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Parental Involvement, Child Temperament, and Parents' Work Hours: Differential Relations for Mothers and Fathers

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Abstract

This study examined how child temperament was related to parents' time spent accessible to and interacting with their 2-year-olds. Bivariate analyses indicated that both fathers and mothers spent more time with temperamentally challenging children than easier children on workdays, but fathers spent less time with challenging children than easier children on non-workdays. After accounting for work hours, some associations between temperament and fathers' workday involvement dropped to non-significance. For fathers, work hours also moderated the relation between irregular temperament and workday play. For mothers, work hours moderated the relation between both difficult and irregular temperament and workday interaction. Mothers also spent more time with girls (but not boys) who were temperamentally irregular. Results speak to the influence of child temperament on parenting behavior, and the differential construction of parenting roles as a function of child characteristics and patterns of work.

Keywords

parental involvement; fathering; temperament; work hours; child sex

With increasing interest in father involvement over the last several decades (e.g., Lamb, 2000; Pleck, 1997) comes the task of delineating distinct correlates of parental involvement for mothers and fathers. Clearly, both mothers and fathers construct and co-construct patterns of time use within daily family life. The degree to which they do (or do not) spend

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time with their children is constrained by a multitude of factors at the individual, family, and socio-contextual levels (Belsky, 1984; Lamb, Pleck, Charnov, & Levine, 1985, 1987). Understanding under what conditions mothers and fathers in dual-earner families spend time with their children during daily interaction is an important goal for understanding modern family life. Similarities or differences in these patterns may shed light on the unique construction of the paternal and maternal roles.

The present study employed the multidimensional framework of involvement proposed by Lamb and colleagues (Lamb et al., 1985, 1987) to explore the relations between child temperament and parental involvement for fathers and mothers in dual-earner families. This model suggests that involvement consists of: 1) accessibility – being physically and/or psychologically available to the child; 2) interaction (or engagement) – interacting directly with the child; and 3) responsibility – assuming responsibility for the child's welfare and care. This approach is not comprehensive, and other conceptualizations include key qualitative components of involvement as well (e.g., NICHD Early Child Care Research Network, 2000). Nonetheless, this definition has been among the most widely used and influential in the study of fatherhood (Pleck & Masciadrelli, 2004). The current study attempts to reach a greater understanding of how parents may enact the interaction and accessibility aspects of their parenting roles.

Belsky's (1984) process model, along with others (e.g., Cabrera, Fitzgerald, Bradley, & Roggman, 2007; Clark, Kochanska, & Ready, 2000; see Crouter & Booth, 2003 for an extensive review), suggests that child temperament may play an important role in dictating parental behavior. These models have largely focused on qualitative aspects of parenting rather than parents' time spent involved with their children, and relatively little research has been concerned with understanding how child characteristics may differentially affect mothers' and fathers' involvement in childrearing. The present study extends this work by examining how associations between temperament and involvement may differ for fathers and mothers, and whether these patterns of association hold across different sets of child characteristics (boys vs. girls) and contextual circumstances (workdays vs. non-workdays, and time spent at work).

Parental Involvement and Family Functioning

The construct of father involvement has elicited a vast array of research documenting its sources and consequences (see Pleck & Masciadrelli, 2004). It should be noted that the Lamb et al. conceptualization of involvement characterizes only a narrow dimension of parenting behavior, and parents clearly take on numerous roles within the family that are not measured by this approach (e.g., Palkovitz, 2002; Pleck & Pleck, 1997). Importantly, however, much past work has revealed that the amount of time spent with one's child does have unique positive outcomes for many domains of child development. Indeed, higher levels of father involvement have been linked to cognitive advances and early learning (Fagan & Iglesias, 1999; Ninio & Rinott, 1988; Nugent, 1991), greater academic achievement (Cooksey & Fondell, 1996; McBride, Schoppe-Sullivan, & Ho, 2005), increased socio-emotional competence (Forehand & Nousianien, 1993; Koestner, Franz, and Weinberger, 1990), fewer behavior problems (e.g., Aldous & Mulligan, 2002; Zimmerman,

Salem, & Notaro, 2000), lower levels of depression and mental health problems (Boyce et al., 2006; Cookston & Finlay, 2006), and increased physical activity (Beets & Foley, 2008), among many others (see Flouri, 2005 for a review). Furthermore, a recent meta-analysis examining the effects of father involvement found significant positive effects of involvement on child development in social, cognitive, and mental health domains (Sakardi, Kristiansson, Oberklaid, & Bremberg, 2008). Given this literature, it seems necessary to document the determinants of this aspect of parenting behavior.

Notably, relatively few investigations of parental involvement include parallel data for both mothers and fathers in the same families (Marsiglio et al., 2000; Pleck & Masciadrelli, 2004), and studies documenting the determinants of parenting behavior often find different results as a function of parent sex (e.g., Simons, Whitbeck, Conger, & Melby, 1990; Woodworth, Belsky, & Crnic, 1996). Thus, this study also examined how both mothers and fathers in dual-earner families spend time with children of varying temperamental characteristics. Given its prominence in fathering research and its apparent consequences for positive development, the Lamb et al. conceptualization of involvement seems a logical point of exploration for examining differential associations between child characteristics and maternal vs. paternal behavior.

Child Temperament

Although researchers have identified a wide range of temperament dimensions, the most attention has been given to the construct of “difficult” temperament. Temperamental difficulty describes children who display high levels of irritability and negative mood, irregular biological and behavioral patterns, and have difficulty adapting to changes in their environment (Rothbart & Bates, 2006). Similarly, temperamental “irregularity” describes the degree to which children show unpredictable rhythmicity in biological patterns such as eating and sleeping. This dimension has also been consistently identified as an important derivative of difficulty across multiple studies (e.g., Hagekull, Bohlin, & Rydell, 1997; Martin, Wisenbaker, Baker, & Huttunen, 1997; Scher, Tirosh, & Lavie, 1998).

Models of the determinants of parenting have long acknowledged the potential role of temperament as an influence on parenting behavior (e.g., Belsky, 1984, Woodworth et al., 1996). In general, empirical work has found that *interactions* between temperament and aspects of the child or parent’s social environment are most predictive of developmental outcomes (e.g., Crockenberg, 1981; Kochanska, 1995; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990). Although the present study is not concerned with documenting child outcomes, this perspective is useful in noting the importance of studying associations between parental involvement and child temperament, and how these associations differ as a function of contextual variables (i.e., work) and other child characteristics (i.e., sex).

Child temperament and mothering

A substantial body of research suggests that difficult temperament is likely to elicit lower quality parenting from mothers (e.g., Allen & Prior, 1995; Brunk & Henggeler, 1984). Spangler (1990), for example, found that mothers were more likely to engage in higher quality parent-child interactions in the second year of life when they viewed their children as

being low on difficulty at one year of age. Temperamental difficulty has also been implicated as a correlate of more specific maternal behaviors, including lower levels of responsiveness (Campbell, 1979), less teaching effort (Maccoby, Snow, & Jacklin, 1984), and more inconsistent discipline (Lengua & Kovacs, 2005). One recent study also found positive, but modest and generally non-significant, associations between children's temperamental regulation and maternal involvement (Mehall, Spinrad, Eisenberg, & Gaertner, 2009).

Nonetheless, studies attempting to link child temperament to mothers' parenting behavior are still somewhat mixed, particularly in low-risk families (see Crockenberg & Leerkes, 2003). For example, Stifter and colleagues found no evidence of a link between infant colic and maternal sensitivity (Stifter & Braungart, 1992; Stifter & Spinrad, 2002). Furthermore, despite being identified as a prominent individual difference in child temperament (e.g., Finegan, Niccols, Zacher, & Hood, 1989), there have been few attempts to link temperamental irregularity with parental behavior (see Campbell, 1979 for one exception). Although overall results suggest that temperamental difficulty may be a risk factor for lower-quality maternal parenting, further research examining multiple dimensions of temperament and involvement is needed.

Child temperament and fathering

The relatively few studies examining the effects of temperament on father-child interaction have produced decidedly mixed results. Volling & Belsky (1992), for example, found associations between father-child attachment security and prior ratings of infant difficulty, whereas later work by Belsky (1996) failed to find links between temperament and father-child attachment. Likewise, some research suggests that fathers show higher quality parenting with infants who are temperamentally easy (e.g., Goldberg, Clarke-Stewart, Rice, & Dellis, 2002), whereas other studies fail to find meaningful associations between child characteristics and quality of fathering (e.g., Woodworth, Belsky, & Crnic, 1996).

Still fewer studies have sought to determine the impact of temperament on the amount of time that fathers spend with their children. Recent work suggests that associations among temperament and involvement may be modest (Mehall et al., 2009). Nonetheless, some work indicates that paternal involvement may be more strongly associated with infant temperament than is maternal involvement (e.g., Nelson & Simmerer, 1984; but see also Rendina & Dickerscheid, 1976). One study by McBride, Schoppe, & Rane (2002) also found more associations between child temperament and dimensions of involvement for fathers than for mothers. Of particular interest in this project is whether patterns of association among involvement and child temperament differ for mothers and fathers in ways that inform our understanding of how these parental roles are uniquely constructed.

The Role of the Father

A great deal of research and theory has been dedicated to defining the father's role, and considering how paternal and maternal roles in childrearing may differ (see Tamis-LeMonda & Cabrera, 2002). One prominent line of thought proposes that, among families with traditional gender roles, the father's role is less well-defined and more discretionary than the

mother's role (e.g., Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Lamb, 2000; Parke, 2002). Whereas the maternal role in childrearing is quite scripted, fathers may have more choice than mothers about whether they get involved, how much they get involved, and what form this involvement takes. This idea may partially explain the striking diversity among conceptions of the father's role, and accompanying evidence that fathers enact their parenting role in many different ways (e.g., Lamb & Tamis-LeMonda, 2004; Marsiglio, Amato, Day, & Lamb, 2000).

Relatedly, some work suggests that paternal parenting quality is more influenced by family context than is maternal parenting quality (Doherty, Kouneski, & Erickson, 1998; Pelchat, Bisson, Bois, & Saucier, 2003). More specifically, child characteristics such as infant crying have been shown to have a greater impact on parenting stress for fathers than mothers (Wilkie & Ames, 1986). Likewise, reactivity in infancy predicts paternal but not maternal caregiving (Jones & Heermann, 1992), as well as mothers' reports of low role reciprocity with their partners (Hakulinen, Laippala, & Paunonen, 1998). It may be that fathers are less prepared than mothers for the difficulties of raising a problematic child, and are especially likely to find fussy temperamental traits surprising and/or irritating (see Wilkie & Ames, 1986).

Although it remains to be seen whether similar effects hold true when examining parental involvement, this preliminary evidence fits well with aforementioned theorizing on the discretionary nature of the father's role. In particular, fathers may have a choice (consciously or not) about how much time they spend interacting with temperamentally extreme children, whereas mothers have less choice. Accordingly, father involvement might be more strongly associated with parental reports of child temperament than would corresponding dimensions of mother involvement. Furthermore, relations between temperament and parental involvement may be moderated by other aspects of the social environment, such that temperament influences parenting only under certain circumstances (Stifter, 2003). Thus, we chose to examine the degree to which associations between temperament and involvement might be affected by 1) child sex, 2) workday status (workdays vs. nonworkdays), and 3) parents' work hours.

Sex as an Important Child Characteristic

Findings linking child sex to parental involvement are somewhat mixed. Although mothers of school-aged children are more involved with girls than boys (Flouri, 2004), there is little evidence to suggest child gender differences emerge in early childhood. Some research has concluded that fathers spend more time with sons than with daughters (Aldous, Mulligan, & Bjarnason, 1998; Lamb, 2000; Pleck, 1997), whereas other studies find no differences in father involvement as a function of child sex (e.g., Marsiglio, 1991; Palkovitz, 1984). Although work on maternal involvement remains scarce, boys and girls may show different patterns of associations between child temperament and father involvement (McBride et al., 2002). Manlove and Vernon-Feagans (2002), for example, found that fathers were more available to easy sons than difficult sons, but failed to find a similar effect with daughters. On the contrary, one other study (Frodi, Lamb, Frodi, Hwang, Forsstrom, & Corry, 1982)

found that fathers were more involved with difficult sons and easy daughters than easy sons and difficult daughters.

These contradictory findings do not lead to clear hypotheses regarding the role of child sex. Given that same-sex dyads share similar modes of emotion regulation (Feldman, 2003), fathers and mothers may be more inclined to engage with emotionally challenging boys and girls, respectively. Alternatively, both mothers and fathers may be more involved with difficult or irregular girls, but not with temperamentally challenging boys. Some research with older children, for example, suggests that mothers in particular are more likely to exert control over their daughters, while granting greater autonomy to their sons (Pomerantz & Ruble, 1998). Although this remains an exploratory issue, this work was designed to test whether child sex moderated the links between temperament and parental involvement.

Parental Involvement on Workdays vs. Non-workdays

A large body of research suggests the importance of considering employment influences on family dynamics (e.g., Crouter, 2006; Hood, 1993; Russell & Hwang, 2004). Although the processes underlying parental behavior may differ markedly for single- vs. dual-earner families (e.g., Crouter, Perry-Jenkins, Huston, & McHale, 1987; Braungart-Rieker, Courtney, & Garwood, 1999), relatively little research has examined differences in workday vs. non-workday patterns of family time in dual-earner households. Limited existing work found that associations between temperament and parental involvement differed on workdays vs. non-workdays, but these patterns were generally similar for both fathers and mothers (Mehall et al., 2009). However, if father involvement is indeed somewhat discretionary, then temperamental difficulty might be more strongly associated with father involvement on non-workdays when fathers have more options regarding how to spend their time. Thus, we hypothesized that associations between temperament and involvement would differ as a function of workdays vs. non-workdays for fathers, but not for mothers.

An additional issue of interest is whether the associations among temperament and workday involvement might be influenced by parental work hours (see Russell & Hwang, 2004). Given the prominence of breadwinning and provision of financial support in the construction of fathering identity (see Pleck & Pleck, 1997), associations between temperament and father involvement could operate via the amount of time fathers spend at work. Whether any relationship between temperament and involvement exists after accounting for work hours -- and whether these patterns differ among mothers and fathers -- is an important empirical question. The inclusion of work hours also allows for tests of the associations between temperament and workday involvement at differing levels of mothers' and/or fathers' work hours. Thus, this study also examined the additional exploratory question of whether associations between temperament and involvement might vary among parents who work more vs. fewer hours.

The Present Study

This investigation examined associations between child temperament and father and mother involvement, as well as differences in these relations based on workday/non-workday contexts, work hours, and child sex. Data collection was guided by several research

questions: (a) Is child temperament related to various dimensions of parental involvement? (b) Do fathers and mothers show differential relations between child temperament and parental involvement? (c) Do relations between temperament and involvement differ on workdays vs. non-workdays for fathers and/or mothers? (d) To what extent do parents' work hours affect relations between temperament and workday involvement And (e) Does child sex moderate the associations between child temperament and parental involvement for fathers and/or mothers?

Method

Participants

Participants consisted of 43 children (21 girls, 22 boys) between the ages of 2 and 3 years and their married parents. Inclusion criteria consisted of the child being 2 years old, both parents living in the home with the child, and the child being enrolled in a daycare/preschool program. Seventy-one percent of fathers, 69% of mothers, and 58% of children were Caucasian. For fathers, mothers, and children, the next most common ethnicity was Asian, followed by Hispanic, and African-American. Mean ages for fathers, mothers, and children at the time of data collection were 38.03 ($SD = 6.45$) years, 34.07 ($SD = 4.79$) years, and 32.00 ($SD = 5.99$) months, respectively. Forty-nine percent of the families had one child, 35% had two children, 14% had three children, and 2% had more than three children. Families with combined incomes less than \$20,000 comprised 5% of the sample, 24% had incomes between \$20 000 and \$40 000, 14% had incomes between \$40,000 and \$60,000, and 58% had incomes greater than \$60,000. Eighty-seven percent of fathers and 88% of mothers had a bachelors degree or beyond. All fathers and all but two mothers were employed outside the home (the two mothers who did not work outside the home were full-time students whose time spent on school work was treated as work hours), and worked an average of 43.39 and 31.25 hours per week, respectively ($t = 4.53, p < .001$).

Procedures

A combination of self-report and interview data was collected for this study. Upon agreeing to participate, families were scheduled for a home visit. During this visit, a time diary interview protocol was used to measure accessibility and interaction forms of parental involvement. Mothers and fathers were interviewed (by a female and male research assistant, respectively) simultaneously in separate rooms while the child was occupied in another room by a third research assistant. A packet of questionnaires was left with the family to be completed and turned in several weeks later. Mothers and fathers each individually completed identical measures designed to assess demographic variables (age, education, income, employment), and perceptions of their child's temperament.

Measures

Involvement variables—The Interaction/Accessibility Time Diary interview protocol (McBride & Mills, 1993) was used to measure accessibility and interaction forms of involvement for both parents. Data were collected during these interviews with each parent individually using a forced-recall technique for the most recent workday and non-workday prior to the interview. For the target days, each parent was asked to recount their activities in

great detail from the time they woke up in the morning until the time they went to sleep at night. Prompts and cues from the interviewer allowed the parents to elaborate upon the length and nature of activities, as well as specify who else was engaged in these activities or otherwise present. This measure has been widely used in fathering research, and the methodology has proven to provide accurate assessments of parental involvement (see Wical & Doherty, 2005).

All interviews were audiotaped and later analyzed. Each reported activity was initially categorized as (a) accessibility, (b) interaction, or (c) no involvement at all, such that accessibility and interaction scores consisted of the amount of time spent (in minutes) in each form of involvement. Accessibility encompassed activities in which parents were available to the child, even though not necessarily engaged with them. This includes being in the same room as one's child, but involved in separate, unrelated activities. Interaction consisted of activities in which both the parent and child were directly engaged. By definition, interaction forms of involvement were also coded as accessibility (i.e., you must be accessible to your child to interact with them). The total interaction score was the number of minutes the parent interacted with the child on the workday and non-workday combined. Interaction subscale scores for the workday and non-workday were also computed. An accessibility total score and subscale scores were computed in a similar fashion. Because time spent in play may be especially discretionary for parents, we also chose to examine the interaction sub-category of *play* -- which consists of time spent engaging in child-centered activities for pleasure -- to see if this particular type of interaction showed any significant associations with our temperament variables. Mothers' and fathers' interviews were coded by separate, trained research assistants (male and female graduate students). In order to establish reliability, each coder overlapped with another experienced coder on a randomly selected 23% of the interviews. Inter-rater reliability was extremely high, as coders agreed on the major category (i.e., interaction or accessibility) for 98.7% of all reported activities for mothers, and 99.3% of all activities for fathers (Cohen's kappa = .99 for both parents). At the level of interaction sub-category coding (i.e., play), inter-rater agreement was 96.6% and 96.2% for mothers and fathers, respectively (Cohen's kappa = .98 for both parents).

Child temperament—Perceptions of child temperament were reported separately by mothers and fathers via the Infant Characteristics Questionnaire (ICQ; Bates, Freeland, & Lounsbury, 1979). The 24-month version of the ICQ is a 32-item questionnaire assessing the emotional characteristics of 2-year-old children that results in seven scales. Each item consists of a 7-point Likert scale that asks parents to rate their child's behaviors and emotional characteristics. This study chose to focus exclusively on what were deemed the most relevant temperament dimensions: difficult (extent of fussiness and required attention; Mean item score = 3.31, $SD = .67$) and irregular (extent of unpredictability/inconsistency in infant's feeding or sleeping schedule; Mean item score = 3.01, $SD = 1.03$).

Fathers' and mothers' reports were aggregated to form composite temperament variables. This was done based on work suggesting that children may behave differently in various developmental contexts, and reports from multiple observers would most accurately capture emotional characteristics (e.g., Mangelsdorf, Schoppe, & Buur, 2000). Combined scores tap into each parents' perceptions of their child while reducing shared-method variance that

could artificially inflate correlations between temperament and involvement reports from the same person. This approach is also consistent with some prior research on temperament and fathering (e.g., Rendina & Dickersheid, 1976; Woodworth et al., 1996). Agreement between parents was significant (albeit moderate) for both the difficult ($r = .43, p < .01$ between parents) and irregular ($r = .62, p < .01$ between parents) dimensions. The difficult dimension consisted of seven items (e.g., “how easy or difficult is it for you to calm or soothe your child when he/she is upset?”), and the irregular dimension consisted of two items (e.g., “how consistent is your child in sticking to his/her eating routine?”). Averaging across parents, Cronbach’s alphas for the difficult and irregular dimensions were .87 and .68, respectively.

Results

Descriptive Analyses

Means and standard deviations for all involvement dimensions are reported in Table 1. Involvement scores represent time in minutes per day. Intercorrelations (see Table 2) ranged from $-.38$ to $.77$ ($M = .21$) for fathers, and from $-.26$ to $.69$ ($M = .23$) for mothers. Consistent with the view that difficulty and irregularity are related but not isomorphic constructs, these variables were modestly correlated ($r = .36, p < .05$). Past research on the effects of infant temperament has focused almost entirely on difficulty (see Rothbart & Bates, 1998), with little work including irregularity as a unique dimension. Thus, we chose to keep these dimensions separate to explore whether they were differentially associated with parental involvement.

Independent samples t-tests were also computed to examine mean-level differences in parental involvement for mothers and fathers. These results are also reported in Table 1, and were generally consistent with prior fathering research (see Pleck & Masciadrelli, 2004). Specifically, mothers showed significantly greater accessibility and interaction than fathers on workdays. There were no significant differences between mothers’ and fathers’ levels of accessibility or interaction on non-workdays. Fathers also spent more time engaged in play with their children than did mothers on both workdays and non-workdays. T-tests also revealed that there were no significant differences between girls’ and boys’ temperament ratings on either dimension. When examining parental involvement, only one significant child sex difference was found. Mothers were more accessible to their daughters than their sons on non-workdays.

Correlational Analyses – Child Temperament and Parental Involvement

Bivariate correlations among all involvement variables are presented in Table 2. Only one correlation between mother involvement and father involvement was significant, thus indicating that each parent’s involvement was largely unrelated to that of his or her partner. Bivariate correlations were also computed to determine the associations between child temperament and all forms of parental involvement. These results are presented in Table 3. There were numerous significant associations between child temperament and parents’ time spent in interaction and accessibility on workdays and non-workdays.

Workday involvement—These results revealed positive associations between some aspects of father involvement and the difficult and irregular temperament dimensions. In particular, when children were rated as more difficult, fathers were more accessible. A similar pattern emerged with irregular temperament, such that children who were described as more irregular also had fathers who showed higher levels of workday accessibility and interaction.

For mothers, there was also one positive association between challenging temperament and workday involvement. Mothers with difficult children interacted more on workdays than did mothers with less difficult children. In addition, children's irregular temperament showed a marginally significant positive association with mother's workday interaction.

Non-workday involvement—Strikingly, results generally revealed *negative* associations between non-workday father involvement and temperamental difficulty and irregularity. More irregular children had fathers who were less accessible and spent less time interacting with them on non-workdays. Additionally, fathers spent less time in play on non-workdays when children were perceived as more difficult. Overall, this pattern of negative correlations between challenging temperament and non-workday father involvement contrasted with the positive relations between temperament and father involvement on workdays.

Unlike fathers, there were no significant associations between temperament and non-workday involvement for mothers. On non-workdays, there was a significant difference in the correlations between temperamental difficulty and child play for mothers ($r = .06$) and fathers ($r = -.38$; $z = 2.13$, $p < .05$). Furthermore, there were differences in the associations between temperamental irregularity and non-workday accessibility ($r_{\text{mother}} = -.10$; $r_{\text{father}} = -.47$; $z = 1.90$, $p = .05$), as well as irregularity and non-workday interaction ($r_{\text{mother}} = .10$; $r_{\text{father}} = -.38$; $z = 2.13$, $p < .05$), for mothers and fathers. These results support the conclusion that mothers and fathers generally showed similar patterns of correlations on workdays, but different patterns on non-workdays. Specifically, fathers (but not mothers) showed negative correlations between temperamental difficulty/irregularity and parental involvement on non-workdays.

Effects of Parent Work Hours

As shown in table 2, when fathers worked more hours they interacted less, played less, and were less accessible to their children than were fathers that worked fewer hours. Similarly, there was a significant negative association between mothers' work hours and mothers' interaction and accessibility on workdays. Parents' levels of accessibility, interaction, and play were unrelated to their partners' work hours, and there were no significant correlations between work hours and any form of non-workday involvement for either mothers or fathers.

Thus, regression analyses were conducted by entering the score for a temperament dimension (difficult or irregular) and either fathers' or mothers' work hours (depending on whether maternal or paternal involvement was the dependent variable) on the same step of an equation predicting each dimension of workday involvement (i.e., accessibility, interaction, and play for both mothers and fathers). Standardized regression coefficients are

presented in Table 3 and represent the association between temperament and each dimension of workday involvement above and beyond the effects of work hours. As seen in Table 3, after accounting for fathers' work hours, the significant bivariate association between difficult temperament and workday accessibility dropped to non-significance, as did the marginally significant association between difficult temperament and workday interaction. Furthermore, the significant bivariate relations between irregular temperament and both workday accessibility and workday interaction were marginally significant and non-significant, respectively, after controlling for fathers' work hours.

Tests of moderation were also examined to determine whether associations between temperament and maternal or paternal involvement varied as a function of parents' work hours. Interaction terms were created by computing the product of difficult or irregular temperament and mothers' or fathers' work hours (all variables were first centered to reduce multicollinearity). These interaction terms were added on the second step of each regression equation described above (statistics that follow represent the contribution of this step to each equation). Results indicated that the associations between mothers' workday interaction and difficult ($\beta = -2.19$, $R^2 = .14$, $p < .01$) and irregular ($\beta = -1.45$, $R^2 = .13$, $p = .01$) child temperament were moderated by mothers' work hours. Plotting and post-hoc probing were conducted according to procedures outlined in Aiken & West (1991). Patterns were identical for difficult and irregular dimensions, so graphical results for difficult temperament only are presented in Figure 1 to avoid redundancy. Specifically, mothers' workday interaction was positively related to child difficulty ($t(41) = 4.75$, $p < .01$) and irregularity ($t(41) = 3.31$, $p < .01$) only when mothers worked fewer work hours. Workday interaction was unrelated to difficult ($t(41) = -.04$, $p = .96$) or irregular ($t(41) = -.12$, $p = .92$) temperament when mothers worked longer hours.

The interaction between irregular temperament and fathers' work hours was also significant in predicting fathers' time spent in play during workdays ($\beta = -1.77$, $R^2 = .15$, $p < .05$). This plot is presented in Figure 2, and reveals a very different pattern than what was observed for mothers. In particular, when fathers worked less there was a positive but nonsignificant relation between irregular temperament and workday play ($t(41) = .92$, $p = .36$). Among fathers who worked longer hours, however, irregular temperament was associated with lower levels of workday play ($t(41) = -2.51$, $p < .05$).

Moderational Analyses with Child Sex

In order to explore the hypothesis that child sex would moderate associations between perceptions of temperament and parental involvement, interaction terms were again computed by calculating the product of each temperament dimension (centered) and child sex (coded as a dummy variable). Work hours were entered as covariates on the first step in each regression equation. The second step in each equation included child sex and temperament entered separately. The interaction term was entered on the third (and final) step of each equation.

There were no significant interactions between temperament and child sex in predicting father involvement. On the contrary, a significant interaction was present when mothers' workday accessibility was the dependent variable ($\beta = -.56$, $R^2 = .14$; $p = .01$). Separate

regression lines for boys and girls are plotted in Figure 3. Temperamental irregularity was positively associated with mothers' workday accessibility for girls (*partial* $r = .66$, $p < .01$; $t(41) = 2.76$, $p < .01$), but unrelated to mothers' workday accessibility for boys (*partial* $r = -.10$, n.s.; $t(41) = -1.09$, $p = .28$). In essence, mothers (but not fathers) were more likely to be involved with and accessible to girls who showed unpredictable and irregular behavior patterns than temperamentally regular girls, but not more likely to be involved with boys who displayed irregular temperamental characteristics.

Discussion

Results suggest that temporal forms of parental involvement in dual earner families may be dependent upon characteristics of the child, working hours, workday/non-workday distinctions, and the interplay among them. Furthermore, this study suggests that prior research linking temperament and parental involvement may have produced mixed results in part because these links differ substantially as a function of work status, as well as parent and child sex.

Workday Patterns

On workdays, both mother and father involvement were higher when children were perceived as having more challenging temperaments. Although this contradicts some models of the determinants of parenting based largely on research with mothers (e.g., Belsky, 1984), this pattern fits with past work suggesting that fathers (as well as mothers) may be called upon more to assist with caregiving activities when their child is difficult (e.g., Galler, Harrison, Ramsely, Butler, & Forde, 2004; see Sanson, Hemphill, & Smart, 2004). Particularly given that most parents in this sample spent a large portion of the workday away from the home, they may feel compelled to help with childcare tasks when they are at home. This could lead to increased involvement in the case of a difficult or irregular child simply because children with challenging temperamental characteristics require (when possible) the attention of both parents. Although this interpretation is consistent with prior suggestions that fathers are sometimes drafted involuntarily into child care (e.g., Crouter et al., 1987), it seems equally plausible that fathers and mothers make voluntary decisions to spend time with difficult children.

In general, however, the relation between fathers' workday involvement with challenging temperamental characteristics was largely eliminated after accounting for fathers' work hours. This may be yet another example of employment demands placing considerable constraints on fathers which are difficult to supersede (see Russell & Hwang, 2004). Nonetheless, it is noteworthy that fathers with fewer work hours appeared to be spending at least some of that non-work time engaged with their children. The finding that fathers (like mothers) spend more time on workdays with difficult and irregular children (and less time at work) could be interpreted as a hopeful sign in suggesting that some fathers of challenging children remain highly involved in childcare. The ability to adjust childrearing involvement based on the needs of one's child and family represents a broadening of the paternal role that exceeds the expectations of previous generations, and is consistent with the notion that modern fathers' identities go well beyond breadwinning (e.g., Lamb & Tamis-LeMonda,

2004). Such findings, however, may well be unique to middle-class fathers whose careers allow some flexibility in working hours. Future research should continue to examine how these patterns might differ among fathers whose work schedules are highly structured.

In contrast to fathers, direct relations between challenging temperament and greater maternal workday involvement were largely unaffected by mothers' work hours. At first glance, this seems to suggest that mothers interact more with irregular children than regular children regardless of their work circumstances. However, moderational analyses revealed that certain mothers are also constrained by work hours. In particular, relations between temperament and workday interaction were driven by strong associations among mothers who worked fewer work hours, whereas involvement did not differ as a function of child temperament among mothers who worked longer hours. Although mothers may tend to interact more with difficult children, long work hours place limitations on mothers' time that may result in scripted patterns of workday interaction that exist regardless of children's temperamental characteristics.

For fathers, work hours moderated the relation between irregular temperament and workday play, indicating that temperament and workday play were only related among fathers who worked longer hours. Interestingly, those fathers spent more time playing with temperamentally regular children than irregular children. This provides some support for considering various forms of interaction separately, and helps to contextualize fathers' responses to child temperament. Although interaction was generally greater among fathers of irregular children, fathers who worked many hours and had regular children engaged in the highest levels of play. Fathers who spend large amounts of time at work may feel compelled to spend time at home in child-centered activities, rather than other sorts of functional interaction. However, playtime with an irregular child can be challenging. Whereas irregular children may do much to elicit caregiving, play activities could be easier to undertake when children are predictable. Future work should continue to follow the unique development of fathers as playmates (e.g., Grossmann et al., 2002; MacDonald & Parke, 1984) and the contributions of child temperament to that development.

Non-Workday Patterns

On non-workdays, a completely different pattern of associations between temperament and father involvement emerged, such that fathers generally spent less time on non-workdays with children who had challenging temperamental characteristics. Because time usage is less constrained on non-workdays, some fathers may choose to spend less time with temperamentally demanding children. Such a choice need not necessarily be conscious, and may come about largely due to paternal role ambiguity. Fathers who lack a clear parenting "script" (relative to mothers' more defined roles) may be especially unsure about how to engage with temperamentally challenging children. Furthermore, a choice to lessen involvement is not always self-serving. Indeed, given evidence linking difficult temperament to lower quality parenting, some level of withdrawal from difficult children (when such an option is available) may well be adaptive for parent and/or child. Moreover, fathers of difficult and irregular children may be engaging in other aspects of parenting not captured by our conceptualization of involvement. Those behaviors may provide direct

benefits to their families. Indeed, flexibility in the paternal role may mean that fathers enact their parenting identities in ways that mothers do not.

The distinction between workday and non-workday involvement (and the possible unique mechanisms underlying each) is one that has not been fully elucidated in the father involvement literature, or in models of the determinants of parenting behavior. Our results suggest that it may be important to distinguish between workdays and non-workdays when examining levels and correlates of parental involvement. Indeed, another recent investigation found that an intervention during the transition to parenthood positively impacted fathers' interactions with their children on workdays, but not on non-workdays (Doherty, Erickson, & Larossa, 2006). Our findings also suggest the possibility that the correlates of fathering behavior differ as a function of this contextual variable.

It is noteworthy that a similar pattern of involvement did not characterize mothers. Although mothers (like fathers) were also more involved with temperamentally difficult children on workdays, maternal non-workday involvement was not associated with temperament. Mothers did not seem to adjust their non-workday involvement according to their children's temperamental characteristics in the way that fathers did. This is consistent with prior arguments that the maternal role may be more clearly defined than the paternal role (e.g., Parke, 2002). This scripted role may not allow mothers to fully withdraw from childrearing, regardless of the characteristics of their child or the constraints (or lack thereof) placed on their time. It is worth noting that mothers may very well exercise the option of withdrawing from aspects of parenting other than accessibility and interaction. Breadwinning may be one such example, as even mothers in this sample of dual-earner families worked fewer hours than did their partners. Nonetheless, in contrast to fathers, the amount of time that mothers spent with their children on non-workdays seemed to be relatively unaffected by the temperamental characteristics of their children. Interestingly, fathers and mothers did not differ significantly in their mean levels of non-workday involvement. It is not the case that all (or even most) fathers were uninvolved with their children on non-workdays. Rather, individual differences in accessibility and interaction forms of father involvement seem more dependent upon child temperament than do individual differences in parallel forms of mother involvement.

Patterns Based on Child Sex

It is not the case, however, that mothers are unaffected by child characteristics. In fact, mothers' responses to temperamental characteristics seemed to be more influenced by child sex than were paternal behaviors. Mothers were most involved with temperamentally irregular girls and least involved with temperamentally irregular boys. These effects might be attributed to the fact that parental perceptions of temperament may not refer to exactly the same characteristics for boys and girls (Frankel & Bates, 1990), and thus elicit differential maternal responsiveness to these perceived characteristics. Another interpretation could argue that mothers simply respond differently to boys and girls. There is evidence that mothers engage in more emotion socialization with girls than with boys (e.g., Kuebli, Butler, & Fivush, 1995). Crouter and colleagues (Crouter, Helms-Erickson, Updegraff, & McHale, 1999), for example, argued that active boys may receive little monitoring because of the

ubiquitous belief that “boys will be boys”, whereas active daughters may be seen as being in need of vigilant attention. Likewise, Maccoby et al. (1984) speculated that sex stereotypes lead mothers to be less assertive towards difficult sons than difficult daughters. As such, mothers may feel the need to more actively intervene in shaping the emotional characteristics of young girls. Thus, the moderating effect of sex in this study could represent one form of early-emerging gender socialization.

Results from this investigation emphasize that child characteristics may affect mothers and fathers in different ways. Thus, the primary contribution is to begin identifying what these differential associations may be, and under what socio-contextual conditions they may emerge. It seems clear that fathers and mothers do play unique roles within the family, and subsequent research should strive to document unique determinants of mothers’ and fathers’ parenting.

Findings should of course be interpreted with caution in the context of having no information on the quality of parental involvement. Whereas an increase in warm, sensitive, and responsive parenting may benefit children, greater quantities of low-quality parenting could lead to a maladaptive cycle of parent-child interaction (see Brown, McBride, Shin, & Bost, 2007). Important for future work will be determining how different parental patterns of involvement may affect child development. Although higher levels of father involvement have been linked to more positive developmental outcomes in multiple domains (see Pleck & Masciadrelli, 2004 and Flouri, 2005 for reviews), it remains to be seen how various constellations of engagement among both parents impacts children residing in two-parent households. Furthermore, the fact that mothers (but not fathers) interacted differently with temperamentally irregular boys than they did with temperamentally irregular girls begs the question of how those differential patterns may be reflected in subsequent emotion understanding, emotion regulation, and emotional expression across the childhood years. Linking these parental behaviors to developmental trajectories may help to further elucidate mothers’ and fathers’ unique roles in childrearing.

Limitations and Future Directions

This study has several key limitations that should be addressed in future research. First, the relatively small and homogeneous sample does not allow for widespread generalizations to other families or individuals that may differ based on ethnicity, income, education, family structure, or employment status. It may be that this investigation lacked sufficient power to detect significant findings, so caution should be used in interpreting null main or interaction effects. Conversely, existing findings may prove less reliable in larger and/or more diverse samples. Secondly, the correlational and concurrent nature of this research does not allow for broad conclusions about the direction of effects. Results are interpreted in terms of the influence of temperament on parental involvement, but it is also possible that various forms of involvement are causally related to parents’ perceptions of child temperament. Relatedly, this study was not able to examine a “goodness-of-fit” model to determine the impact of these involvement patterns on child functioning. This leaves us unable to extrapolate strong conclusions regarding the complex associations among temperament and mothers’ and fathers’ parenting. Clearly, children of different temperamental constitutions may thrive

under different family circumstances. Parenting behaviors, parenting styles, and parental personality traits may be either more or less adaptive for children as a function of that child's temperament. As such, future research would do well to heed recent calls for increased examination of bi-directional and transactional models of child temperament (see Crockenberg & Leerkes, 2003).

The measures utilized in the present study were well-validated assessments of temperament and parental involvement, but were also lacking in several ways. In particular, the exclusive reliance on parental reports of child temperament may produce results that differ from those in which temperament is "objectively" measured. Future work could benefit from independent assessments of child temperament, preferably from neutral coders in observational paradigms. Additionally, the differential findings for various dimensions of parental involvement suggest that the "involvement" construct, and its associations with child characteristics, could be examined in greater detail. Future research would be well-served by looking at increasingly nuanced measures of parental involvement to address this issue.

Similarly, other levels of parenting behavior and family functioning should be included in future work, as this study provides only a limited snapshot of family life. One prominent issue is the exclusive focus on quantity, rather than quality of parenting behavior. It is clearly the case that both aspects of parenting may have different sets of determinants (e.g., NICHD Early Child Care Research Network, 2000). We concur with other reviews that the evidence for the contributions of father involvement per se to developmental outcomes is consistent and robust, such that "there is enough support to urge both professionals and policy makers to improve circumstances for involved fathering" (Sarkadi et al., 2008, p. 153). However, qualitative components such as sensitive, responsive caregiving are at least equally responsible for adaptive child functioning (e.g., Tamis-LeMonda & Cabrera, 2002), and more complete assessments of parenting behavior should necessarily incorporate both dimensions. Furthermore, a more detailed examination of the ways that mothers and fathers enact their parenting roles may help to elucidate the intriguing patterns of association documented here. This could include expanding contexts to other variables that may well impact parental involvement. Among those are family process variables such as marital and coparental relationship quality, and extrafamilial contexts such as parents' social support networks and children's childcare settings.

This study adds to theory-building in the parenting literature by documenting differential involvement patterns for fathers and mothers in dual-earner families based on child characteristics and work contexts. Future research should continue to determine the degree to which the different forms and contexts of parental involvement are adaptive for children, parent-child relationships, and parents themselves. It is our hope that we have provided a small step towards this goal, and that the questions raised in this investigation can lead to a greater understanding of the interplay between child characteristics and family dynamics in general, and the development of differentiated parenting roles in particular.

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Research Highlights

- This study examined relations between child temperament and parental involvement.
- Mothers and fathers spent more time with challenging children on workdays.
- Fathers spent less time with challenging children on non-workdays.
- Work hours moderated relations between child temperament and parental involvement.
- Mothers spent more time with girls, but not boys, who had irregular temperaments.

Figure 1.
Association Between Difficult Temperament and Mothers' Workday Interaction as a
Function of Mothers' Work Hours.

Figure 2.
Association Between Irregular Temperament and Fathers' Workday Play as a Function of
Fathers' Work Hours.

Figure 3.
Association Between Irregular Temperament and Mothers' Workday Accessibility as a
Function of Child Gender.

Table 1

Means and Standard Deviations of Parental Involvement Variables

	Father		Mother		<i>t</i>
	Mean	SD	Mean	SD	
<i>Involvement Variables</i>					
Accessibility					
Workday	252.50	126.45	361.40	138.21	-3.75**
Non-workday	553.93	183.60	588.14	133.59	-1.12
Interaction					
Workday	197.14	94.96	248.37	113.97	-2.47*
Non-workday	435.24	138.19	411.63	168.00	.77
Play					
Workday	29.17	20.72	18.51	14.35	3.20**
Non-workday	37.52	17.72	27.91	16.66	2.77**

* $p < .05$ ** $p < .01$ *** $p < .001$ Note: $df = 41$ for all t-tests

Table 2

Correlations Among Involvement Variables and Work Hours

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Fathers' Work Hours	-												
2. Mothers' Work Hours	-.26	-											
<i>Father Involvement</i>													
3. Workday Interaction	-.47**	.15	-										
4. Workday Accessibility	-.36*	.20	.72**	-									
5. Workday Play	.38*	-.11	-.25	-.14	-								
6. Non-workday Interaction	.05	-.14	.03	-.05	.16	-							
7. Non-workday Accessibility	.11	.09	.08	.00	.17	.65**	-						
8. Non-workday Play	.15	-.27†	-.38*	-.24	.31*	.13	.03	-					
<i>Mother Involvement</i>													
9. Workday Interaction	.04	-.32*	.23	.21	-.04	.05	.00	.05	-				
10. Workday Accessibility	.24	-.40*	-.09	-.04	.23	.16	.06	.40*	.55**	-			
11. Workday Play	.03	-.24	.01	.07	.26	.04	.19	.21	.32*	.34*	-		
12. Non-workday Interaction	-.12	.19	.00	.06	.00	.15	.10	.18	.40**	.11	.05	-	
13. Non-workday Accessibility	-.16	.27	-.05	.01	.05	.29†	.23	.25	.18	.09	-.06	.67**	-
14. Non-workday Play	-.20	.13	.16	-.01	.24	.16	.25	.04	.17	-.05	.38*	.03	.05

† $p < .10$ * $p < .05$ ** $p < .01$ Note: $N = 43$ for all correlations

Table 3
Relations Between Child Temperament and Parental Involvement Before and After Controlling for Work Hours

	Difficult Child Temperament			Irregular Child Temperament		
	Father	Mother		Father	Mother	
	r	β	r	β	r	β
<i>Workday Involvement</i>						
Accessibility	.36*	.12	.18	.18	.45**	.29 [†]
Interaction	.29 [†]	.03	.44**	.45**	.38*	.22
Play	-.20	-.13	.10	.10	-.21	-.14
						.23
						.24
<i>Non-workday Involvement</i>						
Accessibility	-.10		.11		-.47**	-.10
Interaction	-.08		.14		-.38**	.10
Play	-.38*		.06		-.11	.04

[†] $p < .10$

* $p < .05$

** $p < .01$

Note: r represents the bivariate correlation between each dimension of temperament and involvement. β is the regression coefficient for that same association after controlling for mother or father work hours. Regression analyses are not presented for non-workday involvement because it would be inappropriate to control for work hours on days in which parents did not work. $N = 43$ for all analyses.