

Nonstandard maternal work schedules and infant mental health in impoverished families: A brief report

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Abstract:

Guided by a bioecological model, this study examines variability in infant mental health by maternal work schedule in the context of poverty. More time in irregular work schedules, but not fixed night/evening schedules, predicts maternal depression and subsequent behavior problems in infants.

Keywords: infant mental health | maternal depression | maternal work schedules | poverty

Article:

The growing 24/7 global economy has produced an increasing body of research focused on the putative effects of nonstandard work schedules (those outside the normative daytime, Monday through Friday) on infant and child development. A critical review of the literature (Li et al., 2014) concluded that, “parental employment in nonstandard work schedules has negative consequences for child development with regards to mental health and behavioral problems, cognitive development, and other related outcomes” (p. 64). Nevertheless, this same review highlighted several gaps in this literature, several of which are addressed in this study.

The goal of this brief report is to improve understanding of the role of maternal employment schedules in shaping infant mental health among impoverished families. Women living near or below poverty are over-represented in jobs requiring a nonstandard work schedule (Presser, 2003), and Li et al. (2014) contend the deleterious effects of nonstandard work schedules are greater among economically marginalized families. Nevertheless, only two studies have focused on the negative implications of maternal schedules for impoverished families (Hsueh and Yoshikawa, 2007, Joshi and Bogen, 2007), and no studies could be located focused on the early foundations of infant mental health, particularly those in the first year of life. Additionally, Li and colleagues called for more research attention on different types of nonstandard schedules.

Whereas fixed evenings or night schedules may impair the development of family routines such as those captured in family meals or bedtime rituals, rotating or irregular work schedules may introduce levels of chaos within the family that can be normalized by fixed schedules.

Guided by a bioecological model (Bronfenbrenner & Ceci, 1994), we conceptualize work schedules as an exosystem factor that affects infant mental health through maternal well-being (Li et al., 2014), which we interpret as a proximal process in light of previous research indicating the link between maternal depression and psychopathology during childhood (Connell & Goodman, 2002). Further, we suggest that the form and power of maternal work schedule on maternal depression will vary dependent on the type of work schedule. Following previous research (Hsueh & Yoshikawa, 2007), we hypothesize that rotating or irregular work schedules will have particularly deleterious effects on proximal processes and subsequent infant mental health. Finally, based on results from previous research suggesting nonstandard work schedules may be more deleterious to infants with an emotionally reactive temperament (Daniel, Grzywacz, Leerkes, Tucker, & Han, 2009), we consider if negative emotionality modifies the effect of work schedules on depressive symptoms.

Data are from the Women, Work and Wee Ones project, a longitudinal cohort study undertaken in the United States between 2010 and 2015. The study was designed to determine if maternal employment in a nonstandard schedule job poses additional developmental risk for infants in impoverished families. Eligible participants were women who delivered a live birth within the past 3 months, intended to return to work 27 or more hours per week, and whose household earnings were within 185% of federal poverty thresholds. The sampling, recruitment, and data collection procedures were approved by the University of North Carolina, Greensboro and the Wake Forest School of Medicine Institutional Review Boards.

Participants (N = 285) completed the baseline survey; however, n = 32 had missing data on covariates and are not included in this analysis. The sample was majority non-white (70.4%), primarily Black (64.4%), single (66.0%) and had graduated from high school and pursued some additional training without earning an advanced degree (71.2%). Approximately half of the infants were male (51.8%) and slightly more than 10% were born premature (11.5%).

The data for this study are from the baseline (when infants were 3 months of age) and 12-month in-home interviews, and the 6- and 9-month telephone contacts between interviews. Baseline and follow up interviews were conducted by one of three teams of trained data collectors. The interviews consisted of a battery of interviewer-administered and self-administered survey questionnaires completed by the mother. Telephone contacts were made when children were 6 and 9 months of age to capture major changes in work that are common among impoverished families and assessments of maternal depressive symptoms.

Maternal work schedules were assessed at the baseline survey when infants were three months of age, and again during the 6- and 9-month telephone contacts using two questions from the Current Population Survey. The first question asked, “On your job do you usually work a daytime schedule (i.e., between 6 a.m. and 6 p.m.) or some other schedule?”. Individuals who reported “some other schedule” were then asked, “Which best describes your usual work schedule... would you say an evening shift (anytime between 2 P.M. and midnight), a night shift

(anytime between 9 P.M. to 8 A.M.), a rotating shift: one that changes periodically from days to evenings or nights, a split shift: one consisting of two distinct periods each day, or an irregular schedule. Individuals with multiple jobs were asked their usual schedule for each job. At each observation participant responses were used to classify the individual as having a day schedule, an evening or night schedule, or an irregular schedule (i.e., rotating, split shift or irregular) for that reporting period. Two work schedule variables were then created: the first variable, *evening/night schedule*, represents the number of times across the baseline interview and the 6- and 9-month telephone contacts (from 0 to 3) wherein mothers reported working an evening/night schedule. The second work schedule variable, *iwas* was similarly constructed but counted the number of times (from 0 to 3) mothers reported working an *irregular work schedule*.

Depressive symptoms were assessed during the 6- and 9-month telephone contact using the Center for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1977). The CES-D assesses level of depressive symptoms within the previous week and consists of 20 items rated on a 4-point scale of 0–3, from ‘rarely or none of the time’ to “most or all of the time.” Responses were coded and summed ($\alpha = 0.87$ and 0.88 at 6 and 9 month contacts, respectively) with possible scores ranging from 0 to 60 where higher scores indicate more depressive symptoms (Eaton & Kessler, 1981). Summed scores obtained from the 6- and 9-month assessments were averaged together to create a single value.

Infant mental health was operationalized using the Brief-Infant Toddler Social Emotional Assessment (B-ITSEA)(Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004), administered when children were 12 months of age. The B-ITSEA yields a measure of *behavior problems* ($\alpha = 0.80$) and of *social competence* ($\alpha = 0.64$).

Infant negative emotionality was assessed at 3 months via maternal report on the 12 item negative emotionality subscale of the Infant Behavior Questionnaire-Revised, Very Short Form (Putnam, Helbig, Gartstein, Rothbart, & Leerkes, 2014).

Descriptive statistics and their correlations are provided in Table 1. A structural equation model with bootstrapping and full information maximum likelihood (FIML) estimation was used to evaluate our conceptual model (Fig. 1). The models adjusted for mother’s age, ethnicity, education, marital status as well as the infant’s gender and prematurity status. Direct and indirect effects were examined with tests of indirect effects relying on the bias-corrected bootstrap technique. Models were estimated in Mplus Version 7 (Muthén & Muthén, 2013).

Table 1. Means, standard deviations and correlations among study variables.

	Mean	(SD)	2.	3.	4.	5.	6.
1. Problem Behavior	10.2	(6.0)	-0.04	-0.03	0.07	0.25*	0.27*
2. Social Competence	14.9	(3.1)		0.01	0.06	-0.10	0.03
3. Evening/night schedule	0.6	(1.0)			-0.17*	-0.01	0.04
4. Irregular schedule	0.5	(0.8)				0.24*	0.06
5. Maternal Depressive Symptoms	5.6	(6.2)					0.04
6. Infant Negative Emotionality	3.6	(1.0)					

* $p < 0.05$.

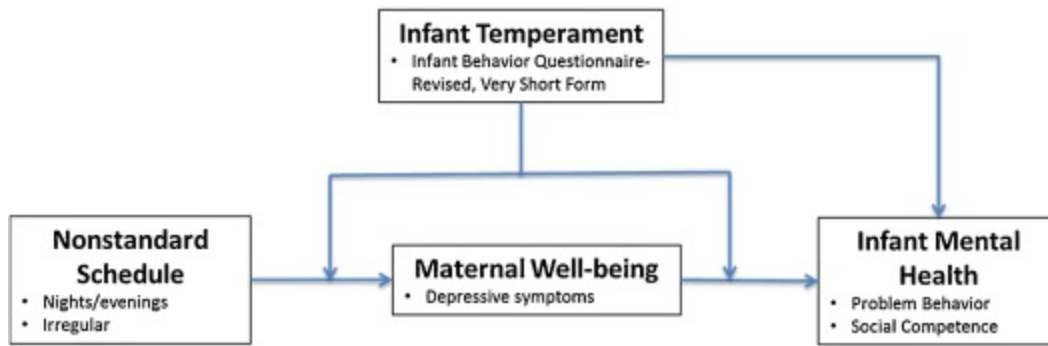


Fig. 1. Bioecological model of nonstandard maternal employment and its implications for infant mental health.

The conceptual model depicted in Fig. 1 did not provide a good fit to the data. A revised model wherein one additional path was added and the exploratory moderator effects were eliminated based on consideration of the modification indices provided a good fit to the data, χ^2 (13 *df*) = 11.05, $p = 0.61$, RMSEA = 0.00; 95% CI [0.00, 0.05], CFI = 1.00. In the final model (Fig. 2), there was not a significant difference in infant negative emotionality by exposure to evening/night or irregular work schedules. Depressive symptoms did not differ by exposure to evening/night schedules; however, women who reported working irregular schedules at more observations across the child's first year of life had higher levels of maternal depressive symptoms (standardized coefficient = 0.25). Higher levels of maternal depressive symptoms during the 6- and 9-month telephone contacts, in turn, was associated with poorer infant mental health at 12 months. Specifically, higher levels of depressive symptoms predicted greater problem behavior ($\beta = 0.24$) and lower social competence ($\beta = -0.13$; $p = 0.08$). Higher levels of negative emotionality were significantly and directly associated with higher levels of problem behavior ($\beta = 0.23$). There were no statistically significant indirect effects of work schedule (either evening/nighttime or irregular) on social competence through infant negative emotionality or maternal depressive symptoms. However, working irregular work schedules at more time points was indirectly associated with higher levels of problem behavior through maternal depressive symptoms (indirect effect = 0.06, $z = 2.38$, $p = 0.02$, 95% CI = 0.02, 0.10). Infant temperament did not modify any of the associations.

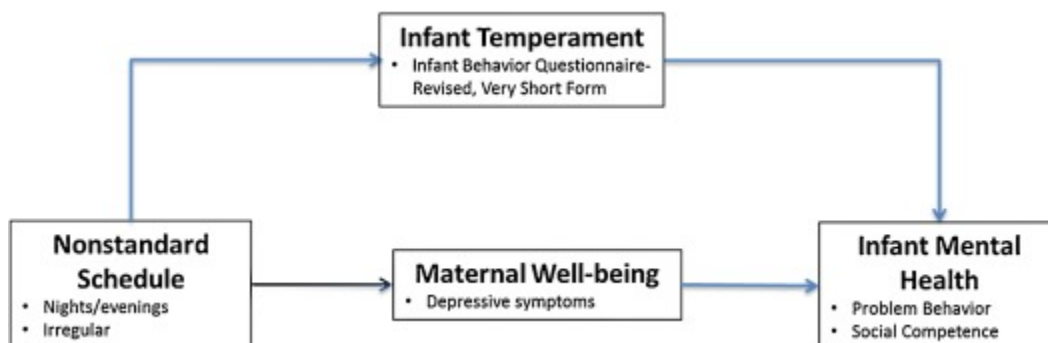


Fig. 2. Revised model of nonstandard maternal employment and its implications for infant mental health.

The goal of this study was to improve understanding of the role of maternal employment schedules in shaping infant mental health among impoverished families. Although a body of

research has accumulated suggesting that nonstandard work schedules compromise infant mental health, particularly among economically disadvantaged families (Li et al., 2014), only two previous studies focused on impoverished families (Hsueh and Yoshikawa, 2007, Joshi and Bogen, 2007), and none have focused on the first year of life. Counter to expectations, there was no evidence that mothers' greater exposure to evening/night schedules or irregular schedules directly predicted infant mental health at 12 months. However, infant problem behavior at 12 months was predicted by elevated maternal depressive symptoms across the 6- to 9-month period, and that greater exposure to irregular work schedules leading up to and including this time was associated with greater depressive symptoms. That is, irregular work schedules had an indirect effect on infant problem behavior through maternal depressive symptoms.

The results of this brief report contribute to the maternal work schedule and infant mental health literature in two distinct ways. First, like others (Hsueh & Yoshikawa, 2007) we find that variable or irregular work schedules have deleterious potential for infant mental health, whereas fixed evenings/night schedules do not. Our results complement previous research documenting the ill-effects of nonstandard work schedules on young children's socioemotional and behavioral health (Daniel et al., 2009; Dunifon, Kalil, Crosby, & Su, 2013; Hsueh and Yoshikawa, 2007, Joshi and Bogen, 2007, Rosenbaum and Morett, 2009) and indicate this may begin as early as infancy. Second, and perhaps more importantly, our results indicate that nonstandard maternal work schedules do not have direct implications for infant mental health among impoverished families. This finding was unexpected given wide agreement that nonstandard work schedules may be particularly deleterious among economically marginalized families (Li et al., 2014). It is possible that our sample did not have sufficient power to detect variability in infant mental health by maternal work schedule, but it is also possible these working mothers successfully buffered their children against the threats imposed by the timing of their work. This possibility seems plausible given the linking role that maternal depressive symptoms played in this study. Daniel and colleagues (2009) suggested that families compensate for nonstandard maternal work schedules in the short run, but that those strategies fail by 24–36 months of age. Perhaps the greater threat of nonstandard work schedules to impoverished families is not the work schedule itself, but rather these families have less effective compensatory strategies than those of higher status families in forestalling negative outcomes for children.

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Conflict of interest

The authors have no conflicts of interest to declare.

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