

Sibling Jealousy as Observed in a
Triadic Family Context
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A thesis submitted in partial fulfillment of the Requirements
for the degree of Bachelor of Arts with Honors in Psychology
from the College of Literature, Science, and the Arts
in the University of Michigan

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Abstract

The current study investigated firstborn children's jealous responses as a function of their gender and whether they were more jealous when mothers versus fathers interacted with their infant siblings one month after the birth. Relations with attachment security to mothers and fathers were also examined. Observational and Q-sort data were obtained from 241 two-parent families composed of fathers, mothers, preschool-aged siblings, and one-month old infants. Sibling jealousy was assessed during two triadic interactions, during which one parent was instructed to act affectionately toward the infant, while the other parent and firstborn child observed.

Firstborn girls demonstrated more comfort seeking behavior than firstborn boys. Firstborns sought comfort more from their mothers than fathers. Finally, firstborns who were securely attached to their mothers engaged them during the father-infant interaction, and firstborns who were securely attached to their fathers engaged them during the mother-infant interaction. Future research on sibling jealousy is needed, as well as more research on father-firstborn relationships.

Sibling Jealousy as Observed in a Triadic Family Context

Jealousy is a rather complex emotion, which, depending on the social context, can manifest itself in a variety of different ways and impact social dynamics between family members, lovers, and friends (Hansen, 1991; Mascuich & Kienapple, 1993; Miller, Volling, & McElwain, 2002; Parrot, 1991; White & Mullen, 1989). Some researchers have asserted that jealousy occurs in the context of a “social triangle” embedded within a larger social and cultural context, and is influenced by both interpersonal and intrapersonal relationships (Volling, Kennedy, & Jackey, 2009). Usually the social triangle is comprised of the rival, the beloved, and the jealous person (Parrott, 1991; Volling, McElwain, & Miller, 2002), although the threat could also be symbolic or imagined (Hansen, 1991; Volling, McElwain & Miller, 2002). Specifically White and Mullen’s (1991) “Interpersonal Jealousy System” assigned each leg of the triangle to the relationships between these individuals (i.e., the jealous person and the beloved, the beloved and the rival, and the jealous individual and the rival). When a rival threatens a valued relationship, people experience symptoms of jealousy (Hansen, 1991; Miller, Volling, & McElwain, 2000; Parrot, 1991; White & Mullen, 1991).

Within the family system, sibling jealousy is one of the most prevalent types of behaviors observed. With the birth of a new sibling, firstborns may feel threatened by the new addition, and thus engage in jealous and often competitive behaviors in order to win their parents’ attention. As demonstrated by Volling, Kennedy and Jackey’s (in press) triadic context (one parent and both siblings), the child who did not get attention became visibly upset whenever the rival sibling “won” the parent’s attention. This included expressions of anger at being neglected by their parents and perceiving their parents’ behavior as an act of betrayal (Volling et al., in press). In this context, the parent’s preferential treatment seemed to create a rift between the two

siblings. Believing that they were losing a valued relationship to a rival, the neglected child reacted negatively to this unfair treatment (Volling et al., in press). Although other factors may have also contributed to the rejected child's behavior (e.g., characteristics of the child, the sibling, and the parents; the quality of the other relationships that exist), the "parent-child relationship that was threatened by a sibling rival [continues to be] the most important and formative relationship of a young child's early life" (Volling, McElwain, & Miller, 2002, pp. 583).

Despite the fact that sibling jealousy is considered the "most powerful jealousy of youth" (Parrot, 1991; Volling, McElwain, & Miller, 2002, pp. 583) most jealousy research has focused primarily on romantic love (Masciuch & Kienapple, 1993). However, recently researchers such as Hansen (1991) drew some conclusions about family relationships and their effects on jealous behavior between siblings. Within the family system, for instance, he posited that members were often uncertain as to who played what role and consequently, when a member stepped beyond his or her boundaries, someone became jealous. Sibling jealousy also seemed to manifest itself differently depending on the siblings' sex, the parents' differential treatment of each child, and the parents' gender (Hansen, 1991; White & Mullen, 1989). In addition, other factors outside the family dynamic, such as children's temperament and attachment styles, also seemed to impact the sibling relationship (Volling, Kennedy, & Jackey, in press; White & Mullen, 1989). In this report, we examined some of these potential moderating variables, specifically the older sibling's gender, the parents' gender, and the child's attachment to both mother and father, in order to assess how each factor affected siblings' jealous behaviors as observed in the triadic context.

Although jealousy may have a negative connotation, it is important to note that many cases of sibling rivalry have actually led to positive developmental outcomes (Bedford, Volling,

& Avioli, 2000; Dunn, 1983). According to Bedford et al. (2000), the Western nuclear family structure, coupled with the individualistic cultural values, promotes sibling rivalry and jealousy. Siblings often engage in conflict because they are either forced to be around each other, their parents view sibling rivalry as normative (and will not interfere in conflicts), and/or a sibling may perceive his or her brother or sister as having more power in the family (Bedford et al., 2000). Regardless of the causes, sibling jealousy provides children with learning opportunities, which benefit them in the future. For instance, adult siblings reported becoming better listeners, arguers, and conflict managers (Bedford et al., 2009). In addition, adult siblings were better able to take another's point of view, work toward a resolution, and learn how to avoid these kinds of negative interactions in the future (Bedford et al., 2009). Bedford et al. (2000) also found that sibling rivalry provided adult siblings with greater social understanding, better sibling relationships, more sensitive and skilled parenting, and better all-around identity formation.

Given these findings, it is important to look at sibling jealousy at an early age and examine its implications for long-term family relationships. According to Hart, Field, Del Valle and Letourneau (1998), children as young as 5 to 6 months demonstrate behaviors symptomatic of jealousy. Mascuich and Kienapple (1993), however, argued that jealousy does not occur until the child can differentiate the self from others, which occurs at roughly 18 months. Although it is unclear as to when exactly jealousy manifests itself, several investigators have observed jealous behaviors in pre-school aged children including interrupting parent-sibling interactions, drawing attention to one's self, expressing sadness and anger, and/or aggressing against the mother and/or sibling (Miller et al., 2000; Volling et al., in press; White & Mullen, 1989). By examining firstborn children in a triadic context one month after the infant's birth, we anticipated observing such individual differences in firstborn jealous behaviors during mother-infant and

father-infant interactions. By looking at such factors as firstborns' gender, parents' gender, and firstborns' attachments to their parents, we sought to examine: (1) whether firstborns' gender predicted sibling jealousy (i.e. was a firstborn male more likely to exhibit jealous responses than a firstborn female?); (2) whether firstborns' jealous responses differed by the parent's gender (i.e. did the older child become more jealous when the maternal relationship or the paternal relationship was threatened?); and (3) whether firstborns' attachment to their mothers and fathers would reliably predict jealous responses.

Jealousy as a Function of Gender

When analyzing sibling jealousy, many researchers have focused on how siblings' gender impacted the sibling relationship (Abramovitch et al., 1986; Corter et al., 1982; Dunn, 1983; Gottlieb & Mendelson, 1990; Kendrick & Dunn, 1982; Miller et al., 2000; Stocker et al., 1989; Teti et al., 1996; White & Mullen, 1989). Gottlieb and Mendelson (1990) posited that the gender of the older sibling, as opposed to whether or not he or she was part of a mixed-sex or same-sex gender pair, seemed to be a better determinant of whether he or she would respond positively to a new child. Using this assertion, we examined whether the gender of the firstborn was related to sibling jealousy behaviors by comparing firstborn girls and boys.

Drawing upon the work of Berk (2008), we believed that gender socialization might contribute to sibling jealousy behaviors. From a very early age, parents begin to encourage feminine traits in their daughters, such as being delicate and frail, and masculine traits in their sons, such as being strong and domineering (Berk, 2008). Consistent with Bandura's "social learning theory," Berk (2008) discussed how parents teach their male and female children about gender through a system of punishments and rewards. If children adhere to gender norms, they are rewarded, but if they deviate from the norm, they are punished. Consequently females are

encouraged to focus primarily on interpersonal relationships, while males are encouraged to be independent and assertive (Berk, 2008). Therefore, in an attempt to be consistent with the socially acceptable gender mores, firstborn girls, as opposed to firstborn boys, are more likely to engage in more nurturing behaviors toward the infant. Because of this socialization process, we hypothesized that in the triadic paradigms, firstborn girls would not demonstrate jealous behaviors as frequently as firstborn boys.

Parent Gender and Children's Jealousy

Consistent with Miller et al.'s (2000) work, parental gender in particular may play a role in the older siblings' behavior. More specifically, they asserted that firstborns have individualized relationships with both parents, and consequently, there are different interpersonal dynamics between mothers and firstborns, and fathers and firstborns. As a result, children learn to regulate their emotions (including jealousy) differently with each parent (Miller et al., 2000). By reviewing the literature on firstborns' different relationships with each parent, we believed that this would help us to reliably predict future jealous behaviors.

To a firstborn child, the birth of a sibling is often perceived as a threat to their prior mother-child relationship. Studies indicated that not only did older siblings receive less one-to-one maternal attention and care, but also mothers demonstrated less warmth and became more controlling of their firstborn children after the birth of a sibling (Bryant & Crockenberg, 1980; Teti, Sakin, Kucera, & Corns, 1996). As a result of these changes in the family dynamic, Bryant and Crockenberg (1980) reported that children were less likely to participate in helping activities or take pride in their accomplishments. Other researchers noted that some firstborns became more anxious, distressed, angry, clingy, whiny, withdrawn, and aggressive, and experienced sleep disturbances and/or toileting problems after the sibling was born (Dunn & Kendrick, 1982;

Teti & Ablard, 1989; Teti, Sakin, Kucera, Corns, 1996). In one striking finding, White and Mullen (1989) claimed that older siblings were three times more likely to display “naughty” behaviors than their younger counterparts when they believed that their sibling posed a threat to the maternal relationship.

As indicated by Masciuch and Kienapple (1993), just the mere presence of the mother can serve to negatively impact sibling relationships. They found that when mothers were absent, siblings were much more prosocial with one another than during her presence. Corter, Pepler and Abramovitch (1982) explained this behavior stating that during the mother’s absence, siblings exert greater self-control and thus are more likely to control their jealous impulses. In the mother’s presence, however, siblings feel a greater sense of insecurity, misbehave and, in an attempt to win her attention, aggress against one another (Cortet et al., 1982).

Given the underlying assumption that the mother is the primary caregiver, most researchers have ignored the role of the father in children’s development. However, according to prominent father researcher, Michael Lamb (2004), fathers are just as involved and influential in their children’s lives as mothers. For instance, Lamb (2004) noted how both parents encouraged their infant to explore during play (Power, 1985), addressed their infant by speaking slowly and using shorter phrases (Dalton-Hummel, 1982; Golinkoff & Ames, 1979; Rondal, 1980), responded similarly to their infants’ cries and smiles (Berman, 1980), and altered their behaviors when accommodating infants’ developmental changes in their competencies (Belsky, Gilstrap, & Rovine, 1984; Crawley & Sherrod, 1984). Furthermore, Lamb (2004) noted how men appeared to demonstrate similar positive reactions in response to the birth of their child as did mothers (Bader, 1995; Greenberg, 1985; Greenberg & Morris, 1974). In fact, Lamb (2004) pointed out how in some studies, men felt so emotionally connected to their infants that it appeared as

though both parents were equally as anxious about leaving their babies and toddlers in someone else's care (Deater-Deckard, Scarr, McCartney, & Eisenberg, 1994; Hock & Lutz, 1998).

Researchers also reported that children tend to respond in a similar manner to their fathers as they do to their mothers. For instance, Braungart-Rieker, Garwood, Powers and Notaro (1998) reported that during the face-to-face and still-face paradigms, both mothers and fathers demonstrated equal sensitivity toward their 4-month-olds, and consequently, infants showed "equivalent patterns of affect and self-regulation" with both parents (as cited in Lamb, 2004, pp. 278). In addition, Kotelchuck (1976, as cited in Lamb, 2004) reported that 12-, 15-, 18- and 21-month-old infants protested to the absence of both parents, and did not explore as much in either parent's absence. Additionally Lamb (2004) noted how during separation and reunion laboratory observations, European American infants demonstrated no preference for either parent (Feldman & Ingman, 1975; Lamb, 1976; Willemson, Flaherty, Heaton & Ritchy, 1974). Consistent with this, Lamb (1977, as cited in Lamb, 2004) found that when looking at separation and protest, children as young as two years old may actually begin to demonstrate a preference for their father over their mother. Given these findings, Lamb (2004) posited that infants do not necessarily discriminate between parents (Cohen & Campos, 1974), and that, starting at a very early age, children develop extremely strong attachments to their fathers (Lamb, 1977). Therefore, if during our study, a firstborn child of two or three years of age harbored a paternal preference, then he or she might be more likely to demonstrate jealous behaviors during father-infant interactions than during mother-infant interactions.

In addition to Lamb, Gottlieb and Mendelson's research (1990) highlighted the important role of the father as it relates to firstborns' distress following the infant sibling's birth. Although they found evidence emphasizing the important role of prenatal maternal support in alleviating

children's distress after the birth of a sibling, their data also indicated that postnatal paternal support might be even more influential than postnatal *maternal* support in children's distress. Children who received postnatal paternal support demonstrated the lowest levels of postnatal distress. Furthermore, prenatally high-distressed firstborns who received little paternal postnatal support demonstrated the highest levels of postnatal distress. With paternal caregiving becoming increasingly more socially acceptable, it may well be that children devoid of paternal support will be at even greater risk for establishing less positive sibling relationships and exhibit more jealousy after the birth of an infant sibling.

Consistent with these findings, Miller, Volling and McElwain (2000) claimed that firstborns responded more positively to their fathers than mothers because of the unique bond formulated after the birth of the sibling. They found that after the second child was born, many fathers were left in charge of caring for the firstborn while the mother tended to the new infant. During this postnatal period, Miller et al. (2000) posited that fathers and firstborn children often cement their relationship, as the father increasingly becomes the older child's source of emotional support. Due to this exclusive relationship, many fathers reported feeling more comfortable with their older children than with their younger children (Miller et al., 2000).

Given the unique relationship between firstborns and fathers, we hypothesized that firstborns would demonstrate more jealous behaviors when the paternal relationship was threatened than when the maternal relationship was threatened. Thus in the triadic paradigm, we hypothesized that firstborns would become more distressed during the father-infant interaction than during the mother-infant interaction.

Relationship between Firstborn's Jealousy and Attachment to Parents

We also believed that a firstborn child's attachment to the parent would reliably predict jealous responses. As discussed by Volling et al. (in press), by the time the second child is born, firstborn children have already formed an attachment to their caregiver. With the introduction of a new sibling, older children's attachments to their parents are now threatened, and consequently, they may become jealous. In an attempt to re-establish their bond with their parents, Volling et al. (in press) found that firstborn children tried to capture their parents' attention, and/or interrupt sibling-parent playful interactions. In addition, Teti et al. (1996) found evidence suggesting that the birth of a new sibling may impact the firstborn's perception of the mother, as some firstborns seemed to become more attuned to their mothers' wellbeing. If, for instance, the mother is overwhelmed with her new maternal role, the firstborn child may sense her frustration, and grow even more resentful of their new sibling. As a result, the firstborn's attachment to the mother and the relationship between the two siblings may suffer.

According to Teti and Ablard (1989), the attachment of the older sibling may play a crucial role in sibling jealous behaviors. In the mother's presence, securely attached siblings were much less likely to protest and aggress against one another: behavior suggestive of a positive relationship (Teti & Ablard, 1989). Even in her absence, this same kind of relationship could be seen, as some securely attached older siblings' took on the caregiver role as they watched over their younger sibling (Teti & Ablard, 1989). Consistent with this finding, they found that securely attached siblings had more positive relationships with one another than insecurely attached siblings. Insecurely attached older siblings were more likely to aggress against the younger sibling and/or mother than securely attached older siblings (Teti & Ablard, 1989). Given these findings, we believed that maternal attachment would be a significant

predictor for positive sibling relationships as securely attached siblings would be less jealous than less securely attached siblings.

Although little research has been conducted on paternal attachment as it relates to sibling jealousy, many investigators have examined children's attachment to their fathers in terms of how it influences children's development. In one study, Lamb (2004) discussed how children as young as 7 months old protested their fathers' separation and responded positively upon reuniting with their father (Pederson & Robson, 1969; Schaffer & Emerson, 1964). Furthermore researchers found that 10-, 13-, and 16-month-old infants were equally as distressed and showed similar patterns of protestation when their mothers and fathers left them during the Strange Situation, thus indicating no preference for either parent in attachment behavior measures (Cohen & Campos, 1974, as cited in Lamb, 2004; Lamb, 1977, as cited in Lamb, 2004). As evidenced by many paternal attachment researchers, those children who demonstrated a secure attachment to their parents were more sociable with strangers, had greater executive capacity, and had a greater index of cognitive performance (Belsky, Garduque, & Hrncir, 1984, as cited in Lamb, 2004; Lamb, Hwang, Frodi & Frodi, 1982, as cited in Lamb, 2004). Therefore in accordance with these implications, we believed that paternal attachment would also play a role in firstborns' development and subsequent jealous behaviors.

According to John Bowlby (1991, as cited in Berk, 2008), children as young as one month old begin to establish an attachment to the parent in what he deemed the "attachment in the making" phase. During this period, children attempt to establish a strong relationship to their primary caregiver (Berk, 2008). If however, firstborns never experience a close emotional connection to the parent, specifically the mother, prior to her second pregnancy, then firstborns may become even less securely attached to the mother after the sibling is born (Teti, Sakin,

Kucera, & Corns, 1996). Consistent with this finding Touris, Kromelow, and Harding (1995) found that when pregnant mothers were primarily concerned with such stressors as worrying about their own physical wellbeing, or worrying about the second child's wellbeing, they had less secure relationships with their firstborn child than mothers who did not deal with such stressors.

Given the important implications for children's attachments to their caregivers, we sought to examine firstborns' attachments to their mothers and fathers prior to the infant's birth and their relations to the firstborns' jealous behaviors. Considering the evidence implicating a positive relationship between securely attached children and sibling relationships, we hypothesized that insecurely attached firstborns would demonstrate more jealous behaviors than securely attached firstborns.

Specific Aims

The current study had three primary goals: (1) to examine the gender differences between boys and girls with respect to jealous responses; (2) to examine whether firstborns responded differently when mothers and fathers interacted with the infant one month after the birth; and (3) to determine whether the firstborn child's attachment to mother and father predicted jealous responses. Specifically we hypothesized that firstborn male children would be more jealous than firstborn female children because female's nurturing behavior is a product of gender socialization. Next, we hypothesized that firstborns would demonstrate more jealous behaviors during the father-infant interaction than the mother-infant interaction because of the unique relationship between fathers and firstborn children. Finally we expected to find data consistent with past research, which suggested a relationship between secure maternal and paternal

attachments and positive firstborn behaviors: securely attached firstborns would demonstrate less jealous responses than insecurely attached firstborns.

Method

Participants

Participants included 241 families in the Family Transition Study (FTS). The FTS was a longitudinal investigation of the changes in family life (e.g., marital relationships, familial support, parents' mental health, and the adjustment of the older sibling) after the arrival of the second child. Women pregnant with their second child were recruited from Obstetrics Clinics affiliated with the University of Michigan Health Care System (UMHS). To participate in the study, families had to meet the following criteria: (1) mothers were expecting a second-born infant, (2) the biological father of the expected infant resided in the home, and (3) older siblings were between 1 and 5 years of age. To avoid any confounding variables, families were excluded from the study if: (1) the older child had chronic and/or severe physical, mental or environmental problems; or (2) the infant was born premature or had a birth weight less than 2500 grams.

Families were primarily European American (87.6% for mothers and 88.3% for fathers), but generally reflected the racial/ethnic demographics of the families in southeastern Michigan (5.4% of mothers and 5% of fathers were African-American; 1.7% of mothers and 2.9% of fathers were of Asian descent; 0% of mothers and 0.4% of fathers were American Indian or Alaska Native; 3.7% of mothers and 2.9% of fathers were Latino; and 5.8% of mothers and 3.3% of fathers were other). The median household income of the sample was \$80,000-\$99,999 (19.1%) and the median levels of education for both mothers and fathers were Bachelor's degrees (37.8% of mothers and 37.3% of fathers). Five mothers had only received their high school degree or GED (2.1%), 10.8% had completed some college, 2.5% had received an AA

degree, 0.8% had received a vocational or technical degree, 34.9% had received their Master's degree, and 11.2% had received their MD, JD, or Ph.D. Only one father had less than a high school degree (0.4%), while 2.5% had received their high school degree or GED, 10.8% had completed some college, 3.7% had received their AA degree, 3.3% had received a vocational or technical degree, 29.5% had received their Master's degree, and 12.4% had received their MD, JD, or Ph.D. The average age of the mother was 31.6 years ($SD = 4.22$), and the average age of the father was 33.2 ($SD = 4.78$). Parents had been married an average of 5.77 years ($SD = 2.74$). The average age of the older child at the time of the 1-month visit was 32.23 months ($SD = 10.14$). About 45.6% ($N = 110$) of the older children and 51.5% ($N = 124$) of the infant siblings in the study were boys, while 54.4% ($N = 131$) of the older children and 41.9% ($N = 101$) of the infant siblings in the study were girls. There were 56 older girl-younger girl dyads, 45 older boy-younger girl dyads, 66 older girl-younger boy dyads, and 58 older boy-younger boy dyads.

Out of the 241 participants, 16 families dropped by one month, leaving 225 families for data analysis. Reasons for dropping out included: inability to schedule the one-month visit, inability to complete couple interview data, and parents' inability (twenty-four mothers and twenty-six fathers) to complete mother, father and/or older sibling questionnaires.

Research Design

The study consisted of 5 timepoints corresponding to prenatal, 1-month, 4-month, 8-month and 12-month postpartum timepoints following the infant sibling's birth. There were two home visits at the prenatal, 4-month, and 12-month timepoints, and one home visit at the 1-month and 8-month timepoints. Two laboratory-based visits (mother and father) at 12/13 months postpartum were also conducted. At the second home visit at the prenatal, 4-month, and 12-month timepoints, the Attachment Q-sort was completed. Assessments of parent

characteristics, child characteristics, family relationship functioning and contextual stresses and supports before and after the birth were obtained through multiple methods, including couple interviews, parental self-reports and behavioral observations. The data used for this study focused on the prenatal assessment of the firstborn's attachment to the mother and father (Attachment Q-sort), and two triadic observation sessions at the 1-month timepoint (one with the mother, infant, and older sibling, and another involving the father and the two children; sessions were counterbalanced).

Recruitment and Procedures

Prior to initial prenatal exams, pregnant women recruited through OB/GYN clinics were sent a packet of information that needed to be completed prior to the visit. A document explaining the study in some detail was included in this packet of materials, which explained the purpose of the study, provided criteria for participation, and briefly outlined the design and procedures of the study. In addition, a separate sheet of paper was attached where women could indicate their interest in being contacted to participate in the study. All forms were placed into an envelope, which was collected by a study coordinator once a week. Those who chose to participate were sent a letter detailing the study and were then contacted a week later to further discuss whether they were interested in participating. When women were in their last pregnancy trimester, the initial prenatal visit was scheduled. At this visit, families were given an overview of the study design and procedures, along with an opportunity to ask detailed questions about their participation. All families signed consent forms before proceeding with the interview and observational segment of the visit. One month after the second child was born, families were then contacted to participate in the follow-up home visits.

Triadic Jealousy Sessions

At 1-month, two triadic paradigms lasting 10-minutes each were conducted. For the first session, the target parent (e.g. mother) was asked to play with the baby very affectionately while the non-target parent (e.g. father) and older sibling were present. After 10-minutes, parents switched roles so that the non-target parent played with the baby, while the previous target parent watched. During this time, the non-target parent was asked to be present with the older sibling but not to initiate interaction. However, non-target parents were told to respond to the older sibling if he/she initiated interaction and to stop the older sibling if he or she tried to leave the area.

Coding of Triadic Jealousy Sessions. At the one-month home visit, researchers coded the older siblings' jealous affect and behavior during the two 10-minute sessions, which included mother-infant and father-infant interactions. The coding scheme was based on a previous system created by Volling and colleagues (Miller, Volling, & McElwain, 2000; Volling, McElwain, & Miller, 2002) as well as Kendrick and Dunn (1982). For this study, we focused solely on the older sibling's jealous behavior.

Older Siblings' Behavior to Parent-Infant Interaction. The following behaviors were coded using 15-second interval sampling: (1) *negativity toward parent*: the older sibling directed any kind of physical or verbal action toward the parent that reflected anger, frustration or unhappiness; (2) *negativity toward sibling*: the older sibling approached the baby and directed negative physical or verbal actions toward the infant; (3) *protest/demands*: the older sibling either verbally protested the interaction between the parent and the infant and/or made demands on the parent to attend to them and not the infant; (4) *attention-seeking*: the older sibling used vocalizations to draw the parents' attention away from the infant and toward themselves without

physically disrupting the parent-infant interaction; (5) *watches/monitors parent-infant interaction*: the older sibling watched or monitored the parent-infant interaction either closely or at a distance, but made no attempt to actively approach, join, or disrupt the interaction; (6) *joins positive*: the older sibling physically approached or vocalized in a positive way but did not disrupt the parent-infant dyad; (7) *self-focused play/task*: the older sibling focused on play or partook in a particular task by himself or herself; (8) *seeks non-target parent*: the older sibling attempted to engage the non-target parent; (9) *positive involvement with non-target parent/play*: the older sibling actively engaged in play with the non-target parent; (10) *comfort seeking toward target parent*: the older sibling made physical contact with the target parent in order to be comforted, but not to disrupt the interaction between the parent and the infant; and (11) *comfort seeking toward non-target parent*: the older sibling made physical contact with the non-target parent in order to be comforted by the mother or father.

Data Reduction

In order to reduce the number of variables for analysis, several composites were formed based on significant correlations. These variables included: (1) *negativity*, which was comprised of *negativity to parent*, *negativity to sibling* and *protest/demands*; (2) *seeking behavior*, which was comprised of *monitors*, *attention seeking* and *comfort seeking*; (3) *positive engagement* which was comprised of *joins positive* and *self-focused play*; and (4) *non-target parent involvement* which was comprised of *seeks the non-target parent*, *positive involvement with the non-target parent* and *comfort seeks the non-target parent*. These four composites were created for mother sessions and father sessions. See Table 2 for descriptive statistics.

Attachment Q-Sort

The Q-sort method (Waters & Deane, 1985) was meant to assess firstborn children's

attachments to both parents prior to the birth of the second child. Attachment constructs were operationalized to provide an overview of the entire domain of attachment relevant behavior. Each item in the attachment behavior Q-set was printed individually on 90 cards (see Appendix) and consisted of an item title and more specific descriptive statements of children's behavior. Items were meant to describe individual differences relating to the firstborn's attachment behavior.

Prior to the prenatal timepoint, parents were sent the list of 90 behaviors, which they were instructed to look over. Using these criteria, they were told to monitor their child over a course of a week to determine which behaviors were least and most characteristic of their child. The cards were meant to describe children's behaviors from ages 1 to 5; if the child acted beyond their years or acted younger than their age, parents were told to place the card into the middle uncharacteristic pile. Using a sorting board, parents were instructed to put 1/3 (30) of the cards into three separate piles (Pile 1: "Least characteristic of your child;" Pile 2: "Neither like or unlike your child;" or Pile 3: "Most characteristic of your child") and then further subdivide the three piles into nine piles ("9" indicated behaviors that were most characteristic while "1" indicated behaviors that were least characteristic of their firstborn child). This was done by asking parents to determine whether the item was "absolutely the most descriptive of the child," "very descriptive of the child," or "mostly descriptive of the child." Under each of the nine columns there were 10 numbers listed for 10 cards that could be placed in each column.

The criterion sort method was used to operationalize the attachment constructs. Experts sorted the items to describe a hypothetically secure firstborn, with respect to certain dimensions of interest. After establishing reliability among the experts, several sorts were averaged to produce a composite criterion definition of the construct. Q-sort descriptions of individual

parents were compared with the criterion sort (in the form of Pearson correlation coefficient) and received a score, which reflected the degree of congruence between each parent and the criterion.

Fisher's *r*-to-*z* transformation was conducted to normalize the distribution of scores.

The results indicated a strong correlation between the child's attachments to mother and father, $r(223) = .31, p < .01$.

Results

Analyses focused on firstborn children's jealous responses during the two triadic interactions (mother-infant and father-infant) and firstborn's attachment prior to the infant's birth as a function of sibling jealousy at the one-month timepoint after the infant's birth. An independent samples *t*-test was used to determine whether there were differences in jealous responses based on firstborn gender. A paired samples *t*-test was used to determine whether firstborns' jealous responses differed in response to mothers' or fathers' interactions with the infant. For our final analysis, correlations were performed using composite variables to determine whether there was a relationship between firstborns' attachment to their parents and firstborns' sibling responses.

The first goal of the study was to examine the relationship between firstborns' gender and sibling jealousy. To test the hypothesis that boys would demonstrate more jealous responses than girls, we conducted an independent samples *t*-test. Of the eight composite variables, older sibling seeking behavior with father, $t(221) = 2.42, p < .05$, and seeking behavior with mother, $t(223) = 2.42, p < .05$, were significant. Contrary to the hypothesis, girls sought out both parents (for fathers $M = 20.95, SD = 16.47$; for mothers $M = 26.62, SD = 17.44$) more than boys (for fathers $M = 16.23, SD = 12.71$; for mothers $M = 21.38, SD = 14.56$). These results suggested

that gender did have an effect on parent seeking behavior, with girls more likely than boys to seek out both parents during parent-infant interactions.

The second goal of the study was to investigate whether firstborns acted differently with mothers and fathers. We hypothesized that firstborns would demonstrate more jealous responses when the father was the target parent than when the mother was the target parent. To test this hypothesis, we used a paired samples *t*-test. Older sibling seeking behavior and older sibling involvement with the parent that was not interacting with the infant were significant. There was a significant difference between seeking behavior with father ($M = 18.79$, $SD = 15.02$) and seeking behavior with mother ($M = 24.22$, $SD = 16.36$); $t(224) = -4.15$, $p < .01$ (see Table 1 for descriptive statistics of all variables). Contrary to our hypothesis, these results suggested that firstborns sought comfort more from the mother than the father. There was also a significant difference between involvement with the mother during the father-infant interaction ($M = 25.60$, $SD = 16.38$) and involvement with the father during the mother-infant interaction ($M = 22.50$, $SD = 14.85$); $t(224) = 2.48$, $p < .05$. Contrary to our hypothesis, these results suggested that when the father was engaged with the infant, firstborns sought out their mothers more frequently than when the mother was engaged with the infant, and the father was not engaged with the infant.

The third goal of the study was to examine the relationship between firstborns' attachments to their parents and their jealous responses. We hypothesized that securely attached children would demonstrate less jealous responses than insecurely attached firstborns. To test this hypothesis, we correlated the composite jealousy variables with attachment scores for each parent. Only two correlations were significant. Mothers' involvement with the infant was strongly correlated to firstborns' attachment, $r(223) = .14$, $p < .05$, and fathers' involvement with the infant was strongly correlated to firstborns' attachment, $r(223) = .15$, $p < .05$ (see Table 3 for

all correlations). This indicated that when older siblings were securely attached to their mothers, they were more likely to engage with mothers during father-infant interactions ($r = .15, p < .05$). Similarly when firstborns were securely attached to their fathers, they were more likely to engage with fathers during mother-infant interactions ($r = .14, p < .05$).

Discussion

The current study focused on three main goals. The first goal sought to explore a possible link between firstborns' gender and their sibling jealousy behaviors in a triadic context. The second goal examined a possible association between parents' gender and firstborns' jealousy behaviors in a triadic context. The final goal investigated whether firstborns' attachments to their parents predicted sibling jealousy responses during parent-infant interactions.

Gender Differences in Jealousy

Contrary to our hypothesis that male firstborns' would demonstrate more jealous responses than female firstborns, female firstborns' sought both parents at significantly higher rates than male firstborns. In addition, both children sought their mothers more than their fathers. As evidenced by Teti, Sakin, Kucera and Corns (1996), the birth of a new sibling can lead to variation in behaviors depending on the firstborn child's sex. After a second child was born, preschool-aged male firstborns tended to withdraw, while female firstborns became more reliant on their mothers (Teti et al., 1996). Consistent with these gender specific behaviors, preschool-aged girls may feel more threatened by the new infant than preschool-aged boys. By seeking out their parents, firstborn girls may be striving for reassurance, and thus they seek physical comfort from their parents to ensure that they are still important in their parents' lives. In addition, as noted earlier, this type of female comfort seeking behavior may also be explained

by gender socialization (Berk, 2008). More specifically, by rewarding and punishing their daughters' behaviors, parents might have encouraged their young daughters to display such stereotypically "feminine" behaviors as comfort seeking. In contrast, firstborn males might have been strongly dissuaded from engaging in this action (Berk, 2008). In an attempt to adhere to these gender norms, preschool-aged female firstborns might have relied on female role models, such as their mother, to emulate feminine behaviors. This may explain why firstborn females sought their mothers more than their fathers.

Although gender socialization can explain female firstborns' tendency to seek out their mothers more than their fathers, the theory does not explain why male firstborns' also sought comfort from their mothers more than their fathers. One way to explain this finding is that at the one-month timepoint, mothers were the primary caregivers and stayed at home. Over time male and female firstborns may have come to view their mother as a source of attention and love. Consequently, during the triadic paradigm, firstborns may have perceived the new infant as a greater threat to the maternal relationship than the paternal relationship. Unfortunately, due to the lack of studies on comfort seeking behaviors, it is difficult to conclude what exactly was driving male and female children's behaviors. To date, no studies have coded comfort seeking as a possible indicator of sibling jealousy nor have there been any studies which have had comparable finding to ours. As a result, it is not clear whether boys and girls will demonstrate comfort-seeking behaviors to mothers more than fathers until more research is conducted.

Children's Responses to Mothers and Fathers

Given the fact that firstborns sought their mothers more than their fathers, it is evident that the parent's gender does affect firstborn jealousy behaviors. It may be that because mothers were caring for their newborn infant and spending time with the firstborn child during this 1-

month period, firstborns developed different relationships with their parents. All children (boys and girls) may have become more reliant on mothers because their working father did not interact with them as frequently as did the mother. Consequently firstborns may not have perceived their fathers as characteristically similar to their mothers.

Unfortunately, because there is very little research on fathers and their relationships with firstborn children, it is difficult to explain why firstborn boys and girls demonstrated more jealous responses during the mother-infant interaction than the father-infant interaction. As evidenced by Dunn (1983), mothers' self-reports revealed that older children actually became more jealous when the father interacted with the baby than when the mother interacted with the baby. Our findings based on actual observations of the older siblings' behaviors in response to mother-infant and father-infant interactions provide a different picture. Given the opposing findings, more research is needed on father-firstborn relationships and interactions.

Attachment and Jealousy

As predicted, we also found a significant correlation between securely attached children and their jealous responses. Namely when firstborns were securely attached to their mothers, they sought them out during the father-infant interaction. Similarly when firstborns were securely attached to their fathers, they sought them out during the mother-infant interaction. Given this finding, it may be that during the parent-infant interaction, children were better able to utilize adaptive coping strategies when securely attached to the parent who was not engaged with the infant and thus sought out this parent when potentially distressed. Rather than express their jealousy by interrupting the mother-infant or father-infant interactions, they may have learned how to deal with their emotions by seeking parental attention from a different source. Therefore, securely attached firstborns may possess greater emotion regulation abilities in a sibling triadic

context than insecurely attached firstborns. Securely attached children may have also sought out the parent who was not interacting with the infant because firstborns felt confident enough in their relationships with the parent who was interacting with the infant that they were not as threatened by the mother-infant or father-infant interactions. Perhaps during the triadic interactions, firstborns sought the parent who was not engaged with the infant merely because, at age three or four, they wanted to play or receive attention. Finally, firstborns may have also sought out their mothers during the father-infant interaction and their fathers during the mother-infant interaction because firstborns were more securely attached to the parent who was not engaging the infant than the parent who was engaging the infant.

Unfortunately since we did not test whether firstborns were more attached to mothers or fathers, it is difficult to conclude whether the firstborn's behavior was a reflection of a greater attachment to one parent over the other. In addition, we also do not know whether firstborns' sought the parent who was not interacting with the infant because they were securely attached to both parents. Given the fact that there was a significant correlation between firstborns' attachments to their mothers and fathers, $r(223) = .31, p < .01$, they may have sought out the parent who was not engaging the infant because it was a strong alternative to the distracted parent who was engaging the infant. Therefore, future research is needed to explore whether children seeking out an alternate caregiver when a parent is interacting with a baby sibling are really securely attached to both parents or just to one parent.

Limitations and Future Research

It is important to mention potential limitations to the study, which could have affected the results. For instance, other variables not included in the study may be responsible for sibling jealousy (e.g. attachment). According to a study conducted by Volling, McElwain, and Miller

(2002), for example, the researchers argued that toddlers' jealous behaviors might be a result of other factors, such as children's emotional understanding. Although we did not measure the associations between marital relationships and its impact on firstborns' behaviors, Volling et al. (2002) found this variable was associated with the children's behavior dysregulation and subsequent indications of jealousy. Future analyses of these data using children's emotion understanding and the quality of the marital relationship are planned to determine whether children's jealousy responses are related to child and family characteristics.

In addition, the sample was predominately middle-class, European American, two-parent families. This was most likely due to recruitment techniques, which only recruited women through fliers at OB/GYN clinics in southeast Michigan and did not reach women who were not seeking prenatal care. Given that the study was interested in examining whether the transition after the birth of a second child is stressful and a crisis for the older sibling, it made sense to start with a low risk, well functioning sample to examine a normative childhood transition. Future work examining high-risk samples is needed and we would expect changes to be associated with more stress under these conditions.

Despite these limitations, it is also important to note the study's strengths. To date this study included the largest number of families to examine this period of children's development. In addition, this study was one of the few research endeavors to include fathers. Finally, this study was one of the first to use direct observations, as opposed to self-reports of father involvement.

Given the limited research on sibling jealousy, it is important for more research to be conducted on the topic. For instance, more research is needed on pre-school aged firstborns' behavior, particularly the extent of comfort-seeking and attention-seeking behaviors. What are

the implications for female and male firstborns' development? Furthermore, to assess firstborns' jealous reactions as a function of parents' gender, it is important to conduct more research on father-firstborn relationships. To assess firstborns' attachment, it is also important to determine whether firstborn children are more attached to fathers or mothers. Finally future research is needed to address whether or not children's attachment to both parents could explain jealousy behaviors.

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First and foremost, I want to thank my faculty advisor and mentor, Dr. Brenda Volling, for her incredible contributions to this thesis. None of this could have been accomplished without her wisdom and guidance. I thank you from the bottom of my heart. I would also like to thank my wonderful roommate and best friend, Carly Coats, for pushing me, supporting me, and just being there for me throughout my college career. I highly doubt I would have been as motivated or focused enough to complete this thesis had I not been inspired by her perseverance and overwhelming desire to achieve. In addition, I have to give thanks to Christopher Glen, for encouraging me to continue on with this thesis, even when I highly doubted I could do it myself. Finally, I want to thank my mother, my Aunt Susan, my father, and my Aunt Sandy. Thank you for the emotional (financial) support, for providing me with the opportunity to go to a great university, for talking me through the stress, and for just being incredible human beings. I love you all.

Table 1

Descriptive Statistics of Older Sibling Jealousy Behaviors

Variable	Mother			Father		
	<u>M</u>	<u>SD</u>	<u>Range</u>	<u>M</u>	<u>SD</u>	<u>Range</u>
Negativity Parent	.09	.45	0-4	.16	.79	0-10
Negativity Sibling	.12	.56	0-5	.11	.51	0-4
Protest/demands	.72	2.71	0-29	.73	2.40	0-19
Attention Seeking	5.09	5.87	0-34	3.19	4.47	0-23
Monitors	16.29	9.42	0-37	13.68	9.73	0-37
Joins Positive	6.21	6.93	0-38	4.61	6.29	0-33
Self-Focused Play	10.50	9.30	0-36	11.63	9.34	0-39
Seeks Father	3.80	3.76	0-22	4.68	3.79	0-25
Positive Involvement with Father	15.06	11.78	0-40	16.26	11.53	0-40
Comfort Seek to Mother	2.84	5.20	0-30	1.92	3.69	0-18
Comfort Seek to Father	3.65	5.85	0-29	4.66	7.82	0-40

Table 2

Correlations between Jealousy Variables for Mothers and Fathers

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. OS negativity parent	.21**	.08	.47**	.06	.22**	.4*	-.12	.00	-.04	.01	.05
2. OS negativity sibling	.10	-.05	.20**	.08	.16*	.15*	-.12	.03	-.02	.07	.08
3. OS protest/demands	.04	.17*	-.02	.16*	.27**	.08	-.16*	.04	-.11	-.07	.05
4. OS attention seeking	.09	.12	.15*	.20**	.57*	.50	.16*	.06	.37**	-.15*	.37**
5. OS monitors	.22**	.16*	.24**	.49*	.27**	.68**	.42**	.02	.35**	.08	.50**
6. OS joins positive	.19**	.21**	.14**	.31*	.70**	-.16*	.22**	-.10	.33**	-.13	.59**
7. OS self-focused play	.00	-.13	-.11	-.08	.29**	.23**	-.45**	.06	.40**	-.32**	.21**
8. OS seeks father	-.10	.04	-.01	-.02	-.01	-.07	.01	.10	-.08	.13	-.08
9. OS positive involvement with father	-.13	-.08	-.12	.34**	.48**	.38*	.40**	-.06	.53**	.33**	.22**
10. OS comfort seek to mother	.23**	.03	.38*	.32**	.46**	.53**	-.25**	-.08	-.24**	.01	.03
11. OS comfort seek to father	-.04	-.05	-.02	-.13	-.01	-.05	-.24**	.23**	.20**	.01	.25**

Note. *. $p < .05$; **. $p < .01$. Upper diagonal: correlations for father; lower diagonal: correlations for mother. Cells on the X-axis are when the father is the target parent. Cells on the Y-axis are when the mother is the target parent. Bolded numbers indicate correlations between mothers and fathers.

Table 3

Correlations between Composite Variables and Attachment Q-Sort Data

Variable	Attachment Q-Sort Prenatal Father	Attachment Q-Sort Prenatal Mother
Father-Infant Interaction		
Father Negativity	-.04	-.06
Father Seeking Behavior	-.07	-.10
Father Positive Engagement	-.06	-.12
Non-Target Parent Involvement with Father (Mother as Target Parent)	.14*	-.01
Attachment Q-Sort Prenatal Father	—	.31**
Mother-Infant Interaction		
Mother Negativity	-.04	.01
Mother Seeking Behavior	.01	.04
Mother Positive Engagement	-.04	-.04
Non-Target Parent Involvement with Mother (Father as Target Parent)	.02	.15*
Attachment Q-Sort Prenatal Mother	.31**	—

Note. * $p < .05$; ** $p < .01$. “Father” and “Mother” indicate target parents.

Appendix

Young Child Behaviors- Mother Version

1. Child readily shares with mother or lets her hold things if she asks to.
2. When child returns to mother after playing, he is sometimes fussy for no clear reason.
3. When he is upset or injured, child will accept comforting from adults other than mother.
4. Child is careful and gentle with toys and pets.
5. Child is more interested in people than in things.
6. When child is near mother and sees something he wants to play with, he fusses or tries to drag mother over to it.
7. Child laughs and smiles easily with a lot of different people.
8. When child cries, he cries hard.
9. Child is lighthearted and playful most of the time
10. Child often cries or resists when mother takes him to bed for naps or at night.
11. Child often hugs or cuddles against mother, without her asking or inviting him to do so.
12. Child quickly gets used to people or things that initially made him shy or frightened him.
13. When the child is upset by mother's leaving, he continues to cry or even gets angry after mother is gone.
14. When child finds something new to play with, he carries it to mother or show it to her from across the room.
15. Child is willing to talk to new people, show them toys, or show them what he can do, if mother asks him to.
16. Child prefers toys that are modeled after living things (e.g. dolls, stuffed animals).
17. Child quickly loses interest in new adults if they do anything that annoys him.
18. Child follows mother's suggestions readily, even when they are clearly suggestions rather than orders.
19. When mother tells child to bring or give her something, he obeys (do not count refusals that are playful or part of a game unless they clearly become disobedient).
20. Child ignores most bumps, falls, or startles.
21. Child keeps track of mother's location when he plays around the house. Calls to her now and then. Notices her go from room to room. Notices if she changes activities.
22. Child acts like an affectionate parent toward dolls, pets, or infant.
23. When mother sits with other family members, or is affectionate with them, child tries to get mom's affection for himself.
24. When mother speaks firmly or raises her voice at him, child becomes upset, sorry, or ashamed about displeasing her (do not score high if child is simply upset by the raised voice or afraid of getting punished).
25. Child is easy for mother to lose track of when he is playing out of her sight.
26. Child cries when mother leaves him at home with babysitter, father, or grandparent.
27. Child laughs when mother teases him.
28. Child enjoys relaxing in mother's lap.
29. At times, child attends so deeply to something that he doesn't seem to hear when people speak to him.

30. Child easily becomes angry with toys.
31. Child wants to be the center of mother's attention. If mom is busy or talking to someone, he interrupts.
32. When mother says "NO" or punishes him, child stops misbehaving (at least at the time). He doesn't have to be told twice.
33. Child sometimes signals mother (or gives the impression) that he wants to be put down, and then fusses or wants to be picked right back up.
34. When child is upset about mother leaving him, he sits right where he is and cries. Doesn't go after her.
35. Child is independent with mother. Prefers to play on his own; leaves mother easily when he wants to play.
36. Child clearly shows a pattern of using mother as a base from which to explore. Moves out to play; returns or plays near her; moves out to play again, etc.
37. Child is very active. Always moving around. Prefers active games to quiet ones.
38. Child is demanding and impatient with mother. Fussing and persists unless she does what he wants right away.
39. Child is often serious and businesslike when playing away from mother or alone with his toys.
40. Child examines new objects or toys in great details. Tries to use them in different ways or to take them apart.
41. When mother says to follow her, child does so (do not count refusals or delays that are playful or part of a game unless they clearly become disobedient).
42. Child recognizes when mother is upset. Becomes quiet or upset himself. Tries to comfort her. Asks what is wrong, etc.
43. Child stays closer to mother or returns to her more often than the simple task of keeping track of her requires.
44. Child asks for and enjoys having mother hold, hug, and cuddle him.
45. Child enjoys dancing or singing along with music.
46. Child walks and runs around without bumping, dropping, or stumbling.
47. Child will accept and enjoy loud sounds or being bounced around in play, if mother smiles and shows that it is supposed to be fun.
48. Child readily lets new adults hold or share things he has, if they ask to.
49. Runs to mother with a shy smile when new people visit the home.
50. Child's initial reaction when people visit the home is to ignore or avoid them, even if he eventually warms up to them.
51. Child enjoys climbing all over visitors when he plays with them.
52. Child has trouble handling small objects or putting small things together.
53. Child puts his arm around mother or puts his hand on her shoulder when she picks him up.
54. Child acts like he expects mother to interfere with his activities when she is simply trying to help him with something.
55. Child copies a number of behaviors or ways of doing things from watching mother's behavior.
56. Child becomes shy or loses interest when an activity looks like it might be difficult.
57. Child is fearless.

58. Child largely ignores adults who visit the home. Finds his own activities more interesting.
59. When child finishes with an activity or toy, he generally finds something else to do without returning to mother between activities.
60. If mother reassures him by saying, "It's ok," or "it won't hurt you," child will approach or play with things that initially made him cautious or afraid.
61. Plays roughly with mother. Bumps, scratches, or bites during active play (does not necessarily mean to hurt mom).
62. When child is in a happy mood, he is likely to stay that way all day.
63. Even before trying things himself, child tries to get someone to help him.
64. Child enjoys climbing all over mother when they play.
65. Child is easily upset when mother makes him change from one activity to another (even if the new activity is something child often enjoys).
66. Child easily grows fond of adults who visit his home and are friendly to him.
67. When the family has visitors, child wants them to pay a lot of attention to him.
68. On average, child is a more active type person than mother.
69. Rarely asks mother for help.
70. Child quickly greets his mother with a big smile when she enters the room (shows her a toy, gestures, or says, "Hi, Mommy").
71. If held in mother's arms, child stops crying and quickly recovers after being frightened or upset.
72. If visitors laugh at or approve of something the child does, he repeats it again and again.
73. Child has a cuddly toy or security blanket that he carries around, takes to bed, or holds when upset (do not include bottle or pacifier if child is under two years old).
74. When mother doesn't do what child wants right away, he behaves as if mom were not going to do it at all (fusses, gets angry, walks off to other activities, etc.).
75. At home, child gets upset or cries when mother walks out of the room (may or may not follow her).
76. When given a choice, child would rather play with toys than adults.
77. When mother asks child to do something, he readily understands what she wants (may or may not obey).
78. Child enjoys being hugged or held by people other than his parents and/or grandparents.
79. Child easily becomes angry at mother.
80. Child uses mother's facial expressions as a good source of information when something looks risky or threatening.
81. Child cries as a way of getting mother to do what he wants.
82. Child spends most of his play time with just a few favorite toys or activities.
83. When child is bored, he goes to mother looking for something to do.
84. Child makes at least some effort to be clean and tidy around the house.
85. Child is strongly attracted to new activities and new toys.
86. Child tries to get mother to imitate him, or quickly notices and enjoys it when mom imitates child on his own.
87. If mother laughs at or approves of something the child has done, he repeats it again and again.

88. When something upsets the child, he stays where he is and cries.
89. Child's facial expressions are strong and clear when he is playing with something.
90. If mother moves very far, the child follows along and continues his play in the area mother has moved to (doesn't have to be called or carried along; doesn't stop play or get upset).