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#### ORIGINAL ARTICLE



# Making it work: Fathers' nonstandard work schedules and parenting activities

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#### Abstract

**Objective:** We examined associations between types of nonstandard work schedules among fathers, couple-level work schedules, and fathers' parenting activities in infancy and middle childhood in the United Kingdom.

Background: An emerging body of literature has interrogated the implications of fathers' nonstandard schedules for their parenting. The evidence is mixed owing to the range of child ages investigated and country context. It remains unclear whether nonstandard working hours are related to different types of parenting activities.

Method: The authors used the Millennium Cohort Study, a nationally representative birth cohort from the UK, and two measures of fathers' parenting: basic care (9-month and 7-year interviews) and play and recreation (7 years). Regression models predicted parenting from fathers' nonstandard work schedules at 9-months (n = 11,412) and 7 years (n = 7791).

Results: Fathers who regularly worked night schedules engaged in more basic care in both infancy and middle childhood, compared to fathers who regularly worked standard schedules. Evening schedules were related to lower levels of basic care among infants and 7-year-olds. There were stronger positive associations with parenting when considering mothers' work schedules. Fathers' parenting at both ages was higher in families in which both parents worked at nonstandard times or parents were engaged in split-shift schedules.

Conclusion: Fathers' night work schedules were associated with more parenting activities in infancy and middle childhood. The combination of fathers' and mothers' work schedules were relatively more important than considering fathers' work schedules in isolation.

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#### KEYWORDS

fathers, nonstandard work schedules, parenting, United Kingdom, work-

## INTRODUCTION

Over the last decade, family scholarship has developed a rich body of research on the contemporary role of fathers as caregivers providing emotional support, time, and day-to-day caring and upbringing of their children as well as being income providers (Cano et al., 2019; Schoppe-Sullivan & Fagan, 2020). In the context of these new norms of fatherhood, fathers' time with children has increased, including participation in the routine activities of child care (Bianchi et al., 2006). The rise in fathers' parenting activities in many Western countries has been attributed to increasing maternal labor force participation, more gender-egalitarian views, and intensive parenting frameworks (Esping-Andersen, 2009). In this emerging model of involved fatherhood, family researchers seek to further understand the conditions and mechanisms that support fathers' parenting given consistent evidence of its association with child development (Cabrera et al., 2007; Pleck, 2010).

Of the many factors that may impinge or support fathers' parenting is employment in jobs that require working nonstandard schedules (i.e., regularly working in the evenings, weekends, or nights). The time of day when a parent is employed has generated a great deal of research on the implications for children and family life (Li et al., 2014). Nonstandard work schedules may disrupt parenting behaviors by creating stress, interrupting family routines, and compromising social and emotional resources. Alternatively, these work schedules may create opportunities for parents to maximize time with their children. A growing, but small, body of evidence has focused on the implications of fathers' nonstandard work schedules on his parenting behaviors (Pilarz et al., 2019; Weinshenker, 2016) and shows mixed results. Although some find fathers' work schedules are an important predictor of parenting activities, the evidence suggests both increases (Wight et al., 2008) and decreases (Craig & Powell, 2012) in time spent parenting resulting from working nonstandard hours. Others report small effect sizes (Pilarz et al., 2019). Importantly some studies suggest fathers' parenting behaviors are contingent on mothers' employment status and schedule (Hook & Wolfe, 2013; Weinshenker, 2016). Equally, research needs to consider types of nonstandard schedules, incorporating both parents' work schedules, and distinguishing between routine and interactive parenting activities (Bianchi et al., 2006; Li et al., 2014). It is therefore salient to better understand what contexts (such as child age and specific work schedules) compromise or increase fathers' parenting when fathers or both parents work at nonstandard times.

We contribute to the incipient literature on fathers' nonstandard work schedules and parenting in several ways. First, we examine different domains of parenting in infancy and middle childhood. This contrasts with previous literature that has not examined middle childhood (Weinshenker, 2016) or uses diverse age ranges (Wight et al., 2008). Second, we investigate individual types of nonstandard working to disentangle how timing of employment is related to parenting. Studies have conflicting conclusions on the specific role of working times, for example, evening and night schedules (Craig & Powell, 2012; Pilarz et al., 2019). Third, our study considers the combined impact of mothers' and fathers' work schedules on fathers' parenting in infancy and middle childhood. Divergent findings in the literature raise questions about whether joint work schedules are related to fathers' parenting (Pilarz et al., 2019; Weinshenker, 2016). Fourth, lastly, our paper adds to the very limited literature on the relationship between fathers' nonstandard work schedules and parenting in the United Kingdom (UK). Country context can influence the time available to parents during the work week, the

availability of childcare, and cultural expectations about parenting behavior (Hook, 2012). Considering fathers' nonstandard work schedules in the UK offers a perspective on whether previous findings are universal or context specific.

The goal of this article is to provide a comprehensive empirical account of the associations between fathers' nonstandard work schedules and parenting behaviors in the UK. We accomplish this by using the Millennium Cohort Study—a nationally representative sample of children born in UK.

## NONSTANDARD WORK SCHEDULES IN THE UK

The prevalence of nonstandard work schedules in both the UK and United States (US) has remained fairly level over the last two decades with the prevalence consistently higher for men than women (20.1% vs. 17%) (Statistics, 2018; Enchautegui, 2013). There is wide variability in the prevalence of nonstandard schedules among working parents, largely due to the varying definitions of nonstandard working times, data used, and ages of children sampled, with estimates ranging from 16% to 40% for working mothers in the UK (Presser et al., 2008; Tammelin et al., 2017) and 12% to 50% in the US (Connelly & Kimmel, 2011; Dunifon et al., 2013). In both countries, nonstandard schedules are concentrated in particular industries, such as personal protection, food, health and social assistance, accommodation, and retail (Enchautegui, 2013; Statistics, 2018). Like the US, the UK is a liberal welfare state, but there are stark differences between the two in policies to support working families. In contrast to the US whose labor market regulations and family policy provisions are low, and workers in nonstandard schedules lack protection (Hook & Wolfe, 2013), in the early 2000s, services for families with young children expanded in the areas of parental leave, tax credits, and child care benefits in the UK (Waldfogel, 2010). Legislation was introduced to ensure employees who are not in standard employment enjoy the same benefits and protections as those in nonstandard work schedules (Gornick & Meyers, 2003). In addition, the rate of part-time employment among mothers is much higher in the UK than in the US and many other countries (Lewis et al., 2008). This arrangement may provide more opportunities to maximize fathers' parenting when a parent works a nonstandard schedule.

It is important to note that relative to its European peers, particularly the Nordic countries and the Netherlands, workers' rights and working conditions are weaker in the UK labor market (Mills & Täht, 2010). Due to these differences in policy support for working families, it is possible that the association between nonstandard working times and parenting differs across countries. Although the increased stress, fatigue, and compromised relationship time may be universal responses to working unsociable hours, adverse associations with nonstandard working may be buffered in countries with strong labor market protections and benefits, and a more generous welfare state.

## FATHERS' PARENTING AND THE ROLE OF NONSTANDARD WORK SCHEDULES AND CHILD AGE

The important role of fathers' parenting in family life and child development is increasingly being recognized as fathers are more involved in their children's lives than previous cohorts of fathers (Schoppe-Sullivan & Fagan, 2020). Fathers' time with their children can promote gender equality within families in a number of ways, including increasing mothers' social and economic participation and reducing maternal time pressure and work-family conflict (Pleck, 2010). Such improvements in family life may positively influence the quality of parent child relationships which in turn may enhance child development. In addition, interactions with two parents increase the diversity of parental inputs, such as different values, behaviors, and parenting styles, which promote children's cognitive and behavioral outcomes (Cano et al., 2019). Children also benefit from fathers as role models from whom to learn social skills and to seek emotional and instrumental support.

Our study gives attention to two types of fathers' parenting activities: basic or physical care, and play and recreation. Basic caregiving tasks, such as feeding, bathing, and soothing, are the hallmark of sensitive parenting when a child is an infant (Kalil et al., 2012). It is through warm, consistent, and sensitive responses to infants' basic physical needs that parents create secure attachments with their infants (Bowlby, 1982). These attachments in infancy are not only related to children's socioemotional development and adolescent self-worth (Grossmann et al., 2002) but also encourage fathers' engagement over time (Aldous et al., 1998). Play and recreational activities, such as playing games, reading, and recreational activities, are associated with positive learning and emotional wellbeing outcomes (StGeorge et al., 2018), because these interactive activities encourage children's thinking skills which in turn cultivate brain structure (Takeuchi et al., 2015). It is an important priority to examine both domains of fathers' parenting activities not only because fathers are expanding their repertoire of parenting activities, but also they report feeling joy, confidence in their caregiving skills, and high levels of happiness across these types of parenting (Edin & Kefalas, 2011; Musick et al., 2016).

The challenges of working nonstandard schedules and balancing parenting time may be conditional on the type of schedule. Regularly working a night shift could restrict a father's availability for bedtimes and dinner and breakfast meals, depending on work times. Equally, it could increase a father's availability for caregiving during the day, although the quality of this caregiving may be compromised due to lack of sleep and fatigue (Vogel et al., 2012). Evening schedules may create the capacity to be involved before or after school, but possibly at the cost of missing family activities during the evening. Time-use studies have shown that fathers regularly working during the weekends may not recover parenting time during the week due to other family members' schedules (Hook, 2012).

The association between fathers' work schedules and parenting may vary by children's developmental stages and as children's availability changes (Presser, 2003). In comparison to older children, infants require significant supervision and physical care by a parent or substitute caregiver. Some of these caring activities are essential to a child's health and safety, such as feeding and changing diapers. Irrespective of work schedules, fathers may participate in parenting activities among infants due to the critical nature of parenting at this stage of development. However, given that physical care required by infants occurs throughout the 24-h day, nonstandard work schedules may expand fathers' parenting participation. In contrast, children in middle childhood are more dictated by school schedules such that parental coverage during after-school hours may be better suited to nonday work schedules, such as night or weekend schedules. On the other hand, parenting in middle childhood may also be less demanding and responsive to fathers' work schedules, because children in this developmental stage are more autonomous, are increasingly influenced by their peers and teachers, and engage in more afterschool programs (Eccles, 1999). Although some nonstandard work schedules may hamper time with children in the evening, such as helping with homework and eating meals together (Wight et al., 2008).

Fathers' parenting may evolve over the lifecourse of a child irrespective of type of work schedule. In particular, fathers may increase their parenting time as children get older when there is commonality in activity interests, such as playing, educational activities, or outings (Negraia et al., 2018). A similar argument is made through a gendered framework whereby fathers engage in more "talk-based" parenting, which becomes more age appropriate as children age, relative to the more demanding time in physical care activities which has been considered the purview of mothers (Craig, 2006). In addition, as a child ages, fathers may feel more competent and confident in their parenting capabilities (Daly, 1996) resulting in more solo parenting.

Therefore, it is possible that fathers invest more time in their school-aged children's basic care and recreational activities, revealing little variation across types of work schedules, whereas infants' basic care activities may be more responsive to fathers' work schedules.

## CONCEPTUAL FRAMEWORK AND EMPIRICAL FINDINGS ON FATHERS' NONSTANDARD WORK SCHEDULES AND PARENTING

From the point of view of Bronfenbrenner's ecological theory (Bronfenbrenner, 1986), childparent interactions are embedded in a child's microsystem, or the child's family environment, which has the most immediate impact on child development. Microsystems are influenced by circumstances or events from the exosystem, such as fathers' nonstandard work schedules, that have consequences for the child even though he or she does not directly participate in them. On the basis of the ecological framework, fathers' nonstandard work may create stress, fatigue, and disrupt family schedules. Parents working at nonstandard times have reported experiencing role overload (Perry-Jenkins et al., 2007), which accompanies a reduction in parents physical and psychological capacities in such a way that fathers are not able to follow through on their best parenting intentions (Hsueh & Yoshikawa, 2007). Nonstandard schedules may have negative impacts on parents' socioemotional resources due to more negative work-family spillover and heightened relationship conflict and stress (Zilanawala & McMunn, 2022; Davis et al., 2008; Maume & Sebastian, 2012). In turn, this mental tax may lower the quality of time and engagement in developmentally-supportive activities with children (Prickett, 2018).

In light of this conceptual framework, we might hypothesize reduced parenting time among fathers working nonstandard schedules; however, the results of previous research on fathers' nonstandard work and parenting have been mixed. Much of the contradictory findings are not surprising given the diversity of types of data (time-use studies, cohort studies, etc.), range of child ages examined, type of parenting activity, and country context of samples (Craig & Powell, 2012; Pilarz et al., 2019; Rapoport & Le Bourdais, 2007; Wight et al., 2008). For example, two studies in the US found fathers who worked nonstandard schedule (any or evenings and nights specifically) were engaged in more routine care (Pilarz et al., 2019; Wight et al., 2008). However, Australian fathers working evenings or nights were found to spend less time in routine parenting activities (Craig & Powell, 2012) and others found no association (Rapoport & Le Bourdais, 2007). Studies in the US and UK have shown weekend schedules did not greatly reduce fathers' parenting because fathers recoup lost time during the weekdays (Brayfield, 1995; Hook, 2012); although these results are by no means consistent as Australian fathers regularly working on weekends spend less time in routine care and play or interactive activities (Craig & Powell, 2012). Most of the studies above assessing the relationship between fathers' types of nonstandard work and parenting used time-use data that count the amount of time in routine and interactive or play activities. Although these studies offer more precise definitions of nonstandard work times, they typically consider samples with wide child age ranges (0-14 years).

A consistent argument in the literature is that families develop strategies to integrate family time, parenting, and paid work and that nonstandard work schedules offer an opportunity to fulfill this goal. Some couples decrease work schedule overlap to maximize time with children and facilitate "tag-team parenting" (Täht & Mills, 2012). These strategies may be made out of choice—by one or both parents—to avoid jobs that interfere with family schedules. Equally, parents may opt for nonoverlapping work schedules when their children are infants or toddlers because physical care is more demanding and nonparental child care costs are high (Rachidi et al., 2019). However, tag-team parenting may be contingent on parents having agency over whether to work nonstandard schedules (Tuttle & Garr, 2012). Some couples may desynchronize their work schedules because of constraint. For example, nonstandard work is more common among racial minorities and among workers with limited education and parents with these characteristics may work nonstandard hours due to a lack of other preferred jobs or relatively weak bargaining power in the workplace (Enchautegui, 2013). Alternatively, parents may choose to work nonstandard jobs for improved earnings or reasons unrelated to caregiving responsibilities (Presser, 2003). It is conceivable that both choice and constraint engender work and parenting arrangements which in turn influence fathers' parenting opportunities. Certainly, the potential use of nonstandard working schedules to maximize the time each parent spends with children suggests the importance of considering both parents' work schedules jointly.

Broadly speaking, fathers' parenting is responsive to the work schedules of their partners (Rapoport & Le Bourdais, 2007), but similar to evidence on fathers' nonstandard work schedules, the literature on joint work schedules and fathers' parenting lacks consensus. Using US cohort data, researchers have found that when both parents worked nonstandard schedules or when only one parent worked at nonstandard times, fathers increased their physical care of infants (Han, 2004; Weinshenker, 2016); although, Pilarz et al. (2019) found fathers' parenting was not contingent on mothers' employment among 3-year-olds in the US. Within the time diary literature, there is some consensus that mothers' nonstandard work schedules were related to more routine care among fathers in Australia, Canada, and the UK (Craig & Powell, 2012; Hook & Wolfe, 2013; Rapoport & Le Bourdais, 2007). It is difficult to disentangle the role of mothers' nonstandard work schedules and fathers' parenting given that the time diary studies use wide age ranges and cohort studies focus on infancy. Our study broadens the current literature by including fathers' parenting in middle childhood when children are 7-years-old and by incorporating basic care and play and recreational activities. Investigating different types of parenting activities are relevant as fathers are less likely than mothers to be engaged across the full range of parenting (Craig & Powell, 2012).

## THE PRESENT STUDY

Taken together, our study extends the literature on nonstandard work schedules and parenting by focusing on fathers' work schedules and parenting in infancy and middle childhood and also considering the extent to which fathers' and mothers' nonstandard work schedules are related to fathers' parenting. The majority of the literature in this area is mixed, in part, perhaps because most studies use time-diary data. Although time-diary data is instructive on the potential associations between work schedules and parenting, these data report working at nonstandard times on the interview day rather than regularly working a nonstandard work schedule. Our study uses a rich, nationally representative birth cohort dataset from the UK and assesses the following key research questions: (1) are fathers' nonstandard work schedules associated with parenting activities in infancy and middle childhood?; (2) do these associations depend on mother's employment status?; and (3) are couple-level parental work schedules associated with fathers' parenting at both ages?

#### **METHODS**

#### Data

We used data from the UK Millennium Cohort Study (MCS), an ongoing population-based cohort study following a representative sample of infants born to 19,244 families in the UK between September 2000 and January 2002 (Joshi & Fitzsimons, 2016). Families were first assessed when children were 9 months old, and followed up at ages 3, 5, 7, 11, 14, and 17. Economically disadvantaged and minority families were oversampled by stratifying by the child

poverty index and the proportion of ethnic minority population of each electoral ward, an administrative unit level. Northern Ireland, Scotland, and Wales were also oversampled relative to England. At each wave, an interview is carried out with the main parent (normally the mother) and resident partners. Of particular interest to our study is that the MCS is the only UK longitudinal study of children that collected information about parents' employment characteristics, including the timing and regularity of work schedules, and fathers' parenting at key points in the early life course.

This study used data from the mother and father interviews from the first and fourth waves of the MCS when children were on average 9 months and 7 years old, respectively. The first interview represented a response rate of 82% of eligible households whereas the 7-year interview had a response rate of 72% of the issued sample. Each of these two waves represent two crosssectional analytic samples, which were restricted to families with singleton births given that families with multiple births are likely to have unique work-family integration experiences. We began with a sample of biological mothers and fathers who were both interviewed and had data on employment experiences (12,861 at 9 months and 8124 at age 7). This criterion was due to our interests in understanding fathers' parenting in the context of fathers' nonstandard work schedules and couple-level work schedules. Conceptually, we want to explore joint work schedules' influence on fathers' parenting and a separate analysis on single fathers is warranted but not within the current study's objectives. Equally, most of our parenting measures are derived from the partner respondent making a sample of single fathers too small to include here. We excluded fathers who were not working, because we are interested in comparing fathers who worked nonstandard schedules to those who worked standard schedules (1551 observations at 9 months and 624 observations at age 7). To minimize potential bias from excluding cases with incomplete data on our analytical variables, we rely on full-information maximum likelihood (FIML) to handle missing values. This method computes model parameters with all available information by treating missing observations as a function of all available information from the variables in the model. This approach produces efficient and unbiased results comparable to those gained via multiple imputation (Allison, 2012). The resulting analytic sample for the 9-month regressions was 11,412 fathers and 7791 fathers for the age 7 regressions. Descriptive statistics on employment and control variables were conducted on all available data (see Table 1). Both analytic samples comprised of the same fathers. To ensure findings are representative of the population we apply overall survey weights to take account of attrition bias and the survey's design (Mostafa & Wiggins, 2015).

## Measures

## Father's parenting

We used two measures that tapped into the frequency of paternal parenting: basic care and physical play/recreation. Play and recreation was only available at the age 7 interview. These measures are consistent with previous research examining parental employment and father involvement (Rosenbaum & Morett, 2009). Both dimensions are scales created by taking the mean of responses to items asking fathers to report the frequency with which they engage in specific activities with their child. The scales are constructed as the mean value due to the varying number of items for each of the two measures. The six response options for each question range from 0 (never or not at all) to 5 (every day or almost every day). In descriptive statistics we use the mean of each scale. In regression analyses, we standardized each measure to have a mean of zero and a SD of 1 to allow for comparison of the strength of associations.

Fathers' basic care was measured using the mean of four items at the 9-month interview capturing the frequency with which he looked after his baby on his own, changed his baby's

TABLE 1 Sample descriptive statistics by child age

	9 months ( $n = 11$	,019–11,412)	Age 7 $(n = 751)$	9–7791)
	Mean or %	SD	Mean or %	SD
Fathers' parenting	,			
Basic care [0–5]	2.86	0.99	3.30	0.97
Play and recreation [0–5]	_		2.64	0.77
Fathers' employment				
Work schedule				
Working standard hours only	49.80		40.42	
Working evenings	42.28		45.61	
Working nights	18.64		16.46	
Working weekends	27.88		34.10	
Total weekly work hours				
Worked 1–34 h	5.85		7.70	
Worked 35–44 h	65.61		56.93	
Worked 45+ h	28.54		35.37	
Mothers' work schedules				
Worked any nonstandard schedule	23.53		28.63	
Worked standard hours only	33.50		41.90	
Not working	42.97		29.48	
Joint work schedules				
Both parents nonstandard	12.95		17.09	
Father nonstandard/mother standard	17.18		23.98	
Father nonstandard/mother not working	24.16		18.46	
Father standard/mother nonstandard	10.67		11.54	
Both parents standard hours	16.36		17.88	
Father standard/mother not working	18.68		11.04	
Covariates				
Father characteristics				
Age (years)	33.18	5.86	39.52	5.80
Married (9-month interview)	74.17		76.21	
Race/ethnicity				
White	90.33		88.61	
Indian	2.11		2.56	
Pakistani/Bangladeshi	3.57		4.37	
Black/Black British	1.79		2.16	
Other	2.20		2.30	
Education				
None	8.17		6.88	
Overseas	2.60		3.08	
NVQ1	6.50		5.62	
NVQ2	27.47		25.25	
NVQ3	15.97		15.29	
NVQ4+	39.28		43.87	

(Continues)

TABLE 1 (Continued)

	9 months ( $n = 11$	,019–11,412)	Age 7 $(n = 751)$	9–7791)
	Mean or %	SD	Mean or %	SD
Excellent/good health	87.16		90.04	
Mental health score	1.29	1.45	2.80	3.14
Weekly net family income	527.33	293.99	714.22	368.19
Number of siblings of cohort member	0.85	0.94	1.48	0.95
Child characteristics				
Child age in months	9.20	0.50	86.72	2.94
Male gender (9-month interview)	51.55		51.21	

*Note*: Covariates are contemporaneous to each wave unless indicated otherwise. All percentages and means are weighted by attrition weights at time of interview. Sample sizes vary because all available data are used for means and percents. Abbreviation: NVQ, National Vocational Qualification.

diaper, fed his child, and awoke in the night for the baby ( $\alpha = .69$ ). At the 7-year interview, fathers' basic care was measured using two questions asking the frequency with which the father helped the child get ready for bed (or put the child to bed) and looked after the child on his own ( $\alpha = .50$ ). The low alpha for fathers' basic care at age 7 is a limitation we address in supplementary analyses below. Fathers' play and recreation captured the frequency with which he participates in the following activities with his child: reading with or to his child, telling stories, musical activities, drawing, playing physically active games, taking child to the park or playground, and playing with toys or games indoors ( $\alpha = .71$ ).

#### Fathers' work schedules

One of our key independent variables is fathers' nonstandard work schedules. Analyses that included fathers on parental leave but reported working at nonstandard hours showed substantively similar results. At both waves, fathers were asked if they regularly work each type of nonstandard work schedule: evenings (between 6 pm and 10 pm), nights (10 pm and 7 am), and weekends. These three schedules were not mutually exclusive because the MCS allowed parents to choose multiple options for nonstandard work schedules. For each type of nonstandard schedule, fathers were coded as 1 if they worked a particular schedule or 0 if otherwise. Fathers were categorized as working a standard schedule if they were employed but indicated that they did not have any of the nonstandard work schedules described. These categories were predetermined options for fathers to select in the survey interview and this survey design is consistent with cohort studies' interview questions on nonstandard work schedules (Dunifon et al., 2013; Zilanawala, 2021). Thus, our measures of nonstandard work captured exposure to particular types of nonstandard work schedules, either experienced in isolation or in combination with other types of nonstandard work schedules. For example, the evening work indicator identified fathers who worked evenings only, as well as those who worked the evening shift along with other schedules (i.e., nights or weekends).

We considered the timing of fathers' work schedules by investigating the types of nonstandard work schedules: worked evenings; worked nights; worked weekends; and worked standard hours only (reference category). The nonstandard schedule categories are mutually exclusive from standard schedules only. Consistent with prior studies using data on nonstandard work schedule variables that are not mutually exclusive, examining each type of nonstandard work

schedule allows us to estimate the relationship between working a specific nonstandard work schedule versus working standard hours only, holding constant working during other nonstandard work schedules (Pilarz et al., 2019). Among fathers who worked any nonstandard schedule across the two age waves, the majority worked one or two types of nonstandard schedules: 50%–53% reported working only one type, 31%–32% reported two types, and 16%–18% reported working three types. Fathers who worked evenings were the most likely to report working multiple types of shifts, and fathers who worked nights were the least likely. Lastly, there were no data on fathers' nonstandard schedules between 9 months and age 7.

## Joint work schedules

The other key independent variable in our analysis captured couple-level work schedule. Identical to the questions asked to their partners, mothers at the 9-month and age-7 interviews were asked to report their nonstandard work schedules. Fathers' work schedules were categorized into a binary variable indicating working any nonstandard work schedule (i.e., evenings, nights, or weekends) versus working standard schedules only (i.e., responding "no" to all nonstandard work questions). Mothers' work schedules were operationalized as nonstandard, standard, and not working. Similar to a previous study in the MCS (Zilanawala et al., 2017), we created a six-category mutually exclusive variable that combined both parents' work schedules: both parents nonstandard, father nonstandard/mother standard, father nonstandard/mother not working, father standard/mother nonstandard, both parents standard (reference category), and father standard/mother not working.

#### Covariates

We adjusted the analyses for a host of demographic and background characteristics that may be associated with both father's parenting and his work schedules. We measured father and child characteristics at each of the two age waves separately unless otherwise noted. We included father's age, measured in years. Marital status (vs. cohabiting) was a binary variable drawn from the first wave. At both age-wave interviews, we used MCS data team derived race/ethnicity and education variables. Using these variables ensured consistency, less missing data, and continuity or updating of information between waves. Father's race and ethnicity were measured with indicators that the father was White (reference category), Indian, Pakistani/Bangladeshi, Black/Black British, or other. Father's education level was measured with a series of dummy variables indicating none, overseas, National Vocational Qualification (NVQ) 1, NVQ2, NVQ3, or NVQ4+ (reference category). We measured fathers' self-reported general health using a binary variable for excellent or good health (vs. fair or poor health). At the 9-month interview, fathers' mental health used the sum score from the Malaise Inventory (Rutter et al., 1970), a set of nine self-completion questions measuring levels of psychological distress ( $\alpha = .70$ ). At the age 7 interview, mental health was measured with the widely used Kessler 6 scale ( $\alpha = 0.89$ ) (Kessler et al., 2002). Previous studies using the MCS to assess parental mental health across childhood similarly used both the Malaise and Kessler scales (Fitzsimons et al., 2017; Zilanawala et al., 2019). We assessed household income using a survey-constructed variable on equalized weekly net family income. Total weekly work hours was recoded from a continuous measure into binary variables indicating 1–34 h, 35–44 h (reference category), and 45+ h/week. We used a continuous measure of the number of siblings of the cohort member at each interview. Finally, we controlled for two child characteristics: gender (coded as 1 if the child is male and assessed at baseline) and age measured in months.

In stratified analyses examining whether the associations between fathers' work schedules and parenting differ among fathers who are socially and economically resource constrained and by mother's employment, we used three binary variables. For fathers' education level, we created a binary indicator for low (NVQ 2 or less, including overseas) versus high education (NVQ3 or more). This measure is an approximate to having a high school diploma or less versus having some college education or more. Second, we used a survey-constructed relative measure of income poverty (coded as 1 if family is 60% below the median income) at both the 9 months and age 7 interviews. This is the standard U.K. poverty measure. Third, we measured mothers' employment using a binary variable at each age in analyses investigating fathers' work schedules only.

## Data analysis

First, we conducted a two-part descriptive analysis. We presented descriptive statistics on all analysis variables at each of the two waves analyzed in the regression models. The second part to the descriptive analysis presented means on fathers' parenting measures, mothers' work schedules, and all covariates by fathers' nonstandard work schedules. Second, we estimated ordinary least squares regression models to examine the association between fathers' work schedules and each of the parenting measures cross-sectionally at 9 months and 7 years. We began with bivariate associations (Model 1) and then added covariates listed in Table 1 (Model 2) to account for potential confounding on father and child characteristics. The omitted category for work schedules was working a standard schedule. Next, we examined whether the linkages between fathers' work schedules and his parenting varied by mothers' employment, poverty status, and fathers' education. Before estimating regressions within subgroups, we tested the statistical significance of interactions between fathers' work schedules and each of the three aforementioned variables. Using Model 2, we conducted stratified analyses by each of these variables before using seemingly unrelated estimations (suest command in Stata) and Wald tests to compare work schedule coefficients across subgroups. Last, we interrogated the role of couple-level parental work schedules in father's parenting by using the joint work schedule variable described above. In these analyses we focused on Model 2 and the omitted category was both parents standard.

## RESULTS

# **Descriptive results**

Descriptive statistics for the analysis variables are presented in Table 1. Fathers' basic care increased from the baseline interview to the age 7 interview. At each interview, over half of employed fathers were working nonstandard schedules (recall that nonstandard work schedules were not mutually exclusive categories). The most common type of nonstandard work was evening working (42%-46% across waves). The next most prevalent was weekend working (28%-34%), followed by night working (16%-19%), the least prevalent. Across the two ages, mothers increased their labor force participation which was largely reflected in the increase in working standard hours (34%-42%) compared to nonstandard hours (24%-29%). At the 9 month interview, the most prevalent joint work schedule type was one in which fathers worked nonstandard and mothers were not working (24%). At the later wave, the most common joint work schedule was one in which fathers worked nonstandard and mothers worked standard (24%).

In Table 2, means and percentages of analysis variables are shown by fathers' work schedules at both waves. At the baseline wave, fathers' basic care was similar across the types of work

TABLE 2 Sample characteristics by fathers' work schedules: 9 months and age 7

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	9 months					Age 7				
	Standard	Nonstandard	Evening	Night	Weekend	Standard	Nonstandard	Evening	Night	Weekend
Fathers' parenting										
Play and recreation [0–5]	I		1	I	1	2.65	2.63	2.65	2.62	2.59
Basic care [0–5]	2.93	2.80	2.80	2.82	2.78	3.38	3.25	3.24	3.25	3.18
Total weekly work hours										
Worked 1–34 h	5.51	6.13	5.93	7.97	7.77	8.13	7.42	7.04	8.42	8.91
Worked 35–44 h	78.19	55.03	53.32	52.08	50.62	72.06	46.67	44.64	44.39	43.43
Worked 45+ h	16.29	38.84	40.75	39.95	41.62	19.81	45.91	48.32	47.20	47.66
Mothers' work schedules										
Worked any nonstandard schedule	23.34	23.85	23.09	26.87	25.96	28.52	28.72	29.59	33.31	28.34
Worked standard hours only	35.79	31.65	32.17	29.07	29.34	44.19	40.28	40.30	36.90	39.16
Not working	40.87	44.51	44.74	44.06	44.70	27.29	31.00	30.11	29.79	32.50
Covariates										
Father characteristics										
Age (years)	33.03	33.36	33.72	33.51	32.78	39.54	39.52	39.83	39.53	39.10
Married (9-month interview)	73.86	74.84	78.15	75.56	70.40	74.55	77.41	80.38	78.13	73.43
Race/ethnicity										
White	91.72	89.30	88.79	88.88	86.91	91.13	88.88	86.94	82.93	83.55
Indian	1.94	2.25	2.19	2.14	2.77	1.87	3.03	3.02	2.77	3.72
Pakistani/Bangladeshi	2.52	4.41	4.80	6.71	6.20	2.71	5.50	5.55	8.44	7.75
Black/Black British	1.98	1.56	1.57	1.31	1.43	2.35	2.04	1.96	2.83	2.09
Other	1.84	2.48	2.66	2.97	2.69	1.94	2.55	2.52	3.02	2.90
Education										
None	8.37	7.92	6.67	9.47	10.86	7.41	6.53	5.53	7.44	89.8
Overseas	2.11	2.97	2.77	3.95	3.81	2.40	3.54	3.29	4.75	4.45
NVQ1	6.41	6.48	5.40	6.82	7.83	5.24	5.89	4.48	6.43	8.05
NVQ2	27.27	27.66	24.82	28.42	32.11	25.80	24.87	20.83	24.94	29.99

TABLE 2 (Continued)

	9 months					Age 7				
	Standard	Nonstandard	Evening	Night	Weekend	Standard	Nonstandard	Evening	Night	Weekend
NVQ3	17.06	15.08	14.37	14.44	17.23	16.05	14.75	13.89	14.94	16.91
NVQ4+	38.77	39.89	45.98	36.89	28.16	43.09	44.42	51.99	41.49	31.92
Excellent/good health	88.08	86.41	86.90	85.85	84.66	90.55	69.68	89.81	88.77	88.44
Mental health score	1.19	1.36	1.36	1.46	1.48	2.66	2.89	2.90	3.03	3.04
Weekly net family income	511.02	544.00	575.00	530.34	467.11	683.21	735.22	784.52	716.05	632.15
Number of siblings of cohort member	0.81	0.88	0.89	0.98	0.91	1.45	1.50	1.51	1.57	1.54
Child characteristics										
Child age in months	9.20	9.20	9.20	9.21	9.20	86.75	69.98	86.73	86.71	86.69
Male gender (9-month interview)	51.49	51.61	51.93	52.55	50.58	51.49	51.01	50.85	50.20	49.88
n	5018	5948	4595	2086	3364	3042	4378	3349	1211	2572

Note: Covariates are contemporaneous to each wave unless indicated otherwise. Means and percentages are weighted by survey weights at time of interview. Sample sizes vary across cells because all available data are used for means and percents. Reported sample sizes are for the minimum number of observations available.

Abbreviation: NVQ, National Vocational Qualification.

schedules. Fathers also reported intensive work hours; fathers engaged in nonstandard work schedules had a higher prevalence of working 45+ h per week compared to fathers in standard schedules. Although mothers' work schedules were fairly comparable across fathers' work types, the prevalence of mothers' nonstandard schedules was most common in families in which fathers worked a night or weekend schedule. Of note in the covariates, there was little difference in education between fathers working standard and those working nonstandard schedules. However, among the types of nonstandard working, fathers working evening hours had the highest educational attainment whereas fathers who worked weekend schedules were least educated. On average, report of excellent or good health was lower among fathers working nonstandard schedules. Mental health scores were worse among fathers working nonstandard schedules, particularly for night and weekend schedules. Weekly family income was highest among fathers working in the evening and lowest among fathers who worked during the weekend. Fathers who worked nights and weekends tended to have larger families. Comparisons in descriptive means by work schedules at age 7 were similar to those at 9 months with the exception of fathers' parenting; basic care was on average higher among fathers working standard schedules.

## Associations between fathers' nonstandard work and fathers' parenting

Table 3 contains our regression results predicting fathers' parenting from the types of nonstandard work schedules at both interviews. Working evenings was associated with lower levels of basic care relative to working standard hours at both ages. Fathers regularly working evening schedules had higher levels of play and recreation when children were seven (B = 0.06, Model 1); although this coefficient attenuated and was no longer significant, potentially due to long working hours (see Table 2). Night schedules were associated with more basic care at both interviews (B = 0.07 at 9 months and B = 0.08 at age 7, see Model 2 basic care). At both waves, working weekends had negative associations with both parenting domains but these lower levels attenuated and were no longer statistically significant upon adjusting for covariates. These effect sizes are small in magnitude, suggesting small associations between work schedules and parenting. Although the regression estimates for night schedules are similar in magnitude across the child ages, we tested whether the effect sizes were statistically different (see Table A1 in Appendix S1). Specifically, we pooled the two age-wave models, interacted child age and night schedules, and did not find a statistically significant interaction.

We explored whether the relationships between fathers' work schedules and his parenting were different between families in which mothers were not and were working in Table 4. Across the two waves, we found fathers' night schedules were only associated with higher basic care levels among families in which mothers were working (B = 0.14 and B = 0.13 at 9-months and age 7, respectively). Although these effect sizes are small in magnitude, they are double the size of the associations when mothers' employment was not considered. Although evening schedules were related to more play and recreation at age 7 when mothers worked, this coefficient was not statistically different from the estimate among families in which mothers were not working (p = .08).

To examine whether the associations between fathers' work schedule and parenting varied by work hours, we also estimated models that included interactions between fathers' schedule and a continuous measure of work hours. For example, working a type of nonstandard schedule on a part-time basis may have less impact on parenting than working this type of schedule with more intensive work hours per week. In these data, we found no evidence of such a relationship (results not shown but available upon request). Finally, we investigated whether our findings differed by poverty status and education. We found no evidence that the relationship between work schedules and parenting varied by these social and economic characteristics, and thus these models are not presented (but available upon request).

TABLE 3 Fathers' work schedules predicting Fathers' parenting at 9 months and age 7

	9 months		Age 7			
	Basic care		Basic care		Play and recreation	
	Model 1 <i>B</i> ( <i>SE</i> )	Model 2 <i>B</i> ( <i>SE</i> )	Model 1 <i>B</i> ( <i>SE</i> )	Model 2 <i>B</i> ( <i>SE</i> )	Model 1 <i>B</i> ( <i>SE</i> )	Model 2 <i>B</i> ( <i>SE</i> )
Fathers' employment						
Worked evenings	-0.09***(0.02)	-0.06*(0.03)	-0.08**(0.03)	-0.06*(0.03)	0.06*(0.03)	0.04 (0.03)
Worked nights	0.03 (0.04)	0.07* (0.03)	0.04 (0.04)	0.08* (0.04)	-0.03(0.04)	0.01 (0.04)
Worked weekends	-0.08***(0.02)	0.01 (0.02)	-0.17***(0.03)	-0.06(0.03)	-0.10***(0.03)	-0.02 (0.03)
Weekly work hours (ref: 35-44)						
Worked 1–34 h		0.23*** (0.04)		0.18*** (0.05)		0.16**(0.05)
Worked 45+ h		-0.22***(0.03)		-0.15***(0.03)		-0.06*(0.03)
Covariates						
Father characteristics						
Age		-0.00(0.00)		-0.01***(0.00)		-0.02***(0.00)
Married		0.05 (0.03)		0.04 (0.03)		-0.00(0.03)
Race/ethnicity (ref: White)						
Indian		-0.38*** (0.08)		-0.39***(0.09)		-0.10 (0.08)
Pakistani/Bangladeshi		-0.95*** (0.06)		-1.11***(0.09)		-0.27*** (0.08)
Black/Black British		0.08 (0.09)		-0.12(0.10)		-0.20*(0.10)
Other		-0.23**(0.08)		-0.42***(0.11)		-0.18 (0.12)
Education (ref: NVQ4+)						
None		-0.31***(0.04)		-0.29***(0.06)		-0.28*** (0.06)
Overseas		-0.05(0.09)		-0.21*(0.09)		-0.29*** (0.08)
NVQ1		-0.15**(0.05)		-0.07 (0.07)		-0.30***(0.07)
NVQ2		-0.02(0.03)		-0.07*(0.03)		-0.18*** (0.03)
NVQ3		-0.02(0.03)		0.01 (0.04)		-0.05 (0.04)
Excellent/good health		0.09**(0.03)		0.07 (0.05)		0.18*** (0.04)
						(Continues)

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TABLE 3 (Continued)

	9 months		Age 7			
	Basic care		Basic care		Play and recreation	u
	Model 1 B (SE)	Model 2 B (SE)	Model 1 B (SE)	Model 2 <i>B</i> ( <i>SE</i> )	Model 1 B (SE)	Model 2 B (SE)
Mental health		-0.02**(0.01)		-0.00 (0.00)		-0.02*** (0.00)
Weekly net family income		0.00 (0.00)		0.00 (0.00)		0.00 (0.00)
Number of siblings of cohort member		-0.06***(0.01)		-0.08***(0.01)		-0.13***(0.01)
Child characteristics						
Child age		0.03 (0.02)		-0.00(0.00)		-0.01 (0.00)
Male gender		0.05**(0.02)		0.10***(0.03)		0.15*** (0.02)
Constant	0.03 (0.02)	-0.15(0.20)	0.10*** (0.02)	0.55 (0.33)	0.01 (0.02)	1.39*** (0.39)
Adjusted $R^2$	0.00	0.07	0.01	0.10	0.00	0.07

Note: Sample is 11,412 at 9 months and 7791 at 7 years. Coefficients are in standard deviation units. Reference category for fathers' work schedule is standard working. Model 2 adjusts for all covariates in Table 1. Standard errors in parentheses. Regressions are weighted by interview attrition weights. Abbreviation: NVQ, National Vocational Qualification; ref, reference category.

p < .05, \*\*p < .01, \*\*\*p < .001.

TABLE 4 Fathers' work schedules predicting Fathers' parenting stratified by maternal employment: 9 months and age 7

	9 months		Age 7			
	Basic care		Basic care		Play and recreation	
	Mothers not working B (SE)	Mothers working B (SE)	Mothers not working B (SE)	Mothers working B (SE)	Mothers not working B (SE)	Mothers working B (SE)
Fathers' employment						
Worked evenings	-0.03(0.04)	-0.04(0.03)	-0.10(0.05)	-0.04(0.03)	-0.02(0.05)	0.08* (0.03)
Worked nights	-0.05	0.14***a	-0.09	$0.13**^{a}$	-0.00	0.01
	(0.05)	(0.04)	(0.08)	(0.04)	(0.08)	(0.04)
Worked weekends	-0.03(0.04)	-0.00(0.03)	-0.07 (0.06)	-0.06(0.03)	0.05 (0.05)	-0.05(0.03)
Weekly work hours (ref: 35-44)						
Worked 1–34 h	0.14* (0.06)	0.34** (0.05)	0.19* (0.09)	0.24*** (0.06)	0.00 (0.08)	0.22*** (0.06)
Worked 45+ h	-0.17***(0.04)	-0.21***(0.03)	-0.16**(0.05)	-0.13***(0.03)	-0.12*(0.05)	-0.03(0.03)
Covariates						
Father characteristics						
Age at interview	-0.00	-0.00	-0.01*	-0.01***	-0.01**	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married	*60.0	0.01	0.15*	-0.03	0.04	-0.02
	(0.04)	(0.03)	(0.06)	(0.03)	(0.06)	(0.04)
Race/ethnicity (ref: White)						
Indian	-0.48***(0.11)	-0.21*(0.10)	-0.56***(0.14)	-0.29**(0.11)	-0.20(0.10)	-0.08(0.10)
Pakistani/Bangladeshi	-0.81***(0.07)	-0.48** (0.17)	-1.00***(0.10)	-0.68***(0.14)	-0.26**(0.10)	-0.53***(0.12)
Black/Black British	0.13 (0.10)	0.01 (0.11)	-0.04 (0.14)	-0.17(0.13)	-0.07(0.12)	-0.20*(0.10)
Other	-0.19*(0.09)	-0.14(0.12)	-0.63*** (0.17)	-0.17(0.13)	-0.14(0.16)	-0.22(0.13)
Education (ref: NVQ4+)						
None	-0.37***(0.05)	-0.26***(0.07)	-0.35***(0.09)	-0.19*(0.07)	-0.37***(0.10)	-0.17*(0.07)
Overseas	-0.27** (0.10)	0.17 (0.11)	-0.22(0.15)	-0.22*(0.10)	-0.37**(0.12)	-0.26*(0.10)
						(Continues)

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	9 months	1	Age 7			
	Basic care		Basic care		Play and recreation	
	Mothers not working B (SE)	Mothers working B (SE)	Mothers not working B (SE)	Mothers working B (SE)	Mothers not working B (SE)	Mothers working B (SE)
NVQI	-0.21** (0.07)	-0.13* (0.06)	-0.10 (0.13)	-0.06 (0.06)	-0.44** (0.13)	-0.28*** (0.08)
NVQ2	-0.10*(0.04)	-0.01(0.03)	-0.21***(0.06)	-0.02(0.03)	-0.32***(0.06)	-0.13***(0.03)
NVQ3	-0.08(0.04)	-0.01(0.04)	0.03 (0.08)	-0.01 (0.04)	-0.15(0.08)	-0.02(0.05)
Excellent/good health	0.10 (0.05)	0.08* (0.04)	0.22* (0.09)	0.01 (0.05)	0.31** (0.09)	0.14** (0.05)
Malaise score	-0.02*(0.01)	-0.02*(0.01)	0.00 (0.01)	-0.01 (0.00)	-0.01 (0.01)	-0.02**(0.00)
Weekly net family income	-0.00***(0.00)	-0.00(0.00)	0.00 (0.00)	-0.00(0.00)	-0.00(0.00)	0.00 (0.00)
Number of siblings of cohort member	-0.04*(0.02)	0.00 (0.02)	-0.06**(0.02)	-0.02(0.02)	-0.12***(0.02)	-0.15***(0.02)
Child characteristics						
Child age	0.02 (0.03)	0.02 (0.02)	0.00 (0.01)	-0.00(0.00)	-0.00(0.01)	-0.01(0.00)
Male gender	0.04 (0.03)	0.05*(0.03)	0.13* (0.05)	0.09**(0.03)	0.15**(0.05)	0.16***(0.03)
Constant	-0.16(0.32)	0.08 (0.24)	-0.08(0.63)	0.94* (0.39)	0.92 (0.69)	1.57*** (0.44)
N	5026	6377	2293	5383	2293	5383
$R^2$	0.09	0.04	0.16	0.04	60.0	0.07

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Note: Coefficients are in standard deviation units. Standard errors in parentheses. Reference category for fathers' work schedule is standard working. Regressions are weighted by interview attrition weights. "Significant difference with equivalent variable in "Not working" regression at p<.05. \*p<.05. \*p<.05; \*\*p<.01; \*\*\*p<.001. Abbreviations: NVQ, National Vocational Qualification; ref, reference category.

## Joint parental work schedules and fathers' parenting

Table 5 contains the regression results predicting fathers' parenting from joint parental work schedules. Across both waves, fathers provided more basic care in families in which mothers worked nonstandard schedules, regardless of their own schedules, compared to couples in which both parents worked standard schedules (see Model 2). In addition, effect sizes were more than double at age 7 (B = 0.30–0.38) compared to 9 months (B = 0.11–0.12), suggesting small to moderate associations between joint work schedules and fathers' basic care activities. We found evidence that fathers provided less basic care in families in which mothers were not working irrespective of their own work schedules. Joint work schedules were not strongly associated to fathers' play and recreation.

# Supplementary analyses

To test the sensitivity of our main results to analytic decisions, we employed a series of supplementary analyses. Our analytic samples for examining basic care at both age-waves in Table 3 comprise of fathers who were present at the first interview but may not be included in the age 7 analysis models due to sample attrition. This sample change could mean our results for basic care at 9 months are biased if the characteristics associated with sample attrition are also related to parenting activities in infancy. We reanalyzed our models for basic care at 9 months in Table 3 by selecting on fathers who were also present at the age-7 interview. Results (see Table A2 in Appendix S1) were largely unchanged from those presented above in Table 3 with the exception of the effect size for regularly working night schedules (increased to B = 0.10 from 0.07; p < .05).

Given the low alpha for fathers' basic care at age 7, it is not unreasonable to argue that the two parenting questions may not be measuring the same underlying construct or may not be representative of the domain of basic care in middle childhood. Therefore, we estimated model 2 in Table 3 on each of the two basic care questions asked to fathers in the age 7 interview (see Table A3 in Appendix S1). We found all three types of nonstandard work schedules were associated with putting a child to bed (B = -0.07 to -0.09; p < .05). Note that weekend schedules were negatively and not significantly associated with basic care in the main results. These effects sizes of the work schedule variables are small in size. In addition, we found night schedules, uniquely, were associated with looking after one's child on one's own (B = 0.24; p < .05).

We measured fathers' nonstandard work schedules using detailed information on the type of schedule in our main results. However, we considered an alternative approach by using a dichotomous variable to indicate working any type of nonstandard work schedule. We applied this binary variable to the models presented in Tables 3 and 4 (see Tables A4 and A5 in Appendix S1). Although working any nonstandard schedule was related to less basic care parenting at both age-waves (B = -0.05; p < .05), this omnibus measure does not clarify that different work schedules were differentially associated with fathers' parenting time. The differential associations by types of work schedules were also not transparent in the stratified analyses by mothers' employment (Table A5). Last, we examined the robustness of the findings on joint parental work schedules by excluding mothers who were not working at the age-wave examined given the findings from Table 4 (results available upon request). In joint parental work schedule models that excluded mothers who are not working, both the magnitude and statistical significance of the associations between joint work schedules and fathers' basic care parenting were very similar as in the main models, suggesting that the findings are robust to the sample specification.

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TABLE 5 Joint parental work schedules predicting Fathers' parenting

	9 months		Age 7			
	Basic care		Basic care		Play and recreation	1
	Model 1 <i>B</i> ( <i>SE</i> )	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)	Model 1 <i>B</i> ( <i>SE</i> )	Model 2 <i>B</i> ( <i>SE</i> )
Joint parental work schedules (Ref: Both parents standard)	nts standard)					
Both nonstandard	0.06 (0.04)	0.12*** (0.04)	0.25*** (0.04)	0.30*** (0.04)	0.05 (0.04)	0.08 (0.04)
Father nonstandard/mother standard	-0.09*(0.04)	-0.03(0.04)	-0.06(0.04)	-0.01(0.04)	-0.01(0.04)	0.01 (0.04)
Father nonstandard/Mother not working	-0.54***(0.04)	-0.41***(0.04)	-0.43***(0.05)	-0.25***(0.04)	-0.14** (0.04)	0.01 (0.04)
Father standard/mother nonstandard	0.11**(0.04)	0.11** (0.04)	0.38*** (0.04)	0.38*** (0.04)	0.02 (0.04)	0.02 (0.04)
Father standard/Mother not working	-0.38***(0.04)	-0.32***(0.04)	-0.23***(0.05)	-0.14** (0.04)	-0.09 (0.05)	0.01 (0.05)
Weekly work hours (ref: 35-44)						
Worked 1–34 h		0.24*** (0.04)		0.19***(0.05)		0.16**(0.05)
Worked 45+ h		-0.19***(0.03)		-0.14*** (0.03)		-0.06*(0.03)
Covariates						
Father characteristics						
Age at interview		-0.00(0.00)		-0.01***(0.00)		-0.02***(0.00)
Married		0.04 (0.02)		0.04 (0.03)		0.00 (0.03)
Race/ethnicity (ref: White)						
Indian		-0.33***(0.07)		-0.38***(0.08)		-0.10 (0.08)
Pakistani/Bangladeshi		(90.0) *** (0.06)		-0.96***(0.09)		-0.26***(0.08)
Black/Black British		0.06 (0.08)		-0.11(0.10)		-0.20*(0.10)
Other		-0.16*(0.08)		-0.38***(0.11)		-0.18 (0.12)
Education (ref: NVQ4+)						
None		-0.31***(0.04)		-0.27***(0.06)		-0.28***(0.06)
Overseas		-0.06 (0.08)		-0.22*(0.09)		-0.30***(0.08)
NVQI		-0.16***(0.05)		-0.10(0.07)		-0.31***(0.07)
NVQ2		-0.04(0.03)		-0.07*(0.03)		-0.18***(0.03)
NVQ3		-0.04 (0.03)		0.00 (0.03)		-0.05 (0.04)
		(20:0)		(20:0) 00:0		

(Continued) TABLE 5

	9 months		Age 7			
	Basic care		Basic care		Play and recreation	u
	Model 1 <i>B</i> ( <i>SE</i> )	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)
Excellent/good health		0.09** (0.03)		0.07 (0.04)		0.18*** (0.04)
Malaise score		-0.02**(0.01)		-0.00(0.00)		-0.02***(0.00)
Weekly net family income		-0.00**(0.00)		0.00 (0.00)		0.00 (0.00)
Number of siblings of cohort member		-0.02(0.01)		-0.04**(0.01)		-0.13***(0.02)
Child characteristics						
Child age		0.02 (0.02)		-0.00(0.00)		-0.01 (0.00)
Male gender		0.05** (0.02)		0.10***(0.03)		0.15*** (0.02)
Constant	0.17***(0.03)	0.08 (0.20)	0.04 (0.03)	0.55 (0.33)	0.03 (0.03)	1.38*** (0.39)
$R^2$	90.0	0.12	0.08	0.15	0.00	0.07

Sample is 11,412 at 9 months and 7791 at 7-years. Coefficients are in standard deviation units. Model 2 adjusts for all covariates in Table 1. Standard errors in parentheses. Regressions are weighted by interview attrition weights. Abbreviation: NVQ, National Vocational Qualification; ref. reference category. \*p < .05, \*\* p < .01, \*\*\* p < .001.

#### DISCUSSION

In this article, we have provided a comprehensive account of whether fathers' nonstandard work schedules and couple level work schedules are associated with fathers' parenting activities in infancy and middle childhood. In doing so, we contributed to both the growing research on parental nonstandard work schedules, which has primarily focused on the implications of mothers' schedules, and the emerging empirical evidence on the association between fathers' work schedules and parenting. This latter body of work is largely comprised of time-diary studies. Using data from the MCS, we found fathers' nonstandard work schedules, in isolation, had small but significant associations with parenting activities in both infancy and middle childhood (less than 10% of standard deviation). Fathers' work schedules in combination with mothers' work schedules had larger effect sizes (11%-38% of standard deviation) across both ages, suggesting the importance of considering both parents' work schedules in the context of parenting time.

Our findings suggest that fathers who regularly engage in night working have higher levels of basic care, such as changing diapers or putting a child to bed or solo care, in both infancy and middle childhood, compared to fathers who regularly work at standard hours, although only in dual-earner households in which the mother was employed. This could indicate that night schedules create opportunities to be involved in parenting routines during the day, or in the early morning or evening depending on the start and stop times of working hours. Previous research that has distinguished between basic care and play and recreational activities has posited parental work schedules are less likely to intrude on basic and routine care because such parenting is obligatory in nature and difficult to delay or curtail (Bianchi et al., 2006). Given that we did not see higher levels of basic care for other types of nonstandard schedules, our results demonstrate night working uniquely may be less constraining on fathers' parenting. Although, our results also indicate that night working may facilitate more parenting when mothers are working. It could be that mothers have less time due to work commitments and such economic factors encourage fathers to fill gaps in care at home. Although fathers who regularly work night schedules may be able to preserve or increase their parenting, irrespective of child age, unquestionably this may come at the cost of fatigue and compromising on sleep and time for oneself (Wight et al., 2008).

Our findings also demonstrate evening schedules are related to lower levels of basic care among infants and 7-year-olds. Whereas night working was less constraining for basic and routine care, evening working may interfere with children's bedtimes relative to fathers who work standard schedules. We did not find strong evidence that evening schedules were related to levels of play and recreation. This is surprising given that play and recreational activities are more interactive, less obligatory, and in some ways can be flexibly planned or postponed. Our results underscore the importance of interrogating the timing of work schedules but also incorporating, where data permits, children's developmental stages and the type of parenting activity to clarify the role of work times on fathers' parenting. Alongside giving attention to the timing of work, it is important to better understand if fathers may have preferences regarding the particular time of day that they engage in caregiving and for which parenting activities they have preferences. For example, some parents place greater importance in being home when their children return from school irrespective of work schedule choice (Connelly & Kimmel, 2011).

Our results on fathers' basic care parenting extends evidence that focuses on 3-year-olds (Pilarz et al., 2019) by noting the potential benefits of night working when children are infants. Although our study uses nationally representative data and also finds night working is related to parenting in middle childhood. Our findings are less compatible with evidence using time-use data. With the exception of one study that corroborates our findings on night working (Wight et al., 2008) and another that also finds no significant association between weekend working

and parenting (Hook, 2012), it is difficult to compare our results to evidence that uses wide-age ranges (0-14 years), excludes some working times, and/or collapses work schedules into one category (e.g., evening and night working) (Brayfield, 1995; Craig & Powell, 2012; Rapoport & Le Bourdais, 2007). In addition, time diary data captures working hours on 1 day of the week whereas our cohort data captures a regular work schedule. Ideally, future data collection should consider collecting time diaries, which provide more precise measurements of time in activities, alongside survey data, which contribute detailed information about family life.

Another contribution is our investigation of couple level work arrangements on fathers' parenting. We found fathers' parenting in infancy and middle childhood, particularly basic care, was higher in families in which mothers worked nonstandard schedules relative to couples in which both parents worked standard schedules and irrespective of fathers' own work schedules. The effect sizes were small in size (11%-38% of standard deviation) but larger than examining fathers' work schedules in isolation. Our findings underscore that fathers' parenting may be sensitive to household employment arrangements. In line with time-use studies, it is mothers' nonstandard working that increases fathers' parenting activities perhaps indicating a preference of parental childcare or the financial constraints of finding child care at nonstandard times (Han, 2004). We also find that fathers are less involved in basic care when mothers are not working highlighting the salience of household time availability.

Theoretically, this study was based on ecological theory which draws attention to the workfamily interface and suggests a challenging work-family arrangement may create barriers to positive parenting interactions and time with children across childhood. Our findings support a more nuanced view of the work-family meso-system in which some fathers can increase their parenting time in the face of working unsociable hours whereas other fathers spend less time in engagement activities. Equally one of the propositions of ecological theory is to consider time, or age of the child, so that the relationship between employment and parenting can be clarified (Sweet & Moen, 2006) given the changing developmental needs of children from infancy to middle childhood.

The extent the workplace is a salient context for child-environment interactions and subsequent effective and beneficial parenting practices is partially contingent on choices and constraints parents face in the workplace. Regular and enduring interactions between children and their family environments will depend on whether fathers can choose their nonstandard work schedules or have job flexibility if such work schedules are beneficial for child care and fathers' parenting. Ecological theory supports the work-family context whereby nonstandard work schedules could increase time resources by allowing parents to be at home with children during daytime hours. Of course spending more time with children may come at the expense of leisure activities (Rapoport & Le Bourdais, 2007). As alluded by our results, work schedule synchronization could support different caregiving needs of children across childhood. The conceptualization of parental choice in familial resources, such as financial and time, is explicitly considered in the conceptual resource framework put forth by Brooks-Gunn et al. (1995), who suggest that parents face decision making and choice in allocating these resources to optimize child wellbeing. Just as choices imposed or taken in the workplace matter for fathers' parenting, it may also be that the nature and magnitude of the impact of nonstandard work schedules on parenting vary by the quality and mix of different resources available to parents as well as family and child characteristics (e.g., behavior and personality).

Coupled with our findings, nonstandard work schedules need to be considered within the context they operate. In the UK, tag-team parenting and desynchronized work schedules may be a solution to the one-and-half earner model in which mothers, relative to the US, have higher rates of part-time employment. Split-shift working may maximize time with children (Mills & Täht, 2010) and potentially lead to more balanced gender division of parenting. Parenting in

households in which at least one parents engages in a nonstandard work schedule may mean parenting is less often done jointly among parents and involve more solo parenting among fathers. Our results call for further understanding of the mechanisms that enable or constrain parenting activities when parents work at nonstandard times and how this reconciliation between working and parenting varies by country context.

Some caveats to our study need to be recognized. These limitations serve as opportunities for methodological refinement and future research inquiry. The generalizability of these data is to a cohort born at the turn of the millennium in the UK which was over 90% White in 2001-2002 (White, 2002) and therefore our findings may not generalize to populations with higher proportions of racial/ethnic minority fathers. Future research needs to attend to the exploration of not only race/ethnic minority groups but also minority groups identified by faith and migration and how fathers' parenting activities differ by work schedules in these groups. Although we find fathers' who work nonstandard schedules have higher levels of parenting we are unaware of the quality of the time spent with their children. Our study is cross-sectional in nature and cannot comment on what motivates or causes fathers to work these hours or to parent in these activities. Nor do we know about their feelings about the amount of time they spend with their children. Related to these lack of data we are not able to discern between fathers who choose to work at a nonstandard time and those whose schedules are mandated by the job itself. However, this is a longstanding concern in the nonstandard work literature and future data collection should consider collecting information on work schedule choice to better understand family dynamics. More specifically regarding variable measurement, our operationalization of work schedules is in line with previous literature but is limited due to self-reporting and the use of predetermined categories (e.g., evenings 6 pm-10 pm). Although we investigate different types of work schedules, our data cannot capture fathers who are exposed to varying schedules, let alone unpredictable work schedules, which may have cumulative or interactive effects on fathers' parenting activities. Lastly, as mentioned earlier, our consideration of children's basic care in middle childhood used two questions and had low reliability, presumably because each type of basic care is correlated to work schedules differently.

Notwithstanding these limitations, the findings of this study have potential implications for policy and practice. Although families with children in the UK have access to a more supportive environment from the perspective of services for children, family-friendly policies, and work culture relative to the US, policies, and programs can be further enhanced to address the challenges and opportunities of working nonstandard schedules. Since April 2003, British fathers have a legal right to take a 2-week paid paternity leave after the birth of a child. One study found nearly three-quarters of fathers used paternity leave in 2008, but only half of these fathers used the maximum allowance (Chanfreau et al., 2011). A key reason for why fathers did not take the full entitlement of 2 weeks was the reduction in income resulting from the statutory flat government rate. Unpaid parental leave is another policy available to fathers for 13 weeks (at the time of the survey waves used here) before the child's fifth birthday. Similar to paternity leave, and perhaps even more onerous, there is a financial disincentive for fathers to take up parental leave and particularly if fathers earn more than their partners. Policies can be improved in a number of ways, for example, by reserving an individual portion ("quota") of leave for the father, providing a high replacement rate for earnings while the father is on leave, and permitting flexibility in when and how the leave may be taken (Fagan & Norman, 2013).

Workplace policies can also alleviate the challenges of nonstandard work schedules while also supporting fathers as they make important contributions in their children's lives. This means pay premiums for working outside of standard hours, incentives for child-care facilities to remain open in the evenings and weekends, and requiring predictable work schedules so that families can maintain routines and engage in cognitively supportive parenting (Morsy & Rothstein, 2015). Fathers also make more use of paternity and parental leave policies in

supportive workplace environments (Fagan & Norman, 2013). Although fathers have the right to request flexible working, it is not guaranteed. The COVID-19 pandemic has unearthed the mismatch between the number of people who need to work flexibly, both in terms of time and place, and the low supply of flexible jobs (Families, 2019). Lessons from the pandemic include that many jobs can be worked flexibly. To ensure the flexible working policy is more inclusive, employers can advertise vacancies as flexible and reduce the qualifying period (currently 26 weeks in new employment) before requesting flexible work schedules. Lastly, parent interventions could include helping parents manage the stresses and challenges of nonstandard working and behavioral tools to successfully integrate work and family demands. These programs may be effective for fathers who want to be involved in the routine care of their children while also competing with the time conflicts of their work schedules.

Our results suggest that some parenting increases when fathers work at nonstandard times and tempers the predominantly negative tone in the family literature on nonstandard work schedules, which is overwhelmingly examined among mothers. We underscore research that incorporates both mothers' and fathers' work schedules, where possible, because nonstandard working may be an option parents choose to benefit their families. This suggests that government or federal policy may not be required but it may be more appropriate to develop workplace interventions that provide parents with more control over their work schedules (Henly et al., 2006). As fathers continue to navigate and interweave their family and work roles, researchers must continue to assess the benefits and challenges of nonstandard working to family life.

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## SUPPORTING INFORMATION

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