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Mother and Father Adjustment during Early Parenthood: The Roles of Infant Temperament and Coparenting Relationship Quality

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Abstract

We explored how parent gender, infant temperament, and coparenting dynamics worked together to shape mothers' and fathers' depressive symptoms, stress, and parental efficacy during early parenthood. We were interested in the coparenting relationship as a context that shapes how parents respond to their infant's temperamental qualities. Participants were 139 couples who had recently given birth to their first child. Parent reports of temperament were collected when the infant was 4–8 months old and reports of coparenting and parent adjustment were collected at 13 months. Two-level random intercept models revealed interactions among temperament and coparenting, highlighting the family system as a context for how men and women adapt to their parenting role. There was little evidence for mother-father differences in these associations.

Keywords

Coparenting; Infant Temperament; Depressive Symptoms; Parenting Stress; Parent Self-Efficacy; Family Systems

The transition to parenthood brings about major changes in men and women's roles, responsibilities, and identities. Parents' well-being is fragile during this transition period, as many mothers and fathers, even those considered to be "low risk," experience it as a stressful time (Cowan & Cowan, 2000). We extend theoretical models developed to understand influences on parenting quality (Belsky, 1984; Cowan, Cowan, Heming, & Miller, 1991) to guide our investigation into understanding parent adjustment. Those models suggest there are three key domains of influence on parenting: child characteristics, parent characteristics, and contextual factors. Indeed, research suggests that one factor influencing parent adjustment is infant temperament (e.g., Cutrona & Troutman, 1986; Mulrow, Caldera, Pursley, Reifman, & Huston, 2002; Paulussen-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). A next step in this line of research, suggested by a general conceptualization of family systems theory (Minuchin, 1974), explores how infant temperament and broader family dynamics work together to shape parent adjustment (Crockenberg & Leerkes, 2003). The study described here aims to capture the complexity of the family system by considering the influence of infant temperament on parent adjustment in the context of the emergent coparenting relationship.

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Gender is an important parent characteristic with implications for parental role, level of involvement, and attitudes (e.g., Aldous, Mulligan, & Bjarnason, 1998; Gaertner, Spinrad, Eisenberg, & Greving, 2007). Most empirical work on parent adjustment during the transition to parenthood has focused on mothers' well-being, but evidence suggests that infant temperament and coparenting are important factors for fathers' adjustment as well (e.g., McBride, Schoppe, & Rane, 2002; Sirignano & Lachman, 1985). This study includes both mothers and fathers and advances our understanding of parent gender by testing for mother-father differences in the links between infant temperament, coparenting, and parent well-being.

1. Conceptualizing Parent Adjustment During Early Parenthood

Mothers' and fathers' adjustment to parenthood is multifaceted and includes both general well-being and more specific dimensions related to their new roles as parents. We make a distinction between parenting (e.g., sensitivity, warmth, involvement) and parents' *individual* adjustment which we conceptualize as a related, but distinct element of men and women's development in early parenthood. In this paper, we focus on three aspects of adjustment: depressive symptoms, parenting stress, and parental efficacy.

Mothers are at elevated risk for depression during early parenthood (NICHD Early Child Care Research Network, 1999; O'Hara & Swain, 1996), and a growing body of work suggests that some fathers also suffer from postnatal depression (e.g., Paulson, Dauber, & Leiferman, 2006). In addition to depressive symptoms, we considered two dimensions of adjustment that are specifically related to the parenting role: stress and efficacy. During early parenthood, parenting stress may arise as a result of mothers and fathers juggling their new responsibilities, feeling trapped by their parenting role, or through distressing interactions with their child. Of course, some level of stress is normative during this period, but elevated stress is associated with negative parenting practices (e.g., Deater-Deckard & Scarr, 1996). A distinct, but related, dimension is parental efficacy, which refers to parents' confidence in their ability to respond to their child's needs competently and effectively (Teti, O'Connell, & Reiner, 1996). A parent with low efficacy may experience anxiety or helplessness in the face of difficult or ambiguous infant signals. High levels of parenting stress and depressive symptoms and low efficacy may interfere with parents' engaged, sensitive parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000) and also have been linked to child behavior problems (Crnic, Gaze, & Hoffman, 2005; Downey & Coyne, 1990; Weaver, Shaw, Dishion, & Wilson, 2008). In sum, becoming parents creates many new challenges that tax mothers' and fathers' psychological resources, and how they adjust to their role as parents has implications for both their personal well-being, parenting, and their child's development.

2. The Role of Infant Temperament and Coparenting in Parent Adjustment

How men and women adjust to their roles as fathers and mothers is multiply determined. Belsky's (1984) process model of parenting suggests that parenting is shaped by three sources: parent characteristics, child characteristics, and contextual sources of stress and support. A similar idea was put forth by Cowan and colleagues (1991) in their 5-domain model. These theoretical models describe multiple influences on *parenting*, but here we build on this general framework to explore *parent adjustment*, which is a proximal predictor of parenting behaviors (e.g., Deater-Deckard & Scarr, 1996; Lovejoy et al., 2000). Specifically, we consider the role of parent gender, infant temperament, the coparenting relationship, and interactions among these factors in predicting first-time mothers' and fathers' adjustment.

2.1. Infant temperament

A key factor in Belsky (1984) and Cowan and colleagues' (1991) models is child characteristics, indexed here by infant temperament. Temperament refers to biologically-based individual differences in reactivity and the ability to self-regulate (Rothbart & Bates, 1998). Infant temperament may have an evocative effect on parenting (Scarr & McCartney, 1983), and we extend this research by considering children's evocative effects on parent adjustment. For instance, parents with highly irritable infants may experience considerably more parenting stress compared to parents with less irritable infants (Mulsow et al., 2002). This effect could be bidirectional (Pesonen, Raikkonen, Heinonen, Komsu, Jarvenpaa, & Strandberg, 2008) and/or part of a larger causal chain, where parenting stress leads to harsh or insensitive parenting and eventually poor child outcomes (Reiss, Neiderhiser, Hetherington, & Plomin, 2000).

The bulk of temperament research has focused on aspects of "difficult" temperament (irritability, high-intensity affect, and negative mood; Rothbart & Bates, 1998). Research with mothers suggests that difficult infant temperament is linked to higher levels of stress and depression (Cutrona & Troutman, 1986; Mulsow et al., 2002; Sheeber & Johnson, 1992) and lower parental efficacy (Porter & Hsu, 2003). Less attention has been paid to fathers, but the available research suggests similar patterns for fathers (Saisto, Salmela-Aro, Nurmi, & Halmesmaki, 2008; Sirignano & Lachman, 1985).

Less is known about links between *positive* temperament dimensions and parent well-being. Both theory and empirical evidence suggest that positive and negative temperament dimensions are somewhat orthogonal and that positive temperamental qualities are not simply the absence of difficult characteristics (Rothbart & Bates, 1998). Rather, positive aspects of temperament include soothability, positive affect, and sustained attention (Kochanska, Coy, Tjebkes, & Husarek, 1998; Rothbart, 1986). Theoretically, parents with infants who are easily soothed and smile often will feel more efficacious and experience lower levels of stress and depression, but the few available empirical studies are mixed. Pesonen, Raikkonen, Strandberg, Keltikangas-Jarvinen, and Jarvenpaa (2004) found no links between infant soothability and positive reactivity and mother or father depression, while McBride and colleagues (2002) showed that fathers with highly sociable children reported less stress than fathers with less sociable children. Clearly, more research is needed on the role of infants' positive temperament qualities and the current study addressed this research gap by examining both positive and negative dimensions of temperament.

There is some evidence for mother-father differences in the associations between infant temperament and personal well-being. For example, Sirignano and Lachman (1985) demonstrated that negative infant temperament qualities were linked more strongly with changes in father than mother characteristics, including a decreased sense of personal control and efficacy. With regard to parenting, McBride et al. (2002) found that difficult temperament was more strongly linked to decreased father than mother involvement in activities with their child. A limitation of previous research is that few studies consider both mothers and fathers in the same statistical models, making it difficult to explicitly test whether observed gender differences are statistically significant. We used a multilevel modeling approach to test statistically for mother-father differences in the associations between positive and negative temperament dimensions and parents' adjustment.

2.2. Coparenting

A second component of Belsky (1984) and Cowan and colleagues' (1991) models of parenting is contextual sources of stress and support. In this study, we considered the coparenting relationship as an important source of support for mothers and fathers in their

role as new parents. Coparenting is a central aspect of family life and refers to how mothers and fathers coordinate their parenting efforts and support or undermine each other in their roles as parents (Gable, Belsky, & Crnic, 1995; McHale & Rasmussen, 1998). A supportive coparenting relationship is thought to contribute to parents' well-being as they provide one another with assistance in their parenting activities. It may also bolster parents' sense of efficacy, as mothers and fathers validate one another's parenting and sense of competence in handling difficult child-rearing situations (Cutrona & Troutman, 1986). Conversely, a coparenting relationship in which parents are intrusive, undermining, or actively compete for the child's love and attention might interfere with parents' well-being. A number of studies provide evidence for positive links between coparenting relationship quality and parenting quality (Abidin & Brunner, 1995) and child outcomes (McHale & Rasmussen, 1998).

A small body of work has examined links with parents' personal adjustment. Among new mothers, spousal support is linked with fewer depressive symptoms and less stress (O'Hara & Swain, 1996; Thorp, Krause, Cukrowicz, & Lynch, 2004). A recent study by Bronte-Tinkew, Horowitz, and Carrano (2010) found a negative association between fathers' supportive coparenting and their stress and depression. A topic that has not yet been explored is that of gender differences in these associations, a question which is explored in the current study.

2.3. Interactions between infant temperament and coparenting

A family systems perspective (Minuchin, 1974) emphasizes the importance of moving beyond examining individual dynamics in isolation and instead considering them in the context of the larger family system. Belsky's (1984) process model suggests that parenting is a "buffered" system in that potential problems in one area (e.g., having an infant with a difficult temperament) may be compensated for by strengths in another area (e.g., a supportive coparenting relationship).

The coparenting relationship may be an important context that influences how parents react and respond to their infant's temperamental qualities. Crockenberg and Leerkes (2003) emphasize that not only do coparenting and temperament dynamics coexist and potentially compensate for one another, but that main effects for temperament are often qualified by contextual factors such as coparenting. Empirical research on parenting suggests that such interactive effects do exist. For instance, the expected negative effects of having an infant with a challenging temperament are more frequently found among at-risk samples, including depressed or low-income parents (Papoušek & von Hofacker 1998; Paulussen-Hoogbeem et al., 2007). Crockenberg and Leerkes (2003) suggest that difficult temperament may only have a detrimental impact on parenting when it is combined with other risk factors. Indeed, a meta-analysis of 62 studies on mothering and infant temperament (Paulussen-Hoogbeem et al.) found that negative temperament was a risk factor for less sensitive parenting only among low SES mothers; for more affluent mothers, difficult temperament was associated with *increased* sensitivity.

A few studies have looked at links between temperament and coparenting, and most find that marital quality moderates this association. We explored a similar dynamic here, but examine coparenting as the moderator and parent adjustment as the outcome. For instance, Schoppe-Sullivan, Mangelsdorf, Brown, and Sokolowski (2007) found that, among parents with poorer marital quality, infants' lack of adaptability was associated with more undermining and less supportive coparenting behaviors. In contrast, parents with higher quality marriages who were faced with a difficult infant were able to "pull together" and refrain from engaging in undermining behaviors. Similarly, Burney and Leerkes (2010) found that infant reactivity was more strongly associated with negative coparenting when parents reported poorer marital quality and less satisfaction with the division of labor. A

recent study of parents with preschool-aged children, however, found a different pattern: Among parents with strong marital relationships, there was an inverse relation between child negative temperament and supportive coparenting, but no link emerged for parents with average or lower quality marital relationships (Cook, Schoppe-Sullivan, Buckley, & Davis, 2009). The authors suggest that a high-quality marital relationship may buffer against coparenting difficulties during infancy, but by the time children reach preschool, it may no longer be strong enough to buffer the coparenting relationship from the ongoing stress of difficult child temperament. Taken together, these studies suggest that temperament effects depend on family context, and the bulk of the research suggests that parents who are at risk either because of individual and/or family factors may be particularly susceptible to parenting and coparenting difficulties if they have a temperamentally challenging infant.

To our knowledge, no studies have investigated the interactive effects of infant temperament and coparenting in shaping mothers' and fathers' adjustment. Given that these constructs are related to child outcomes (Crnic et al., 2005; Downey & Coyne, 1990) and parenting quality (Lovejoy et al., 2000; Teti et al., 1996), this represents an important line of inquiry. Further, parent adjustment is an important aspect of adult development that is sometimes overlooked in family research in favor of parent-child relationships or child outcomes (Azar, 2003).

2.4. Study goals

In sum, the present study had three goals that were grounded in the theoretical parenting models described by Belsky (1984) and Cowan and colleagues (1991). They suggest that important influences on parenting include parent characteristics, child characteristics, and contextual factors. We extended this model to consider these three types of influences on first-time parents' individual adjustment: depressive symptoms, parenting stress, and parental efficacy. We included parent gender as one type of parent characteristic, infant temperament as a child characteristic, and coparenting as a key contextual factor. First, we examined the links between both positive and negative dimensions of infant temperament and parent adjustment, and tested whether the associations were different for mothers and fathers. Our second goal was to investigate the links between both coparenting support and undermining and parent adjustment and to test for mother-father differences. In order to probe into the complexity of the emerging family system, our third goal was to explore interactions between infant temperament, coparenting, and parent gender as predictors of parent adjustment.

3. Method

3.1. Participants

Participants were 169 heterosexual couples who were participating in a randomized intervention study to test a program aimed at improving coparenting relationships in first-time parents (for details, see Feinberg & Kan, 2008). At the time of recruitment, couples were at least 18 years of age, living together and/or married, and expecting their first child. They resided in rural areas, towns, and small cities in an Eastern state and most (81%) were recruited primarily through childbirth education programs at two hospitals. Of the eligible couples contacted by phone, 23% agreed to participate.

Data were collected at three time points, once prenatally and twice after the child's birth. The current study used data from the two postnatal time points: The first occurred 4–8 months after the birth (Time 1) and the second was approximately 13 months after the birth (Time 2). Although infant ages ranged from 4 to 8 months at Time 1, the majority (70%) of couples provided data when their infant was between 5 and 7 months. A total of 26 families did not participate at Times 1 and/or 2; in addition, fathers from 8 families did not

participate. Two families with children with serious medical problems were excluded from the analyses, and a small amount of data was also missing due to participants' refusal to respond to a particular scale. The final models included data from 139 mothers and 133 fathers.

At Time 1, 89% of couples were married and the majority of the sample (93% of mothers and 92% of fathers) was Non-Hispanic White. Annual family income ranged from \$2,500 to \$162,500, with a median value of \$67,500 ($M = \$66,206$; $SD = \$33,038$). On average, mothers had completed 15.25 years of education ($SD = 1.76$) and fathers 14.76 years ($SD = 2.10$). Mean ages were 29.40 ($SD = 4.82$) years for mothers and 30.88 ($SD = 5.45$) years for fathers. Although the sample was not nationally representative, it was generally representative of the regions where the data were collected.

3.2. Procedure

Data were collected through mailed questionnaires at Time 1 and home interviews at Time 2. Mothers and fathers separately completed questionnaires about their relationship experiences, parenting, and individual well-being. Approximately half of the families participated in an intervention to improve coparenting that involved both pre- and postnatal sessions (see Feinberg & Kan, 2008). The current study did not examine program effects, but intervention condition (i.e., treatment versus control) was included as a control variable.

3.3. Measures

Means, standard deviations, and correlations are presented in Table 1.

3.3.1. Parent adjustment—Three domains of parental adjustment were assessed at Time 2: depressive symptoms, parenting stress, and parental efficacy. *Depressive symptoms* were measured with a 14-item version of the Center for Epidemiological Studies Depression scale (CES-D; Radloff, 1977). Participants responded on a 4-point scale (1 = *rarely or none of the time*, 4 = *most or all of the time*) to items that asked about symptoms experienced in the past week (e.g., “How often did you feel sad?”). Responses were averaged and a natural logarithmic transformation was applied to correct for negative skew. Cronbach's alphas were .79 for mothers and .80 for fathers and the CES-D has been shown to have adequate validity in parents (e.g., Orme, Reis, & Herz, 1986). To measure *parental efficacy*, we used the mean of the 16-item Self-Efficacy in the Nurturing Role Questionnaire adapted by Pedersen, Bryan, Huffman, and Del Carman (1989) from Gibaud-Wallston and Wandersman (1978). Parents responded on a 7-point scale (1 = *not at all like me*, 7 = *completely like me*) to indicate how they felt about their role as a parent (e.g., “In most circumstances I am able to cope well with meeting my child's needs.”). Cronbach's alpha was .83 for both mothers and fathers. This scale has shown adequate convergent and discriminant validity among mothers (Porter & Hsu, 2003). *Parenting stress* was assessed with 27 items from the Parenting Stress Index – Short Form (Abidin, 1995). Items measured parental distress (e.g., “I find myself giving up more of my life to meet my children's needs than I ever expected.”), parent-child dysfunctional interaction (e.g., “My child smiles at me much less than I expected.”), and parents' reports of a difficult child (e.g., “My child turned out to be a lot more of a problem than I had expected.”) on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Responses were averaged and the total scale score was used in the analyses. Cronbach's alphas were .89 for mothers and .85 for fathers and the scale has shown adequate convergent and discriminant validity for both mothers and fathers (Deater-Deckard & Scarrm 1996).

3.3.2. Infant temperament—Infant temperament was assessed with mother and father reports on the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003)

at Time 1. Parents responded to 64 items from 6 of the 14 subscales using a 7-point scale (1 = *never*, 7 = *always*) and thinking about the past week. Items measured soothability (9 items, e.g., “When your baby was upset, how often were you able to soothe or comfort her/him by rocking?”), approach (10 items, e.g., “When given a new toy, how often did the baby immediately go after it?”), duration of orienting (10 items, e.g., “How often during the last week did your baby play with one toy/object for 5–10 minutes?”), distress to limitations (12 items, e.g., “When something was removed, how often did s/he cry or show distress for a time?”), sadness (10 items, e.g., “When it was time for bed or a nap and your child did not want to go, how often did s/he become tearful?”), and fear (13 items, e.g., “When introduced to an unfamiliar adult, how often did your baby cling to a parent?”). Composite variables reflecting positive and negative temperament dimensions were created based on the results of a principal components analysis of the six subscales using VARIMAX rotation. Items were standardized and averaged. *Positive temperament* included soothability, approach, and duration of orienting subscales and *negative temperament* was comprised of distress to limitations, sadness, and fear. Cronbach’s alphas were .89 and .91 for mothers and .88 and .92 for fathers for positive and negative temperament, respectively. Positive and negative temperament dimensions were not correlated (see Table 1). Previous research using the IBQ-R has found evidence for a third factor (e.g., Gartstein & Rothbart, 2003), but because participants completed only a subset of the full IBQ-R we chose not to impose a three-factor solution and instead to retain the two-factor solution evident in our sample. Other researchers have also found support for a similar two-factor structure of positive and negative temperament (Kochanska et al., 1998; Pesonen et al., 2008). The IBQ-R has demonstrated good validity (Parade & Leerkes, 2008).

3.3.3. Coparenting—The coparenting relationship was measured at Time 2 with mother and father reports on a scale adapted from earlier measures of the parental alliance (Abidin & Bruner, 1995; Frank, Jacobson, & Avery, 1988; Margolin, 1992; McHale, 1997). Parents responded on a 7-point scale (1 = *not true of us*, 7 = *very true of us*) to items that assessed their perception of *coparenting support* (7 items, e.g., “My partner supports my parenting decisions.”) and *coparenting undermining* (6 items, e.g., “My partner sometimes makes jokes or sarcastic comments about the way I am as a parent.”). Items were averaged. Cronbach’s alphas for coparenting support were .80 and .84 and for coparenting undermining were .77 and .80 for mothers and fathers, respectively. This measure of coparenting has been shown to have good construct and convergent validity (Feinberg, Brown, & Kan, under review). A natural log transformation was applied to coparenting undermining scores to correct for negative skew.

3.3.4. Control variables—The mean of mothers’ and fathers’ education in years was included in all models as a control. In order to control for external sources of anxiety that might affect parent adjustment, financial strain assessed at Time 2 was also included as a control variable. Financial strain was measured with 3 items (Kessler, Turner, & House, 1988) that asked about experiences with financial difficulties (e.g., “In the next two months, how much do you anticipate having to reduce your standard of living to the bare necessities in life?”). Responses were coded on a 5-point scale (1 = *not at all*, 5 = *a great deal*) and the mean was taken. Cronbach’s alphas were .86 for mothers and .80 for fathers. Although this study did not investigate effects of the coparenting intervention program, a dummy code for intervention status (treatment vs. control) was included in all models and interactions between intervention status and the substantive predictor variables were tested.

4. Results

4.1. Analysis Plan

We used a multilevel modeling approach to test a series of two-level random intercept models using the PROC MIXED command in SAS 9.1. This approach accounted for the correlated nature of the data (i.e., parent nested within family). Level 1 included measures specific to each parent (financial strain, parent gender, positive and negative temperament ratings, and coparenting support and undermining). Level 2 included measures shared by both parents (intervention status and education). Mother and father reports remained separate in the analyses and each parent's reports of temperament and coparenting predicted that same individual's reports of adjustment. We created a dummy variable to indicate which parent was the reporter and this variable was included to test whether parent gender was predictive of adjustment. Details about the equations involved in MLM can be found in Raudenbush and Bryk, (2002) and Hox (2002).

To address our first research goal, we estimated a series of models testing the main effects of the infant's positive and negative temperament on depressive symptoms, parental efficacy, and parenting stress. We also included interactions between temperament and the dummy variable indicating parent gender to test whether these effects were different for mothers and fathers. To address our second research goal, parent reports of the coparenting relationship were added to these models, along with coparenting X parent gender interactions to test for mother-father differences. Finally, temperament X coparenting interactions were added to the models to explore our third goal. Three-way interactions between parent gender, temperament, and coparenting were also tested, but none reached statistical significance and were not included in the final models. Variables comprising the interaction terms were centered at the mean to reduce collinearity. Final models included main effects for positive and negative temperament, coparenting support, coparenting undermining, parent gender, and any interaction terms that were significant at the $p < .10$ level (all non-significant interaction terms were removed). Depending on the nature of the interaction, significant interaction effects were followed up by either (a) testing the effects for mothers and fathers separately, or (b) running separate models for high (one standard deviation above the mean) and low (one standard deviation below the mean) coparenting groups.

4.2. Multilevel Model Results

4.2.1. Control variables—Results for the multilevel models are presented in Table 2. Financial strain was associated with depressive symptoms in the expected positive direction but not parental efficacy or stress. There were no significant main effects for education or intervention status in any of the models. Of 39 possible interactions between intervention status and the substantive variables (i.e., temperament, coparenting, and parent gender), only two significant effects emerged. This is what would be expected by chance and thus these interactions were not interpreted. Main effects for parent gender showed that fathers felt less efficacious in their role as a parent than mothers.

4.2.2. Infant temperament effects—In all three main effects models, negative temperament emerged as a significant predictor in the expected direction, such that parents showed higher levels of depressive symptoms and stress and lower parental efficacy when they had infants who were more easily distressed, fearful, and sad. Positive temperament was a significant predictor only in the parental efficacy model: parents whose infants had more positive temperaments reported stronger feelings of efficacy. No parent gender X temperament interactions were evident, indicating that temperament effects were similar for mothers and fathers.

4.2.3. Coparenting effects—Coparenting undermining emerged as a strong, significant predictor in all of the models. As predicted, more coparenting undermining was associated with higher levels of parenting stress and depressive symptoms and lower levels of parental efficacy. Coparenting support was negatively associated with parenting stress. There was one parent gender X coparenting support interaction in the model predicting depressive symptoms. Follow-up analyses revealed that the effect was significant and negative for fathers, $\gamma = -0.07$, $SD = 0.02$, $t = -4.47$, $p < .01$. For mothers, the effect was in the same direction but it did not reach statistical significance, $\gamma = -0.02$, $SD = 0.01$, $t = -1.43$, $p = ns$.

4.2.4. Interactions between temperament and coparenting—Three interactions between negative temperament and coparenting emerged in the models predicting parental efficacy and depressive symptoms. The interaction between negative temperament and coparenting support predicting depressive symptoms showed the pattern that has been found most consistently in previous literature (see the top panel of Figure 1). Among parents who reported lower levels of coparenting support (which is thought to be a risk factor), there was a positive association between difficult temperament and depressive symptoms, $\gamma = 0.13$, $SD = 0.04$, $t = 3.48$, $p < .01$. For parents who reported more coparenting support, there was no link between the infant's negative temperament and parents' depressive symptoms, $\gamma = -0.01$, $SD = 0.04$, $t = -0.33$, $p = ns$. In this model, coparenting support may have acted as a buffer against the effects of negative infant temperament on parents' depressive symptoms.

The two interactions between negative temperament and coparenting undermining, however, showed a different pattern which we labeled the “swamping” effect (see the bottom panel of Figure 1; the interaction for depressive symptoms is not pictured, however, it follows the same pattern as that for parental efficacy). In families with low coparenting undermining, significant associations between negative infant temperament and depressive symptoms and parental efficacy emerged. In these lower-risk families, parents with infants who had highly negative temperaments reported more depressive symptoms, $\gamma = 0.13$, $SD = 0.03$, $t = 3.87$, $p < .01$ and lower parental efficacy, $\gamma = -0.29$, $SD = 0.10$, $t = -2.74$, $p < .01$ compared with parents with less difficult infants. In the context of highly undermining coparenting, however, there was no association between negative infant temperament and depressive symptoms, $\gamma = -0.02$, $SD = 0.04$, $t = -0.41$, $p = ns$, or parental efficacy, $\gamma = -0.03$, $SD = 0.11$, $t = -0.26$, $p = ns$. No significant interactions between positive temperament and coparenting emerged.

5. Discussion

This study was grounded in parenting theories that suggest that parenting is multiply determined by both parent and child characteristics, as well as contextual sources of stress and support (Belsky, 1984; Cowan et al., 1991). We extended this idea and applied it to parents' personal well-being; specifically, we focused on the roles of parent gender, infant temperament, and coparenting dynamics in shaping mothers' and fathers' depressive symptoms, parenting stress, and parental efficacy during the early stages of parenthood. We were interested in exploring the emerging coparenting relationship as a context for parents' responses to their infant's temperamental qualities and mother-father differences in these dynamics.

Our first goal was to examine the associations between parents' ratings of their infant's temperament and the three indices of parent adjustment. Consistent with previous research (e.g., Cutrona & Troutman, 1986; Porter & Hsu, 2003), we found that parents with infants who were more easily distressed, fearful, and sad reported higher levels of parenting stress and depressive symptoms and lower levels of parental efficacy. As these others have

speculated, it is likely that such infant characteristics make it more difficult for parents to engage in positive and rewarding interactions with their children and may decrease a sense of competence in their parenting abilities.

Our inclusion of positive temperament represents an important contribution to the literature. Positive and negative temperament are distinct dimensions; in our sample, the correlation between the two was nearly zero. By focusing exclusively on difficult temperament qualities, many other studies ignore a major dimension in parent-infant dynamics. In particular, we found that parents whose infants had more positive temperamental qualities reported feeling more efficacious about their ability to respond to their infant's needs. This could have implications for parent-child dynamics over time, as a strong sense of efficacy could foster more sensitive and competent parenting (Teti et al., 1996) and, in turn, more positive child adjustment (Weaver et al., 2008). Research should continue to explore positive infant temperamental qualities and its links with both parent and child outcomes.

Our second goal was to test the associations between coparenting undermining and support and parent adjustment. Coparenting dynamics are just emerging during early parenthood as mothers and fathers negotiate their new roles as parents and establish their working relationship as a parenting team. During this sensitive period, coparenting is a key context for men and women's personal well-being (Cowan & Cowan, 2000). As expected, coparenting undermining was associated with more depressive symptoms and parenting stress and less parental efficacy. When parents disagree about how to raise their children and engage in behaviors that undercut their partners' parenting efforts, they are likely to experience poorer well-being and a decreased sense of efficacy. Conversely, coparenting support was linked with less stress and a better sense of parental efficacy. Mothers and fathers who feel that they are on the same page may feel more comfortable taking care of their child's needs and feel that they have help in dealing with the challenges of raising a child. The main effects that emerged for coparenting are consistent with past research on first-time parents (O'Hara & Swain, 1996; Thorp et al., 2004).

An important strength of this study was that we tested for mother-father differences in the associations between infant temperament and coparenting and parent adjustment. Few studies on infant temperament include fathers, and those that do rarely test statistically for differences between mothers and fathers. A handful of studies have found that fathers' adjustment and parenting are more influenced by temperament than mothers' (McBride et al., 2002; Sirignano & Lachman, 1985), but our multilevel models that statistically tested for gender differences suggest that the links were similar for mothers and fathers. Likewise, we found only one gender difference in the link between coparenting support and depressive symptoms. Given that only 1 out of 12 interactions with parent gender emerged as statistically significant, we do not place much weight in this finding.

The lack of mother-father differences has both theoretical and practical significance. It suggests that theories that posit processes linking infant temperament and coparenting to parent adjustment may not need to specify different pathways for mothers and fathers. Instead, it appears that these links are fairly universal, at least in our sample of mostly middle class Caucasian families. Further, the lack of gender differences suggests that mothers and fathers might both benefit from prevention/intervention programming around instructing parents on how to deal effectively with temperamentally difficult infants (see section 5.1 for more information on intervention implications).

Perhaps the most important contribution of this paper is our examination of the *interactions* between infant temperament and coparenting in predicting parent adjustment. Both a family systems perspective (Minuchin, 1974) and parenting theories (Belsky, 1984; Cowan et al.,

1991) suggest that influences on parenting should be considered in the context of the larger family system. We were interested in how coparenting dynamics might serve as a context that shaped how mothers and fathers reacted to their infant's temperamental qualities. Based on past research (Crockenberg & Leerkes, 2003), we expected to find stronger links between infant temperament and parent adjustment among parents with lower coparenting support and higher coparenting undermining. We reasoned that these parents would be more susceptible to the effects of a difficult child temperament because they would have less support to fall back on. Of the 12 temperament X coparenting interactions, 3 (25%) were statistically significant—a level exceeding that expected by chance.

The results revealed two patterns of interactions, which we term “buffering” and “swamping”. The buffering effect showed that, under conditions of low coparenting support, a positive association between difficult temperament and parents' depressive symptoms emerged, as found by other researchers (e.g., Cutrona & Troutman, 1986). Under conditions of high coparenting support however, the link was not observed. This suggests that mothers and fathers who feel that their partner supports their parenting efforts are buffered from the potentially negative consequences of having a temperamentally difficult infant. In contrast, parents who experience the combination of two risk factors, low coparenting support and a highly negative infant temperament, have the highest levels of depressive symptoms. In these at-risk families, mothers and fathers are caring for a temperamentally difficult infant and at the same time may feel unsupported in their roles as parents, which may lead to particularly high levels of depression and low self-worth. This finding is in line with other research which suggests that the implications of difficult temperament are stronger among at-risk families (Papousek & von Hofacker 1998; Paulussen-Hoogeboom et al., 2007).

The “swamping” pattern in the models for depressive symptoms and parental efficacy was unexpected. The results revealed different patterns depending on the coparenting relationship. The previously documented (e.g., Porter & Hsu, 2003) associations between negative infant temperament and parent adjustment emerged *only* for parents who reported low levels of coparenting undermining. These parents reported higher levels of parental efficacy and fewer depressive symptoms when their infant had a relatively less negative temperament, and lower levels of efficacy and more depressive symptoms when their infant had a relatively more negative temperament. In contrast, for parents in highly undermining coparenting relationships, their adjustment *was not* related to their infant's negative temperamental qualities. Instead, these parents showed consistently low parental efficacy and elevated depressive symptoms, regardless of how difficult their infant was. Cook and colleagues (2009) found a similar pattern in parents with preschool-age children. In their study, the dependent variable was supportive coparenting, predicted by the child's negative temperament and the couples' marital adjustment. In the case of couples with high marital adjustment, the expected association between more negative temperamental qualities and less supportive coparenting emerged. Among couples with low marital adjustment, however, there was no link between child negative temperament and coparenting support. In both our swamping effect and Cook et al.'s study, child temperament appeared to be decoupled from a positive parent-related outcome under the conditions of a troubled couple relationship.

Our interpretation is that the well-being of these parents was swamped by their undermining coparenting relationship, and as a consequence, variability in difficult infant temperament did not alleviate or further exacerbate their well-being to an appreciable extent. In these families, parents' disparaging remarks and mistrust may create such a negative dynamic that parents' emotional well-being becomes less sensitive and responsive to their infant's qualities. Elsewhere, we have argued that coparenting has a powerful influence on parenting as the partner is (a) likely the individual who has the most exposure to the parent's skills and abilities in handling parenting tasks, and (b) strongest emotional connection to the parent

(Feinberg, 2002). If a parent feels that his/her partner undermines or does not trust his/her parenting decisions, the effect may be quite strong, perhaps leading to less sensitivity to infant temperament. Replications of this pattern are necessary before any solid conclusions can be drawn, but it points to a high level of coparenting undermining as creating an early childrearing environment that warrants additional research.

5.1. Limitations, Future Research, and Practical Implications

There are some limitations to the current study. Perhaps the largest concern is that the data are correlational and thus do not allow for causal inferences. Further, although temperament was measured at an earlier time point, both parent adjustment and coparenting were measured concurrently which makes it more difficult to establish causality. A direction for future research is to explore how infant temperament and coparenting interact over time to shape parent adjustment. Another potential concern is that lack of evidence for interactions between coparenting and infant *positive* temperament. One possibility is that positive temperament was not as reliably assessed, given that parents showed much lower agreement in their assessment of positive temperament dimensions ($r = .33$) compared to negative aspects ($r = .66$). Although the sample had a large range of education and income, most participants were relatively well-educated, middle class, and of European American descent. Families who agreed to participate in this study may not be representative of all families; for example, they may be relatively better-adjusted and have less stress than families who declined to participate. Replication of these findings in nationally representative samples is needed. Finally, half of the families in this sample took part in a coparenting intervention program, although extensive examination revealed that there were no differences between intervention and control families in results above the level expected by chance. Despite these limitations, this study makes an important step toward illuminating influences on mothers' and fathers' adjustment during the transition to parenthood and underscores the complexity of the emerging family system (Minuchin, 1974).

The questions addressed in this study have implications for prevention and intervention programs. Given that the early stages of family formation can be a difficult period of adjustment and that the patterns that develop during this time have implications for both parent and child development, the transition to parenthood is an opportune moment for intervention efforts. A growing body of research is dedicated to helping the transition go smoothly (e.g., Schulz, Cowan, & Cowan, 2006), including the coparenting intervention described in this study (see Feinberg & Kan, 2008). Existing parenting and marital programs tend to take a uniform approach in applying research findings to practice. The current study, however, highlights the importance of considering the broader family context when designing programs for parents of young children. In particular, the findings presented here suggest that the *interactive* effects of risk factors like difficult infant temperament and coparenting undermining may have more meaningful implications for parent adjustment than one risk factor in isolation. For instance, a program designed to teach parents effective strategies for coping with negative infant temperament might not be as effective as a more comprehensive one that also addresses coparenting problems. In addition, this study suggests that both mothers and fathers stand to benefit from such programs and that targeting relationship dynamics that involve both parents is key. Findings from studies like ours reveal the complexity of family systems and invite the development of programs that address a range of risk factors in the same curriculum.

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Research Highlights

- Negative infant temperament and poor coparenting were risk factors
- Positive infant temperament and coparenting support were protective factors
- Few mother-father differences in patterns of association emerged
- Negative temperament and poor coparenting interacted to predict parent adjustment

Figure 1. Interactions between negative temperament and coparenting showing a “buffering” pattern (top panel) and a “swamping” pattern (bottom panel). Lines with an asterisk are significantly different from zero. * $p < .01$.

Table 1

Correlations, Means, and Standard Deviations for Study Variables

	1	2	3	4	5	6	7	8
1. Depressive symptoms	.08	-.26**	.40**	.01	.20*	-.42**	.36**	.20*
2. Parental efficacy	-.40**	.19*	-.63**	.31**	-.16 [†]	.42**	-.34**	-.04
3. Parenting stress	.43**	-.69**	.33**	-.18*	.31**	-.53**	.41**	.15 [†]
4. Positive temperament	-.10	.33**	-.15 [†]	.33**	-.01	.19*	-.09	.18*
5. Negative temperament	.20*	-.20*	.31**	-.06	.66**	-.07	.16 [†]	-.06
6. Coparenting support	-.18*	.22**	-.35**	.18*	-.07	.28**	-.43**	-.13
7. Coparenting undermining	.25**	-.21**	.35**	-.15 [†]	.13	-.51**	.29**	.15 [†]
8. Financial strain	.36**	-.03	.22**	-.02	.09	-.18*	.29**	.41**
Mother Mean (SD)	0.35 (0.21)	95.95 (10.95)	1.89 (0.47)	-0.02 (0.51)	-0.01 (0.50)	4.84 (1.01)	0.34 (0.39)	4.38 (2.11)
Father Mean (SD)	0.37 (0.21)	88.91 (11.56)	1.96 (0.40)	-0.03 (0.49)	-0.02 (0.53)	4.77 (0.94)	0.45 (0.44)	4.33 (1.77)

Note. Mother correlations are below the diagonal; father correlations are above the diagonal; correlations between mother and father are on the diagonal. Positive and negative temperament are standardized variables.

[†] $p < .10$,

* $p < .05$,

** $p < .01$

Table 2

Unstandardized (γ), (Standard Errors), and Standardized Regression Coefficients (SRC) for Multilevel Models Predicting Adjustment

	Depressive Symptoms		Parental Efficacy		Parenting Stress	
	γ (SE)	SRC	γ (SE)	SRC	γ (SE)	SRC
Intercept	0.35 (.02)**		5.95 (.07)**		1.94 (.04)**	
Financial strain	0.02 (.01)**	0.19	0.01 (.02)	0.03	0.01 (.01)	0.04
Education	0.001 (.01)	0.01	0.02 (.03)	0.05	-0.02 (.02)	-0.08
Intervention status	0.005 (.02)	0.01	0.05 (.09)	0.03	-0.04 (.05)	-0.05
Parent gender	0.01 (.02)	0.02	-0.38 (.07)**	-0.26	0.04 (.04)	0.05
Positive temperament	0.005 (.02)	0.01	0.33 (.08)**	0.22	-0.07 (.05)	-0.08
Negative temperament	0.06 (.02)**	0.15	-0.16 (.08)*	-0.11	0.20 (.05)**	0.23
Coparenting support	-0.02 (.01)	-0.12	0.12 (.04)**	0.20	-0.08 (.02)**	-0.22
Coparenting undermining	0.07 (.03)*	0.14	-0.30 (.11)**	-0.17	0.22 (.06)**	0.21
Parent gender* coparenting support	-0.05 (.02)*	-0.20				
Negative temp.* copar. support	-0.06 (.02)*	-0.18				
Negative temp.* copar. undermining	-0.18 (.07)**	-0.19	0.31 (.18) [†]	0.09		

Note. Control group = 0; Intervention group = 1. Mother = 0; Father = 1.

[†] $p < .10$,

* $p < .05$,

** $p < .01$.