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New Parents' Psychological Adjustment and Trajectories of Early Parental Involvement

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Abstract

Trajectories of parental involvement time (engagement and child care) across 3, 6, and 9 months postpartum and associations with parents' own and their partners' psychological adjustment (dysphoria, anxiety, and empathic personal distress) were examined using a sample of dual-earner couples experiencing first-time parenthood ($N = 182$ couples). Using time diary measures that captured intensive parenting moments, hierarchical linear modeling analyses revealed that patterns of associations between psychological adjustment and parental involvement time depended on the parenting domain, aspect of psychological adjustment, and parent gender. Psychological adjustment difficulties tended to bias the 2-parent system toward a gendered pattern of "mother step in" and "father step out," as father involvement tended to decrease, and mother involvement either remained unchanged or increased, in response to their own and their partners' psychological adjustment difficulties. In contrast, few significant effects were found in models using parental involvement to predict psychological adjustment.

Keywords

adult well-being; contemporary families; gender roles; interpersonal relationships; parent involvement

Parental involvement time, or the amount of "quality" time parents spend directly interacting with their young children in engagement (play) and caregiving activities, is crucial for child development (Lang et al., 2014). Belsky's (1984) theoretical model describes parental psychological adjustment as the most powerful determinant of parental involvement. Parents with poor psychological adjustment are less involved with their children, placing children at higher risk for maladaptive development (Ramchandani, Stein, Evans, & Connor, 2005).

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Although most studies linking parental psychological adjustment and involvement have centered on pathology, Belsky emphasized the importance of studying normative variations in psychological adjustment in association with parenting. Indeed, even well-functioning adults face increased risk for deteriorated psychological adjustment during the transition to parenthood (e.g., Paulson & Bazemore, 2010; Twamley, Brunton, Sutcliffe, Hinds, & Thomas, 2013). First-time parents, especially those in dual-earner families, are often under substantial time pressures from work and parenting demands (Roxburgh, 2012). Individual vulnerabilities, such as psychological adjustment difficulties, might aggravate this stress, placing first-time, working parents at risk of poor parenting, such as reduced quality time with infants.

Despite agreement regarding the importance of parental psychological adjustment for parental involvement, progress in theory and research in this area has been hampered by lack of attention to a number of key conceptual and methodological issues. Conceptualizations of parental involvement have often failed to differentiate between specific parenting domains (Pleck, 2010), which are likely differentially affected by parental psychological adjustment. Similarly, even though they share some underlying diathesis, different facets of psychological adjustment may be linked to parental involvement time in distinct ways, given variation in their manifestations (Clark & Watson, 1991; Heron, O'Connor, Evans, Golding, & Glover, 2004). Finally, few researchers have applied a systems perspective to studying associations between parental psychological adjustment and trajectories of parental involvement time, or they have considered how parental involvement responds to parents' own and their partner's psychological adjustment (but see Cabrera, Hofferth, & Chae, 2011), or how these associations may differ by parent gender.

In this study we extended Belsky's (1984) model and, in a longitudinal framework, examined how three aspects of parental psychological adjustment (i.e., dysphoria, anxiety, and empathic personal distress) are associated with the trajectories of parents' own and their partner's parental involvement time in two domains (engagement and child care) across infancy. We sought for more accurate characterization and prediction of early parental involvement time via three innovative efforts: (a) a conceptually and methodologically improved assessment of parental involvement time, (b) an appreciation of the multifaceted nature of parental psychological adjustment and differential associations with parenting, and (c) a systems approach that considered these associations for mothers and fathers at both an individual and a couple level. Examining the associations of parental psychological adjustment with parental involvement time in a low-risk, volunteer sample of highly educated, dual-earner families followed across the transition to parenthood will advance scholars' understanding of the longitudinal impact of normative psychological adjustment fluctuations on parenting in infancy. Even though our sample is not representative of all new-parent households in the United States, results from our study can serve as a baseline to evaluate early parenting and parental psychological adjustment in clinical populations or populations with different demographic and psychosocial characteristics.

Parental Involvement Time in the First Postpartum Year

We developed a more refined conceptualization and operationalization of parental involvement time in two ways. First, we conceptualized and measured parental involvement time within two domains central to optimal early child development: (a) *engagement* in developmentally appropriate activities (e.g., playing, reading) that are intellectually and emotionally stimulating and involve positive affect and responsiveness from parents and (b) routine *child care* activities, such as changing diapers and feeding, that are vital for child security and health but require greater parental control and child compliance (Jia, Kotila, & Schoppe-Sullivan, 2012; Pleck, 2010). Cross-sectional time diary data have shown that new parents spend the majority of their parenting time in engagement and child care, with mothers consistently devoting more time than fathers to both (Kotila, Schoppe-Sullivan, & Kamp Dush, 2013; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). However, parents' time use in these domains has rarely been investigated longitudinally using data from mothers and fathers in the same families (for exceptions, see Lang et al., 2014, and Paulson, Dauber, & Leiferman, 2006). Whether involvement in engagement and child care has similar or different susceptibilities to parents' psychological adjustment is unknown.

Second, we used time diary methods, prompting parents to construct a chronological record of their activities in a 24-hour period. Prior work using frequency measures often has required parents to define their average involvement in preset parenting activities, resulting in more subjectivity and less detail (Hofferth & Sandberg, 2001; Juster, Ono, & Stafford, 2003). In our time diary measure parents delineated their activities with children but without aggregating them, allowing us to generate a detailed, objective assessment of parents' quality time with infants based on study goals. Our time diary measure also allowed us to isolate and exclude activities occurring at the same time (multitasking) and focus only on parental involvement occurring as the sole/primary activity when parents were fully engaged with and responsive to infants (Wilson & Prior, 2009). This quality interaction time is likely more influential for children's development and more sensitive to parental psychological adjustment.

Multifaceted Psychological Adjustment: Associations With Parental Involvement

Dysphoria (depressed mood) is one of the most prevailing psychological adjustment states experienced by new parents (e.g., Newland, Crnic, Cox, & Mills-Koonce, 2013). Parents suffering from depressed mood tend to isolate themselves and withdraw from responsibilities such as child care (Lyons-Ruth, Wolfe, Lyubchik, & Steingard, 2002). Depressed parents are less inclined to perceive pleasure from their infants' facial cues (Arteche et al., 2011) or to participate in otherwise-enjoyable interactions such as playing with, reading to, and hugging their children (Lyons-Ruth et al., 2002). Paternal depression seems particularly related to fathers' reduced involvement (Roggman, Boyce, Cook, & Cook, 2002), especially in enrichment activities (Paulson et al., 2006). Whether this "fragile" parenting pattern applies to mothers is less definite; a meta-analysis found only a

small to moderate association between maternal depression and the quantity of maternal involvement (Lovejoy, Graczyk, O'Hare, & Neuman, 2000).

Anxiety is a state of uneasiness or tension caused by apprehension and worry about a realistic or anticipated uncertainty or threat (Tluczek, Henriques, & Brown, 2009), and it is one of "the dominant emotion(s) governing the American parenting experience" (Roxburgh, 2012, p. 1028). Anxiety is characterized by high negative affect but, unlike depression, it does not necessarily entail low positive affect (Clark & Watson, 1991; L. E. Johnson & Greenberg, 2013). At clinical levels, maternal anxiety is associated with mothers' withdrawal from infants (Nicol-Harper, Harvey, & Stein, 2007) and preschoolers (Murray et al., 2012). However, mothers with subclinical anxiety display more prompt and responsive parenting behaviors (Newland et al., 2013), a "vigilant parenting" pattern that may arise out of these mothers' excessive worry for their children's development. Perhaps anxious mothers heighten their time investment in children in response to contemporary ideals of "intensive mothering" that exhort them to maximize "quality" time with children (Roxburgh, 2012). Although this vigilant pattern might be evident in relatively well-functioning, first-time, working mothers, it is unknown whether it is unique to maternal anxiety or could generalize to fathers or to other aspects of psychological adjustment.

Empathic personal distress is a self-focused, aversive affective reaction induced by observing pain in others (Decety & Lamm, 2009) and is often linked to a poor understanding of others' needs, excessive negative reaction to aversive stimuli, and withdrawal from stress. Whereas dysphoria and anxiety index general psychological functioning, empathic personal distress has clear environmental triggers and may be especially relevant to parenting. For instance, parents high in this trait are less efficacious and responsive, and more hostile, toward their children (Almeida, Wethington, & McDonald, 2001; Gondoli & Silverberg, 1997). When directly interacting with care-intensive infants, parents with higher empathic personal distress are expected to be easily aroused and taxed by their exposure to infants' demands and cries, making their involvement time with children fragile and subject to declines in the first postpartum year.

In sum, previous research about intraparental associations between psychological adjustment and parental involvement time is inconsistent. Some findings support the "fragile" parenting hypothesis, suggesting reduced parental involvement in the presence of one's own psychological adjustment difficulties, but others substantiate a "vigilant" parenting pattern, especially for mothers with subclinical levels of anxiety (Newland et al., 2013). Recognition of the comorbidity and distinction among different psychological adjustment constructs (Clark & Watson, 1991; Heron et al., 2004), combined with our domain-specific approach to parental involvement time, may help clarify these findings. Engagement with infants demands positive affect, attentiveness, and responsiveness from parents, implying the vulnerability of engagement time to the negative influence of psychological adjustment difficulties characterized by depleted positive affect and emotional alienation (e.g., dysphoria). In contrast, child care requires parents to regulate and control infants' protests and distress when implementing routine tasks. Thus, parents high in empathic personal distress (characterized by excessive negative reaction to stress and poor emotion regulation) might find child care especially stressful and exhausting and tend to withdraw from this

responsibility. New parents with mild anxiety may feel compelled to invest considerable time playing with and caring for their infants because of perceived pressures for cognitive stimulation (Roxburgh, 2012) and worries for their infant's health. An investigation of these parental psychological adjustment variables and how their associations with parental involvement time vary as a function of parenting domain will contribute to a more specific prediction and explanation of heterogeneity in the development of early parental involvement.

Interparental Associations of Parental Psychological Adjustment and Involvement

Family systems theory emphasizes interdependence among family members, meaning one parent's psychological adjustment has consequences for the entire family, including relationships in which he or she may not be directly involved (Minuchin, 1985). Evidence points to two interparental association patterns. Goodman (2008) found that when mothers were more depressed, fathers were more negative toward and tended to withdraw from their children, indicating a *spillover effect*, whereby individual parents' depression jeopardized their partner's parental involvement (Paulson et al., 2006). Others found a *compensatory pattern*, whereby fathers increased their positive involvement in response to the low parenting function of depressed mothers (de Mendonça, Bussab, Rodrigues, Siqueira, & Cossette, 2012) and mothers increased their involvement to protect their children from the negative effects of paternal depression (Zaslow, Pedersen, Cain, Suwalsky, & Kramer, 1985). Inconsistencies likely stem from different designs and measures and different severities of psychological adjustment across samples. Our longitudinal design, which distinguished aspects of psychological adjustment and incorporated domain-specific parental involvement measures, was intended to clarify these inconsistencies.

The Role of Parent Gender

Intra- and interparental associations also may be gendered. Fathers' participation in childrearing follows more of a "helper" role. Thus, paternal involvement may be more optional and more susceptible to individual and contextual influences, including family members' psychological adjustment (e.g., Cummings, Merrilees, & George, 2010). In comparison, mothers are often children's primary caregivers and expected to maximize their "quality" time with children (Douglas & Michaels, 2004). Thus, mothers may feel compelled to remain involved even when they or their partners are struggling with psychological adjustment. Understanding the intra- and interparental associations between parental psychological adjustment and involvement time and how couples differ in these associations represents a critical leap forward in advancing a family systems view of the development of early parental involvement.

The Current Study

The central purpose of this study was to examine associations between parents' psychological adjustment and their own and their partners' parental involvement time in a sample of dual-earner, first-time parents from the third trimester of pregnancy through 3, 6,

and 9 months postpartum. We proposed two competing hypotheses for intraparental associations between parents' psychological adjustment and trajectories of their own parental involvement time: (1) a *fragile* pattern, in which parents' psychological adjustment difficulties are associated with a relatively greater decrease in their own parental involvement time, and (2) a *vigilant* pattern, in which parents' psychological adjustment difficulties are associated with a relatively greater increase in their own parental involvement time. We also proposed two competing hypotheses regarding interparental associations between parents' psychological adjustment and trajectories of their partners' parental involvement time: (a) a *compensatory* pattern, in which parents' psychological adjustment difficulties are associated with a relatively greater increase in the parental involvement of their partners, and (b) a *spillover* pattern, in which parents' psychological adjustment difficulties are linked to a relatively greater decline in the parental involvement of their partners.

We anticipated that these patterns of associations would rely on the specific aspect of parental psychological adjustment and domain of parental involvement time. We expected negative associations of parental engagement time with dysphoria and of parental child care time with empathic personal distress, both reflecting the fragile pattern. In contrast, we anticipated both parental engagement and child care time to be positively associated with parental anxiety, reflective of the vigilant pattern.

Furthermore, we expected the patterns of associations to vary by parent gender. In particular, mothers were expected to increase their involvement time in response to their own (vigilant pattern) and their partners' psychological adjustment difficulties (compensatory pattern), whereas fathers were expected to decrease their involvement time in response to their own (fragile pattern) and their partners' psychological adjustment difficulties (spillover pattern). Finally, given that involvement with infants could have reciprocal effects on new parents' psychological adjustment (Roxburgh, 2012; Twamley et al., 2013), we also tested associations from parental involvement time to parental psychological adjustment.

Method

Participants and Procedure

One hundred eighty-two expectant couples were recruited from a large midwestern city in 2008 and 2009 to participate in a university institutional review board–approved longitudinal study examining first-time, working parents' experiences transitioning to parenthood. Our sampling strategy targeted couples who were at least 18 years old, married or cohabiting, expecting their first biological child, and currently employed and planning to return to paid employment following the birth. Participating families were assessed for their demographics, psychological adjustment, and time use at the third trimester and at 3, 6, and 9 months postpartum. Modest incentives were given for participation.

Five families were excluded because of large amounts of missing data, resulting in a sample of 177 couples (354 individuals). The majority of parents were married (87%), college educated (bachelor's degree or higher for 82% of mothers and 72% of fathers), and White (86%; 5%–6% were Black, and 3% were Asian). Thus, our sample was more selective

compared to the general population of new parents in the United States in terms of marital status (41% unmarried; Martin, Hamilton, Osterman, Curtin, & Matthews, 2015), educational attainment (college degree or higher for 54% of mothers), and racial composition (White = 53%, Hispanic = 25%; Livingston & Cohn, 2010).

Our sample of mothers was, on average, 28.33 years old ($SD = 3.94$) and fathers were 30.38 years old ($SD = 4.65$), slightly older than the general new parent population (mothers = 26 years; Martin et al., 2015; fathers = 27 years; Guzzo & Payne, 2014). The average annual family income of our sample was \$87,000 ($SD = \$41,000$). Consistently across the four phases, 5%–8% of fathers worked less than 30 hours/week, 33%–37% worked 31–40 hours/week, and 56%–60% worked over 40 hours/week. The percentage of mothers working less than 30 hours/week increased from 9% at the third trimester to 29%–38% in the postpartum period; the percentage of mothers working 31–40 hours/week dropped from 52% in the prenatal period to 45% at the third month and to 39% at 6 and 9 months postpartum. The percentage of mothers working more than 40 hours/week dropped from 39% in the prenatal period to 16.8% at the third month and rebounded to nearly 30% at 6 and 9 months postpartum. This is comparable to the average work hours for dual-earner new parents in the United States (mothers = 31 hours/week, fathers = 42 hours/week; Abraham, Flood, Sobek, & Thorne, 2011). Half (52%) of the infants were female.

Measures

Dysphoria (depressed mood)—At each phase, parents independently completed a survey (Bonomi, Kernic, Anderson, Cannon, & Slesnick, 2008) indicating how often (0 = *rarely or none of the time* to 3 = *most or all of the time*) they had felt “depressed, hopeful about the future (reversed), and happy (reversed)” in the previous week. This measure focuses on the (low) positive affect or dysphoria aspect of depression, which is distinguished from anxiety (Clark & Watson, 1991), and is appropriate for indexing mild depressed mood in a low-risk sample. Cronbach’s alphas ranged from .56 to .76 for mothers and .55 to .77 for fathers. A confirmatory factor analysis (LISREL 8.70) supported the goodness-of-fit of the measure for fathers, $\chi^2(32) = 52.19$, $p = .001$, root-mean-square error of approximation = .07, and mothers, $\chi^2(32) = 44.73$, $p = .067$, root-mean-square error of approximation = .05. All items loaded significantly on the latent depression variable at each phase (standardized loadings ranged from .36 to .99 for fathers and from .44 to .99 for mothers), suggesting the validity of the measure. For later analysis, we created a composite score by averaging the values of the three items at each phase, with higher values indicating higher levels of dysphoria.

Anxiety—At each phase, parents independently completed six items from a short form of the Spielberger State–Trait Anxiety Inventory (Marteau & Bekker, 1992). Parents rated the following feelings on a scale that ranged from 1 (*not at all*) to 4 (*very much*): “I am: calm (reversed), tense, upset, relaxed (reversed), content (reversed), and worried.” Cronbach’s alphas ranged from .83 to .86 for mothers and from .79 to .84 for fathers. The mean value of the six items constituted a composite anxiety score at each phase and was used in subsequent analysis.

Empathic personal distress—Because of its stable traitlike nature, empathic personal distress was measured only at the third trimester. Expectant parents independently completed the seven-item Empathic Personal Distress subscale of the Interpersonal Reactivity Index (Davis, 1983; e.g., “In emergency situations, I feel apprehensive and ill-at-ease” and “When I see someone who badly needs help in an emergency, I go to pieces”) on a scale that ranged from 1 (*doesn’t describe me well*) to 5 (*describes me very well*). Alphas were .79 for mothers and .77 for fathers. After we re-coded some items, higher values in the average composites indicated greater empathic personal distress.

Parental involvement—Parents independently completed time diary interviews at 3, 6, and 9 months postpartum. In a procedure modeled after the American Time Use Survey (U.S. Bureau of Labor Statistics, 2006), parents reported a sequential list of activities during one recent workday and non-workday, from 4:00 a.m. on the target day to 4:00 a.m. on the following day. Information gathered that is relevant to this study included the start and end time of primary activities; up to two simultaneous activities (secondary/tertiary), if any; whether the activity was for work; and whether the child was in the parent’s care during each activity period. Trained research assistants reviewed diaries with parents to ensure correct reporting and audio recorded their interviews. A final cross-check of the paper-and-pen diaries with the audio reports was performed on the completion of the entire sample, and major discrepancies were conferenced.

Based on the American Time Use Survey coding scheme, reported child-related activities were assigned into broader categories (e.g., “Picking Up the Baby” was categorized as “Physical Care for Household Child”), which were further classified into two domains. *Engagement* referred to parental direct involvement in enrichment activities, including reading, playing, talking and listening, and soothing or holding. *Child care* encompassed parental direct involvement in care activities common in infancy, including physical care (waking up or getting the child ready), feeding (breast, bottle, or solids), changing diapers, preparing meals or bottles, giving baths, putting to bed, and dressing (for similar versions of this coding method, see Kotila et al., 2013, and Lang et al., 2014). This time diary method allowed parents maximum flexibility in describing their time with children outside of preset categories but did not require parents to aggregate time, thus reducing measurement error and social desirability bias (Juster et al., 2003).

In addition, we extracted high-quality parental involvement by counting only time in which the parent was focused solely or primarily on the child; that is, within each involvement domain (engagement vs. caregiving) and daily context (workday vs. non-workday), the constructed time measure reflects a sum of (a) the time parents were solely involved (i.e., did not report additional activities) and (b) the time parents reported a primary child-related activity along with one additional non-child-related activity, or one additional child-related activity that fell within a different parenting domain. Secondary or tertiary involvement time was not counted if the primary activity was not child related.

Results

Analysis Plan

Descriptive statistics and correlations were computed. We used the restricted maximum-likelihood algorithm in hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) to examine the expected levels and linear trends of individual parents' involvement time from 3, 6, to 9 months postpartum. To test the intrapersonal (actor effect) and interparental (partner effect) associations between parental psychological adjustment and parental involvement time, we combined the individual growth model with dyadic data analysis (Raudenbush, Brennan, & Barnett, 1995); specifically, the parameters of both mothers' and fathers' involvement time were simultaneously estimated in the same baseline model. Next, the individual-specific changes of parental involvement time were predicted by parents' own and partners' postnatal psychological adjustment changes (time-variant effects), and the individual-specific linear trends of parental involvement time were predicted by parents' own and partners' prenatal psychological adjustment levels (time-invariant effects).

We conducted these analyses separately by parenting domain (child care vs. engagement) and daily context (workday vs. non-workday). Different aspects of psychological adjustment (dysphoria, anxiety, or empathic personal distress) were also modeled separately, to avoid potential multicollinearity problems. Parents' work hours were controlled in all of the analyses. In addition, we conducted a second set of HLM analyses to test how changes of parents' postnatal psychological adjustment were predicted by changes of parental involvement time. Logarithmic transformations were applied to positively skewed parental involvement time and dysphoria variables prior to conducting HLM.

Across the three postnatal phases, 25.4%, 36.7%, and 23.7% of mothers, and 20.3%, 33.9%, and 21.5% of fathers, did not complete a workday diary, and 13.0%, 29.4%, and 13.0% of mothers and 16.9%, 32.8%, and 15.8% of fathers did not complete a non-workday diary. Dysphoria and anxiety percentages missing from pre- to postnatal phases were 1.7%, 3.4%, 27.1%, and 13.6% for mothers, and 4%, 4%, 30.5%, and 15.8% for fathers. At the third trimester, 1.1% of mothers and 4.5% of fathers were missing empathic personal distress scores. The 6-month assessment involved phone interviews rather than in-home assessments and offered lower monetary incentives, resulting in greater attrition. Little's (1988) missing-completely-at-random test) showed that the pattern of missing data was completely random, $\chi^2(2,024) = 2,053.05, p = .32$. However, sensitivity analyses indicated that married parents and those with greater education were more likely to remain continuously enrolled. Thus, we used the multiple-imputation procedure in HLM (D. R. Johnson & Young, 2011; Raudenbush & Bryk, 2002) to handle missing data. To be specific, 10 imputed data sets were derived from the original data, thereby producing 10 sets of estimates (Graham, Olchowski, & Gilreath, 2007). Pooled estimates of the parameters are reported.

Preliminary Analyses

The data in Table 1 show that mothers spent an average of 3 hours and 20 minutes on workday child care at 3 months, but only around 2 hours in workday child care at 6 and 9 months. Mothers' non-workday child care time was more than 4 hours at 3 and 6 months

and then reduced to 3 hours at 9 months. Mothers' workday engagement time was relatively stable, remaining around 1.25 hours/day throughout the first 9 months; however, mothers' non-workday engagement time consistently increased, from less than 2.5 hours/day at 3 months to around 3 hours/day at 6 months, and 3 hours and 20 minutes/day at 9 months.

On average, fathers spent less than 1 hour on workday child care during the first 9 months, and their time spent on non-workday childcare rose slightly from 1 hour 30 minutes/day at 3 and 6 months to 1 hour 40 minutes/day at 9 months. Fathers' engagement time increased both on workdays (50 minutes/day at 3 months, almost 1 hour/day at 6 months, 1 hour 10 minutes/day at 9 months) and on non-work days (less than 2 hours/day at 3 months, more than 2 hours/day at 6 months, nearly 2.5 hours/day at 9 months). Parents' dysphoria and anxiety scores were relatively low, which, together with the demographic data, reflect the low-risk characteristics of the families sampled.

Correlation analysis (see Table OA1 on the *Journal of Marriage and Family* website, [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1741-3737](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1741-3737)) revealed significant stability of non-workday parental involvement time for both parents and both parenting domains from 3 to 9 months (average r ranged between .27 and .38). On workdays, parents' child care time (average $r = .30$ mothers and .23 fathers) was more stable than their engagement time (average $r = .27$ mothers and .19 fathers). Parents' workday and non-workday involvement time was significantly correlated (average r ranged between .26 and .51). Couples' involvement was significantly correlated for non-workday engagement (average $r = .31$) but not for other types of involvement (average r ranged between $-.01$ and .10). Parents' child care and engagement time was only moderately correlated (average r ranged between .16 and .24). We found no consistent pattern of correlations between parental involvement and psychological adjustment in preliminary analyses.

HLM Analyses Predicting Trajectories of Parental Involvement Time

Step 1—In Step 1, a two-level random coefficient model was first specified to estimate the intercepts (levels) and slopes (linear trends) of parental involvement time:

$$\text{Level 1: } Y_{ij} = \pi_{m0i} (\text{M. intercept}) + \pi_{m1i} (\text{M. slope}) + \pi_{f0i} (\text{F. intercept}) + \pi_{f1i} (\text{F. slope}) + e_{ij}$$

$$\begin{aligned} \text{Level 2: } \pi_{m0i} &= \beta_{m00} + u_{f0i} & \pi_{f0i} &= \beta_{f00} + u_{f0i} \\ \pi_{m1i} &= \beta_{m10} + u_{f1i} & \pi_{f1i} &= \beta_{f10} + u_{f1i}, \end{aligned}$$

where Y_{ij} was the involvement time for an individual parent of family i at time j ; π_{m0i} and π_{f0i} were the intercepts, or the initial levels of involvement time for the individual mother and father; π_{m1i} and π_{f1i} were the slopes, or rates of linear change in involvement time for the individual mother and father; e_{ij} was the residual variance; β was the fixed effect and u was the random effect of a parameter. We found that mothers increased in engagement time on non-workdays ($\hat{\pi}_{m1i} = .09, p < .01$) but declined in child care time on workdays ($\hat{\pi}_{m1i} = -.10, p < .01$) and non-workdays ($\hat{\pi}_{m1i} = -.05, p < .01$). Fathers increased in engagement

time on workdays ($\hat{\pi}_{f1i} = .07, p < .01$) and non-workdays ($\hat{\pi}_{f1i} = .07, p < .05$), and in child care time on non-workdays ($\hat{\pi}_{f1i} = .06, p < .01$).

Step 2—In Step 2, the time-variant predictors representing change of parents' postnatal psychological adjustment (dysphoria and anxiety) from 3 to 9 months were entered into the Level 1 model to explain the variation of the change in parents' own involvement time and that of their partner.

Regarding the intraparental associations, Table 2 shows that an increase in fathers' postnatal anxiety was associated with a relatively greater decrease in their workday child care ($\pi_{f2i} = -.08, p = .06$), whereas an increase in mothers' postnatal anxiety was associated with a relatively greater increase in their workday child care ($\pi_{m2i} = .08, p < .01$). The negative association from change of mothers' postnatal dysphoria to change of their non-workday engagement was only marginally significant ($\pi_{m2i} = -.29, p = .07$). This supported the fragile fathering and vigilant mothering hypotheses.

In terms of interparental associations, an increase in mothers' postnatal anxiety was associated with a relatively greater decrease in fathers' non-workday child care ($\pi_{m3i} = -.09, p < .01$), supporting a spillover effect. In contrast, an increase in fathers' dysphoria was associated with a relatively greater increase in mothers' workday ($\pi_{f3i} = .42, p < .05$) and non-workday child care ($\pi_{f3i} = .43, p < .01$), and mothers' non-workday engagement ($\pi_{f3i} = .53, p < .05$); an increase in fathers' anxiety was associated with a relatively greater increase in mothers' workday ($\pi_{f3i} = .10, p < .05$) and non-workday child care ($\pi_{f3i} = .09, p < .01$), indicating a compensatory effect.

Increased work hours were associated with relatively greater declines in parents' own non-workday (fathers: $\pi = -.05, p < .05$, mothers: $\pi = -.03, p < .05$) and workday childcare (fathers: $\pi = -.05, p < .05$, mothers: $\pi = -.03, p < .05$). Increased work hours were also associated with relatively greater declines in parents' own engagement time, but only on workdays ($\pi = -.05, p < .01$ fathers; $\pi = -.05, p < .05$ mothers), not on non-workdays (fathers: $\pi = -.02, p = .60$, mothers: $\pi = -.02, p = .36$). Significant time-variant variables were retained in subsequent analyses.

Step 3—In Step 3, the time-invariant predictors representing the level of parents' prenatal psychological adjustment (dysphoria, anxiety and empathic personal distress) were entered into the Level 2 model to explain the variation of the levels and linear trends of parents' own (actor effect) and their partners' (partner effect) involvement time. The actor and partner effects were tested separately to avoid confounding from couple interdependence.

Regarding intraparental associations, fathers higher in prenatal dysphoria had a relatively greater decline in their own non-workday engagement ($\beta_{f11} = -.49, p < .05$); fathers higher in prenatal empathic personal distress were initially higher in their own workday child care ($\beta_{f01} = .15, p < .01$), but over time experienced a relatively greater decline in their own non-workday child care ($\beta_{f11} = -.07, p < .01$), supporting the fragile fathering hypothesis. In contrast, mothers' prenatal empathic personal distress was associated with a lower level of

their initial workday child care ($\beta_{m01} = -.07, p < .05$), but over time it was associated with a relatively greater increase in their own workday child care ($\beta_{m11} = .07, p < .05$), supporting the vigilant mothering hypothesis.

Regarding interparental associations, mothers' prenatal anxiety was associated with fathers' higher level of initial workday ($\beta_{f01} = .11, p < .05$) and non-workday ($\beta_{f01} = .15, p < .01$) child care, and non-workday engagement ($\beta_{f01} = .17, p < .01$). However, mothers' prenatal empathic personal distress was associated with a relatively greater decline in fathers' non-workday child care ($\beta_{f11} = -.06, p < .05$), indicating a spill-over pattern longitudinally.

HLM Analyses Predicting Trajectories of Parental Psychological Adjustment

We conducted a second set of HLM analyses to examine how changes in parents' postnatal psychological adjustment varied as a function of changes in their own and their partner's involvement time. Only two time-variant associations were found: An increase in fathers' workday child care time was associated with relatively greater increases in mothers' dysphoria ($\pi = .04, p < .01$) and anxiety ($\pi = .18, p < .05$).

Discussion

The transition to parenthood is stressful, particularly for working parents, who must balance the intensive needs of their infants with work demands, all while coping with normative fluctuations in psychological adjustment. Consistent with theory (Belsky, 1984), even these normative fluctuations in psychological adjustment were associated with changes in parental involvement time in our low-risk sample of highly educated, dual-earner couples. Moreover, because in the current study we used a domain-specific conceptualization and corresponding measurement of parental involvement, considered multiple facets of parental psychological adjustment, and adopted a systems perspective, we were able to determine that the pattern of associations from psychological adjustment to parental involvement time indeed depended on the aspect of psychological adjustment studied, parenting domain, and parent gender. In general, normative psychological adjustment difficulties tended to bias the two-parent system toward a gendered pattern of "mother step in" and "father step out," as father involvement time tended to decrease, and mother involvement time either remained unchanged or increased, in response to their own and their partners' psychological adjustment fluctuations.

Gendered Intrapersonal Associations of Parental Psychological Adjustment and Involvement

We found gendered actor effects across all aspects of psychological adjustment in predicting trajectories of parental involvement time. In our sample, fathers with higher prenatal dysphoria declined more in engagement time; fathers with a greater increase in postnatal anxiety, or fathers higher in prenatal empathic personal distress, declined more in child care (the father-to-father effects in Table 2). These findings are consistent with previous work linking fathers' mental health with impaired paternal involvement (Roggman et al., 2002) and support our hypothesis about the fragility of father involvement (Cummings et al., 2010) even among high-functioning fathers.

Consistent with findings of a meta-analysis (Lovejoy et al., 2000) and studies of mothers with subclinical levels of anxiety (Newland et al., 2013), our sample of mothers demonstrated a vigilant pattern, as mothers with greater postnatal anxiety or high in prenatal empathic personal distress increased in their child care time, and mothers with increased postnatal dysphoria declined only marginally in their engagement time (the mother-to-mother effects in Table 2). It may be that, as Hochschild and Machung (1990; Kotila et al., 2013) described, working mothers in transitional families still assume much parental responsibility and retain primary caregiver status. According to our study, psychological adjustment difficulties seemed to aggravate the tendency of these transitional families to divide child-related involvement along gendered lines. Alternatively, first-time, working mothers may be less able or willing than fathers to downgrade their parental responsibility given social norms of intensive mothering. As a result, these mothers would rather maximize quality time with children (Douglas & Michaels, 2004), even at the cost of their psychological well-being.

Gendered Interpersonal Associations of Parental Psychological Adjustment and Involvement

The results regarding interparental associations were also gendered and provide an important supplement to the intraparental association findings. On the one hand is a series of positive associations from fathers' psychological adjustment to mothers' involvement time change, including mothers' greater increase in engagement and child care time in response to fathers' increased postnatal dysphoria or anxiety (the father-to-mother effects in Table 2). Thus, mothers appeared to compensate for fathers' psychological vulnerability by increasing time in the corresponding domain (just as they did in response to their own psychological adjustment difficulties). Again, perhaps in the face of their own and their partner's psychological adjustment difficulties, our sample of highly educated working mothers were on the one hand capable of picking up the slack in parenting responsibility while on the other hand perceiving less flexibility to adjust their involvement time given social norms of intensive mothering. In light of the significance of parental involvement for optimal child development (Pleck, 2010), mothers' increased involvement time in families with more dysphoric or anxious fathers could protect children from the negative influence of fathers' impaired psychological functioning.

On the other hand, fathers tended to reduce their involvement time in response to mothers' anxiety and empathic personal distress (a reaction similar to their own psychological adjustment difficulties; note the mother-to-father effects in Table 2). Again, this pattern supports theories proposing that paternal involvement is especially susceptible to individual and contextual influences (Cummings et al., 2010), such as family members' psychological adjustment. Unmeasured variables may also explain these associations. For example, more anxious/distressed mothers might be less likely to encourage and more likely to discourage fathers' involvement in childrearing (Schoppe-Sullivan, Altenburger, Lee, Bower, & Kamp Dush, 2015). Fathers with psychological adjustment challenges might also be less confident in their ability to fulfill parental responsibility. Whether this spillover effect on fathering holds in families in which parents' psychological adjustment difficulties are at a clinical level warrants further investigation.

Aspects of Parental Psychological Adjustment and Domains of Parental Involvement

We found that different facets of psychological adjustment had distinct associations with parental involvement time, depending on parenting domain. The dysphoria scale in the current study concentrated on the lack-of-positive-affect aspect of depression (Lovejoy et al., 2000). Parents with depleted positive affect often find sustained and focused engagement in enriching activities with infants too demanding (Jacob & Johnson, 2001). At their core, routine child care activities require less emotional devotion beyond simple manual labor. This partially explained why parents' dysphoria was detrimental only to their own playful engagement, but not child care.

On the other hand, parents' anxiety and empathic personal distress appeared more predictive of parents' child care time, with positive associations for mothers and negative associations for fathers. This indicates that nonclinical levels of parental anxiety and empathic personal distress contribute to more vigilant and responsive involvement among high-functioning parents, but only in mothers and in the context of child care, and not for fathers or in the context of playful engagement. Child care likely requires parents to regulate and control infants' protests and distress when implementing routine tasks. Fathers high in anxiety and empathic personal distress (both characterized by excessive negative reaction to stress) might find child care too stressful and tend to avoid child care activities when possible.

Prediction of Parental Psychological Adjustment From Parental Involvement Time

Mothers' increased dysphoria and anxiety in response to fathers' heightened child care involvement found in our study might be attributed to implicit negative attitudes toward fathers being highly involved in child care (Schoppe-Sullivan et al., 2015). It is also possible that mothers might feel a sense of guilt when perceiving that their partners are "too" involved, a psychological dilemma that working mothers may often face when balancing the demands of work and parenting. If mothers feel fathers are taking over central aspects of motherhood (e.g., routine care activities), these mothers might have a more negative maternal self-image, which may affect their psychological adjustment (Sasaki, Hazen, & Swann, 2010).

However, in general, the reciprocal analysis was less conclusive and lacked consistent, significant findings from parental involvement time to parental psychological adjustment. These supplemental results suggest that, at least in these low-risk, highly educated, dual-earner families, parental psychological functioning may have contributed to changes in parental involvement time, rather than vice versa. Future studies with more stringent designs and diverse samples might help clarify the causality issue.

Limitations and Implications

This study had notable strengths, including (a) a longitudinal design that followed first-time parents across the transition to parenthood; (b) a refined conceptualization and assessment of domain-specific parental involvement time; (c) consideration of multiple facets of psychological adjustment; and (d) a dyadic, systems approach to examine parent gender and inter- and intrapersonal associations. However, important limitations must be acknowledged.

First and foremost, interpretation of these results must be situated within the target population: dual-earner, first-time parents who had relatively high socioeconomic status, who volunteered to participate in our study, and whose psychological adjustment fluctuated within a normal range. Therefore, we cannot be certain that our results would generalize to the broader population of new parents or to parents with clinical-level mental health problems. On the one hand, that even mild psychological adjustment difficulties posed a challenge to parental functioning in low-risk families is striking and underscores the impact of psychological adjustment on parenting as proposed by Belsky (1984). These associations might be even more apparent in populations with more severe symptoms and fewer social or financial resources. On the other hand, certain patterns we found—for instance, mothers' heightened involvement in response to their own and their partners' psychological adjustment difficulties—may be more characteristic of first-time, high-socioeconomic status, working mothers, who are transitional between family ideology and working ideology and are most compelled by the social norm of intensive mothering. The findings from this select sample of first-time, dual-earner parents can advance our understanding about the development of early parenting under certain conditions and may serve as a baseline to evaluate the associations between parental psychological adjustment and parenting in less advantaged families or families in other developmental stages.

Second, even in light of their striking advantages, time diary methods are not without biases and are limited in their capacity to measure the quality of parental involvement. Third, the dysphoria scale had relatively narrow content coverage and low internal consistency, although it was well validated and adequate to measure mild depressed mood in a low-risk sample. Selection of a psychometrically sound depression measure will be critical to testing our hypotheses about depression in higher risk samples. Fourth, children's development always brings increased challenges to parents that may induce psychological adjustment –related fluctuations. In spite of the lack of consistent associations from parental involvement time to parents' psychological adjustment in the first 9 months in our study, future research should examine the reciprocal associations as children age. Moreover, other characteristics of children, such as gender and temperament, may affect associations between parental psychological functioning and involvement. Finally, mothers' responses to family members' normative psychological adjustment fluctuations may differ from mothers' responses to clinical-level psychological adjustment difficulties that could interfere with maternal functioning and dampen mothers' quality time with infants. This potential nonlinear function of family members' psychological adjustment in predicting maternal involvement time should be tested in the future.

We believe that revealing the subtle variation in and associations between new parents' psychological adjustment and parental involvement time in the first postpartum year in a low-risk, first-time, dual-earner parent sample is still informative to both research and practice aimed at early detection of maladaptive parenting in the broader population of new parents, clinical populations, or populations with diverse demographic and psychosocial characteristics. The susceptibility of father involvement to parents' psychological adjustment has important implications for policymakers who desire to move men in the direction of more involved parenting. Mothers' tendency to compensate for fathers' adjustment difficulties and paternal withdrawal indicates the resilience of the two-parent system in

preserving parental involvement that is critical for children's adaptive development. However, when "intensive mothering" is advocated by media and child-rearing experts, working mothers' efforts to maximize involvement time despite psychological adjustment difficulties alerts us to the potential side effects of sustained demands on mothers' well-being. As such, policymakers' advocacy for supports for working parents (e.g., child care subsidies, paid parental leave, etc.) will be critical to help parents achieve positive psychological adjustment and maintain consistent high-quality parental involvement.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Descriptive Statistics of Parental Involvement and Psychological Adjustment Variables

		Mother						Father						
Phases	<i>n</i>	<i>M</i>	<i>SD</i>	Min	Max	Skew	Kurtosis	<i>n</i>	<i>M</i>	<i>SD</i>	Min	Max	Skew	Kurtosis
Parental involvement time in childcare at workday (minutes)														
3 months	132	201.23	105.46	15.00	585.00	0.78	0.71	141	56.18	53.40	0.00	255.00	0.86	0.42
6 months	112	161.50	94.68	0.00	460.00	0.88	0.56	117	49.38	46.83	0.00	260.00	1.45	3.23
9 months	135	121.79	70.36	0.00	312.00	0.50	−0.11	139	54.71	51.81	0.00	240.00	1.20	1.16
Parental involvement time in childcare at non-workday (minutes)														
3 months	154	247.87	119.89	0.00	610.00	0.45	0.35	147	88.92	85.96	0.00	395.00	1.22	1.37
6 months	125	248.63	122.26	30.00	625.00	0.63	0.23	119	93.71	82.00	0.00	390.00	1.21	1.34
9 months	154	191.90	87.75	0.00	444.00	0.33	−0.31	149	106.37	90.62	0.00	500.00	1.63	3.93
Parental involvement time in engagement at workday (minutes)														
3 months	132	74.26	81.29	0.00	385.00	1.57	2.75	141	49.02	57.80	0.00	350.00	1.53	4.09
6 months	112	73.50	91.52	0.00	626.00	2.71	11.79	117	54.49	61.01	0.00	290.00	1.39	2.07
9 months	135	79.12	73.14	0.00	375.00	1.12	1.40	139	69.81	68.95	0.00	380.00	1.48	3.11
Parental involvement time in engagement at non-workday (minutes)														
3 months	154	140.62	132.98	0.00	750.00	1.39	2.68	147	111.53	123.65	0.00	600.00	1.57	2.51
6 months	125	181.34	134.04	0.00	836.00	1.32	3.75	119	125.63	118.25	0.00	720.00	1.71	4.82
9 months	154	201.88	154.08	0.00	720.00	1.01	0.68	149	155.95	158.46	0.00	970.00	1.74	4.55
Parents' dysphoria														
Prenatal	174	0.34	0.49	0.00	2.33	1.65	0.18	170	0.41	0.49	0.00	2.50	1.54	0.19
3 months	171	0.42	0.55	0.00	2.33	1.45	0.19	170	0.53	0.50	0.00	2.00	0.78	0.19
6 months	129	0.44	0.56	0.00	2.33	1.26	0.21	123	0.50	0.53	0.00	2.00	1.14	0.22
9 months	153	0.44	0.57	0.00	3.00	1.58	0.20	149	0.49	0.48	0.00	2.00	1.08	0.20
Parents' anxiety														
Prenatal	174	1.60	0.58	1.00	3.50	1.12	0.78	170	1.65	0.55	1.00	3.33	0.89	0.39
3 months	171	1.58	0.56	1.00	3.33	0.91	0.11	170	1.66	0.56	1.00	3.50	0.96	0.70
6 months	129	1.58	0.54	1.00	3.17	0.93	0.22	123	1.60	0.55	1.00	3.33	1.03	0.64
9 months	153	1.65	0.60	1.00	3.17	0.86	−0.10	149	1.64	0.56	1.00	3.33	0.96	0.53

Note. Min = minimum; Max = maximum.

Note. Min = minimum; Max = maximum.

Table 2

Summary of Significant Associations from Parental Psychological Adjustment to Levels and Changes of Parental Involvement Time

Intraparental associations					Interparental associations				
Predictor	Outcome	β	<i>t</i>	<i>p</i>	Predictor	Outcome	β	<i>t</i>	<i>p</i>
Father-to-father effect: A fragile pattern					Mother-to-father effect: A spillover pattern				
Prenatal dysphoria	Change of engagement NW	-0.49	-2.40	.02	Postnatal anxiety	Change of child care NW	-0.09	-2.74	.01
Postnatal anxiety	Change of child care W	-0.08	-1.94	.06	Prenatal distress	Change of child care NW	-0.06	-2.12	.04
Prenatal distress	Change of child care NW	-0.07	-2.10	.04	Prenatal anxiety	Level of engagement NW	0.17	2.65	.01
Prenatal distress	Level of child care W	0.15	2.77	.01	Prenatal anxiety	Level of child care W	0.11	2.31	.02
					Prenatal anxiety	Level of child care NW	0.15	2.59	.01
Mother-to-mother effect: A vigilant pattern					Father-to-mother effect: A compensatory pattern				
Postnatal dysphoria	Change of engagement NW	-0.29	-1.82	.07	Postnatal dysphoria	Change of engagement NW	0.53	2.52	.02
Postnatal anxiety	Change of child care W	0.08	2.90	.01	Postnatal dysphoria	Change of child care W	0.42	2.64	.01
Prenatal distress	Change of child care W	0.07	2.34	.03	Postnatal dysphoria	Change of child care NW	0.43	3.73	.00
Prenatal distress	Level of child care W	-0.07	-2.03	.04	Postnatal anxiety	Change of child care W	0.10	3.43	.00
					Postnatal anxiety	Change of child care NW	0.09	3.39	.00

Note. W = weekday; NW = non-workday.