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Parenting in Context: Martial Adjustment, Parent Affect, and Child Temperament in Complex Families

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Abstract

The parent-child relationship impacts many later social and cognitive outcomes. The current study compared correlates of mother vs. father dyadic interactions with their twin children in 503 families at 36-months of age. Measures included parent reported child temperament, observed parents' marital quality and affect, and parents' sensitivity, responsivity, and growth fostering with their children. Different patterns emerged for mothers and fathers: marital quality related to higher sensitivity for fathers, whereas positivity related to higher sensitivity for mothers. Child inhibitory control was related to fathers' response to child distress and mothers' use of cognitive growth fostering. In sum, parental engagement varied depending on marital and child factors, although different patterns emerged for mothers and fathers.

Keywords

parenting; fathers; marital adjustment; parent affect; temperament

In the presence of a supportive and sensitive caregiver, children develop healthier relationships with caregivers and others, better emotion regulation, and stronger social and behavioral outcomes (Bradley & Corwyn, 2008; Cabrera, Shannon, & Tamis-LeMonda, 2007). Parents' warm and responsive engagement with their child, particularly during a task when children must learn to problem solve and regulate their emotions, models appropriate conduct in challenging situations. Children whose parents offer sufficient guidance and support during such tasks tend to develop better socioemotional competencies (Eisenberg et al., 2001; McElwain, Halberstadt, & Volling, 2007). Alternatively, children of parents who are insensitive or express negativity during difficult tasks have more behavior problems and poorer cognitive control (Eisenberg et al., 1999; Fabes, Leonard, Kupanoff, & Martin, 2001). Parenting quality is indeed the basis for much of children's later socioemotional, cognitive, and healthy development; therefore, it is important to understand how parent personality, the marital relationship, and even characteristics of the children themselves may influence effective parenting (Belsky, 1984).

Factors Influencing Parenting Behaviors

"Parenting" is a broad term referring to myriad behaviors; parenting behaviors by mothers and fathers may vary widely, even within the same family. Belsky's (1984) process model of parenting proposes that parenting is determined by contextual or environmental factors,

parent characteristics, and child characteristics. In addition, family systems theories hold that complex but related dynamics influence the multiple relationships evident in families (Erel & Burman, 1995). The spillover hypothesis suggests that thoughts, feelings, or behaviors about one aspect of the family system (i.e., the marital relationship) transfer to another aspect of the system (i.e., the parent-child relationship) (Cox, Paley, & Harter, 2001; Erel & Burman, 1995). Taken together, these theories propose a complex system of interactions that may impact parenting and parent-child relationships.

Meta-analyses reviewing data on marital quality and parenting indicate an average effect size of $d = .62$ for the association of marital conflict with poor parenting behaviors (Krishnakumar & Buehler, 2000), and an average effect size of $d = .44$ for marital quality's impact on parent-child relationships (Erel & Burman, 1995). Spillover from the marital relationship affects parenting directly, and parent-child relationships perhaps more indirectly. Further, the marital relationship may relate to father-child processes more strongly, or differently, than to the mother-child relationship (Corwyn & Bradley, 1999). Parent personality or affect also relates to parenting (Rueger, Katz, Risser, & Lovejoy, 2011) and the parent-child relationship (Achtergarde, Postert, Wessing, Romer, & Müller, 2015). Thus, we examine both marital quality and parent affect in relation to parent-child dyadic interactions.

Child temperament may also modify how parents perceive and interact with their child. Temperament reflects children's typical modes of reactivity (Goldsmith et al., 1987). Parenting behaviors differ depending on the child's temperament, though directionality of such processes is difficult to determine empirically. For example, mothers are more sensitive and warm with toddlers who are higher in regulatory control (Feldman & Klein, 2003). Mothers are also more engaged, but not necessarily more sensitive, when infants and toddlers are higher in temperamental positivity, though infant positivity was unrelated to father-child interactions (Planalp et al., 2013). Further, mothers use less negative parenting with children rated more positive (Bridgett, Laake, Gartstein, & Dorn, 2013). Mothers of infants higher in negativity are more intrusive (less sensitive) at ten months of age (Perry, Dollar, Calkins, & Bell, 2017). Fathers engage more with children lower in negativity (McBride et al., 2005; Planalp & Braungart-Rieker, 2016) and are less responsive to infants higher in negativity (Volling & Belsky, 1991). In sum, child positive and negative temperament, as well as regulatory behaviors relate to parenting, though in different ways for mothers and fathers.

Measures of Parenting

Parent sensitivity is perhaps the most well-studied component of parenting. Sensitive parents correctly interpret their child's needs and respond appropriately, whether the child is distressed, making bids for the parents' attention, or simply engaging in communication or play behaviors. Children of more sensitive parents have higher quality parent-child relationships (de Wolff & van IJzendoorn, 1997) and better emotion regulation (Braungart-Rieker, Garwood, Powers, & Wang, 2001; Gunning, Halligan, & Murray, 2013). Importantly, parents' sensitivity to their child during times of non-distress is qualitatively different responsiveness to child distress, with differential effects on child development

(Davidov & Grusec, 2006; Leerkes, Blankson, & O'Brien, 2009; McElwain & Booth-LaForce, 2006). The extent to which parents respond appropriately to their child's needs in times of distress can teach the child how to handle their own negative reactions more effectively, improving their own self-regulatory abilities and coping skills (Davidov & Grusec, 2006). Interpreting and responding to a child's needs in times of distress, rather than in non-distress, could be considered one of the most important components in the development of child well-being (Bowlby, 1969; Crockenberg & Leerkes, 2003).

Notably, parents' sensitivity and responsiveness toward their child are in *response* to children's behaviors. Growth fostering measures, on the other hand, assess the parents' ability to engage their child in tasks that *elicit* socially and cognitively appropriate behaviors from the child rather than responding to child prompts (Sumner & Spietz, 1994). Growth fostering is often neglected in the literature even though it relates to children's learning and healthy development (Banerjee & Tamis-LeMonda, 2007). Socioemotional growth fostering occurs when the parent provides an appropriate emotional context an adequate setting for the social exchange that occurs during teaching. Cognitive growth fostering occurs when the parent provides intellectual stimulation that is right above what the child is able to understand. Because growth-fostering can be observed during teaching tasks where the objective of the task changes as the child grows older, parents must recognize and adapt to the child's needs in a developmentally appropriate manner. In this way, growth fostering is a related, yet qualitatively different, aspect of parenting than sensitivity and responsivity.

Parenting for mothers versus fathers.

Though parents' levels of sensitivity and engagement with their children are often related, correlates and outcomes associated with mothering and fathering can differ (Cabrera, Fitzgerald, Bradley, & Roggman, 2014; Planalp, Braungart-Rieker, Lickenbrock, & Zentall, 2013; Pleck & Hofferth, 2008). In addition, fathers are more involved as children enter the preschool years (Planalp & Braungart-Rieker, 2016) and are typically more involved in play and cognitive engagement activities than in caregiving (Fletcher, St George, & Freeman, 2013). Models of fathering suggest that fathers stimulate and promote active behaviors in their children more so than mothers (Paquette & Bigras, 2010). Thus, the use of a teaching task to examine father-child dyads may be more ecologically valid and representative of the developing typical father-child relationship. None of the aforementioned studies directly compared parent behaviors using a teaching task with toddlers.

Of the limited work that explores parents' sensitivity, responsivity, and growth fostering, few mother vs. father differences emerge for sensitivity, responsivity, or socially appropriate growth fostering with infants (Harrison & Magill-Evans, 1996; Nakamura, Stewart, & Tatarka, 2000). However, fathers' behaviors with children were less focused on their child's cognitive growth than mothers' behaviors in both studies. Notably, the Nakamura and colleagues study only included 15 father-child dyads at 6 months of age, and the Harrison and Magill-Evans study compared 54 term with 49 preterm infants at 12 months of age. In another study of 110 infants ranging from 2–24 months, fathers who were more involved in their infant's typical daily care used more cognitively-focused growth fostering than fathers less involved in daily care (Boechler, Harrison, & Magill-Evans, 2003), with no differences

in sensitivity or responsivity. Moreover, similar comparisons of multiple parenting variables across mothers and fathers with toddlers and young children rather than infants have not been examined, particularly using a large sample; we include data from 503 families. Even in the limited number of studies that include both parents, few use direct statistical comparisons of mothers' and fathers' parenting (Cabrera, Volling, & Barr, 2018; Planalp, Du, Braungart-Rieker, & Wang, 2016). Thus, we compare parenting behaviors within a family to determine how multiple components of parenting (sensitivity, response to distress, and growth fostering) differ across mother-father dyads.

The Current Study

Based on Belsky's process model of parenting, we examined the degree to which marital relationship quality, parent affect, and child temperament were associated with parenting during a parent-child interaction task at 36-months of age. No previous work using this sample has included information from the birth narrative, teaching task, or fathering data at 36 months.

Parents engage with their children differently as the child ages (Mehall, Spinrad, Eisenberg, & Gaertner, 2009; Planalp & Braungart-Rieker, 2016; Pleck & Hofferth, 2008) and child temperament also changes as the child develops more advanced physical and cognitive skills (Rothbart & Bates, 2006). As a result, it is difficult to disentangle age effects versus effects of child temperament on parenting behaviors. We use a unique design to study Belsky's process model in families with twins; one twin becomes an age matched control for their co-twin. In this way, age is kept constant, but we can examine how child temperament uniquely relates to parenting as both parents independently engage with two children of potentially varying temperaments but at the same age. We expect that parents will be more sensitive and responsive to infants who are higher in regulatory control and lower in negativity.

We also compare relations between martial adjustment and parenting for mothers versus fathers, as spillover from the marital relationship may alter fathers' parenting differently than mothers' parenting (Cummings, Goeke-Morey, & Raymond, 2004). In addition, increasingly comprehensive research on fathering, father-child relationships, and consequences associated with fathers' role in the family (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Cabrera et al., 2018; Cummings & Davies, 2002) highlight that mother-child and father-child relationships develop and impact child outcomes differently (Braungart-Rieker et al., 2001; Grossmann et al., 2002; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). Thus, correlates of both mother *and* father behaviors are examined to better understand parenting processes. We expect that parents with better marital adjustment will engage in more sensitive, responsive behaviors with their children. Based on previous work (Cummings & Davies, 2002; Cummings, Goeke-Morey, & Raymond, 2004), we expect fathers to be more affected by marital adjustment than mothers. Further, parents who exhibit more positivity will engage in more effective parenting (Erel & Burman, 1995).

To our knowledge, no research with a family-wide focus examines relations between child temperament, the marital relationship, and parents' dyadic interactions with three-year olds during a teaching task. Thus, we also aim to fill a gap in the literature by comparing

mothering and fathering behaviors toward their toddlers. This design allows us to better understand the unique influence of temperament on parenting when child age is constant (36-months), and directly compare mothers' and fathers' behaviors within families.

Method

Participants

Participants were part of a larger study (N=901 families) examining emotional development in young children. We recruited families with twins using multiple methods, including state birth records, newspaper birth announcements, television advertising, and flyers in doctors' offices. Lab-based assessments occurred when children were 36-months of age. The sample used in current analyses comprised 991 toddlers (n = 503 families) with mother- and/or father-child interactions at three years of age. Children were 86.8% Caucasian (2.8% Hispanic), 2.7% African-American, and 1.5% were Asian-American. Mothers were, on average 31.73 years old (S.D. = 4.68) and fathers were 33.55 years old (S.D. = 5.20) at the time of the child's birth. Most parents had completed college (77% for mothers and 76.8% for fathers), and median family income was between $51,000 and $60,000. See Table 1.

Procedures

Three Year Laboratory Visit.—At 36 months of age, families came into the laboratory to complete a behavioral visit that lasted approximately 2 hours. For the first half of the visit, children independently completed a series of laboratory tasks (not used in this paper), with two experimenters in two separate rooms. During a 30-minute break during which the child was given a snack and allowed to play, parents participated in the Birth Narrative Task. After this, mothers and fathers separately engaged one of their children in a 15-minute teaching task, from which we scored parenting quality. After the first teaching task, parents switched which child they were interacting with and engaged in another teaching task with the second child. Mothers and fathers were also given a set of questionnaires asking about family demographics and child temperament to be mailed back to the lab within two weeks. All procedures are approved by the University of XXX's Institutional Review Board (Study Title and Protocol Number).

Teaching Task.—Parents were instructed to teach their child to complete one task from a preselected list of tasks that the child could not already do, but one that they might be able to accomplish during the visit. Task options included printing his/her first name, drawing a shape using a crayon, cutting out a pre-drawn shape using safety scissors, or tying a shoelace. The second parent engaged with their child using a different task than the first parent. Interactions were videotaped and later scored using a standardized dyadic scoring system.

Birth Narrative.—Parents were asked to interact and discuss their birthing experience. Many narrative tasks aimed at scoring marital relationships use prompts that elicit conflict, for example, money problems or their most recent argument (i.e., Cummings, Goeke-Morey, & Papp, 2004; Schoppe-Sullivan, Mangelsdorf, Brown, & Sokolowski, 2007). As our overarching goal was to examine infant development, parents understood that the study was

about their children and a birth narrative fit the study rationale. For many parents, twins can be a surprise and lead to more difficult pregnancy and birth experiences than with singleton children. The birth narrative prompt elicited comments and behaviors that allowed us to characterize parent affect and the marital relationship.

Parents sat next to each other and were asked to retell the story of having their children, starting with finding out that they had a twin pregnancy to the first few weeks after birth. Experimenters told the parents to "talk to me as if you were talking to one of your friends over coffee. Rather than just facts and dates, tell me what you were thinking and what emotions you were feeling." Interactions were videotaped and later scored using a dyadic scoring system (described below). The length of each interaction was recorded (M = 12 minutes, S.D. = 7 minutes). Analyses controlled for Birth Narrative length.

Missing Data.—Data were collected from mothers, fathers, and their children. 517 families came to the lab for the 36-month visit. Of these 517 families, 490 (95%) produced codable video for the teaching task and 380 (74%) produced codable video for the birth narrative task. The main reason for lack of codable data was that only one parent attended the lab session (in such cases, the father was the missing parent 79% of the time). Fewer cases were missing from data other than the narrative task; for example, 51 families did not return the demographic questionnaire after the visit. Of course, the father's absence would leave missing teaching task data for both children in the family. Thus, we selected one twin randomly from each family to test for non-random missingness at the family level. Little's MCAR (Missing Completely at Random) Test incorporating all study and demographic variables within a family was nonsignificant ($\chi^2_{(df = 2710)} = 2723.75$, $p = .42$), indicating that patterns of missing data were not systematically biased due to any variables of interest. Therefore, analyses used maximum likelihood estimation (MLE; Enders, 2010), a robust method for calculating estimates using all available data.

Measures

Parent Affect and Marital Adjustment.—Based on previous research (Easterbrooks & Emde, 1988) and using a coding system developed by Mangelsdorf and colleagues (Brown, Schoppe-Sullivan, Mangelsdorf, & Neff, 2010; Frosch, Mangelsdorf, & McHale, 1998; Schoppe-Sullivan et al., 2007), we scored several dimensions assessing the quality of marital interactions. The coding system did not incorporate aspects of the actual story content, only how the parents engaged in the telling of their children's birth story.

Eleven behaviors were coded on a scale of 1 "very low" to 7 "very high". Dimensions included joint scores for dyadic components of the task: engagement/interpersonal involvement, cooperation/joint task involvement, balance/reciprocity, sensitivity/support, and an overall global rating of interaction quality. We also scored fun/enjoyment, irritation/antagonism, and positive and negative affect independently for each dyad member. Three trained coders who were unaware of the couples' questionnaire responses or offspring identity (i.e., which dyads were parents to which children) scored the birth narrative task by giving each episode one rating on each scale. A randomly selected sample of 10% of the

tasks were scored for reliability with a master coder. Interrater reliability for the three coders across the eleven scales ranged from α = .88 to 1.00.

A principal components analysis with direct oblimin rotation indicated three broad dimensions covering mother and father interactional quality: both parents' Positive Affect, both parents' Negative Affect, and overall Marital Adjustment. Because parent scales were all derived from the same task, we conducted tests for multicollinearity by regressing the three factors scored from the Birth Narrative on each parent-child interaction. Results indicated that marital quality, positive and negative affect in parents were independent (Tolerance statistics were all > .20).

The Positive Affect scale included fun/enjoyment and positive affect for each parent (α = .78 for fathers and α = .84 for mothers). The Negative Affect scale included irritation/ antagonism and negative affect for each parent (α = .95 for fathers and α = .91 for mothers). The Marital Adjustment scale included engagement/interpersonal involvement cooperation/ joint task involvement, balance/reciprocity, sensitivity/support, and the overall interaction quality (α = .84). Higher scores indicate a higher level of positive affect for each parent, negative affect for each parent, and more balanced, engaged marital interaction, respectively.

Children's Behavior Questionnaire.—Parents each completed a shortened version of the Children's Behavior Questionnaire (CBQ; Rothbart et al., 2001) for each child at 36-months. Items (n = 106) measured multiple dimensions of temperament: activity level, anger, approach behaviors, attention focusing, attention shifting, inhibitory control, high intensity pleasure, fear, sadness, shyness, and smiling and laughter. Parents responded on a 1 'extremely untrue of your child' to 7 'extremely true of your child' scale. Following previous reports that indicate a three-factor CBQ solution to assess temperament (Putnam, Ellis, & Rothbart, 2001; Rothbart et al., 2001), we averaged individual scales to create regulatory, positive and negative composites separately for mothers and fathers. Child regulation was measured using only the CBQ inhibitory control scale. Though theoretically similar to inhibitory control, the attentional focusing and attentional shifting scales showed low reliability in our data (αs = .42 for mothers and .51 for fathers) so were not included. The positivity factor included activity level, approach, high intensity pleasure and smiling and laughter. The negativity factor included the anger, fear and sadness.

Parent/Child Dyadic Interaction.—We used the Nursing Child Assessment Satellite Training teaching scale (NCAST; Barnard, 1994) to assess the quality of parent-child interactions during a structured laboratory-based teaching task. The teaching scales are used in children up to three years of age (Parent-child relationship programs at the Barnard Center, 2015; Sumner & Spietz, 1994). Coded by assessing the presence/absence of items from a checklist, we scored parents'/caregivers' patterns of action and response while engaged in a dyadic teaching interaction. Dimensions coded for each parent-child dyad include the following: s*ensitivity to child's cues* is measured using 11 items that ask how well the parent can identify the child's cues and respond appropriately ("Caregiver positions child so that child can reach and handle teaching materials"). *Response to child's distress* is measured with 10 items assessing how well the parent can calm the child when he/she is upset ("the mother "avoids using abrupt movements or rough handling" when the child

signals during distress"). *Socioemotional growth fostering* is measured with 10 items qualifying whether parents provide the child with the appropriate emotional context for the learning task as well as an adequate setting for the social exchange that occurs during teaching ("Caregiver laughs or smiles at child during the teaching interaction"). Finally, *cognitive growth fostering* is measured using 16 items that index whether parents provide the appropriate level of intellectual stimulation for the age of the child ("Caregiver uses explanatory verbal style more than imperative style in teaching the child"). Scores are simply the sum of items checked.

Coders underwent a rigorous training process, based on a master coder's training at a national workshop sponsored by NCAST developers, to ensure reliability of scoring. To maintain independence of coding, no single coder scored both children within the same family. Because this measure was a checklist, standard kappa and ICC estimates are inappropriate (DeVellis, 2016) so we used percent agreement as an indicator of coder reliability. A master coder randomly scored 10% of tapes and agreement ranged from 82.30% to 95.77% (means = 92.56% for sensitivity to child's cues; 91.08% for response to child's distress; 89.33% for socioemotional growth fostering; 90.34% for cognitive growth fostering). Of note, all parents engaged in each behavior at rates significantly greater than zero (*t*s range from 144.39 to 200.62, $p < .0001$). Means and standard deviations for each variable are in Table 2.

Data Analyses

We used SAS PROC MIXED to fit multilevel models (Singer & Willett, 2003) relating marital adjustment, parent affect, and child characteristics to parenting behaviors. To account for the family structure, we used a repeated measures long data format (Kashy, Donnellan, Burt, & McGue, 2008), whereby we have data for two children within the same family, with reports of each child from both mothers and fathers. When examining family-wide processes, data from members within a family are *nonindependent* (Gonzalez & Griffin, 2012; Kenny, Kashy, Cook, & Simpson, 2006) and consequently do not conform to standard regression assumptions. To account for this, we used a statistical model that allowed the residuals from correlated observations from mothers to covary with the corresponding observations from fathers and observations from Twin 1 to covary with observations from Twin 2 (Kenny et al., 2006). We also use both mother and father derived data; for example, in analyses relating to mothers' level of sensitivity, we use mother reports of child temperament and mother affect, in analyses relating to fathers' level of sensitivity, we use father reports of child temperament and father affect. To answer our research question of whether mothers and fathers differ in their parenting of young children, we examined a single model with a dummy coded "parent" variable in analyses to be able to statistically infer differences between mothers' and fathers' behaviors (Planalp et al., 2016).

$$y = b_0 + b_1(Father) + b_2(variable) + b_3(Father * variable) + \sigma^2_e$$

b_0 represents the estimated level of mothers' parenting behavior; b_1 represents the estimated *difference* in parenting behavior for fathers (with the same child); b_2 represents the effect of a variable of interest (i.e., marital quality) on the mothers' parenting behavior; b_3 represents

the estimated *difference* in parenting for fathers contingent upon the variable of interest. This resulted in four final models, each including both mothers and fathers, for the four parenting variables: sensitivity to cues, response to distress, socioemotional and cognitive growth fostering. In sum, we account for family-wide dyadic data but are also able to statistically compare mother and father processes within the family.

Results

Descriptive statistics and correlations among primary variables

Associations of demographic variables (parent age, education, and family income) with parenting were mostly non-significant. Due to the relatively small effect sizes (correlations less than .10), and the ambiguous answer to the question of whether education and income should be considered as nuisance variables (Meehl, 1970), we did not include or control for these demographic measures in further analyses. Significant differences in how parents interact with identical versus fraternal twin children are not commonly observed (Lytton, 1977; Rowe, 1994). Similarly, in secondary analyses we did not find significant differences in how parents interacted with identical, same-sex fraternal or opposite-sex fraternal twins; thus, we do not differentiate by twin zygosity.

Descriptive statistics and correlations for all variables are in Table 2. Several patterns emerged: in general, mothers' parenting behaviors were related, whereas fathers' socioemotional growth fostering was unrelated to other fathering behaviors. Marital adjustment was related to several parenting variables for fathers but only maternal socioemotional growth fostering. Fathers with high positive affect showed more cognitive growth fostering but mothers' affect (both positive and negative) was unrelated to parenting using simple correlations.

Multilevel models relating parent and child temperament to parenting

Table 3 presents results from four multilevel models comparing mothers' and fathers' behaviors (separate models for sensitivity to cues, response to distress, and socioemotional and cognitive growth fostering). Analyses controlled for the order in which children participated in the interaction task with both parents. No significant differences occurred for average quality of parenting behaviors. However, when taking parent and child characteristics into account, several patterns emerged with varying associations with mother vs. father behaviors.

First, fathers were more sensitive when marital adjustment was higher, and mothers were more sensitive when mother positive affect (from the dyadic narrative task) was higher. In addition, significant *within* couple differences in sensitivity to cues indicated that positive affect did not impact fathers' sensitivity and marital adjustment did not impact mothers' sensitivity (mother vs. father comparisons: $p = .02$ for marital conflict and $p = .02$ for parent positive affect). Both mothers and fathers used more socioemotional growth fostering when marital adjustment was higher, and this relation was statistically stronger for fathers (Est = .69) than mothers (Est. = .28, with a significant difference between the estimates ($p = .03$). Fathers used significantly less socioemotional growth fostering when parent positive affect

was higher, but the difference for mothers did not reach statistical significance. Finally, fathers used more cognitive growth fostering when marital adjustment was higher.

Child inhibitory control was the only temperament measure associated with parenting behaviors. Fathers were more responsive to a distressed child when they perceived their child to have higher inhibitory control. Mothers used more cognitive growth fostering when they perceived their child's inhibitory control to be higher.

Discussion

Based on several models of parenting (Belsky, 1984) and family process (Cox et al., 2001), we examined the extent to which parent and child characteristics might relate to parent-child interactions in early childhood. Results from multilevel models indicate that marital adjustment, parent positive affect, and child inhibitory control differentially related to mother-child versus father-child dyadic interactions in a sample of families with twins.

Marital Adjustment and Parent Affect

We replicate findings suggesting that spillover from the marital relationship impacts parenting behaviors and parent-child interactions (Coiro & Emery, 1998; Cummings & Davies, 2002). Mothers were more sensitive to their child's cues when her own positive affect was higher, and fathers were more sensitive when marital adjustment was higher. As typically primary caregivers (McBride et al., 2005; Pleck & Hofferth, 2008), mothers may have less choice in how and when they engage with their children, yet mothers with a more positive disposition may be more positive and sensitive with their children as well as their partners. Of note, our measurement of the marital relationship focused on cooperation, balance and reciprocity and not marital conflict. Thus, we expand on the extant marital literature by showing that spillover is not limited to negative aspects of marital quality but positive aspects of parents' relationships (i.e., marital adjustment) as well.

Parents used more socioemotional growth fostering when marital adjustment was higher, yet, as anticipated, this relation was significantly stronger for fathers. Fathers also used more cognitive growth fostering when marital adjustment was higher. These findings concur with previous literature suggesting that the marital relationship affects parenting of infants and toddlers, particularly for fathers (Coiro & Emery, 1998; Cummings & Davies, 2002). Mothers' multiple roles within the family may be more discrete, whereas fathers' roles are more interdependent and one relationship may spillover into another (Coiro & Emery, 1998; Doherty, Kouneski, & Erickson, 1998).

Our key finding was that marital adjustment and parent positive affect within the marital interaction task differentially related to mother and father parenting behaviors in the parent-child teaching task. The quality of parents' marital relationship impacts children's socioemotional and academic outcomes (Cummings & Davies, 2002; Harold, Aitken, & Shelton, 2007; Rhoades, 2008). For example, children with greater exposure to marital conflict are more aggressive (Cummings, Goeke-Morey, & Papp, 2004) and exhibit fewer prosocial behaviors (McCoy, Cummings, & Davies, 2009). Parenting of infants and young children, particularly when affected by marital adjustment or conflict, may set the stage for

these later problem behaviors. Though we are not able to infer causality with our data, identifying emerging patterns of parent-child relations during the preschool ages, a time when children are developing a sense of self (Kagan, 1981) and becoming more independent, is an important step before testing causal claims.

Child Inhibitory Control

Fathers were less responsive to their child's distress when the father rated his child higher in inhibitory control. Fathers may expect children who are characteristically more effective in regulating their own emotions and behavior to be able to recover from distress on their own. These fathers would then not intercede on the child's behalf to help them regulate distress during the teaching task. Similar to previous work (Eisenberg et al., 2010), mothers used more cognitive growth fostering when they rated their children higher on inhibitory control. Parents can have a profound effect on how a child learns to regulate behavior and emotion; enhanced growth fostering may contribute to higher child inhibitory control. As we are not able to infer directionality given our data, mothers may engage their child in teaching and learning more when they deem their child able to reciprocate more effectively.

We did not find any significant relations for child positivity or negativity. Inhibitory control emerges rapidly during the preschool years (Posner & Rothbart, 2000). During this period, children learn to more effectively regulate not only their behaviors, but their emotions as well; thus, parent reports of toddler's inhibitory control might overshadow the effect of child affective response during parent-child interactions. Of note, mothers and fathers completed questionnaires for each child's temperament separately. By using separate reports instead of averaging across parent, we garner a truer picture of how each parent's perception of his or her child's temperament might modify parenting behaviors for each parent-child dyad. Nevertheless, we add to existing literature examining how child temperament relates to parenting within a family system with two children of the same age; thereby teasing apart child temperament versus age effects on parent behaviors.

Limitations and Conclusions

The use observational measurement of parent-child interactions as well as marital adjustment and parent affect is both a strength and limitation of our study. Observational assessment of parent-child dyadic interactions illustrates how various factors are associated with parent-child relationships but are not confounded by parents' perception or reports of their parenting. Observational assessment instead offers independent accounts of parent-child interactions. However, laboratory observations are also limited by the nature of the structured environment; families may interact differently in their home than they do in the lab. Further, though we used multiple methods (parent reported temperament, independent parent-child interactions, dyadic parent-parent narratives), we were not able to examine co-parenting in this study. The parenting tasks assessed mothers and fathers separately and not in parent-child triads. A focal argument we make is that context is important in examining parent-child relationships; thus, future research may wish to include separate as well as co-parenting assessments of mothering and fathering behaviors.

We did not include child gender in our analyses. In a meta-analysis on parenting of twins, Lytton and Romney (1991) found few differences in how mothers and fathers engaged with sons and daughters; we did not find gender differences in our temperament scales nor did parents engage differently with same-sex versus opposite-sex twins in our sample; thus, we did not anticipate significant gender findings. Even so, we did examine each model with gender as a covariate and results did not differ from those presented.

In addition, because our analyses were already complicated by including a dummy code for each mother and father-child score as well as a repeated measurement accounting for multiple children within the same family and a heterogeneous covariance structure, we were not able to incorporate interactions between marital, parent, and child variables as correlates of parenting. However, temperament may moderate relations between marital adjustment and parenting. For example, parents report higher marital adjustment when they also report that their children are more regulated (Mehall et al., 2009). Future research would benefit from examining potential moderating mechanisms associated with parenting behaviors in early childhood.

Because our data were not collected longitudinally, we cannot make strong inferences about directionality of effects. For example, we proposed earlier that parents are more responsive to children higher in inhibitory control. However, parental responsivity might also foster higher inhibitory control. Our statistical model also did not control for mothering behaviors on fathering or vice versa. Many studies find that mothers' and fathers' parenting behaviors are related and that mothers are potentially gatekeepers of fathers' time with their children (McBride et al., 2005). These studies often use models that either examine mothers and fathers separately, or control for one parents' behavior on the other. Instead, we compared processes for mothers and fathers and controlled for shared covariance within each family. Finally, our findings are based on a mostly Caucasian, well-educated sample. Examination of parenting differences in more diverse populations is warranted.

Nonetheless, our large sample and advanced statistical modeling allowed us to make direct comparisons between couples while controlling for multiple offspring. This approach provides a unique way to increase power to interrogate correlates of parenting while avoiding biases that could arise from failing to account for the non-independence among siblings. Our results suggest that qualitative aspects of mothers' and fathers' parenting behaviors are not as disparate as previous research suggests. Notably, however, though the average level of parenting is similar, the factors associated with how mothers and fathers reach those average levels does differ.

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Table 1.

Participant demographic characteristics

Child Sex	***n* = 494 female**	***n* = 497 male**
Child Racial Background		
Caucasian/White	860 (25 Hispanic)	
African American/Black	24	
Asian	14	
American Indian	6	
Family Income	Median = $51,000 - $60,000	
	Mean	*Std. Dev.*
Mother Age (years)	31.73	4.68
Father Age (years)	33.55	5.20
Mother Education (years)	15.37	2.40
Father Education (years)	15.29	2.63

Note: Although total N = 991, sample sizes for some demographic variables varied due to missing data.

Table 2.

Descriptive statistics and correlations among variables

	1	2	3	4	5	6	7	8	9	10
1. Sensitivity to cues	**.07**	.10**	.14**	.16**	−.01	.08	.04	−.01	.02	−.02
2. Response to child's distress	.20**	**.11****	.20**	.08*	−.03	−.05	−.04	.05	−.04	.07
3. Socioemotional growth fostering	.00	−.05	**.12****	.23**	.10*	.07	.06	.05	−.06	.03
4. Cognitive growth fostering	.48**	.14**	.23**	**.18****	.08	.02	.04	.12**	−.08	−.01
5. Marital adjustment	.10*	.03	.15**	.17**	**1.00**	.56**	−.15**	.03	−.02	.03
6. Parent positive affect	.03	.03	.03	.12**	.69**	**.87****	−.20**	−.02	.02	.08
7. Parent negative affect	−.05	−.04	.02	−.02	−.19**	−.21**	**.89****	−.04	.03	−.05
8. Child inhibitory control	.05	.08	.00	.07	.11*	.10*	−.05	**.49****	−.34**	−.24**
9. Child positive temperament	−.05	.06	−.04	.03	.06	.05	−.04	−.31**	**.51****	.05
10. Child negative temperament	.02	.05	.06	−.07	.00	−.07	.04	−.22**	.00	**.45****
Mother Behaviors and Reports of Child Temperament										
Mean	9.37	9.22	8.29	13.53	5.35	4.72	1.02	4.38	5.25	4.29
Standard Deviation	1.08	1.73	1.32	1.83	0.63	.67	.19	0.82	0.54	0.65
N	723	935	890	740	749	749	749	692	692	692
Father Behaviors and Reports of Child Temperament										
Mean	9.06	9.01	8.02	13.22	5.35	4.56	1.02	4.30	5.15	4.24
Standard Deviation	1.22	1.81	1.48	2.08	0.63	.67	.19	0.78	0.50	0.58
N	545	760	711	555	749	749	749	629	629	629

Note:

*** $p < .001$

** $p < .01$

* $p < .05$.

Mother correlations are above the diagonal, father correlations are below the diagonal, and cross-parent correlations are bolded on the diagonal.

Table 3.

Standardized estimates from multilevel models relating marital adjustment and child temperament to parent-child interaction behaviors

	Sensitivity to Cues		Response to Child's Distress		Socioemotional Growth Fostering		Cognitive Growth Fostering	
Effect of:	**Mother Est. (s.e.)**	**Father Est. (s.e.)**	**Mother Est. (s.e.)**	**Father Est. (s.e.)**	**Mother Est. (s.e.)**	**Father Est. (s.e.)**	**Mother Est. (s.e.)**	**Father Est. (s.e.)**
Marital Adjustment	**−.14 (.12)**	**.30 (.14)** *	−.05 (.16)	−.03 (.18)	**.28 (.13)** *	**.69 (.15)** ***	.21 (.20)	.49 (.23) *
Parent Positive Affect	**.29 (.11)** *	**−.11 (.13)**	−.18 (.16)	.05 (.17)	−.05 (.13)	−.36 (.14) **	−.05 (.19)	.01 (.22)
Parent Negative Affect	.19 (.36)	−.46 (.48)	−.09 (.40)	−.90 (.49)	.52 (.32)	−.01 (.45)	−.04 (.82)	.01 (. 62)
Child Inhibitory Control	−.06 (.08)	.02 (.09)	.09 (.10)	.23 (.11) *	.10 (.08)	−.08 (.09)	.29 (.12) *	.14 (.15)
Child Positive Temperament	−.01 (.12)	−.21 (.14)	.01 (.15)	.20 (.17)	−.01 (.13)	−.22 (.14)	−.05 (.19)	.20 (.23)
Child Negative Temperament	−.04 (.09)	.02 (.11)	.15 (.12)	.18 (.15)	.08 (.10)	.14 (.12)	.01 (.15)	−.010 (.19)

Note:

*** p < .001

** p < .01

* p < .05.

Models controlled for the length of the Birth Narrative and the order in which children interacted with parents during the interaction task. Significant mother vs. father differences are **bolded** and discussed in