Responsibility		.10*	.004, .19
R^2	.12	.18	
F	8.63**	6.71**	
ΔR	.06		
ΔF	1.91		

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