

Parents' Joint Work Schedules and Young Children's Cognitive and Behavioral
Development: A Longitudinal Analysis

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Abstract

In this paper we explore whether having one or both parents working nonstandard hours early in infancy (nine months) is associated with cognitive and behavioral development later in early childhood (at 24 months of age). The literature on shift work has traditionally focused on the consequences for the individual (e.g., poor physical and mental health) and for the quality of the marital relationship. Most recently, studies have begun to examine how parental – and largely maternal – shift work affects children. This literature has largely conceptualized mothers' socioemotional states and marital quality as mediating the relationship between shift work and children's outcomes, and we follow that general approach here. However, the few studies that exist largely utilized disparate and selective samples, and often lacked data on fathers as well as mothers. In this paper, we focus on the question of how mothers' *and fathers'* work schedules, socioemotional states, and interaction with children influence young children's cognitive and behavioral development with a nationally representative sample of very young children with co-resident parents from the first two waves of the Early Childhood Longitudinal Survey - Birth Cohort (ECLS-B).

Introduction

While research on the effects of working nonstandard schedules dates back several decades, only recently has the focus turned to how such schedules influence child well-being. This research, which remains fairly sparse, generally finds a negative association between shift work and child outcomes. Heyman (2000), Joshi and Bogen (2007), and Strazdins et al. (2006) all found a negative relationship between shift work and young children's behavioral outcomes, as we did in an earlier paper (Morett and Rosenbaum 2007). Han (2005) found a negative relationship between maternal shift work and both cognitive outcomes and language acquisition. Meanwhile, Dunifon et al. (2005) found no effect of certain kinds of shifts in a sample of mothers transitioning from welfare to work.

Each of the above-mentioned analyses made useful contributions to the literature, but various questions remain unanswered. We address some of these questions in our analysis of cognitive outcomes at 24 months. We also extend our previous work on shift work and behavioral development (Morett and Rosenbaum 2007) in two ways. First, we test the validity of results previously reported by using measures of child cognitive development and alternative measures of behavior. Second, we extend our previous findings on whether fathers' parenting is important to child well-being in families where parents work differing shifts.

Literature review

Han (2005) is the lone example of published research on shift work and child cognitive development. Her longitudinal analysis revealed that nonstandard work hours were associated with worse cognitive outcomes and lower levels of language acquisition during the first three years of life. She also found that shift work was more likely to have a negative association with cognitive outcomes when it began in the first year of life.

Although Han's work was groundbreaking, her research suffered from several limitations. Han's sample was relatively advantaged, did not include children of teen mothers, mothers with identified substance abuse problems, mothers not fluent in English, or children from dangerous neighborhoods. This, as she noted, limited the generalizability of her findings. We utilize consistently measured outcomes and a large, nationally representative, longitudinal sample. She also was unable to investigate the role of fathers, even though she speculates about their importance in situations when parents work different shifts.

In addition to Han's findings, a great deal of other research suggests the importance of parental well-being and the parental relationship for child outcomes. Research suggests that these parental factors are adversely affected by nonstandard shifts. The negative effect of shift work on individual health, sleep patterns, and psychological well-being has long been documented (e.g., Oexman et al. 2002; Presser 2003). Strazdins et al. (2006) and Bogen and Joshi (2007) specifically focused on mental health as a factor mediating the relationship between shift work and child outcomes. Both studies found that shift work negatively affected mental health, which in turn affected child behavioral outcomes. Perry-Jenkins et al. (2007) reported that shift work and depression were linked in a study of new parents. There is also evidence that shift work decreases the

quality of the parental relationship (Perry-Jenkins et al. 2007; Presser 2003; White and Keith 1990). Accordingly, we include parental relationship, parent-child interactions, and parents' depression as key mediating factors in our statistical analysis.

Finally, it has been observed that fathers play a more active role in their children's lives when they are home and their spouses are not (e.g., Brayfield 1995, Nock and Kingston 1988, Presser 2003), as occurs when parents work non-overlapping shifts. To date, however, other authors have not made systematic efforts to see how fathers' work schedules affect children's outcomes. In our previous paper, we found that compared to children with two parents who work during the day, children whose mothers worked non-standard hours while fathers worked during the day suffered worse behavioral outcomes, but the converse situation (a mother who works during the day and a father working nontraditional hours) had either no effect or a *positive* effect on behavior. In this paper, we explore whether these findings hold true for alternative measures of behavior and for cognitive development, and, if so, whether the quantity and quality of fathers' involvement explains the differences among children.

Data and methods

The analysis relies on restricted-use data from the first two waves of the Early Childhood Longitudinal Survey Birth Cohort (ECLS), a nationally representative sample of all children born in 2001.¹ The first assessment of infants and surveys of their parent(s) occurred at nine months, which was followed by another round of assessments and surveys at 24 months. The data are ideal for our study as they contain indicators of *both* parents' work schedules, along with indicators of parents' psychosocial well-being and health, parenting behaviors and beliefs, and the child's health and developmental achievements.

We limit the data set to those infants living in two-parent families in which: both parents were working for pay at the baseline assessment; the biological mother was the main survey respondent² in both waves; and assessments occurred at 24 months. Due to small cell sizes, Native American and multiracial non-Hispanic mothers will be omitted from the analysis. The analytical data set contains 1,650 cases.³

Independent variables

Our key independent variable is parents' work schedules, a six-category variable created from mothers' reports of the timing of their and their spouses' work schedules at the baseline assessment. The six categories are as follows: both work day; father works day, mother works evening/night; father works day, mother works irregular shift (rotating, split, or other); father works evening/night, mother works day; father works irregular shift, mother works day; and both parents work evening/night/irregular shifts.

Dependent variables

¹ The following births were not included in the sample: those born to women under age 15; those that died before the 9-month assessment; and those adopted before the age of 9 months (NCES 2005).

² Limiting our focus to biological mothers was necessitated by skip patterns omitting non-biological mothers from a number of questions.

³ To conform to confidentiality rules, we round all Ns to the nearest 50.

Cognitive abilities. To measure infants' cognitive abilities at 24 months, we use the (recalibrated) score from the Bayley Short Form – Research Edition (BSF-R) mental scale. The items in the BSF-R tap into aspects of general mental ability, such as problem solving and language acquisition.

Behavior problems. In our earlier work (Morett and Rosenbaum 2007), we used the infant's score on the Infant/Toddler Symptoms Checklist (ITSC) at 24 months to tap into the presence of behavior problems. The ITSC is completed by nonprofessionals, in this case the respondent parent, and is used to identify infants with regulatory problems, such as excessive fussiness, sleeping problems, and distractibility. Our findings suggested that shift work (at the baseline) had negative consequences for children's behavior (at 24 months) net of all key mediators, but only for children whose *mothers* worked nonstandard shifts. We speculated that this result may at least partially reflect the fact that the mother is the source of information for this measure of behavior problems.

As a result, in this paper we plan to use two sets of *objective* measures of children's behavior problems. The first will consist of observations made by the interviewer during the administration of the BSF-R. The interviewer observations are based on items originating from the Behavior Rating Scale, and tap into many of the same behaviors reflected in the ITSC, including attentiveness and interest. The second set of measures derives from the Toddler Attachment Sort (TAS-45) which also consists of interviewer observations. The TAS-45 items also overlap with the ITSC but focus on the child's type and security of attachment to the parent.

Key mediators

As discussed above, a focus of this analysis will be on the mediating role of fathers' behaviors and psychosocial states. In measuring father involvement in child care, we follow leading scholars in drawing a distinction between the amount and the quality of parenting (Pleck & Masciadrelli 2004). The amount of father care is measured by a self-report of how frequently the man looks after his child, at the 24-month assessment, while his partner is not present. We utilize two scales that measure quality. One is derived from fathers' estimates of the frequency with which they engage in play and other social activities (such as attending religious services) with their children, and the other concerns basic caregiving. Although the extent of father involvement in care has increased, at least in the middle class, play and attending church together and the like remain more widely practiced modes of fathering (LaRossa 1988; Townsend 2002).

Additional mediators include maternal and paternal depression (at baseline), marital quality (reported by both parents), aspects of the home environment, and the extent and frequency of parental arguments.

Hypotheses

We expect to find that having parents who have opposing work schedules early in infancy will increase the prevalence of behavior problems, and will depress cognitive abilities, both at 24 months. We also expect that our set of mediators will account for at least part of these effects. If we reproduce the finding that some types of non-overlapping schedules in early infancy lead to negative outcomes at 24 months, but others do not, we expect that variation in father involvement will explain at least part of the difference.

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