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Paternal Work Stress and Latent Profiles of Father–Infant Parenting Quality

The current study used latent profile analysis (LPA) to examine the implications of fathers' experiences of work stress for paternal behaviors with infants across multiple dimensions of parenting in a sample of fathers living in nonmetropolitan communities (N = 492). LPA revealed five classes of fathers based on levels of social–affective behaviors and linguistic

stimulation measured during two father–infant interactions. Multinomial logistic regression analyses suggested that a less supportive work environment was associated with fathers' membership in multiple lower quality parenting classes. Greater work pressure and a nonstandard work schedule also predicted fathers' membership in the latent parenting classes, although these associations differed depending on the number of hours fathers spent in the workplace.

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Over the past several decades, researchers have increasingly recognized that work stress can shape the quality of fathers' relationships with their children. Previous research indicates that a variety of occupational stressors predict lower quality parent–child interactions, including long hours at work, nonstandard work schedules, high levels of job pressure, and low levels of workplace support (e.g., Davis, Crouter, & McHale, 2006; Greenberger, O'Neil, & Nagel, 1994; National Institute of Child Health & Human Development, Early Child Care Research Network [NICHD ECCRN], 2000; Repetti, 1994). These studies are consistent with a role stress perspective on the work–family interface, which suggests that experiences of

occupational stress may negatively impact the quality of parent–child relationships through the negative effects of work stress on parents as individuals (e.g., Bolger, DeLongis, Kessler, & Wethington, 1989).

Although progress has been made in identifying specific workplace characteristics that predict variations in parenting quality, less is known about whether and how experiences of workplace stress may shape father–infant interactions (for exceptions, see Goldberg, Clarke-Stewart, Rice, & Dellis, 2002; Goodman, Crouter, Lanza, Cox and the Family Life Project Key Investigators, 2008; Volling & Belsky, 1991). Further, many studies have taken a more traditional variable-oriented approach to the study of work stress and fathers' parenting, rather than a holistic or "person-oriented" approach. As defined by Bergman and Trost (2006), a variable-oriented approach is one in which the focus is on measuring discrete variables and studying their associations over time, typically using some form of linear modeling (e.g., regression, structural equation modeling). In contrast, person-oriented approaches examine the individual as an integrated whole, identifying groups of individuals who share similar profiles across multiple indicators (e.g., cluster analysis, latent class analysis, latent profile analysis). Thus, a person-oriented approach, such as latent profile analysis (LPA), can be used to organize similar fathers into subgroups based on an entire set of parenting characteristics. Further, although variable-oriented approaches have expanded our understanding of work stress effects on discrete parenting behaviors, examining these associations using a person-oriented approach may offer unique insight into work–family relations by focusing on the associations between work stress and parenting as a holistic process.

In the case of fathers, it is possible that work stress may negatively impact multiple dimensions of parenting, with potential implications for children's development. A considerable body of research suggests that both social–affective (e.g., warmth, sensitivity, and engagement) and linguistic (e.g., amount and complexity of language) dimensions of fathers' parenting contribute to a broad range of child outcomes. For example, fathers' sensitive and supportive involvement is associated with children's later social and cognitive development, including fewer internalizing and externalizing behavior problems, greater social competence with peers,

greater attachment security, and greater problem solving ability and receptive vocabulary (e.g., Easterbrooks & Goldberg, 1984; Martin, Ryan, & Brooks-Gunn, 2007; NICHD ECCRN, 2004; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). Further, the more complex and challenging forms of language fathers use with children has been found to promote children's linguistic competence, as well as their social competence (e.g., Duursma, Pan, & Raikes, 2008; Lamb, 2010). Although work–family researchers have examined the influence of work stress on social–affective aspects of paternal parenting (e.g., warmth, sensitivity, and engagement), little is known about whether and how work stress may impact fathers' language stimulation, and no study that we are aware of has attempted to examine associations between workplace stress and social–affective and linguistic aspects of fathers' parenting in combination. Thus, the current study addresses an important limitation in the work–family literature by taking a more holistic view in understanding the specific ways in which work stress is linked to fathers' parenting.

The current study sought to expand upon previous research by examining whether patterns of fathers' social–affective and linguistic parenting behaviors could be identified in a large, ethnically and economically diverse sample of families living in nonmetropolitan communities. Consistent with a role stress perspective on work stress and parenting quality, the current study also examined whether occupational stressors, including long hours at work, nonstandard work shifts, high pressure, and a nonsupportive work environment, were associated with patterns of fathers' parenting. Fathers living in nonmetropolitan communities may be particularly vulnerable to experiences of workplace stress, as previous research suggests that fewer employment opportunities are available in rural communities and, further, that the jobs that are available are likely to be of lower quality compared to jobs available in urban areas (Gibbs, Kusmin, & Cromartie, 2005). Further, as a role stress perspective suggests that work stress may shape family processes through the impact of stress on the individual, we examined whether associations between paternal work stress and patterns of fathers' parenting were mediated by fathers' perceptions of time resources. Finally, as the combination of long hours in the workplace and high levels of job stress may be particularly

detrimental to the quality of father–child relationships (e.g., Crouter, Bumpus, Head, & McHale, 2001), we examined whether associations between work stressors and fathers' parenting profiles varied according to the amount of time fathers spent in the workplace.

A PERSON-ORIENTED APPROACH TO FATHER PARENTING

Although variable-oriented approaches are useful for modeling predictors and correlates of fathers' parenting, such approaches involve examining individual dimensions of parenting behaviors. Although these approaches have led to detailed information about individual dimensions of fathers' parenting, they have also contributed to a compartmentalization of empirical research on parenting. For example, although previous studies suggest that parental sensitivity and language use both make meaningful contributions to children's socioemotional development (e.g., Duursma et al., 2008; NICHD ECCRN, 2004), these processes are rarely examined together, obscuring how these qualities uniquely combine in different groups of fathers. Jain, Belsky, and Crnic (1996) noted that the majority of studies of father parenting have "focused on fathering behaviors, rather than fathers as individuals" (p. 432) and proposed that a person-oriented approach to the study of paternal parenting may provide important insights. Although it is often assumed that levels of parenting quality are similar across dimensions (e.g., high sensitivity and high linguistic stimulation), multidimensional conceptualizations of parenting suggest that this may not be the case (Bornstein, Tamis-LeMonda, Hahn, & Haynes, 2008; Jain et al.). By identifying unique subgroups of fathers based on the socioemotional and linguistic quality of father–infant interactions, insight may be gained into how workplace stressors predict specific patterns of parenting, providing nuanced information that can complement findings based on more traditional, variable-oriented approaches.

PATERNAL WORK STRESS AND FATHER–INFANT PARENTING QUALITY

The individual cannot be understood outside of his or her environment, including the proximal and distal factors that shape individual functioning (Bronfenbrenner, 1986). Consistent

with this perspective, a significant body of research suggests that workplace conditions may facilitate or impede high-quality parent–child interactions. Jobs characterized by high levels of stress, including long hours, nonstandard work schedules, high levels of pressure, and low levels of workplace support, may negatively influence the quality of the father–infant relationship.

Weekly Work Hours

Among employees working at least 20 hours per week, men spend almost 50 hours per week on average in the workplace (Bond, Galinsky, & Swanberg, 1998). Previous research suggests that the stress associated with the increasing number of hours spent in paid employment may have negative repercussions for the quality of fathers' relationships with their children (e.g., Crouter et al., 2001). However, Grossman, Pollack, and Golding (1988) found that fathers who were more involved in their work, including working longer hours, showed greater warmth, responsiveness, and positive affect during home-based dyadic interactions with their children. These apparently contradictory findings suggest that long work hours may be detrimental to parenting quality for some fathers, but beneficial for others.

Nonstandard Work Schedules

Despite considerable interest in the implications of shift work for individual well-being and family life, surprisingly little is known about the associations between shift work and parent–child relationship quality. Barnett and Gareis (2007) found no associations between maternal shift work and maternal reported parenting quality, but they did not examine such associations for fathers. Previous research examining father–adolescent relationships, however, found that fathers working nonstandard shifts reported knowing less about their children's daily activities and enjoyed lower intimacy when they also experienced greater marital conflict (Davis et al., 2006). To date, no research has examined associations between nonstandard work schedules and father–infant relationship quality.

Work Pressure

Previous research suggests that jobs characterized by high work pressure, including high

demands and heavy workloads, may negatively influence the quality of parent–child relationships. Greater job demands were associated with decreased self-reported use of firm but flexible control and increased use of harsh discipline with elementary school-age children (Greenberger et al., 1994). Further, greater time pressure was associated with less sensitivity in observed, home-based father–infant caregiving interactions (Goldberg et al., 2002). Although, to date, no research has examined associations between experiences of work pressure and person-oriented profiles of fathers' parenting quality, research by Repetti (1994) suggests that some fathers may withdraw from interactions with their children as a means of coping with work-related stressors, which may result in lower quality father–infant interactions.

Nonsupportive Work Environment

Several studies have found that a nonsupportive work environment, including low levels of flexibility and low levels of coworker and supervisor support, predicted lower quality fathering behaviors, including less sensitive and more detached parenting, during in-home interactions with infants and young children (Goodman et al., 2008; Volling & Belsky, 1991). Further, a less supportive work environment has also been linked to greater paternal negative feelings toward their children and increased withdrawal behaviors during same-day, in-home observations of father–child interactions with preschoolers (Repetti, 1994). Given these findings, it is likely that a nonsupportive work environment will be associated with fathering profiles characterized by fewer positive and more negative dimensions of parenting.

PATERNAL TIME RESOURCES AND FATHER–INFANT PARENTING QUALITY

Role stress theory suggests that work stress impacts parenting indirectly, through the negative effects of work stress on parents as individuals. With regard to fathers' time spent with their children, Daly (1996) concluded that "time was the chief currency that seemed to guide many of their decisions and reflect their commitments as fathers" (p. 469). Although work hours may limit the actual time fathers spend in the parenting role, fathers' *perceptions* of limited or insufficient time available to devote to family life may

represent an internalized source of stress that may lead to withdrawal or negative interactions with children. In the case of job characteristics, experiences of multiple work stressors, including long or nonstandard hours, high pressure, and low support, may tax fathers' perceived resources, including the perceived time available for family, with negative implications for the father–child relationship. Previous research supports this conclusion, finding that work stress was associated with increased feelings of time strain for fathers, negatively impacting the quality of the father–child relationship (Milkie, Mattingly, Nomaguchi, Bianchi, & Robinson, 2004). The current study examined whether associations between work stress and membership in the parenting subgroups were mediated by paternal perceptions of time availability.

ADDITIVE EFFECTS OF PATERNAL WORK HOURS AND WORK STRESSORS

Although numerous studies have found direct links between work stressors and lower quality parenting with infants and young children (e.g., Goldberg et al., 2002; Greenberger et al., 1994; Repetti, 1994), it is unlikely that the impact of work stressors on parenting is uniform across all fathers. Barnett (1998) hypothesized that the effects of work stressors are likely to vary according to the amount of time individuals spend in the job environment. This "dosage" effect suggests that work stressors are less likely to negatively impact parenting for fathers who spend less time in the workplace relative to fathers who spend more time at work. For example, long hours in the workplace predicted lower quality father–adolescent relationships, including lower levels of acceptance and higher levels of conflict for fathers who also perceived high levels of overload (Crouter et al., 2001). Further, working long hours in jobs characterized by high levels of care work was associated with lower quality father–infant freeplay interactions, although such associations were not observed for jobs with less supportive work environments (Goodman et al., 2008). To date, it is unknown if paternal work hours moderate associations between work pressure or nonstandard work schedule and father–infant parenting quality. The current study expands previous research by examining whether and how associations between nonstandard work schedules or high levels of work pressure and

father–infant interaction quality may vary as a function of paternal work hours.

FATHER, FAMILY, AND CHILD CHARACTERISTICS

Covariates included a number of father, child, and family characteristics that previous research suggests may be associated with the quality of parent–child relationships. Among the covariates included were paternal age and education level, as older and better educated fathers may provide higher levels of engagement, sensitivity, and linguistic stimulation to their children (Duursma et al., 2008; Volling & Belsky, 1991), and paternal race and marital status, as previous research suggests that cohabitation and culture may shape fathers' parenting behaviors (Manning, 2002; NICHD ECCRN, 2000). Additionally, we included parental relationship instability, as an unstable parental relationship represents an alternative source of stress in the home that may shape paternal sensitivity, warmth, and linguistic stimulation (e.g., NICHD ECCRN, 2000). A family income covariate held economic resources constant so we could better explore associations between work stressors, time resources, and parenting quality. We also included the number of children in the home under age five, as Menaghan and Parcel (1995) found that the presence of multiple young children in the home predicted lower parenting quality over time. Maternal employment status was included, as previous research suggests that maternal employment may predict lower quality father–infant interactions (Grych & Clark, 1999). Finally, we included child gender, as gender may affect fathers' interaction style and language usage (Power & Parke, 1983).

RESEARCH QUESTIONS

Guided by a person-oriented approach to parenting research (e.g., Bergman & Trost, 2006) and a role stress perspective on work–parenting relationships (e.g., Bolger et al., 1989), the following research questions were addressed:

1. Can meaningful latent profiles of fathers' parenting quality with infants be identified on the basis of social–affective and linguistic interactions?
2. Accounting for numerous father, child, and family characteristics, are paternal work

stressors associated with membership in the different parenting subgroups?

3. Are associations between experiences of work stress and membership in the parenting subgroups mediated by fathers' perceived time resources?
4. Are associations between work stress and fathers' membership in the parenting subgroups moderated by paternal work hours?

METHOD

Participants

The current data are from the Family Life Project, an ongoing longitudinal study of families living in predominantly low-income, non-metropolitan counties in North Carolina and Pennsylvania ($N = 1,292$). Only families where the employed biological father was living in the home when the target child was approximately 6 months of age were included. In total, 1,571 families were invited to participate in the first wave of data collection when the target child was 2 months old, and 1,292 (82%) participated. Of these families, 1,204 (93%) later participated in the second wave of data collection when the target child was approximately 6 months old, and 496 (42%) of these families included the employed biological father of the target child who successfully completed two father–infant interactions conducted during the 6-month assessment. Of these families, four (1%) were dropped because the father identified his primary race as something other than White or African American. Additionally, three families were missing data for one or more covariates included in the current analyses. Because of the low amount of missing data (less than 1% of the total sample), these missing values were imputed using single imputation (Schafer & Graham, 2002). Thus, the current analyses included 492 families.

Procedures

Trained interviewers conducted two in-home visits when the target child was approximately 6 months of age, collecting questionnaire data from parents and observational data on the mother, target child, and, when applicable, the father. All paternal data were collected during the first home visit. Visits were scheduled at a time that was convenient for parents. Questionnaire data were collected via laptop

computer; observational data were videotaped for later coding. Written consent was obtained from parents prior to conducting home visits (for a detailed description of sample selection and study procedures, see Vernon-Feagans et al., 2008).

Measures

Father–infant interactions. Fathers participated in two separate semistructured observational measures designed to assess the quality of their interactions with their infants. First, a freeplay interaction was videotaped for 10 minutes, during which fathers were given a standard set of toys and instructed to play with the child as they normally would if they had a little free time (Cox, Paley, Payne, & Burchinal, 1999). Interactions were later rated by trained coders to assess global levels of *sensitivity* (level of responsiveness to child's needs, gestures, and expressions; $M = 2.74, SD = 0.74$); *intrusiveness* (degree to which the father imposed his own agenda on the interaction; $M = 2.62, SD = 0.77$); *detachment* (level of emotional disengagement; $M = 2.91, SD = 0.92$); *positive regard* (level of positive feelings expressed toward child; $M = 2.99, SD = 0.98$); *negative regard* (level of negative feelings expressed toward the child; $M = 1.78, SD = 0.84$); *animation* (level of energy or excitement; $M = 2.91, SD = 0.96$); and *stimulation for development* (level of appropriate scaffolding of activities; $M = 2.40, SD = 0.89$). Ratings were made on a scale from 1 = *not at all characteristic* to 5 = *highly characteristic*; reliability was determined by calculating intraclass correlations for ratings made by two coders on approximately 30% of the tapes randomly drawn at the 6-month assessment period (average ICC = .72; range = .62–.78).

Second, fathers participated in a videotaped picture book activity, in which they were instructed to go through a wordless picture book with their infant as they normally would, and to inform the interviewers when the task was completed. Evidence suggests that a majority of lower and working-class fathers engage in bookreading activities with their young children on a routine basis (Duursma et al., 2008), making observations of such interactions useful for gaining insight into paternal linguistic stimulation. Interactions were later transcribed and then coded using Systematic Analysis of

Language Transcripts software (SALT; Miller & Chapman, 1986). For the current analyses, three variables were used to assess the overall amount and quality of verbal stimulation provided by fathers. *Total number of utterances* ($M = 72.59, SD = 41.45$) was used as an indicator of the amount of verbal stimulation during the interaction. The *total number of questions* ($M = 20.26, SD = 14.31$) by the father and the *total number of different word roots* ($M = 73.03, SD = 31.62$) were used as indicators of the quality and complexity of fathers' talk during the interaction. Additionally, because fathers determined when the interaction was complete, *length of observation* ($M = 180.30$ seconds, $SD = 81.46$) was included as a measure of the time fathers spent in the picture book task with their infant. Transcribers trained for 3 months to learn the proper conventions for transcribing the videotaped observations for later SALT coding. At the completion of training, transcribers completed transcriptions of 20 training observations, which were then reviewed by a senior trainer to ensure transcription accuracy. Further, transcribed tapes were regularly checked by senior trainers to ensure continued reliability throughout the coding process. Once transcribed, coding was completed automatically by the SALT software program.

Background information. Parents provided information on age ($M = 31.78$ years, $SD = 6.18$), race (83% White, 17% African American), education ($M = 15.32$ years, $SD = 2.56$), marital status (79% married, 21% cohabiting), child gender (49% female, 51% male), and number of children under 5 years of age ($M = 1.60, SD = 0.67$).

Maternal employment status. Mothers reported the total number of hours worked at all jobs for which they worked 5 or more hours per week; maternal employment status was categorized as (a) not employed (0 hours; $n = 206$), (b) part-time employment (5–34 hours; $n = 105$), or (c) full-time employment (35 or more hours; $n = 181$).

Income-to-needs ratio. Family income resources were estimated by calculating an income-to-needs ratio score. Household income contributions from all family members were summed, along with income from any additional sources

(e.g., child support, TANF). Total household income was then divided by the U.S. government's poverty threshold for that year (differentiated by family size and number of children) to obtain an income-to-needs ratio score. A score of 1.00 corresponds to a family income equal to the poverty threshold. Mean income-to-needs ratio for the current sample was 2.77 ($SD = 1.83$). A log transformation was applied to the income-to-needs ratio score to correct for nonnormality.

Parental relationship instability. Fathers completed the Relationship Instability Scale, a five-item subscale of the Dimensions of Marital Quality Scale (Johnson, White, Edwards, & Booth, 1986), assessing perceptions of relationship instability and behaviors such as discussing divorce or a breakup (e.g., "Have you or your spouse ever seriously suggested the idea of a divorce/break-up?"). Responses were rated on a 6-point scale ranging from 1 = *never* to 6 = *yes, within the last 3 months* ($M = 1.77$, $SD = 1.04$; $\alpha = .79$).

Time resources. Fathers completed seven items from the Time for Self and Time for Family subscales of the Family Resource Scale—Revised (van Horn, Bellis, & Snyder, 2001), measuring fathers' perceptions of time resources (e.g., "To what extent is there enough time to be with your child(ren)?"). Responses were rated on a 5-point scale, ranging from 1 = *not at all adequate* to 5 = *almost always adequate*; higher scores reflect greater time availability. Factor analysis results suggested that all seven items loaded onto a single factor—thus the items were averaged to create a single measure of paternal time resources ($M = 3.26$, $SD = 0.84$; $\alpha = .86$).

Weekly work hours. Fathers reported the total number of hours worked at all jobs for which they worked 5 or more hours per week ($M = 46.64$, $SD = 11.80$).

Nonstandard work schedules. Fathers reported on the hours during which they usually worked at their primary job, based on the following options: (a) fixed day shift (most hours between 8 a.m. and 4 p.m.), (b) fixed evening shift (most hours between 4 p.m. and midnight), (c) fixed night shift (most hours between midnight and 8 a.m.), (d) rotating shift (hours change to different shifts periodically), (e) irregular (daily schedule

determined by employer for each week or so), or (f) other. Because some shift-work groups were quite small, a dichotomous variable was created for nonstandard work schedules—all fathers not working a standard day shift were coded as working a nonstandard work schedule (71% day shift, 29% nonstandard shift).

Work pressure. Fathers completed the nine-item Work Pressure subscale from the Work Environment Scale (Moos, 1986), assessing the degree to which the workplace is characterized by high demands and frequent deadlines (e.g., "There is constant pressure to keep working"). Responses were rated on a 4-point scale ranging from 1 = *strongly agree* to 4 = *strongly disagree*; higher scores reflect greater work pressure ($M = 2.66$, $SD = 0.49$; $\alpha = .79$).

Nonsupportive work environment. Fathers completed three measures designed to assess levels of informal workplace supports. Fathers completed a four-item version of the Flexible Work Arrangements Scale (Bond et al., 1998) measuring the degree to which the workplace allowed fathers to balance work and family roles (e.g., "At my place of employment, employees have to choose between advancing in their jobs or devoting attention to their family or personal lives"). Responses were rated on a 4-point scale ranging from 1 = *strongly agree* to 4 = *strongly disagree*. Items were reverse-scored such that higher scores reflect lower levels of flexibility. Fathers also completed the nine-item Supervisor Support Subscale (e.g., "Supervisors often criticize employees over minor things") and the nine-item Coworker Support Subscale (e.g., "Employees often talk to each other about their personal problems") from the Work Environment Scale (Moos, 1986). Responses were rated on a 4-point scale ranging from 1 = *strongly agree* to 4 = *strongly disagree*; higher scores reflect less support.

Preliminary analyses showed high intercorrelations among the three measures of workplace support ($r = .46-.61$), and factor analysis results revealed that all three measures loaded onto a single factor. Thus, mean scores for the three scales were standardized and summed to create a composite measure of nonsupportive work ($M = 2.15$, $SD = 0.44$; $\alpha = .77$).

Analytic Strategy

We used latent profile analysis (LPA) to examine whether fathering subgroups could be identified across multiple dimensions of father–infant parenting as well as to explore whether paternal experiences of work stress predicted the probability of membership in the latent parenting classes. LPA models associations between continuous observed variables and categorical latent classes. Computationally, LPA identifies underlying subgroups, or latent classes, in a sample characterized by different mean scores on the observed variables (Muthén, 2001). We hypothesized that unique subgroups of fathers could be identified, characterized by qualitatively different patterns of behaviors across social–affective and linguistic dimensions of parenting.

To examine whether multiple subgroups of father–infant interaction quality could be identified, latent profile models with one to seven classes were fit using Mplus version 5.2 (Muthén & Muthén, 2008). We constrained variances to be equal across latent classes in order to increase the parsimony and stability of the models. We standardized parenting variables prior to estimating the LPA models to account for differences in rating scales across the two interactions. Relative interpretability and multiple fit indices, including the Bayesian information criterion (BIC), Akaike information criterion (AIC), Lo-Mendell-Rubin likelihood ratio test (Lo, Mendell, & Rubin, 2001), and entropy statistic (Celeux & Soromenho, 1996) for each model were examined to determine the optimal number of classes. We then incorporated covariates into the final latent profile model to examine whether paternal experiences of work stress were associated with membership in the latent fathering classes. We then added paternal perception of time resources as a covariate to examine whether perceptions of limited time mediated associations between experiences of work stress and probability of class membership. Finally, potential differences between work stressors and membership in the latent fathering classes as a function of paternal work hours were examined. We first examined interaction terms individually, then entered all interaction terms that were significant on their own concurrently into a final model. We conducted post hoc tests of significant interactions following Aiken and West (1991).

RESULTS

Bivariate associations between paternal work characteristics, father and child individual characteristics, and family and demographic characteristics appear in Table 1. Fathers who were older, White, and better educated were more likely to be married and had greater financial resources; families where mothers worked full time also had greater financial resources. Older fathers worked more hours per week; better educated fathers worked more hours and also had more supportive work environments. African American fathers had less supportive work environments, but also reported working jobs with less pressure. Fathers' work hours and reports of time resources were moderately associated, suggesting that actual and perceived time resources were related, but distinct, constructs. Finally, greater work hours and work pressure, as well as a less supportive workplace environment, were all associated with paternal perceptions of less time for family and friends.

Latent Profiles of Father–Infant Parenting Quality

A five-class model of father parenting quality was selected based on model fit and parsimony (see Table 2). The five-class model had the lowest AIC and BIC values, as well as an entropy score approaching 1.00, suggesting clear delineation between classes (Celeux & Soromenho, 1996). Further, the six- and seven-class models failed to converge, even after increasing the number of starting values and model iterations, suggesting that these models were not identified (Muthén & Muthén, 2007). The standardized mean scores for the five-class model suggested that the classes were distinguishable and that meaningful labels could be assigned.

Table 3 shows the standardized mean scores for the parenting indicators used in the current model. Classes were assigned labels based on the primary features that distinguished them from each other. For example, slightly less than half of fathers (42%) were characterized by relatively average levels of both social–affective and linguistic dimensions of parenting. Thus, this class was labeled “Average Parenting.” Two additional subgroups of fathers were distinguished based on their relatively high mean scores on multiple dimensions of positive parenting. The first class, labeled “Sensitive/Engaged” (12%

Table 1. Correlations of Paternal Occupational Conditions and Individual and Background Characteristics (N = 492)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Income-to-needs ratio	—														
2. Number of children < age 5	-.24**	—													
3. Parent marital status ^a	.29**	.08 [†]	—												
4. Parent relationship instability	-.21**	.09*	-.25**	—											
5. Mother part-time employment ^b	.04	-.05	.05	-.11*	—										
6. Mother full-time employment ^b	.44**	-.09 [†]	.02	-.06	-.40**	—									
7. Child gender ^d	.06	.01	-.01	.06	-.08 [†]	.11*	—								
8. Father age	.22**	.11*	.23**	-.16**	-.02	.08 [†]	-.02	—							
9. Father race ^e	-.24**	.10*	-.11*	.10*	-.07	.02	-.03	-.03	—						
10. Father education	.44**	.05	.32**	-.14**	.03	.09*	.02	.29**	-.26**	—					
11. Father time resources	-.07	-.13**	-.05	-.16**	.06	-.03	-.01	-.05	.16**	-.10*	—				
12. Father work hours	.26**	.06	.19**	-.03	-.05	-.03	.02	.11*	-.08 [†]	.11*	-.25**	—			
13. Father nonstandard work shift ^f	-.03	.01	-.02	.10*	.07	-.09*	-.03	-.08 [†]	.04	-.07	-.06	.08 [†]	—		
14. Father work pressure	.08 [†]	.02	.01	.04	-.03	.03	.01	-.07	-.13**	.06	-.22**	.15**	.03	—	
15. Father nonsupportive work	-.13**	-.01	-.09 [†]	.05	-.13**	.08 [†]	.04	-.05	.10*	-.16**	-.17**	.01	.05	.33**	—

^aMarital status: 0 = married, 1 = cohabiting.

^bMother part-time employment: 0 = not employed (0 hours per week), 1 = part-time employment (5–34 hours per week).

^cMother full-time employment: 0 = not employed (0 hours per week), 1 = full-time employment (35 or more hours per week).

^dChild gender: 0 = female, 1 = male.

^eFather race: 0 = White, 1 = African American.

^fFather nonstandard work schedule: 0 = standard day shift, 1 = nonstandard work shift.

[†]p < .10. * p < .05. ** p < .01.

Table 2. Comparison of Models for Latent Profiles of Father–Infant Parenting Quality (N = 492)

Number of Latent Classes	Log Likelihood	AIC	BIC	Lo-Mendell-Rubin	Entropy
1	-7673.79	15391.58	15483.95	—	—
2	-7093.22	14254.45	14397.20	<i>p</i> < .001	0.85
3	-6823.46	13738.92	13932.05	<i>p</i> < .005	0.88
4	-6677.87	13471.73	13715.24	<i>p</i> = .19	0.87
5	-6533.71	13207.41	13501.31	<i>p</i> = .09	0.95

Note: The six- and seven-class models did not converge, suggesting nonidentification. Bold font indicates the model that best fit the data.

of fathers), consisted of fathers with very high levels of sensitivity, low levels of detachment and intrusiveness, and high levels of positive regard, animation, and stimulation for development. These fathers were also moderately verbal, with above-average levels on all three dimensions of linguistic stimulation and complexity. The second class consisted of fathers characterized by high scores on all of the picture book variables, as well as above-average scores on the positive regard, animation, and stimulation-for-development dimensions of the freeplay interaction. This class, labeled “Stimulating/High Verbal,” comprised 17% of the study sample.

Multiple dimensions of negative parenting characterized the final two classes. The first class

consisted of fathers characterized by very high levels of detachment and low levels of sensitivity, animation, positive regard, and stimulation for development. These fathers also had below-average levels of language stimulation and complexity during the picture book interaction. Thus, this class was labeled “Detached/Low Verbal” (19% of fathers). The final class, labeled “Intrusive/Negative” (12% of fathers), included fathers characterized by relatively high levels of intrusiveness and negative regard as well as low levels of sensitivity. In contrast to the “Detached/Low Verbal” class, however, fathers in the “Intrusive/Negative” class were characterized by average levels of linguistic stimulation and complexity.

Paternal Work Stress and Father Membership in Latent Parenting Classes

Table 4 presents results of the multinomial logistic regression models examining associations between paternal work stress and fathers’ membership in the latent parenting classes (Model 1). The “Sensitive/Engaged” class was chosen as the reference class in order to examine whether experiences of work stress were associated with a greater probability of fathers’ membership in lower quality parenting classes. Relative to the “Sensitive/Engaged” reference class, African American fathers were more than 13 times more likely than White fathers to be

Table 3. Standardized Mean Scores for a Five-Class Model of Father–Infant Interaction Quality (N = 492)

	Average Parenting (42%)	Sensitive/Engaged (11%)	Stimulating/High Verbal (17%)	Detached/Low Verbal (19%)	Intrusive/Negative (12%)
Father freeplay ratings					
Sensitivity	.35	1.78	.33	-1.38	-1.05
Intrusiveness	-.07	-1.02	.22	-.42	1.55
Detachment	-.16	-1.21	-.57	1.48	.04
Stimulation for development	-.04	.68	.77	-1.01	.10
Positive regard	.00	1.05	.59	-1.06	-.05
Negative regard	-.04	-.33	.10	-.31	.84
Animation	-.06	.96	.70	-1.18	.31
Father picture book ratings					
Total number of utterances	-.35	.42	1.30	-.77	.29
Total number of questions	-.35	.58	.97	-.55	.22
Total number of different word roots	-.29	.41	1.16	-.79	.29
Length of observation	-.29	.10	.94	-.30	.11

Note: Standardized scores greater than .50 above or below the sample mean are highlighted in bold.

in the “Detached/Low Verbal” and “Intrusive/Negative” classes, more than 12 times more likely to be in the “Stimulating/High Verbal” class, and more than 9 times more likely to be in the “Average Parenting” class.

Further, cohabiting fathers were 3.3 (1/.30) times less likely than married fathers to be in the “Stimulating/High Verbal” class, although this association only approached significance. Note, however, that several characteristics frequently associated with paternal parenting quality, including father education, parental relationship quality, and child gender, were unrelated to the probability of fathers’ membership in the “Sensitive/Engaged” parenting class, relative to their probability of membership in the other parenting classes.

Examining associations between paternal work stressors and the latent parenting classes, a less supportive work environment predicted significant differences between the “Sensitive/Engaged” reference class and the four remaining parenting classes. Specifically, for each one standard deviation increase in paternal reports of a nonsupportive workplace environment, fathers were 2.0 times more likely to be in the “Detached/Low Verbal” class and 1.8 times more likely to be in the “Intrusive/Negative” class, as well as 1.5 times more likely to be in the “Average Parenting” class and 1.6 times more likely to be in the “Stimulating/High Verbal” class. Work hours, shift work, and work pressure, however, were not directly related to membership in the latent parenting classes in this model.

Next, the paternal time resources covariate was added to the model to examine whether time resources mediated the association between paternal nonsupportive work and the probability of fathers’ membership in the latent parenting classes. Consistent with Baron and Kenny’s (1986) conceptualization of mediation, we examined whether (a) nonsupportive work predicted time resources, (b) time resources predicted the probability of fathers’ membership in the latent parenting classes, and (c) controlling for time resources reduced or eliminated the previously significant associations between nonsupportive work and the probability of membership in the latent parenting classes. Results revealed that a less supportive work environment predicted lower levels of time resources ($b = -.32$, $p < .01$), but paternal time resources were not significantly associated with the probability of membership in any of the latent parenting

classes. Further, with time resources added to the model, paternal nonsupportive work remained significant in predicting differences between fathers’ probability of membership in all four latent parenting classes, relative to the “Sensitive/Engaged” reference class. Thus, paternal time resources did not mediate the association between paternal nonsupportive work and the probability of membership in the latent parenting classes.

Finally, interaction terms were added to the model to examine whether paternal work hours moderated the associations between paternal shift work, work pressure, and nonsupportive work and the probability of membership in the latent parenting classes (Table 4, Model 2). The nonsupportive work \times work hours interaction was not associated with the probability of latent class membership on its own, so it was removed from the final model. The work pressure \times work hours interaction predicted a significant difference in the probability of membership for both the “Intrusive/Negative” and “Stimulating/High Verbal” classes. Post hoc analyses revealed that, under conditions of low work hours, fathers reporting greater work pressure were 2.8 times less likely to be in the “Intrusive/Negative” class and 1.8 times less likely to be in the “Stimulating/High Verbal” class relative to the “Sensitive/Engaged” reference class, although the latter association only approached significance. Under conditions of high work hours, there was no association between work pressure and the probability of fathers’ membership in the latent classes. The nonstandard work schedule \times work hours interaction predicted a significant difference in the probability of membership in the “Average Parenting” class relative to the “Sensitive/Engaged” reference class. Post hoc analyses revealed that, under conditions of low work hours, fathers working nonstandard schedules were 6.4 times less likely to be in the “Average Parenting” class. Under conditions of high work hours, however, fathers working nonstandard schedules were 4.7 times more likely to be in the “Average Parenting” class.

DISCUSSION

The purpose of this study was to explore whether meaningful person-oriented profiles of fathers’ parenting quality with infants could be identified across distinct types of

Table 4. Odds Ratios for Multinomial Logistic Regression Model of Family Characteristics, Father and Child Individual Characteristics, and Father Work Stress Predicting the Probability of Father Membership in Latent Parenting Classes (N = 492)

Variable	Model 1				Model 2			
	Detached/Low Verbal	Intrusive/Negative	Average Parenting	Stimulating/High Verbal	Detached/Low Verbal	Intrusive/Negative	Average Parenting	Stimulating/High Verbal
Income-to-needs ratio	0.78	0.76	1.00	0.95	0.77	0.75	0.98	1.03
Number of children under age 5	1.06	0.88	0.98	0.98	1.05	0.87	0.95	1.00
Parent marital status ^a	0.63	0.37	0.48	0.30 [†]	0.60	0.35 [†]	0.45	0.31 [†]
Parent relationship instability	1.09	1.02	1.00	1.02	1.10	1.00	0.99	1.03
Mother part-time employment ^b	3.30*	3.19*	2.25 [†]	1.31	3.46*	3.42*	2.43*	1.22
Mother full-time employment ^c	1.48	1.52	1.46	1.69	1.42	1.40	1.43	1.72
Child gender ^d	1.15	1.48	1.22	1.82	1.11	1.36	1.16	1.72
Father age	1.02	1.21	1.12	1.13	1.03	1.11	1.11	1.11
Father race ^e	13.26*	13.23*	9.58*	12.12*	18.06*	18.73*	13.41*	16.54*
Father education level	0.85	0.95	0.85	1.38	0.86	0.97	0.88	1.30
Father work hours	1.06	0.87	0.85	1.21	0.85	0.79	0.58*	1.29
Father nonstandard work shift ^f	0.50	0.59	0.73	0.94	0.82	0.61	1.61	0.71
Father work pressure	1.13	0.87	1.04	0.91	1.09	0.85	1.01	0.84
Father nonsupportive work	1.99**	1.79*	1.50*	1.63*	2.10**	1.86*	1.57*	1.68**
Nonstandard work × work hours					1.73 [†]	1.31	2.32*	0.71
Work pressure × work hours					1.27	1.55*	1.34 [†]	1.55*

Note: All continuous predictors were standardized prior to estimating logistic regression models. "Sensitive/Engaged" is the reference class.

^aMarital status: 0 = married, 1 = cohabiting.

^bMother part-time employment: 0 = not employed (0 hours per week), 1 = part-time employment (5–34 hours per week).

^cMother full-time employment: 0 = not employed (0 hours per week), 1 = full-time employment (35 or more hours per week).

^dChild gender: 0 = female, 1 = male.

^eFather race: 0 = White, 1 = African American.

^fFather nonstandard work schedule: 0 = standard day shift, 1 = nonstandard work shift.

[†]p < .10. * p < .05. ** p < .01.

fathering—social— affective behaviors and linguistic stimulation and complexity—as well as to examine whether paternal experiences of work stressors were associated with the probability of fathers' membership in these parenting subgroups. Latent profile analysis revealed distinctive, meaningful groups of fathers based on both dimensions of parenting quality. Consistent with a role stress perspective on work and parenting associations, experiences of a nonsupportive work environment were associated with the probability of paternal membership in the latent parenting classes. Further, work pressure and nonstandard work schedules predicted the probability of membership in the latent parenting classes, although these associations varied according to the number of hours fathers spent in the workplace.

With respect to the parenting subgroups, fathers were distinguished most markedly by their classification as sensitive, intrusive, or detached during the freeplay interaction as well as low or average to high on verbal stimulation and complexity during the picture book interaction. The largest subgroup of fathers (42%) was classified as "Average Parenting," exhibiting parenting behaviors that could be characterized broadly as indicative of "good enough" parenting (e.g., Scarr, 1992), including slightly above-average levels of sensitivity, average levels of other social— affective dimensions, such as positive regard and stimulation for development, as well as slightly below-average levels of linguistic stimulation. Approximately one third of fathers demonstrated more negative patterns of parenting, including low levels of sensitivity and high levels of detachment or intrusiveness that are frequently associated with maladaptive child outcomes, such as higher levels of internalizing and externalizing behaviors and deficits in early cognitive and language development (e.g., Duursma et al., 2008; NICHD ECCRN, 2004; Tamis-LeMonda et al., 2004).

Interestingly, in examining the subgroups characterized by more positive parenting dimensions, the fathers who were the most sensitive and positive, as well as the least detached and intrusive ("Sensitive/Engaged" fathers), were not the same fathers who exhibited the highest levels of language complexity and stimulation ("Stimulating/High Verbal" fathers). This finding highlights one strength of a person-oriented perspective, as it reveals that parenting quality

is not always consistent across different dimensions. As recent findings suggest that fathers', but not mothers', vocabulary use with infants predicted child language development at 15 and 36 months of age (Pancsofar, Vernon-Feagans, & the Family Life Project Key Investigators, 2010), this finding also highlights the importance of considering both social— affective and linguistic dimensions of parenting in fatherhood research. Although yet to be empirically examined, factors such as a father's family background, beliefs about the importance of specific parenting behaviors, or knowledge and skill in the parenting role may differentiate sensitive and engaged fathers from those that are more verbally stimulating (Parke, 2002). Greater attention should be paid in future research to understanding both the underpinnings of these qualitatively distinct "positive" parenting styles and the potential differential implications of these parenting styles for children's development.

When we examine correlates of fathers' membership in the latent parenting classes, we found that African American fathers were significantly less likely to be in the "Sensitive/Engaged" parenting class relative to all other latent parenting classes. However, it should be noted that African American families in this sample had disproportionately lower family incomes relative to White families. Although the current study included family income as a covariate, this finding may still reflect underlying stressors associated with lower income status that are not fully explained by income alone (McLoyd, 1990). This difference may also reflect other sources of stress for African American fathers that were not measured in the current study, such as experiences of racial discrimination.

Additionally, fathers were significantly more likely to be in the "Detached/Low Verbal" and "Intrusive/Negative" classes, relative to the "Sensitive/Engaged" reference class, when mothers were employed part time. As the current sample consists of predominantly low-income and working-class families, it is possible that mothers working part time in the current sample do so in order to help make ends meet. In such cases, fathers may be pulled into greater family roles out of necessity rather than choice, which may result in greater stress and lower quality parent—child relationships (Grych & Clark, 1999).

Consistent with a role stress perspective on work and family relationships (e.g., Bolger et al., 1989), a nonsupportive work environment was associated with fathers' membership in multiple subgroups characterized by lower overall levels of parenting quality, including the "Detached/Low Verbal," "Intrusive/Negative," and "Average Parenting" classes. This is consistent with the notion that stress associated with low levels of coworker and supervisor support and less flexible work arrangements may negatively influence the quality of father–infant interactions (e.g., Goodman et al., 2008; Repetti, 1994; Volling & Belsky, 1991), predicting such behaviors as higher levels of negativity and withdrawal as well as lower levels of sensitivity, positivity, and stimulation. This is the first study, however, to examine the link between a nonsupportive workplace and a typology of fathers' parenting that incorporates both social–affective and linguistic dimensions. Further, the current findings represent associations between paternal reports of nonsupportive work and observations of parenting behaviors across two separate, objectively rated interactions; in other words, the associations do not reflect correlations between paternal self-reports of work stress and parenting quality. Finally, although a more nonsupportive work environment was also associated with a higher probability of membership in the "Stimulating/High Verbal" subgroup, this class was characterized by relatively lower levels of sensitivity and higher levels of intrusiveness compared to the "Sensitive/Engaged" reference class, suggesting that a lack of workplace support may have the greatest negative impact on fathers' abilities to be affectively attuned to, and to sensitively respond to, their child's needs during interaction.

As hypothesized in previous research (Barnett, 1998), our findings also revealed that the associations between two types of work stressors—job pressure and nonstandard work schedules—varied according to the number of hours fathers spent in the workplace. Specifically, when fathers worked more hours on a nonstandard shift, they were significantly more likely to be in the "Average Parenting" class relative to the "Sensitive/Engaged" reference class. This is consistent with previous research suggesting that nonstandard work schedules may result in lower quality parenting for fathers (e.g., Davis et al., 2006), although this is the first study of

this kind with infants. Notably, however, working longer hours on a nonstandard shift—unlike a nonsupportive work environment—was not associated with a greater probability of membership in the two parenting classes characterized by the most negative parenting behaviors (the "Detached/Low Verbal" and "Intrusive/Negative" classes). This suggests that, although the stress associated with employment at jobs with long hours and nonstandard shifts may result in moderate deficits in father parenting, the relative impact of nonstandard work schedules appears to be less severe compared to jobs with lower levels of workplace support.

Surprisingly, when fathers were employed for fewer hours on a nonstandard shift, they were significantly less likely to be classified in the "Average Parenting" class relative to the "Sensitive/Engaged" reference class. Further, fathers who worked fewer hours at jobs characterized by high levels of pressure were less likely to be in the "Intrusive/Negative" and "Stimulating/High Verbal" classes, relative to the "Sensitive/Engaged" class. Although not consistent with the hypothesis that longer hours in a stressful work environment may predict lower quality parenting, these findings suggest that limited hours in the workplace may buffer fathers against the negative effects of certain types of work stressors, including pressure and nonstandard work schedules. Given that approximately half the current sample consisted of low-income and working-class fathers living in rural communities characterized by a relative dearth of high-quality jobs (Gibbs et al., 2005), fathers in the current sample may have found the challenge of working a job with relatively higher levels of pressure and deadlines personally rewarding. Combined with relatively lower total hours, these jobs may challenge fathers professionally while still allowing for greater opportunities to be involved in the parenting role. Further, employment that involves a limited number of nonstandard work hours may not represent a significant source of stress and may also provide fathers with greater opportunities to be involved in the parenting role during the day. Greater involvement, in turn, has been linked in previous research to higher quality father–child relationships (e.g., Almeida & Galambos, 1991). Alternatively, it is possible that these fathers may have actively selected jobs with nonstandard work schedules to allow for greater time with their children (e.g., Brayfield, 1995), although

this hypothesis could not be tested in the current study.

The current study has a number of limitations. First, although results of the latent profile analysis suggest that fathers' parenting with infants can be characterized by a five-class parenting typology, the current analyses were exploratory in nature and limited to a sample of predominantly low-income and working-class fathers. Future research is needed to determine whether this parenting typology can be replicated with more diverse samples. In addition, father–infant parenting typologies possibly would differ from those found in the current study if paternal parenting quality were examined across additional contexts or settings. It is also possible that other correlates of paternal parenting quality not measured in the current study, such as maternal gatekeeping behaviors or parental gender-role attitudes, may predict the probability of fathers' group membership above and beyond the characteristics examined in the current investigation. Fathers' personal resources (e.g., personality, coping skills) represent a potential confound that could not be fully addressed in our analyses. Although we controlled for paternal education and family income, fathers with fewer personal resources possibly experienced higher levels of work stress and exhibited lower quality parenting behaviors. Similarly, fathers in the "Sensitive/Engaged" classes may actively select jobs that are more supportive. It should be noted, however, that fathers in the current sample lived in communities generally characterized by a dearth of high-quality jobs (Gibbs et al., 2005), likely making active selection into and out of jobs challenging. Finally, the current study examined global experiences of work stress and parenting; measures of same-day work stressors were not collected. Although visits were scheduled at a time that was convenient for all family members, including fathers, for those fathers who completed home visits after work, same-day work experiences represent an unmeasured source of variance that could shape both perceptions of work stress and parenting behaviors.

Overall, the current study has several strengths, including the use of holistic profiles of father–infant interactions, allowing for an examination of both social–affective and linguistic dimensions of parenting, two distinct traditions of research rarely integrated in the fatherhood literature. Further, these results expand our understanding of the work–family

interface by examining associations between paternal experiences of multiple work stressors and multidimensional profiles of father–infant parenting quality. Finally, the current study was based on a large, ethnically and economically diverse sample of rural fathers with infants, an understudied population, using observational measures of father–infant interactions that were objectively rated by coders for multiple aspects of parenting quality.

In sum, results from this study suggest that a global typology of parenting behaviors can be developed using multiple dimensions of parenting and that several distinctive patterns of fathering behavior may exist during infancy. The current study also extended previous research examining associations between work stress and father–child relationships (e.g., Crouter et al., 2001), indicating that low levels of workplace support may negatively impact fathering in infancy. Going forward, work–family theories are needed that account for the differential associations work stressors have with these patterns of parenting. Further research is also needed to better understand the implications of patterns of fathers' parenting behaviors in infancy for children's subsequent social, emotional, and cognitive development. Examining parenting as a multifaceted phenomenon in future research may offer greater insight into the ways in which work and parenting influence young children's development.

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