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Expectant Fathers' Intuitive Parenting: Associations with Parent Characteristics and Postpartum Positive Engagement

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Abstract

This study examined expectant fathers' intuitive parenting behavior, its correlates, and its associations with fathers' postpartum positive engagement. One hundred eighty-two expectant couples completed the Prenatal Lausanne Trilogue Play in the third trimester of pregnancy. Coders rated expectant fathers' and mothers' intuitive parenting behavior during this procedure. Expectant parents also completed surveys regarding their psychological and demographic characteristics. At 3 months postpartum, fathers completed time diaries that assessed the time they spent in developmentally appropriate positive engagement activities with their infants. Examination of correlates of expectant fathers' intuitive parenting behavior revealed that expectant fathers showed lower levels of these behaviors than expectant mothers, that intuitive parenting behavior was moderately positively associated for mothers and fathers, and that individual differences in expectant fathers' intuitive parenting behavior were associated with parent demographic and psychological characteristics. In particular, expectant fathers showed greater intuitive parenting behavior when they had greater human capital and more progressive beliefs about parent roles, and when their partners had lower parenting self-efficacy. Findings also indicated that expectant fathers' greater intuitive parenting behavior was predictive of fathers' greater subsequent engagement in developmentally appropriate activities at 3 months postpartum, but only when expectant mothers demonstrated low levels of intuitive parenting behavior.

Keywords

fathers; intuitive parenting; transition to parenthood

Fathers' involvement with their infants and young children contributes positively to multiple aspects of their development (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008; Tamis-LeMonda, Baumwell, & Cabrera, 2013). In an effort to better understand why some fathers are more involved with their children than are others, researchers have recently turned their attention to the prenatal period, when parent-child relationships start to emerge (Stern, 1995). This growing body of research indicates that fathers' prenatal involvement is associated with fathers' engagement with their children after birth (Cabrera, Fagan, &

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Farrie, 2008; Fagan, 2013; Zvara, Schoppe-Sullivan, & Kamp Dush, 2013). In conceptualizing and assessing fathers' prenatal involvement, these studies have tended to focus on activities such as attending prenatal doctors' visits and associated experiences (e.g., viewing a sonogram, purchasing items for the baby, and attending childbirth education classes).

Although these prenatal activities may reflect fathers' commitment to their child (and their child's mother), these actions provide only a limited picture of fathers' prenatal involvement and how it may be associated with their involvement with their child after birth (Marsiglio, 2008). Further, a family systems perspective (Cox & Paley, 2003; Minuchin, 1985), which emphasizes that individuals' behaviors cannot be understood apart from the family context and that family members' behaviors affect each other, suggests that father-child relationships must be examined within the family system. In the prenatal period, the developing family system can be assessed with the Prenatal Lausanne Trilogue Play procedure (PLTP; Carneiro, Corboz-Warnery, & Fivaz-Depeursinge, 2006). Within this assessment, a number of behaviors of expectant coparents are coded including "intuitive parenting" (Papoušek & Papoušek, 1987) – the extent to which expectant parents show six developmentally appropriate behaviors: holding and "en face" orientation, dialogue distance, baby talk and/or smiles at the baby, caresses and/or rocking, exploration of the baby's body, and preoccupation with the baby's well-being. The intuitive parenting behaviors in the PLTP may hold promise as indicators of the earliest developments in parents' relationships with their children, especially for fathers, who may feel less prepared for parenthood (Deave & Johnson, 2008) and whose involvement in parenting after the child's birth is highly variable (Cabrera, Hofferth, & Chae, 2011). Overall, little is known about why some expectant parents show greater intuitive parenting than others in the PLTP, or how intuitive parenting behavior is associated with parenting behavior after birth.

The central goal of the current study was to examine the intuitive parenting behavior of expectant fathers during the PLTP from a family systems perspective, with the goal of evaluating these behaviors as an indicator of expectant fathers' investment in and preparation for parenting that can be used to better understand the early development of father-child relationships. In particular, using data from a study of the transition to parenthood among dual-earner couples, our study addressed three questions: (1) What are the similarities and differences between expectant fathers' and mothers' intuitive parenting behavior? (2) Which characteristics of fathers and their partners are associated with expectant fathers' intuitive parenting behavior? (3) What are the associations between expectant fathers' intuitive parenting behavior and fathers' positive engagement with their infants in the early postpartum period? Key strengths of the current study included the direct observation of prenatal intuitive parenting behavior in the PLTP and the use of time diary data, which is considered superior to survey measures in accuracy (Hofferth & Sandberg, 2001) and reduction of social desirability (Kan & Pudney, 2008), to assess fathers' positive engagement with their infants at 3 months postpartum.

What is Intuitive Parenting?

Infants are born biologically predisposed to cope with environmental stress and adapt to their physical and social surroundings. Although these inherent predispositions facilitate infants' abilities to recognize others and communicate a need for support, human children require responsiveness from the ecological context to reach their full potential (Koester & Lahti-Harper, 2010). Responsibility for supporting the infant's regulation and social-emotional adjustment predominantly rests with the parent. Parental investment is a critical component of the environment in the immediate postpartum months, when the infant is developmentally inhibited and struggles to regulate behavior. For the infant's rudimentary communication skills to develop into competencies, parental attunement and responsiveness through "subtle, nonconscious behaviors, [help guide the] infant in the regulation of emotions, language acquisition, and participation in social exchanges" (Koester & Lahti-Harper, 2010, p. 5). As the more skilled partner in the didactic infant-caregiver interaction, parents are biologically prepared to adjust to the infant's survival needs and scaffold the adoption of appropriate sociocultural communication skills (Papoušek & Papoušek, 2002; Rheingold & Adams, 1980).

Evidence for these "subtle, nonconscious behaviors" was found in a series of microanalytic analyses by Papoušek and Papoušek (1982, 1987), who discovered universal parenting behaviors that transcended the boundaries of age, gender, culture, and even species (i.e., chimpanzees; Bard, 1994). Termed "intuitive parenting" (Papoušek & Papoušek, 1987), these behaviors ultimately facilitate 1) infant-caregiver engagement, 2) adequate stimulation, and 3) the infant's integrative process of developing competencies (Papoušek & Papoušek, 1987). Intuitive parenting occurs during face-to-face interactions between parent and child (Papoušek & Papoušek, 1987). In Western, industrialized societies intuitive parenting behavior is exhibited when parents face their infant—sometimes vocalizing in a high pitched, rhythmic voice (Papoušek & Papoušek, 1987). Often eye contact is established and parents greet their infants with "a slight retroflexion of the head, raised eyebrows, widely open eyes," and a smile (Lohaus, Keller, Völker, Cappenberg, & Chasiotis, 1997; Papoušek & Papoušek, 1987, p. 693).

Intuitive parenting behaviors are believed to have originated as part of "psychobiological preadaptedness" (Papoušek & Papoušek, 1987, p. 475), and simultaneously serve to increase the infant and parent's chance of survival. These behaviors are significant because they permit parents to respond to the infant's communicative signals in a quick, nonconscious, and meaningful way that does not require extensive cognitive resources. This allows enough remaining cognitive energy for parents to behave vigilantly in new, potentially threatening circumstances, and to, ultimately, protect the infant against potential environmental dangers (Papoušek & Papoušek, 2002). Thus, in theory, intuitive behaviors have been selected over time to optimize survival and healthy developmental outcomes in offspring.

Prenatal Development of Parent-Child Relationships

Although intuitive parenting behaviors are described with reference to an actual, physical child who can actively respond to the parent's behaviors, we know from other literature that

the parent-child relationship begins to develop before the child can actively respond – in fact, prior to the child’s birth (Stern, 1995). Research using the Working Model of the Child Interview indicates that expectant parents develop representations of the child that appear to shape the development of the parent-child relationship after the child’s birth (for a review, see Vreeswijk, Maas, & van Bakel, 2012). However, very little, if any of this research has investigated expectant fathers’ representations of the child. Related work that has examined expectant parents’ feelings of attachment to or bonding with the fetus has also largely ignored expectant fathers’ experiences, even though pregnancy is a time of psychological preparation for fathers as well as for mothers (van Bakel, Maas, Vreeswijk, & Vingerhoets, 2013), perhaps because of the assumption that expectant mothers experience greater attachment to the fetus because of the physical experience of pregnancy. In fact, in studies in which expectant fathers’ and mothers’ fetal attachment was compared, most reported that fathers felt less attached to the fetus than mothers (e.g., Ustunsoz, Guvenc, Akyuz, & Oflaz, 2010; van Bakel et al., 2013), although individual differences in expectant mothers’ and fathers’ attachment to the fetus were observed.

In contrast, the literature on prenatal involvement of fathers has focused greater attention on the pregnancy-related activities of expectant fathers, rather than on their representations, feelings, or experiences. For instance, in their study of low-SES unmarried fathers that showed a significant, positive association between fathers’ prenatal involvement and their subsequent positive engagement with their child up to age 3, Cabrera et al. (2008) used an index of prenatal father involvement that included three elements: whether or not the father was present at the child’s birth, whether he provided financial or material support during pregnancy, and whether he helped the expectant mother in other ways. In Bronte-Tinkew, Ryan, Carrano, and Moore’s (2007) study of resident fathers, fathers were more involved in multiple aspects of rearing their 9-month-old infants when fathers had engaged in more of the following prenatal activities: discussed the pregnancy with the mother, viewed an ultrasound, listened to the fetal heartbeat, felt fetal movement, attended childbirth education classes, and bought things for the child.

However, research indicating the importance of fathers’ prenatal involvement for their postbirth engagement has largely relied on self-report data on both prenatal and postnatal involvement, which may have inflated their associations (Podsakoff, MacKenzie, & Podsakoff, 2012). Moreover, neither the literature on prenatal representations/attachment nor the literature on fathers’ prenatal involvement has examined behaviors of expectant fathers that are directly relevant to the interactions they may have with their infants after birth. This is likely in part because it has been difficult to envision how one could assess an expectant parent’s parenting behavior. However, the Prenatal Lausanne Trilogue Play (PLTP) procedure introduced by Carneiro and colleagues (2006), adapted from the original Lausanne Trilogue Play (Fivaz-Depeursinge & Corboz-Warnery, 1999), provides an opportunity to observe expectant parents’ engagement in the intuitive parenting behaviors described by Papoušek and Papoušek (1987).

Intuitive Parenting in the PLTP: A Harbinger of Fathers' Postnatal Engagement?

The PLTP uses a gender-neutral doll to elicit behaviors associated with expectant parents' representations of their baby-to-be. In this procedure, a "nurse" – played by a research assistant—brings the doll to expectant parents and asks them to imagine this is the first time they are meeting their baby. Expectant parents play with the doll in three configurations: parent₁-doll, parent₂-doll, and mother-father-doll. Expectant parents must first come to an agreement about who plays first with the doll, while the other parent observes until the roles are reversed. After these two parts, the family plays together as a whole; then, in a fourth non-play task, expectant parents put the doll to sleep and discuss their experience. The procedure lasts about 5 minutes.

The PLTP was designed as an observational measure of the emerging coparenting relationship between mothers and fathers, as it requires expectant parents to project their representations of the baby-to-be onto the doll in the presence of, and together with, their partners. The coding scales used to assess interaction in the PLTP are: playfulness, cooperation, family warmth, structure of play, and intuitive parenting behaviors. Prior research has combined these codes to generate a score reflecting the overall quality of the prenatal coparenting relationship or "prenatal alliance" and has used that score to predict the quality of family interaction postpartum, coded from the original LTP. Indeed, prenatal coparenting in the PLTP consistently predicts postnatal family interaction up to 18 months postpartum (Carneiro et al., 2006; Favez et al., 2012; Favez, Frascarolo, Lavanchy Scaiola, & Corboz-Warnery, 2013).

In contrast to the other PLTP coding scales, which are directed at the behavior of the coparenting team, the intuitive parenting scale is distinct in that it focuses on the individual behaviors of each expectant parent toward the doll. This scale requires coders to rate six behaviors based on the intuitive parenting literature (Papoušek & Papoušek, 1987): holding and "en face" orientation, dialogue distance, baby talk and /or smiles at the baby, caresses and/or rocking, exploration of the baby's body, and preoccupation with the baby's well-being. Research using the PLTP has demonstrated that expectant parents show these behaviors toward the doll and that the occurrence of these behaviors can be reliably coded (Carneiro et al., 2006).

Given that these intuitive parenting behaviors are believed to be an enactment of expectant parents' representations of their baby, the degree to which expectant parents show these intuitive behaviors may reflect their attachment to the fetus and their commitment to the parent role. But, as behaviors, they may be more directly relevant to the interactions new parents will have with their infants after birth. Moreover, for fathers in particular these intuitive parenting behaviors in the PLTP may hold promise as indicators of their future interactions with their infants for two reasons. First, the intuitive parenting behaviors are elicited in the context of play, a type of parent-infant interaction in which fathers may specialize (Jia, Kotila, & Schoppe-Sullivan, 2012). Second, these behaviors are enacted in the presence of mothers, mirroring the reality that most of fathers' interactions with young children happen with the mother present (Craig, 2006). However, in prior research using the

PLTP, expectant fathers' and mothers' ratings on intuitive parenting were combined together to form a couple-level intuitive parenting score that is further combined with other ratings to produce a global score reflecting the quality of the prenatal coparenting relationship. Despite the distinctions between the intuitive parenting behaviors and the other behaviors coded in the PLTP, no prior study has investigated these observations of prenatal intuitive parenting in detail, their correlates, or their relations with fathers' subsequent postpartum interactions with their infants.

The Present Study

Our first research question focused on similarities and differences between expectant fathers' and mothers' intuitive parenting behavior. Although Carneiro et al. (2006) reported no gender differences in intuitive parenting, we hypothesized that expectant mothers would show higher levels of intuitive parenting behavior than expectant fathers, based on the larger literature regarding prenatal attachment and studies showing greater maternal than paternal sensitivity in infancy (e.g., Barnett, Deng, Mills-Koonce, Willoughby, & Cox, 2008). However, consistent with a family systems perspective (Cox & Paley, 2003; Minuchin, 1985), we also expected that the intuitive parenting behaviors of expectant mothers and fathers would be significantly and positively associated, as are levels of prenatal attachment of partners (van Bakel et al., 2013) and postnatal parenting behaviors (Barnett et al., 2008).

Our second research question concerned characteristics of fathers and their partners that are associated with expectant fathers' intuitive parenting behavior. We identified potential correlates of expectant fathers' intuitive parenting from theory and literature on correlates of fathers' postpartum involvement. We expected that fathers would show greater intuitive parenting behavior when they perceived their couple relationship more positively (Lee & Doherty, 2007), and when they had greater parenting self-efficacy (Giallo, Treyvaud, Cooklin, & Wade, 2013), and more progressive beliefs about parent roles – beliefs consistent with the notion that fathers and mothers are equally capable as parents and should share parenting responsibilities equally (Schoppe-Sullivan, Brown, Cannon, Mangelsdorf, & Sokolowski, 2008). We further anticipated that fathers would show greater intuitive parenting behavior when they were older, had completed more education, and their families had higher annual incomes (Cabrera et al., 2011). Consistent with a family systems perspective (Cox & Paley, 2003; Minuchin, 1985), we also tested the associations between expectant mothers' psychological characteristics and expectant fathers' intuitive parenting behavior.

Finally, we sought to determine whether expectant fathers' intuitive parenting was associated with their postpartum interactions with their infants. In particular, we examined the extent to which expectant fathers' intuitive parenting predicted the amount of time fathers spent in developmentally appropriate positive engagement activities (e.g., playing, talking and listening, soothing and holding) with their infants at 3 months postpartum, while controlling for the parent characteristics associated with fathers' parenting described above. We focused on positive engagement as these activities include play, a domain in which fathers may specialize (Jia et al., 2012), and these are also the types of interactions most closely related to the intuitive behaviors described by Papoušek and Papoušek (1987). We

anticipated that expectant fathers who demonstrated greater intuitive parenting behavior would choose to spend more of their time in positive engagement activities with their infants, reflecting their greater preparation for and investment in parenting as well as their comfort with these types of interactions. Given that we expected expectant mothers' and fathers' intuitive parenting behavior to be positively associated, we controlled for expectant mothers' intuitive parenting when assessing the association of expectant fathers' intuitive parenting with his postnatal positive engagement. We further tested whether expectant mothers' intuitive parenting behavior moderated the association between expectant fathers' intuitive parenting and their postnatal positive engagement. Such a moderation effect would be consistent with the notion that fathers' engagement in childrearing is contextually sensitive (Marsiglio, Roy, & Fox, 2005), and that mothers play an important role in the development of father-child relationships (Doherty, Kouneski, & Erickson, 1998).

Method

Participants and Procedure

Data were drawn from a longitudinal study of the transition to parenthood conducted in a large, Midwestern U.S. city and focused in particular on the development of father-child relationships. Expectant couples were recruited for the study in 2008–2009 primarily from childbirth education classes, but also through advertisements in local newspapers, flyers posted at doctors' offices and local businesses, and a snowball approach. To meet inclusion criteria, expectant parents must have been at least 18 years of age, able to read and speak English, married or cohabiting, and both expecting their first biological child with no prior parenting experience for either partner. Expectant parents were also required to both be working full time and to anticipate returning to paid employment at least part-time after the child's birth.

One hundred eighty-two expectant couples participated in this study. Demographic characteristics of participating couples reflected the focus on dual-earner, first-time parents. Eighty-six percent of couples were married (14% cohabiting). Seventy-five percent of expectant mothers and 65% of expectant fathers had attained at least a bachelor's degree. The median family income was \$79,500. Expectant mothers were 28 years old on average ($M = 28.24$; $SD = 4.02$; $Range = 18$ to 42), whereas expectant fathers were about two years older ($M = 30.20$; $SD = 4.81$; $Range = 18$ to 50). Regarding race/ethnicity, 85% of expectant mothers and 86% of expectant fathers identified as White. Of the remainder, 6% of expectant mothers and 7% of expectant fathers identified as Black, and 3% of expectant parents identified as Asian. The remaining 6% of expectant mothers and 5% of expectant fathers identified as other races and/or multiracial. In addition, 4% of expectant mothers and 2% of expectant fathers identified as Hispanic. Fifty-one percent of children born to participating couples were male.

All participating couples were assessed during the third trimester of pregnancy. At that time, as part of a larger battery of assessments, expectant parents completed surveys about their demographic and psychological characteristics. Expectant couples were also visited at home, during which time they participated in the Prenatal LTP assessment (PLTP; Carneiro et al., 2006). Our PLTP differed from the standard procedure in two ways: (1) we conducted the

PLTP in participants' homes versus in a laboratory setting, and (2) we conducted the procedure during the third trimester (versus late in the second trimester) of pregnancy. These changes were made because of constraints associated with the goals of the larger study.

In order to maintain the standardization of the procedure across homes, we brought two folding chairs and a small table to each visit. These chairs and table were aligned using a special mat marked with the proper distances. The PLTP episodes were recorded using a single, tripod-mounted camera that captured both parents' faces and upper bodies from the waist up. The "baby" that expectant parents were asked to play with consisted of a yellow and white footed infant sleeper sewn shut with approximately 7–8 lbs. of rice inside to make its weight similar to that of a newborn. The "baby's" head was made out of fabric that was green with multicolored polka dots (so that the design would not imply any particular racial or ethnic background), filled with stuffing, and sewn onto the footed sleeper.

Consistent with standard PLTP procedures, researchers instructed parents to "Imagine the moment when the three of you meet for the first time after the delivery. Please play this out in four parts: first, one of you plays with the 'baby' alone, and then the other one. Then, please play together with the 'baby,' and finally, let him/her 'go to sleep' and talk together about the experience you just went through. You can decide who plays with the 'baby' first on your own. We will leave the room. Please signal when you are finished." Before the couple began the task, a female researcher "warmed up" the couple to the role playing by pretending to be the "nurse" bringing the "baby" to them, wrapped in a blanket. The "nurse" said the following, in a lighthearted but not silly tone: "Hi baby! Aren't you so cute? I'm sure your mommy and daddy are so excited to meet you! See, here they are. There's your mommy; there's your daddy. I think they want to play with you, so I'm going to put you down right here." Next the "nurse" placed the "baby" in the basket between the parents and left the room. The other researcher reminded the parents about the four parts of the procedure. Of the 182 couples that completed the PLTP, three episodes were uncodable due to technical difficulties with video recording. The average duration of the procedure was 6.29 minutes ($SD = 2.49$).

A second assessment was conducted at 3 months postpartum. As part of this assessment, new fathers and mothers completed time diaries using procedures that closely followed the format of the American Time Use Survey (ATUS; U. S. Bureau of Labor Statistics, 2006). Approximately one week prior to this assessment, parents were mailed paper-and-pen time diaries to complete regarding a workday and non-workday. Parents started their diaries at 4:00am on the target day and ended them at 4:00am the following day. Parents were asked to report each and every activity they engaged in, their location during the activity, and who they were with. First, parents reported their primary activity, or the activity that was most salient at the time. Parents were also encouraged to report any additional activities (secondary and tertiary) occurring simultaneously, in order of salience.

At the subsequent in-person assessment, trained interviewers conducted audio-recorded reviews of the diaries with participants to ensure that participants had recorded their activities correctly and to clarify any inconsistencies. If a participant had not completed the paper-and-pen diaries, the interviewer led them through creation of the diaries at that time.

Coders used the paper-and-pen diaries in conjunction with the audio recordings of the interviews to categorize participants' activities using a system developed for the present study adapted from that used in the ATUS. For further details regarding the time diary assessments please see Kotila, Schoppe-Sullivan, and Kamp Dush (2013).

Of the original sample of 182 couples, $n = 147$ fathers had complete time diary data at 3 months postpartum from which estimates of time in positive engagement activities could be gleaned. As reported in Kotila et al. (2013), comparisons of families in which parents contributed any time diary data at 3 months postpartum to those that did not indicated few significant demographic differences, with the exception that fathers who did not contribute time diary data at 3 months postpartum had lower family incomes than fathers who contributed time diary data.

Measures: Third Trimester of Pregnancy

Intuitive parenting—Expectant fathers' and mothers' intuitive parenting behaviors were coded from their videotaped interactions during the PLTP procedure. Each expectant parent's rating on intuitive parenting behaviors captured the frequency, variety, and intensity of his/her display of six parenting behaviors towards the "baby": holding or facing the baby, dialogue distance, "baby talk" and/or smiling at the baby, caressing and/or rocking, exploring the baby's body, and preoccupation with the baby's well-being. In Carneiro et al.'s (2006) system, each expectant parent received one point for the presence (vs. absence) of each of the six intuitive behaviors. Thus, in the original coding system, scores for each parent could range from 0 to 6. In our study we modified the intuitive parenting scale to take into account both the quantity and intensity of intuitive parenting behaviors observed (see Appendix). Ratings were made by two trained coders (one male, one female) who double-coded 33% randomly selected PLTP episodes. Coders assigned each parent a score from (1 = *low* to 5 = *high*) according to the frequency, variety, and intensity of their intuitive parenting behaviors. Gamma statistics, appropriate for ordinal data (Hays, 1981; Liebetrau, 1983), indicated acceptable interrater reliability: .84 for mother's intuitive parenting and .76 for father's intuitive parenting.

Relationship adjustment—Expectant parents' adjustment in their marital or couple relationships was measured using the brief Dyadic Adjustment Scale (brief DAS; Sabourin, Valois, & Lussier, 2005), which includes a subset of four items from the original DAS (Spanier, 1976). The brief DAS required respondents to rate how often (1 = *never*; 6 = *all of the time*) three situations arose within their relationship (e.g., "how often do you discuss or have you considered divorce, separation, or terminating your relationship?") as well as to report their overall happiness in the relationship (0 = *extremely unhappy*; 6 = *perfect*). One item from the brief DAS was dropped due to low item-total correlations. Cronbach's alphas for the brief DAS were .64 for expectant mothers and .63 for expectant fathers.

Parenting self-efficacy expectations—Expectant parents reported their parenting self-efficacy expectations using 6 items from Teti and Gelfand's (1991) Adapted Maternal Self-Efficacy scale. These items required expectant parents to rate how well they believed they would handle different situations with their baby (1 = *not good at all*; 4 = *very good*). Two

example items were: “When your baby is upset, fussy, or crying, how good will you be at soothing him or her?” and “How good do you feel you will be at feeding, changing, and bathing your baby?” Cronbach’s alpha was .80 for expectant mothers and .82 for expectant fathers.

Beliefs about parent roles—To measure expectant parents’ beliefs about the roles of women and men in families, expectant fathers and mothers completed a 29-item questionnaire on which respondents rated their agreement (1 = *disagree strongly*; 5 = *agree strongly*) with items concerning parent roles (e.g., “when a child becomes ill at daycare/school it is primarily the mother’s responsibility to leave work or make arrangements for the child”; “fathers have to learn what mothers are able to do naturally in terms of child care”). Twenty-six of the 29 items came from the Beliefs Concerning the Parental Role Scale (Bonney & Kelley, 1996), and the remaining 3 items were drawn from the Survey of First-Time Mothers (Beitel & Parke, 1998). Six of the 29 items were dropped because of low item-total correlations. Subsequently, for the final set of 23 items, $\alpha = .87$ for expectant fathers and .90 for expectant mothers. Items were reverse scored as necessary and averaged variables were computed such that higher scores indicated more progressive beliefs about parent roles.

Expectant fathers’ demographic characteristics—Expectant fathers’ age was measured in years using their birthdates and the date of the prenatal assessment to calculate age. Expectant fathers’ level of completed education was assessed using an ordinal scale with response categories that ranged from “less than high school” to “Ph.D./doctoral degree”. Family income was measured as the total income reported from all sources in the previous calendar year rounded to the nearest \$1000.

Measures: 3 Months Postpartum

Time in positive engagement—For the current study, we focused on the total number of minutes that new fathers spent in positive engagement activities with their infants, both with and without their partner present, on their non-workday. We focused on the non-workday because working parents’ time is considerably less constrained by work demands on non-workdays (Lang et al., 2014), and thus, greater variability in choice regarding how individuals spend their time can be observed. Positive engagement activities included reading, playing, arts or crafts, talking and listening, and soothing or holding the infant. An activity counted for time in positive engagement if it was the primary, secondary, or tertiary activity. However, if two activities that would be categorized as positive engagement were reported simultaneously, only the time in the more primary activity was counted in the positive engagement total.

Results

Analysis Plan

T-tests and correlations were used to test for similarities and differences in expectant fathers’ and mothers’ intuitive parenting. Correlations tested associations between expectant parents’ psychological and demographic characteristics and expectant fathers’ intuitive parenting

behavior. Regression analyses examined the contributions of expectant parents' intuitive parenting behavior to fathers' positive engagement with their infants at 3 months postpartum.

Similarities and Differences in Expectant Fathers' and Mothers' Intuitive Parenting

Expectant mothers showed higher intuitive parenting than expectant fathers, $t(178) = 8.73, p < .001$; $M_m = 3.82, SD_m = .95$; $M_f = 3.22, SD_f = .96$; Cohen's $d = .63$, indicating a medium-sized effect. At the same time, intuitive parenting was moderately correlated for expectant mothers and fathers in the same families, $r = .54, p < .001$. In 37% of families expectant mothers and fathers showed the same level of intuitive parenting. In 53% of families expectant mothers showed greater intuitive parenting than expectant fathers, whereas in 10% of families expectant fathers showed greater intuitive parenting than expectant mothers.

Correlates of Expectant Fathers' Intuitive Parenting

When considering correlates of expectant fathers' intuitive parenting, in addition to individual scores on intuitive parenting for fathers, we also created an intuitive parenting discrepancy score by subtracting the father's score from the mother's score. This additional variable tapped the extent to which expectant mothers showed greater intuitive parenting relative to expectant fathers, and was included based on the results reported above indicating variability in the balance of intuitive parenting across families.

Correlations of expectant parents' psychological and demographic characteristics with fathers' intuitive parenting and the intuitive parenting discrepancy score are reported in Table 1. Neither expectant fathers' nor mothers' reports of dyadic adjustment were associated with fathers' intuitive parenting behavior or the intuitive parenting discrepancy score. Expectant fathers' parenting self-efficacy expectations were not associated with their intuitive parenting behavior or the intuitive parenting discrepancy score. But, when expectant mothers reported greater parenting self-efficacy expectations, expectant fathers showed less intuitive parenting behavior, $r = -.16, p < .05$. Expectant fathers' beliefs about parent roles were not associated with their intuitive parenting behavior but were associated with the intuitive parenting discrepancy score, such that fathers showed less intuitive parenting relative to mothers when expectant fathers held less progressive beliefs about parent roles, $r = -.22, p < .01$. Expectant mothers' beliefs about parent roles were not associated with expectant fathers' intuitive parenting behavior or the intuitive parenting behavior discrepancy score. Regarding demographic characteristics, when expectant fathers had completed more education, they showed greater intuitive parenting ($r = .23, p < .01$). Similarly, expectant fathers in families with higher annual incomes also showed more intuitive parenting behavior ($r = .22, p < .01$).

Contributions of Intuitive Parenting to New Fathers' Positive Engagement

Prior to regressing fathers' time in positive engagement at 3 months postpartum on expectant fathers' and mothers' intuitive parenting behavior, missing time use data for fathers were multiply imputed using Predictive Mean Matching due to non-normal distribution. Multiple imputation is superior to listwise deletion for handling missing data and is considered a current "best practice" in child and family research (Enders, 2013;

Johnson & Young, 2011). However, given a highly skewed distribution, regression and maximum likelihood techniques can produce imputed values that are extreme outliers. For example, in the current data, ML yielded daily engagement times of greater than 24 hours for some participants with missing data. One approach to handling this situation is the use of Predictive Mean Matching (Landerman, Land, & Pieper, 1997; Little, 1988). In this regression-based technique (as implemented in IBM-SPSS v.21), the imputed value is not the predicted value from the imputation regression equation, but the observed value from the set of participants with the most closely matching predicted values. Although this restricts the potential range of imputed values, it yields a distribution that is much more plausible and consistent with the observed data.

After imputation of missing values, expectant mothers' and fathers' intuitive parenting behavior variables were mean-centered and the interaction term was created from the centered imputed variables. Additionally, the following variables (previously considered as correlates of expectant fathers' intuitive parenting) were centered for inclusion in the model: expectant mothers' and fathers' dyadic adjustment, expectant fathers' and mothers' parenting self-efficacy, expectant fathers' and mothers' beliefs about parent roles, and father's age, education, and family income. Because time diary data tend to follow a distribution consistent with count data, but in this case are over-dispersed relative to a Poisson distribution, a Negative Binomial regression model with robust covariance estimates was used to predict the dependent variable.

Across the 50 individually imputed models predicting fathers' total positive engagement, the median omnibus test of likelihood ratios yielded a significant median chi-squared, $\chi^2(12) = 28.62, p < .01$, indicating that the predictors provide significant improvement in model fit relative to a model containing the intercept alone (there are unfortunately no easily interpretable measures, such as R^2 , that indicate effect size for Negative Binomial models). None of the control variables were significant predictors of engagement, and neither the pooled main effect of expectant fathers' ($b = 0.115, p = .20$) or mothers' ($b = 0.070, p = .42$) intuitive parenting behavior were significant. The interaction, however, was significant ($b = -0.166, p < .05$), and graphing of this interaction by using values that were ± 1 SDs from the means of the independent variables (see Figure 1) indicated that fathers' postpartum positive engagement increased as their intuitive parenting increased, but only when mothers had demonstrated lower levels of intuitive parenting in the PLTP. Simple slopes tests confirmed that the positive slope describing the effect of fathers' intuitive parenting on their positive engagement was significantly different from zero when mother's intuitive parenting was low ($b = 0.273, p < .05$). However, the negative slope describing the association between fathers' intuitive parenting and their positive engagement was not significantly different from zero when mothers' intuitive parenting was high ($b = -0.043, p = .68$). Because of the difficulty in intuitively interpreting the simultaneous effects of both the interaction and the transformation to log values for the Negative Binomial model, we have included Figure 2, which is graphed in the original units and includes more points to illuminate the non-linear relationships.

Discussion

This study has provided preliminary evidence that expectant fathers' intuitive parenting behavior, assessed in the Prenatal Lausanne Trilogue Play (PLTP; Carneiro et al., 2006), holds promise as an indicator of expectant fathers' investment in and preparation for parenting that can be used to better understand the early development of father-child relationships. In particular, we found that expectant fathers' intuitive parenting behavior, in conjunction with their partners' intuitive parenting behavior, was predictive of fathers' subsequent engagement in developmentally appropriate activities with their 3-month-old infants. Moreover, an examination of correlates of expectant fathers' intuitive parenting behavior revealed that expectant fathers showed lower levels of these behaviors than expectant mothers, that intuitive parenting behavior was moderately positively associated for mothers and fathers, and that individual differences in expectant fathers' intuitive parenting behavior were associated with additional parent demographic and psychological characteristics.

On average, as anticipated, expectant fathers were at a disadvantage in intuitive parenting behavior when compared to expectant mothers: they demonstrated lower levels of intuitive parenting behavior than expectant mothers. This finding is consistent with related research indicating that, on average, fathers feel less attached to the fetus than mothers (Ustunsoz et al., 2010; van Bakel et al., 2013) and show less sensitivity than mothers in infancy (e.g., Barnett et al., 2008). Only one prior study tested differences between expectant fathers' and mothers' intuitive parenting behavior in the PLTP (i.e., Carneiro et al., 2006) and found no significant difference. However, Carneiro et al. had only 41 families and hence had reduced power to detect differences. Further, the coding of intuitive parenting behavior in the current study took into account the frequency, variety, and intensity of intuitive parenting behaviors and not just the presence or absence of each behavior as in the original coding system. Overall, the average difference in favor of mothers could stem from the fact that men receive less socialization for the nurturing parental role than women, or from the fact that men do not directly experience pregnancy, and therefore feel relatively unprepared for parenthood (Deave & Johnson, 2008). However, it is important to point out that the distributions of expectant fathers' and mothers' intuitive parenting behavior showed considerable overlap, such that in 37% of families expectant mothers and fathers showed the same level of intuitive parenting. Moreover, ratings of fathers' intuitive parenting covered the entire range of the scale.

These individual differences in expectant fathers' intuitive parenting were closely tied to individual differences in their partners' intuitive parenting, such that as expectant mothers' intuitive parenting increased, so did that of expectant fathers. This interdependence in partners' intuitive parenting is consistent with prior research demonstrating significant, positive associations between mothers' and fathers' sensitivity to their infants (Barnett et al., 2008), although relations between prenatal intuitive parenting and postpartum parental sensitivity have yet to be established. That this association between partners' intuitive parenting exists in couples who have not yet become parents suggests that similarities in partners' parenting could reflect an assortative mating process, in which partners are

attracted to those with similar characteristics (Schwartz, 2013), in addition to a modeling or spillover process (Barnett et al., 2008).

Additional correlates of expectant fathers' intuitive parenting included education and income, with higher-SES expectant fathers demonstrating greater intuitive parenting than lower-SES fathers. This is consistent with research on fathers' postnatal involvement indicating that greater human capital is associated with greater paternal engagement (Cabrera et al., 2011). As such, intuitive parenting, and by extension – expectant fathers' preparation for parenthood – may be enhanced by human capital. Relatively less consistent were associations between expectant parents' psychological characteristics and expectant fathers' intuitive parenting. Results did reveal less of an intuitive parenting “advantage” for expectant mothers when fathers held more progressive beliefs about parent roles, consistent with prior research that has observed greater father competence in father-infant interactions when fathers held more progressive beliefs about their roles (Schoppe-Sullivan et al., 2008). In keeping with a family systems perspective (Cox & Paley, 2003; Minuchin, 1985), mothers' psychological characteristics were also associated with expectant fathers' intuitive parenting. In particular, when expectant mothers had higher parenting self-efficacy expectations, expectant fathers showed lower intuitive parenting behavior. Although the negative direction of this association was not explicitly anticipated, this pattern is not necessarily counterintuitive. Because mothers are most often infants' primary caregivers (Kotila et al., 2013), when expectant mothers feel especially confident in their own parenting abilities, expectant fathers may be less invested in and prepared for involved fathering. Whether this is because these expectant fathers are less motivated and take less initiative, or because their highly confident partners discourage them in a type of maternal gatekeeping process (Schoppe-Sullivan et al., 2008), is unclear.

Just because intuitive parenting behaviors are believed to have originated in humans' evolutionary past (Papoušek & Papoušek, 1987) does not mean that individual differences in intuitive parenting do not exist or that they are not influenced by environmental factors. In fact, Papoušek and Papoušek noted that these intuitive parenting behaviors include a “rich repertoire of adaptive activities lying between very fast and rigid innate reflexes and relatively slow, highly flexible, often culturally determined rational behaviors” (Papoušek & Papoušek, 2002, p. 189). Findings of the present study suggest that these intuitive behaviors may be even more influenced by cultural and environmental factors than previously believed.

Regardless of the origins of individual differences in intuitive parenting behavior, expectant fathers' enactment of these behaviors appeared to be consequential for their positive engagement with their infants in the postpartum period – but not directly. In particular, when considered individually, neither expectant fathers' nor mothers' intuitive parenting was associated with fathers' time in positive engagement activities at 3 months postpartum. However, consistent with a family systems perspective (Cox & Paley, 2003; Minuchin, 1985), the interaction between expectant fathers' and mothers' intuitive parenting was a significant predictor of new fathers' total time in positive engagement with their infants. Higher levels of expectant fathers' intuitive parenting behavior were associated with higher

father positive engagement at 3 months postpartum, but only when maternal intuitive parenting was low.

This pattern may suggest a maternal gatekeeping process (Schoppe-Sullivan et al., 2008) in which mothers that are especially well prepared for parenthood trump even highly intuitive fathers when it comes to postnatal parental positive engagement. Alternatively, expectant fathers who are especially committed to parenting, who feel greater attachment to the fetus, and thus already appear more natural and comfortable enacting their intuitive parenting behaviors in the PLTP, may take greater initiative in parenting when paired with partners who are less intuitive. These highly engaged fathers may have the potential to buffer children from exposure to less than optimal maternal parenting (Mezulis, Hyde, & Clark, 2004). Additional research is needed to unpack these findings further to indicate exactly what type of process is occurring and what the implications may be for the quality of parenting postpartum.

Although the current study was the first to directly observe expectant fathers' intuitive parenting behavior in the PLTP in the U.S., the sample we used consisted of primarily highly educated, dual-earner, White, heterosexual couples and therefore our findings may not generalize to other populations of expectant parents. The use of time diary data versus self-reports to measure fathers' postnatal positive engagement was a key strength of this study, but we recognize that even these detailed reports may vary in accuracy depending on how well parents followed the directions and reported their activities as they happened. Moreover, our time diary measures did not directly capture the quality of father-infant interactions, which may be more directly related to expectant fathers' intuitive parenting behavior. Future research should confirm our results in samples more diverse in race/ethnicity and SES, and include measures directly assessing the quality as well as the quantity of father-infant interactions. Moreover, given that the correlates of expectant fathers' intuitive parenting we examined were not associated with fathers' postpartum positive engagement, more work is needed to further our understanding of the role of intuitive parenting in relation to other factors implicated in the development of father-child relationships. In particular, examination of expectant fathers' intuitive parenting behavior in conjunction with other indices of prenatal involvement, prenatal attachment, and fathers' representations, and consideration of the role of infant characteristics in associations between prenatal intuitive parenting and postnatal parenting behavior, may be fruitful.

Parent-child relationships do not begin at the moment of a child's birth; rather, they start to develop well before this life-changing event. This is not only true for mothers but for fathers as well. As such, progress in understanding variations in fathers' postnatal relationships with their children, which are consequential for children's development, will require a better understanding of fathers' feelings, experiences, and representations in the prenatal period, and how fathers begin to enact their paternal roles in the prenatal period via intuitive parenting behavior and involvement in other preparations for the child's arrival. By extension, prevention and intervention programs aimed at the prenatal period (e.g., Doherty, Erickson, & LaRossa, 2006; Feinberg & Kan, 2008) may be especially fruitful for helping fathers develop the high quality parent-child relationships that will best support their children's positive development.

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Appendix

Intuitive Parenting Behaviors in the Prenatal LTP – Father and Mother

This scale assesses parents' use of six parenting behaviors identified in the literature as intuitive: holding or facing the baby, dialogue distance, baby-talk and/or smiling at the baby, caressing and/or rocking, exploring the baby's body, and preoccupation with the baby's well-being. Each parent will be scored separately based on the frequency, number, and quality of behaviors exhibited.

1 = The parent displays no intuitive parenting behaviors. They may seem to have little knowledge of how to approach the baby or appear entirely disinterested in the task.

2 = The parent displays 1 to 2 intuitive parenting behaviors, but they are not consistently present throughout the entire episode, and the parent does not appear to be confident/comfortable in their actions.

3 = Up to 3 intuitive parenting behaviors are present, but repeated/maintained only a few times throughout the play; or the parent may have a fairly limited repertoire of behaviors. The parent appears to have a sense of what they are doing, but he/she also displays some self-doubt (e.g., the parent starts a game with the baby but then looks up for reassurance).

4 = The parent shows 3 to 5 different intuitive parenting behaviors and repeats/maintains the majority of them throughout the episode. The parent is mostly confident and natural in his/her actions, though may display some self-doubt or reservation once or twice.

5 = The parent displays 5 to 6 intuitive parenting behaviors. These are consistently maintained/repeated throughout the episode and the parent is comfortable/natural using them.

Figure 1. Association between expectant fathers' intuitive parenting and fathers' total positive engagement at 3 months postpartum at different levels of expectant mothers' intuitive parenting behavior.

Figure 2.

Association between expectant fathers' intuitive parenting and fathers' total engagement at 3 months postpartum at multiple levels of expectant mothers' intuitive parenting behavior, expressed in minutes.

Table 1
Intercorrelations and descriptive statistics for expectant fathers' intuitive parenting and parent characteristics

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	M/Mdn	SD	n
1. F Int Parenting	1.00	-.49**	-.01	.08	-.06	-.16*	.09	-.04	.05	.23**	.22**	3.22	.96	179
2. Int Parenting Disc		1.00	-.12	-.06	-.05	.05	-.22**	.00	.11	-.05	-.03	.60	.92	179
3. F Dyadic Adj			1.00	.40**	.10	-.01	.04	-.02	.02	.11	.03	5.50	.49	173
4. M Dyadic Adj				1.00	-.13	.05	-.06	.06	.10	.26**	.21**	5.60	.44	180
5. F Self-efficacy					1.00	.20**	.17*	-.02	-.12	-.31**	-.19*	3.45	.42	168
6. M Self-efficacy						1.00	-.14	-.15	-.15*	-.14	-.22*	3.52	.37	179
7. F Beliefs							1.00	.30**	-.01	-.05	-.10	4.12	.49	172
8. M Beliefs								1.00	-.01	.00	.03	4.26	.52	178
9. F Age									1.00	.29**	.31**	30.20	4.81	181
10. F Education										1.00	.50**	6.00	n/a	182
11. Family income											1.00	79500	n/a	182

Note. F = Father; M = Mother; Int = Intuitive; Disc = Discrepancy; Adj = Adjustment.

Ns vary due to missing data.

*
 $p < .05$

**
 $p < .01$.