

**The Role of Touch and Parental Depression in the Development of the Mother-
Infant and Father-Infant Attachment Relationship**

By

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Infant and Father-Infant Attachment Relationship**

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Abstract

Attachment refers to the relationship that the infant forms with their mother and father in regards to trusting their caregiver to meet their needs. Past research has primarily focused on the mother-infant dyad when observing attachment, with little to no research conducted with the father-infant dyad. A component of attachment is sensitivity, which refers to the parent being able to notice and understand an infant's cues and responding in a timely manner. One factor of sensitivity is touch, since it can help regulate the child's emotions and be a way for the parent to communicate to their infant. This study was conducted to better understand how fathers form attachment with their infants, and to see if there was any difference in touch that mothers and fathers use when participating in the Still Face Paradigm. Both mothers and fathers were studied to see if depressed mothers and fathers interacted with their infant differently from those who are not clinically depressed. Infants ($n = 101$) at the age of six months and both their parents participated in the Still Face Paradigm. Touch was coded on a second by second coding system during the free play and reunion episode. The results revealed that depressed mothers performed more active accompaniment and attention getting touch during the reunion episode, while depressed fathers performed more active accompaniment touch attention getting touch in the free play episode. Other results revealed that resistant infants received more utilitarian touch and attention getting touch from their mothers during the free play episode. This demonstrates that touch can differ depending on attachment style and that depressed parents do not perform less touch or negative touch behaviors as previous research has thought.

The Role of Touch and Parental Depression in the Development of the Mother-Infant and Father-Infant Attachment Relationship

Recent decades have witnessed a shift in gender roles with respect to caregiving. It was once thought that a mother's job was to be the primary caregiver while the father worked outside the home and had minimal caretaking responsibilities. These changes in societal attitudes have been accompanied by an increase in research examining the role of the father and the effects of father behavior on children's development (Hawkins & Palkovitz, 1999). One area of particular interest is the attachment relationship, since research has shown that the quality of the parent-child relationship is critical for the child's social, emotional, and cognitive development. The child learns to interact with the world around them and gets a better understanding of who they are as they mature (Steele & Steele, 2005). Research with mothers has found that maternal sensitivity (Ainsworth, Blehar, Waters, & Wall, 1978), maternal mental health (Burstein et al., 2012; Cummings & Davies, 1994; Downey & Coyne, 1990; Seifer & Dickstein, 2000) and maternal touch (Arnold, Jean, & Stack 2014) are particularly important for the development of the attachment relationship. However, there is a lack of research examining predictors of the father-child attachment relationship. Thus, the purpose of the current longitudinal study was to examine the contribution of paternal touch and paternal depression to the father-infant attachment relationship.

Attachment Theory

Attachment theory has been influential in understanding the importance of caregiving in children's development (Ainsworth & Bowlby, 1991). Bowlby used an ethological perspective to describe how infants are dependent on their caregivers not only for food and shelter, but also for

warmth and comfort (Bowlby, 1969, 1973, 1980). When the infant perceives a threat, the attachment behavior system is activated, which elicits behaviors designed to achieve and maintain proximity to the caregiver (e.g., crying, clinging). According to Bowlby (1973), by 12 months the infant has developed an internal working model from interactions with their caregiver. Internal working models help infants interpret and guide their interactions with attachment figures. If the parent is consistent in their care and are emotionally responsive, the infant develops a positive internal working model that caregivers can be trusted in times of need.

The Strange Situation Paradigm (SSP; Ainsworth, 1969) was developed to assess the quality of the parent-child attachment relationship. The purpose of the SSP is to activate the attachment behavior system and this is accomplished through episodes of increasing stress, via a series of separations from the caregiver and subsequent reunions. Infant behavior during the reunion episodes is assessed and infants are classified into one of three attachment categories: secure, insecure-avoidant, insecure-resistant. During the reunion episode, infants classified as secure will seek proximity and contact with the caregiver, and then will resume their exploration and play time. The secure infant knows and trusts that their caregiver is sensitive to their needs and will provide them comfort. The second classification is insecure-avoidant and during the reunion episode the infant avoids being close to the caregiver and stays focused on playing with toys. However, after some time elapses, the infant may look for some contact from the caregiver, but generally refrains from showing any outward signs of negative emotions. This is likely because the infant has experienced moments when their caregiver rejected their bids for proximity and comfort. The third classification is insecure-resistant. In contrast to the insecure-avoidant classification, these infants do show their distress by crying even when the caregiver returns. Insecure-resistant infants struggle with wanting to seek proximity to their caregiver, but

at the same time they express anger toward the caregiver once they achieve contact. Insecure-resistant infants have learned through past experiences that their caregiver has been inconsistent in their sensitivity and availability. Since the development of the attachment classification system, decades of research has been conducted to examine the predictors and outcomes associated with each classification.

Predictors and Outcomes of Attachment Relationship

There is a considerable amount of research highlighting the importance of a secure attachment relationship for later outcomes in a variety of domains (Hazan & Shaver, 1987; Kochanska & Kim, 2013; Steele & Steele, 2005). For example, a secure attachment relationship in infancy is associated with later romantic relationships that are characterized by high levels of trust and overall positive emotions (Hazan & Shaver, 1987). Attachment also influences how the child interacts with the outside world and how they understand themselves. According to Steele and Steele (2005), the parent-child attachment relationship is important for the child's understanding of who they are as an individual and how they view themselves, for dealing with inner conflicts, and the child's competence with school and peers. According to some research (Kochanska & Kim, 2013), having a secure attachment relationship with one parent can protect against the development of later behavior problems if a child has an insecure attachment relationship with the other parent. However, if a child has an insecure attachment relationship with both parents, then they would be at the highest risk of developing psychopathology (Kochanska & Kim, 2013).

Given the importance of a secure attachment relationship for later developmental outcomes, researchers have identified several factors that predict the development of a secure attachment relationship. One of the predictors of a secure infant-parent attachment is parental

sensitivity. Sensitivity refers to the parent being able to notice and understand an infant's emotional cues and responding appropriately and timely (Ainsworth, Blehar, Wall, & Waters, 1978). Consistent, sensitive responding leads the infant to believe that they can trust their caregiver to respond to their needs quickly and will give them comfort when in times of distress (Ainsworth, 1969). An example of this would be a parent who is tickling their infant and being able to pick up on the infant's signals that are saying "I'm over stimulated" and then changing their behavior. Research has shown that mothers who were more sensitive to their infant's' needs during the Still-Face Paradigm (SFP) had infants who showed more positive emotions, less gaze aversion, and fewer instances of avoidant and resistant behavior toward their mothers (Carter & Kogan, 1996). A meta-analysis of the association between maternal sensitivity and infant attachment classification found a small effect size of .24 (van IJzendoorn & de Wolff, 1997) and the effect size for the association between maternal sensitivity and infant positive affect was .45 (Bakersmans-Kranenburg & van Ijzendoorn, 2009). In sum, patterns of sensitive responses to infants needs during the first year of life are associated with a secure parent-child attachment relationship.

One component of sensitive responding that has received less attention is touch. As previously stated, parents that are sensitive to their infants' needs will adapt their responses to meet whatever need the infant may have (Cole, Dennis, & Martin, 2004; Gianino & Tronick, 1988). Research has shown that mothers accomplish this through several modalities, such as vocalizations, gaze, facial expressions, and touch (Hertenstein, 2002; Jean & Stack, 2011). Touch allows a mother to modulate their infant's behaviors and emotions (Stack, 2010; Tronick, 1995). Research has shown that during the SFP, maternal touch lowered an infant's physiological stress, such as cortisol levels (Feldman et al., 2010). According to Arnold, Jean,

and Stack (2014), there are different types of touch that a caregiver may use that have specific purposes. These include (a) nurturing, where touch is very soothing and slow (e.g., stroking or massaging), (b) playful, where touch is active, repetitive, and fast paced (e.g., tickling, squeezing, extending or flexing the infant's arms and legs), and (c) attention getting, where touch serves to get the attention of the infant (e.g., patting, squeezing, or stroking the infant). Arnold, Jean, and Stack (2014) observed maternal touch during a modified version of the SFP. This study was designed to examine how maternal touch and infants' emotional and behavioral regulatory behaviors were related. Research has shown that it is not just the presence of passive touch but the use of active touch that modulates the SFP effect. The qualities in the type of touch mothers' use are important for the infants' regulatory process (Muir & Stack, 1992).

Another factor that may impact the developing parent-infant attachment relationship is the mental health status of the parent. There is a considerable amount of research focusing on maternal psychopathology, specifically depression, and how it affects the mother-child relationship and the child's development (Beck, 1995; Campbell et al., 1992, 1995; Coyne & Downey, 1990; Edhborg et al., 2001; McCabe, 2014; Murray et al., 1999; Nagata et al., 2004; Toth et al., 2009;). With respect to the attachment relationship, maternal depression has been associated with lower rates of secure attachment (Goodman & Gotlib, 1999, 2002; Lyons-Ruth et al., 1990; Lyons-Martins & Gaffan, 2000; Murray, 1992; Teti et. al, 1995). One possible explanation for this association is that maternal depression is associated with poor maternal sensitivity (Ammaniti et al., 2007). Depressed mothers are less likely to pick up on the child's emotional cues (e.g., crying, fussing), and fail at soothing the child (Tronick, 2005). They are also less likely to communicate positive emotions, and are more susceptible to the distress of their infants (Beebe & Lachmann, 2014; Goodman et al., 2011). The behaviors of a depressed

mother can vary, with some being intrusive and showing angry facial expressions, while others show sadness and seem withdrawn (Tronick & Weinberg, 1997). Intrusive mothers have been shown to treat their child in a more severe manner, talk to the infant with an angry tone of voice, and interfere with the child's activity. Withdrawn mothers, on the other hand, seem to interact with their child in lesser degrees. They are seen as emotionally flat and not supportive of their infant's activities. All of these behaviors are important for the development of a secure attachment relationship.

The Development of the Father-Child Attachment Relationship

The majority of research on the parent-child attachment relationship focuses on mothers. Indeed, fathers are relatively neglected despite their important role in children's development. A father's emotional investment with their child is associated with overall well-being, cognitive development, and social competence as young children (Amato & Rivera, 1999; Kindlon, Earls, & Yogman, 1995). Fathers have also been important in the development of children's emotional regulation and control (Gottman, Hooven, & Katz, 1997). Some evidence for the importance of father involvement comes from studies of single parent families, which has increased in recent years (U.S. Bureau of the Census, 1998). Children with absent fathers have poor academic achievement and greater chances of risk-taking behavior (Federal Interagency Forum on Child and Family Statistics, 1998). For boys, growing up without a father figure increases their risk of having difficulties with gender-identity development, academic achievement, psychosocial adjustment, and self-control (Hetherington & Stanley-Hagan, 1986). Fathers are important for the child's social, emotional, and cognitive development, and children are at a higher risk of maladjustment when a father is not involved.

The importance of fathers for children's development may be due to the way in which they interact with their children. Research has found that fathers typically use more physical stimulation, such as touch, and interact with their child in a more playful, rough and tumble way compared to mothers (Parke & Tinsley, 1987). When a child is upset, they typically seek their mother for comfort, whereas when they want to play, they seek out their fathers (Frodi, Frodi, Hwang, & Lamb, 1982). Although there may be differences in the interaction styles of mothers and fathers, research has found that mothers and fathers are equally sensitive and that there is a range of levels of sensitivity expressed by mothers and fathers (Braugnart-Rieker, Garwood, Powers & Notaro, 1988; Diener, Frosch, Mangelsdorg, & McHale, 2002). Their different types of touch, however, can encourage the child to seek a certain parent when in need or distress.

In addition to similar levels of sensitivity, the rates of secure attachment are comparable for mothers and fathers. For example, Braungart-Rieker, Courtney, and Garwood (1999) evaluated the infant's attachment style with both mothers and fathers when the infant was 12 months of age. They found similar rates of secure attachment classifications with mothers and fathers. However, fathers had a higher occurrence of insecure-resistant attachment compared to mothers. It is possible that this is because fathers spend more time working outside the home and the stressors of work spill over to impact interactions with their child. There could be other factors that explain the elevated rates of insecure-resistant attachment since a meta-analysis of the association between paternal sensitivity and father-infant attachment was quite low (van IJzendoorn & de Wolff, 1997). One possible behavior is that of father touch. Given that fathers typically engage in more rough and tumble play the global construct of sensitivity may not capture the behaviors that fathers typically engage. Therefore, the purpose of this study was to

examine one component of father behavior, touch, to determine its impact on the father-child attachment relationship.

Although research surrounding maternal mental health is plentiful, the focus on paternal mental health has been lacking since perinatal mental health has been seen as something that is relevant only to women (Kim & Swain, 2007; Musser et al., 2013; Roubinov et al., 2014). However, there has been a significant amount of evidence that suggests that fathers, who are just as much at risk for experiencing postpartum depression during this transition, are not being screened for, diagnosed, or treated regularly (Musser et al., 2013). Research has shown that nearly 10% of men experience perinatal depression (Bazemore & Paulson, 2010) and fathers with perinatal depression are less likely to be engaged with their children in activities such as singing, reading, and storytelling, which are all thought to be enriching to the child's development (Dauber, Leiferman, & Paulson, 2016). Children whose fathers have postpartum depression were at increased risk for behavioral problems, such as hyperactivity and conduct problems (Ramchandani et al., 2005).

There are a variety of factors that may contribute to fathers experiencing perinatal depression. First, the transition to parenthood is difficult, with a lack of sleep and having to take time off of work, which can increase anxiety. The relationship between the mother and father also shifts as now their main focus is not on each other, but on their newborn. Men in general struggle with a gender role conflict, in that they have to be tough and masculine because that is what society expects of them (O'Neil, 1990, p. 25). Therefore, when a father is trying to interact and bond with his infant, he may have trouble in displaying nurturing behaviors such as cooing, soothing, and hugging, because these behaviors are considered feminine and for the role of the mother only. When the father becomes stressed, they may channel their anger and frustration into

withdrawing from their child, which can lead to lower levels of attachment security between the father and the child (Levant, 1995). Thus, just as maternal depression can negatively impact the developing mother-child attachment relationship, it is conceivable that paternal depression may similarly impact the developing father-child attachment relationship.

The Current Study

The purpose of the current study was to examine predictors of the father-child attachment relationship in comparison to the mother-child attachment relationship. First, I examined the extent to which paternal touch, a component of sensitivity, during face-to-face interactions predicted subsequent father-child attachment classification. Due to the lack of research on paternal touch, this research question was exploratory. However, based on previous research with mothers I expected that fathers who used nurturing, playful, and active types of touch would have a secure attachment relationship compared to fathers who used passive touch. Next, I examined the effect of paternal depression on the developing father-infant attachment relationship. Based on existing research with mothers, I predicted that fathers with elevated depressive symptoms were less likely to use touch to interact during the face-to-face interaction. In addition, higher depressive symptoms would also predict an insecure father-child attachment relationship.

Method

Participants

The total sample consisted of 101 infants (50.5% female, 49.5% male) and their parents (mothers and fathers). Several methods of recruitment were used: flyers distributed at local events and at area resource centers who provide services to families with young children. In order to qualify for the study, the infants must have been born full term (minimum 35 weeks

gestation), have no known medical condition, and lived in a household with both parents. Mothers ranged in age from 20.74 to 48.65 years ($M= 32.20$, $SD = 4.53$ and fathers ranged in age from 24.26 to 61.34 years ($M= 34.23$, $SD= 5.77$). Mothers were predominantly Caucasian (89.4%) with the remaining mothers identifying as African American (7.7%), Native American/Aleutian Islander (<1%), Asian or Pacific Islander (<1%), or other (<1%). Fathers were mostly Caucasian (87.5%) with the remaining fathers identifying as African American (9.6%), Native American/Aleutian Islander (<1%), Asian or Pacific Islander (1.9%), or other (<1%). For household income, 8.9% of families reported a household income of US \$40,000-US \$74,999. The remaining 81.2% reported a household income greater than US \$74,999, and 10% reported a household income lower than US \$40,000. Finally, 80.2% of mothers reported having received a college degree and 67.3% of the fathers reported having received a college degree.

Procedure

Parents who agreed to participate in the study were sent a packet of questionnaires to fill out and bring with them to the visit. During the visit, infant-parent interactions were video-recorded using two separate video cameras: one focused on the infant in the high chair and the other on the parent sitting in front of the child. The video cameras recorded onto a split screen so that coders were able to see both the parent and the infant simultaneously. Families were given a \$25 gift card per visit to compensate for their participation.

The parents filled out a few consent forms to give permission for the infant to participate and a media consent form. The parents were randomly assigned as to who would go first in participating in the SFP (Tronick et al., 1978). The first parent to go went in and put the child in a high chair and sat in front of the infant face to face. The SFP has three episodes, 2 minutes each. First was the play episode, where the parent was told to interact with their infant

just like they would if they were home until they heard the experimenter come over the intercom. This began the still-face episode in which the parent stopped playing the infant and kept an expressionless, or “still”, face. The experimenter would come on over the intercom and tell the parent to resume playing with their infant, which began the reunion episode. If at any point during the still face or reunion episode the infant became overly distressed for more than 30 seconds (i.e. hard crying, screaming), the episode was cut short. After the reunion episode was completed, and the child reached a positive or neutral state, the second parent came in and repeated the same steps. The parents’ touch was coded during the free play and reunion episode.

Measures

Parental Touch. Parental touch was coded second-by-second during the free play and reunion episodes of the SFP using the valid and reliable Functions of Touch Scale (FTS; Jean & Stack, 2009, 2012). The presence or absence of eight functions of touch codes were coded each second. Playful touch was characterized as being active and playful, often fast paced and repetitive (i.e., singing, “I’m going to tickle you”, making noise). Active accompaniment was defined as active touch, with no game aspect, that served as an accompaniment to another modality of communication (i.e., talking to the infant). Passive accompaniment referred to touch that was passive (i.e., placing hands on the infant’s legs with no movement). Nurturing was characterized as soothing touch and down slowly in an attempt to regulate infant’s negative affect (i.e., kissing, rubbing the infant). Utilitarian touch was defined as touch used to accomplish a task (i.e., removing the infant’s hands from his/her mouth, adjusting the infant in the seat, and moving the strap). Attention-getting touch was characterized as using touch to getting the baby’s attention (i.e., moving hands while saying the infant’s name or “hey”). Accidental touch was coded when the touch was unintentional. Harsh or negative touch was

defined as touch serving to control the infant's behavior and was usually intrusive and done in a negative manner. Finally, unspecified function was characterized as no apparent function for touch (i.e., the parent seems to be touching for touching). Touch was coded by two reliable coders who overlapped on 20.83% of the mother videos and 20.88% of the father videos. Reliability was calculated for each behavior across episodes of the SFP. The Kappa value for mothers during the free play was .88 and .81 during the reunion episode. The Kappa value for fathers during the free play was .81 and .81 during the reunion episode.

Parental Depressive Symptoms. Parents completed the Center for Epidemiologic Studies Depression Scale (CESD), a reliable and valid measure of depression symptoms (Radloff, 1977). The scale has 20 items, which represent different symptoms of depression, and parents reported how often they experienced each symptom in the past week on a 4-point Likert-type scale (0 = rarely or none of the time; less than one day to 3 - most or all of the time; 5-7 days). Sample items include "I could not get 'going'," "I felt lonely," and "I feel that I could not shake off the blues even with help from my family and friends." After reverse coding four of the items, the sum of the scores were calculated where higher scored indicated a higher level of reported depressive symptoms. Internal consistency for mothers was .82 and .75 for fathers.

Attachment. Infants' attachment classifications, coded from the Strange Situation, received a primary code of organized attachment (Ainsworth et al., 1978)—insecure–avoidant (A), secure (B), insecure–ambivalent (C). A three-person coding team (primary coder trained at the University of Minnesota and two secondary coders who attained reliability with University of Minnesota tapes) rated attachment from the Strange Situation. Characteristics that were looked for in the infants were proximity seeking, contact maintenance, resistance and avoidance and were rated during the reunion episode. For secure babies, group B, their behavior is described as

actively seeking proximity and contact with the mother, with little to no resistance or avoidance. Once contact begins, the infant wants to maintain it, and resists being put down. For avoidant babies, group A, their behavior is described as avoiding being close to or interacting with the mother (i.e. turning away, not looking at the mother). They tend to treat the stranger as much as the mother is treated, but sometimes with less avoidance. If they are picked up, they do not seem to try to maintain contact or resist being put down like secure babies. With resistant babies, group C, their behavior is described as seeking proximity and contact, and wanting to maintain contact, but also seemed to be more angry than the other groups. Sometimes these infants want proximity, but once contact begins, they become distressed and angry. These behaviors were coded on a 7 point scale, with 1 being no display of the behavior and 7 being very active and persistent in the behavior. Depending on the scoring of these behaviors, infants were classified into the different styles of attachment. To calculate interrater reliability, 33.7% of the infant–mother tapes and 23.5% of the infant–father tapes were coded by both raters and yielded a Kappa value of 1.00 for both mothers and fathers during the Strange Situation.

Role of the Father. Fathers' views on their role in their child's development was coded from The Role of the Father Questionnaire (ROFQ) (Palkovitz, 1984). This 15 item survey allows the subject to indicate how much they agree or disagree with each statement on a 5-point scale (a= agree strongly, e= disagree strongly). The letters were converted to numerical values (a = 5, b = 4, c = 3, d = 2, and e = 1). Three of the fifteen items were reverse coded. Scores can range from 15 to 75. A higher score indicates attitudes that believe that fathers are capable and need to be involved in their child's life and sensitive to their child's needs. For the present sample, Cronbach's alpha was calculated for the current study and yielded a score of .66.

Results

Covariate Analyses

To identify potential covariates to include in analyses, relationships between demographics (child age, child gender, child ethnicity, household income, parent education) and the identified outcome variables were examined. Analysis of variance (ANOVA) was used for categorical demographic variables whereas Pearson correlations were used for continuous variables. Father education was significantly related to utilitarian touch with fathers during free play $F(5, 83) = 2.71, p = .026$, active accompaniment touch with fathers during reunion $F(5, 83) = 3.73, p = .0040$, and utilitarian touch with mothers during free play $F(5,88) = 9.95, p = .000$. These variables were controlled for whenever one of these variables was the dependent variable. Household income was significantly related to utilitarian touch with mothers during the free play episode, $F(1, 94) = 10.50, p = .002$. Child ethnicity was significantly related to nurturing touch with fathers during the free play episode, $F(1, 88) = 5.81, p = .018$. Child gender was significantly related to playful touch with mothers during the free play episode, $F(1, 94) = 5.35, p = .023$.

Descriptive Analyses

Descriptive statistics are presented in Table 1. Correlations between mother touch and mother depressive symptoms, as well as father touch and father depressive symptoms and role of the father are shown in tables 2-5. According to these findings, mother's depressive symptoms were positively correlated with maternal active accompaniment touch in the reunion episode, $r = .21, p = .04$ and maternal attention getting touch in the reunion episode, $r = .28, p = .01$. Father

depressive symptoms were correlated with paternal active accompaniment touch in the free play episode, $r = .23, p = .03$, and father attention getting touch in the free play episode, $r = .25, p = .02$. Father's beliefs about the role of the father was correlated with father touch in the reunion episode, $r = .24, p = .03$. Of the 101 infants in the study, 70.3% of infants had a secure attachment with their mother, 9.9% of infants had an avoidant attachment with their mother, and 7.9% of infants had a resistant attachment with their mothers. With fathers, 65.3% of infants had a secure attachment with their father, 10.9% of infants had an avoidant attachment with their father, and 7.9% of infants had a resistant attachment with their father.

Parent Differences in Touch

As seen in Tables 1–4, mothers engaged in more passive accompaniment in the free play episode ($M = .10, SD = .13$) than fathers ($M = .05, SD = .09$), $F(1, 185) = 11.31, p \leq .001$. Fathers performed more active accompaniment in the free play episode ($M = .24, SD = .20$) than mothers ($M = .13, SD = .15$), $F(1, 185) = 17.45, p \leq .001$. Fathers performed more attention getting in the free play episode ($M = .02, SD = .03$) than mothers ($M = .01, SD = .02$), $F(1, 185) = 5.47, p = .020$. Mothers performed more nurturing in the reunion episode ($M = .03, SD = .09$) than fathers ($M = .01, SD = .04$), $F(1, 185) = 3.79, p = .053$. Fathers performed more attention getting in the reunion episode ($M = .02, SD = .04$) than mothers ($M = .01, SD = .02$), $F(1, 185) = 3.91, p = .050$. Controlling for income, utilitarian during free play differs by parent, $F(1, 184) = 4.5, p = .035$. Mothers performed more utilitarian touch in the free play episode ($M = .04, SD = .05$) than fathers ($M = .02, SD = .03$).

The Relationship between Parent Characteristics and Parental Touch

A linear regression was conducted to examine the relationship between parent characteristics and touch. Controlling for child gender, maternal depressive symptoms predicted

an increased amount of time doing active accompaniment in the reunion episode, $b = .008$, $SE = .003$, $p = .023$. An increase in maternal depressive symptoms was associated with an increase in attention getting touch during the reunion episode, $b = .001$, $SE = .000$, $p = .006$. An increase in paternal depression predicted an increase in active accompaniment during the free play episode, $b = .009$, $SE = .004$, $p = .034$. Increased paternal depressive symptoms predicted increased attention getting touch during the free play episode, $b = .001$, $SE = .001$, $p = .021$. Finally, the view of the role of the father, which was reported by the father, was associated with an increase in touch during the reunion episode, $b = .011$, $SE = .005$, $p = .029$.

Parental Touch and the Parent-Child Attachment Relationship

In order to determine how touch varied based on infant attachment style, a one way analysis of variance was conducted. Maternal utilitarian touch significantly differed by attachment style, $F(2, 83) = 4.60$, $p < .05$. A Bonferonni adjustment revealed that resistant infants ($M = .08$, $SD = .10$) received more utilitarian touch than secure infants ($M = .02$, $SD = .04$). Maternal attention getting touch differed based on attachment style $F(2, 84) = 5.44$, $p = .006$. Resistant infants ($M = .03$, $SD = .02$) received more attention getting touch from mothers during the free play episode than avoidant babies ($M = .002$, $SD = .01$), $p = .009$, and secure babies did not differ from either the resistant or avoidant infants on attention getting touch in the free play. Total touch by mothers during the free play episode was marginally different based on attachment, $F(2, 84) = 2.43$, $p = .094$. For fathers, when examining all functions of touch, no function of touch differed based on attachment style during the free play or the reunion episode.

Discussion

The current study sought to examine whether the discrete behavior of parental touch, a component of parental sensitivity, impacted the development of the parent-child attachment

relationship. Touch is one way for parents to show that they are in sync with their infant and to modulate their infant's behaviors and emotions (Stack, 2010; Tronick, 1995). Much of the research on infant-parent attachment has focused on the mother-child dyad, with little to no focus on the father-infant dyad. The current study extended this research by including fathers. This study found that mothers and fathers with elevated depressive symptoms used more active accompaniment and attention getting touch, but during different episodes. With respect to attachment style, resistant infants received more utilitarian and attention getting touch from their mothers.

The first goal of this study was to examine differences in the type and amount of touch used by mothers and fathers. Past research has suggested that fathers engage in more playful touch than mothers, using a more "rough and tumble" play style (Parke & Tinsley, 1987). In the current study we found that there was no difference between mothers and fathers in playful touch. While the mothers with elevated depressive symptoms did not interact harshly or act withdrawn as previous studies have shown (Beebe & Lachmann, 2014; Goodman et al., 2011), they did use more active accompaniment and attention getting touch. This could be because in the past, some of these mothers may have been withdrawn in their interactions with their infants, and so the infants have learned to occupy themselves without their mother. Because of the nature of the study, these mothers may be trying to show attention to their infants and trying to get the infant to pay attention to them. Another thing to consider is the amount of active accompaniment that mothers with elevated depressive symptoms used. This touch is really not thought of as playful; instead, it is an accompaniment to something else, such as talking. For example, the mother could be moving the infant's feet, but talking in a flat, monotone voice. This would support the idea that depressed mothers are emotionless or "flat" when interacting with their

infants. However, this study did not take into consideration the way a mother was talking to her infant when coding for active accompaniment. Further studies should examine the vocalizations of depressed mothers.

With respect to the attention getting touch, it is important to consider why the infant is not focused on the parent. It could be that the infant is examining the new environment, but it could also be because the infant has learned in the past that the parent does not interact with them and has learned to distract and entertain themselves. Although we did not code for overall sensitivity, it is possible that the combination of these behaviors (active accompaniment and attention getting) reflects an intrusive, insensitive style of parenting. Future research is needed that accounts for the infant's behavior. Another possible limitation is that the sample of parents was relatively high functioning. The average level of depressive symptoms was below the cut-off for a clinical diagnosis of depression for mothers and fathers. Thus, although elevated levels of depressive symptoms were associated with certain functions of touch, this study is not capturing the clinical levels of depression that are typically found in previous studies.

The current study also examined whether parental touch behaviors were associated with the quality of the parent-infant attachment relationship. For mothers, utilitarian and attention getting touch was associated with mother-infant attachment. Infants classified as resistant received more utilitarian touch than infants classified as secure. Resistant infants also received more attention getting touch compared to secure and avoidant infants. Resistant infants typically display behaviors such as crying and struggling with their desire to seek closeness to their caregiver, but also seeming to get away from their caregiver once contact begins (Ainsworth, 1969). Mothers of these infants may be trying to use their utilitarian touch to achieve some kind of task, such as getting the foot or strap out of the infant's mouth. These mothers may be

touching their infants, but they are not using warm touch (i.e., nurturing), to soothe their infant's emotions; instead, they are using touch to achieve a specific instrumental task. It is possible that the mother is trying to accomplish something even though the child is not being cooperative.

With attention getting touch being used with resistant infants, one could infer that the mothers are trying to get their infant's attention, but because the infant has received inconsistent attention and sensitivity in the past, they struggle with wanting to seek proximity but also wanting to show their frustration that the parent stopped interacting with them.

Limitations and Further Discussion

Although the current study was novel and contributes to the body of knowledge about parent-infant attachment, there are several limitations that warrant discussion. First, the parents in this study were predominantly high functioning and were not representative of the general population. The families were mostly White, highly educated, and had high incomes. Further studies should gather more data from families that are in a lower socioeconomic status so that researchers can compare those parents to those in the middle or upper social class. Another limitation in our study was that we only had 8.4% of parents who had reported levels of depression. According to previous research, 10% of fathers suffer from postpartum depression (Paulson & Bazemore, 2010) and are not being screened for, diagnosed, or treated regularly (Musser et al., 2013). With our study only having a small percentage of fathers meeting criteria for depression, it was difficult to compare their behaviors to fathers without depression. Future studies should systematically screen fathers for depression and recruit a sample consisting of clinically depressed fathers. This would allow research to be able to gain a better understanding of their interactions with their infants.

This study is one of the few studies to examine the father-infant dyad and their attachment relationship. As previously stated, most research focuses on the attachment relationship with mothers. Future research is needed to further examine how fathers form their attachment with their infants and determine whether there are any differences between mothers and fathers. A longitudinal study examining touch and how fathers use touch to interact with their children at various ages could be beneficial. Further research on touch should be conducted to assess whether there are any variances on how the touch is done. For example, although we found that mothers with elevated depressive symptoms used more active accompaniment, we do not know the discrete behaviors that the mother is performing. For example, the mother may be poking the infant while the infant is distressed or she could be moving the infant's feet when the infant is bored. We should also take into consideration what the infant is doing at the time of touch to examine whether they are responding positively to that kind of touch, and also consider the kinds of vocalizations the parent is using to accompany their touch. Other components of sensitivity, such as imitating the infant's emotions or responding in a timely manner to an infant's needs should also be looked at in the future and see if there are any differences in how sensitive a father is to their child's needs compared to mothers.

In conclusion, depressive symptoms does not appear to affect mothers and fathers and how they touch their infants, which is in contrast to previous research. These parents did perform more attention getting and active accompaniment touch, but they did not perform harsh behaviors or refrain from touching their infants any more than parents who do are not clinically depressed. With utilitarian touch being performed more with resistant infants, we can see that they are not receiving warm, sensitive touch from their mothers. These infants are also receiving more attention getting touch, so we can conclude that these mothers are having to put more effort

into gaining their infant's attention because the infant is so distressed and potentially sending mixed signals to the parent.

Table 1

Descriptive Statistics for Mother Touch during the Free Play Episode

Variable	Range	Mean	SD
Mother Touch	.00 - 1.00	.61	.28
Mother Passive Accompaniment	.00 - .67	.10	.13
Mother Active Accompaniment	.00 - .79	.13	.15
Mother Nurturing	.00 - .11	.01	.02
Mother Playful	.00 - .91	.33	.24
Mother Attention Getting	.00 - .09	.01	.02
Mother Accidental	.00 - .00	.00	.00
Mother Utilitarian	.00 - .31	.04	.05
Mother Harsh	.00 - .00	.00	.00
Mother Unspecified Function	.00 - .00	.00	.00

Table 2

Descriptive Statistics for Mother Touch during the Reunion Episode

Variable	Range	Mean	SD
Mother Touch	.00 – 1.00	.65	.26
Mother Passive Accompaniment	.00 - .61	.08	.12
Mother Active Accompaniment	.00 - .61	.23	.20
Mother Nurturing	.00 - .54	.03	.09
Mother Playful	.00 - .97	.26	.21
Mother Attention Getting	.00 - .13	.01	.02
Mother Accidental	.00 - .00	.00	.00
Mother Utilitarian	.00 - .33	.03	.06
Mother Harsh	.00 - .00	.00	.00
Mother Unspecified Function	.00 - .00	.00	.00

Table 3

Descriptive Statistics for Father Touch during the Free Play Episode

Variable	Range	Mean	SD
Father Touch	.00 – 1.00	.64	.28
Father Passive Accompaniment	.00 - .48	.05	.09
Father Active Accompaniment	.00 - .81	.24	.20
Father Nurturing	.00 - .19	.005	.02
Father Playful	.00 - .93	.31	.24
Father Attention Getting	.00 - .13	.02	.03
Father Accidental	.00 - .00	.00	.00
Father Utilitarian	.00 - .14	.02	.03
Father Harsh	.00 - .00	.00	.00
Father Unspecified Function	.00 - .00	.00	.00

Table 4

Descriptive Statistics for Father Touch during the Reunion Episode

Variable	Range	Mean	SD
Father Touch	.02 – 1.00	.68	.27
Father Passive Accompaniment	.00 - .67	.08	.13
Father Active Accompaniment	.00 - .83	.27	.21
Father Nurturing	.00 - .28	.01	.04
Father Playful	.00 - .87	.26	.25
Father Attention Getting	.00 - .23	.02	.04
Father Accidental	.00 - .00	.00	.00
Father Utilitarian	.00 - .33	.04	.07
Father Harsh	.00 - .00	.00	.00
Father Unspecified Function	.00 - .00	.00	.00

Table 5

Correlations between Mother Characteristics and Touch during the Free Play Episode

Variable	1	2	3	4	5	6	7	8
1. Depressive Symptoms	-							
2. Overall Touch	-.01	-						
3. Passive Accompaniment	-.18	..40***	-					
4. Active Accompaniment	.11	..40***	.05	-				
5. Nurturing Touch	.02	.08*	.10	.08	-			
6. Playful Touch	.02	.60***	-.18	-.27*	-.079	-		
7. Attention Getting	.15	.22*	.10	.32***	.02	-.14	-	
8. Utilitarian Touch	-.03	.23*	.15	.25*	-.06	-.20*	.30	-

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

Table 6

Correlations between Mother Characteristics and Touch during the Reunion Episode

Variable	1	2	3	4	5	6	7	8
1. Depressive Symptoms	-							
2. Overall Touch	.03	-						
3. Passive Accompaniment	-.17	.40***	-					
4. Active Accompaniment	.21*	.50***	.04	-				
5. Nurturing	-.08	.22*	.00	-.02	-			
6. Playful Touch	-.07	.37***	-.16	-.39***	-.08	-		
7. Attention Getting	.28**	.19	.00	.15	.02	-.07	-	
8. Utilitarian Touch	.04	.31	.15	.25*	.15	-.10	.12	-

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

Table 7

Correlations between Father Characteristics and Touch during the Free Play Episode

Variable	1	2	3	4	5	6	7	8
1. Depressive Symptoms	-							
2. Role of the Father	-.02	-						
3. Overall Touch	.12	.10	-					
4. Passive Accompaniment	-.06	-.10	.26	-				
5. Active Accompaniment	.23***	.07	.61***	.19	-			
6. Nurturing Touch	.14	-.01	.09	-.05	.12	-		
7. Playful Touch	-.08	.11	.58***	-.16	-.22*	-.06	-	
8. Attention Getting Touch	.25***							
9. Utilitarian Touch		-.04	.18	.02	.34***	-.09	-.21*	-
	.87							
		-.02	-.15	-.22*	-.05	.01	-.22*	.17

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

Table 8

Correlations between Father Characteristics and Touch during the Reunion Episode

Variable	1	2	3	4	5	6	7	8
1. Depressive Symptoms	-							
2. Role of the Father	-.02	-						
3. Overall Touch	.09	.24*	-					
4. Passive Accompaniment	-.07	.09	.34***	-				
5. Active Accompaniment	.18	.06	-.51***	-.00	-			
6. Nurturing Touch	.04	-.05	-.12	-.05	.06	-		
7. Playful Touch	-.06	.13	.42***	-.12	-.39***	-.10	-	
8. Attention Getting Touch	.15	.19	.34***	.06	.40***	.17	-.25*	-
9. Utilitarian Touch	.03	-.00						
			-.08	-.08	-.02	.03	-.32**	.12

- $p < .05$; ** $p < .01$; *** $p < .001$

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