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Descriptive Finding

Educational gradients in nonstandard work schedules among mothers and fathers in the United Kingdom

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Abstract

BACKGROUND
Mothers' and fathers' participation in nonstandard employment across children's lives is not well understood in the United Kingdom.

OBJECTIVE
The first objective is to describe the prevalence of nonstandard work schedules (e.g., evenings, weekends, nights) among employed mothers and fathers using longitudinal data. The second objective is to document the education gradient in parental nonstandard work schedules over the first decade of a child's life.

METHODS
Linear probability models predict participation in nonstandard work schedules, adjusting for demographic variables, at each survey wave by education for each parent, using the first five waves of the Millennium Cohort Study.

RESULTS
Employed mothers with less than NVQ2 (or less than high school) were most likely to work nonstandard schedules across childhood. Among employed fathers, there was little difference in the probability of working nonstandard schedules by education. The most common type of shift for mothers (30%–36%) and fathers (nearly 42%–46%) was evening work. Mothers and fathers with NVQ4 or more (college degree or higher) were most likely to work regularly in the evening at all ages. Night working, the least common type of schedule, did not differ by education for both parents. Mothers and fathers with the least education were most likely to work weekend schedules at all ages.

CONTRIBUTION
This article documents the pervasiveness of parental nonstandard employment, which has received little attention in the UK; finds that the education gradient in nonstandard work schedules is contingent on type of schedule; and critically incorporates information about fathers' nonstandard schedules.

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1. Introduction

In the last half century, global economies have faced remarkable transformations to their labor markets. In particular, the growth of the service sector – which disproportionately employs women, technological changes, and globalized labor markets – which have reduced the cost of labor, have increased the demand for services during nonstandard hours; that is, evening, night, and weekend work schedules (Presser 2003). This revolution in working time has transformed family life and considerable evidence shows the adverse implications of nonstandard working hours for children's wellbeing (Li et al. 2014). Equally, nonstandard work schedules may impinge on parental stress, fatigue, and sleep patterns, all of which may eclipse parental socioemotional resources and parenting intentions, which in turn have implications for child wellbeing.

This study focuses on parental nonstandard work schedules in the United Kingdom (UK). This is a salient policy context to consider given that the vast majority of evidence in this literature focuses on the United States (US), which has more limited policies available to working families than the UK. In the UK between 1999 and 2001, a period overlapping the years in which children in the current study were born, parental leave and childcare tax credits were expanded and the number of childcare providers increased. Legislation was introduced to ensure employees who are not in standard employment enjoy the same benefits and protections as those in standard work schedules. In addition, the EU Working Time Directive provides limits to weekly working hours, rest periods during the week, and extra protection when working night schedules (Gornick and Meyers 2003). Thus, the UK working context is distinct from the US in offering incentives and support to parents who may work nonstandard schedules.

Given the associations between nonstandard employment and family wellbeing, the first contribution of this study is its description of the prevalence and types of nonstandard work schedules among mothers and fathers, using longitudinal data across nearly the first decade of children's lives in the UK. There is little evidence on the longitudinal patterns in types of nonstandard work, given evidence that the consequences of nonstandard working may be contingent on type of schedule (Wight, Raley, and Bianchi 2008). This study moves beyond a narrow period of employment life; for example, after the birth of a child or snapshots at other points in a child's life. Despite the increasing attention to the role of fathers and the changing expectations of gendered family roles, the description of fathers' nonstandard employment constitutes a gap in the literature.

The second contribution is its description of the educational differences in the probability of experiencing a nonstandard work schedule among employed mothers and fathers. The motivation to focus on education is for several reasons. Over the last two decades, maternal labor force participation has increased dramatically, particularly for economically disadvantaged mothers and mothers of young children (Roantree and Vira

2018). The sharp rise in educational attainment among women partially explains these employment changes, particularly as education is one of the key determinants of labor force outcomes. Education is strongly related to social, cognitive, and psychological resources that can be used to protect against work-related challenges (Mirowsky and Ross 2003). Unequal distribution of key inputs for children's health and development, such as parenting time, has led to children's destinies diverging by maternal education (McLanahan 2004). Additionally, economic resources received by children differ considerably by parental education (Putnam 2016). Evidence suggests an unequal distribution of nonstandard work schedules in the population such that these schedules are more common among less-educated and low-income groups (Presser and Ward 2011). If poor health and adverse outcomes are concentrated among parents working nonstandard hours, exploring the education gradient can inform discussion on health inequalities and widening inequality in general. Understanding the potential educational differences in parental nonstandard work schedules is an important goal for scholarship on inequality, given that children's life chances and social mobility are tied to parental education. Furthermore, investigating features of the of the labor market and educational institutions can further our understanding of potential patterns of inequality and the processes of stratification.

These two contributions shed light on work schedules at a time when diverse work schedules are becoming increasingly common in the UK, and create a foundation for understanding nonstandard employment among British parents in a contemporary cohort.

2. Data

The Millennium Cohort Study (MCS) is an ongoing longitudinal cohort study of 9-month infant survivors born in the United Kingdom between September 2000 and January 2002 (Joshi and Fitzsimons 2016). The sample was clustered at the electoral ward, oversampled for Wales, Scotland, and Northern Ireland for areas with high child poverty, and in England for areas with a high proportion of ethnic minority residents. Families were first assessed when children were 9 months old, and followed up at ages 3, 5, 7, 11, 14, and 17. This study uses data from the first five interviews. Nearly 70% of the initial respondents remained in the study at the fifth wave. Sample weights are used to account for inter-wave attrition and sample design (Mostafa and Wiggins 2015). In each wave an interview was carried out with the main respondent (normally the mother) and resident partners (normally the father).

The focus of the research is to examine patterns in education gradients in nonstandard employment over time, and therefore the analytic samples are restricted to mothers and fathers who were continuously interviewed, had complete data on baseline

control variables, and had information on their employment details (N = 9,808 for mothers; N = 6,123 for fathers). As described below, data on nonstandard employment is available at the first five survey waves for mothers and at three survey waves for fathers. The analyses used employed mothers and fathers at each wave. This is in line with literature examining both the descriptive characteristics of nonstandard employment (Enchautegui 2013; Presser and Ward 2011) and studies focused on differences between standard and nonstandard employment in relation to wellbeing measures (Li et al. 2014). Sample sizes varied by child age given that mothers entered and exited employment between waves (n = 5,002–6,808). Fathers' sample sizes were narrower in range across child age (n = 4,729–4,664). The baseline control variables described below had a very small percentage of missing data (less than 2.5%). Descriptive prevalence statistics in Tables 1 and 2 were estimated on larger sample sizes, which were not restricted to presence in all survey waves but conditioned on employment at each age wave and data on demographic characteristics.

2.1 Parental nonstandard work schedule

Information on mothers' nonstandard work schedules was collected at each of the first five interviews of the MCS. Data on fathers' nonstandard work schedules were only available in the baseline interview at 9 months and at the 7-year and 11-year follow up interviews. Parents who indicated being in paid work the previous week were asked if they regularly (daily/weekly) worked each type of nonstandard work schedule: evening (6 p.m. – 10 p.m.), night (10 p.m. – 7 a.m.), and weekends (Saturday and/or Sunday). All nonstandard work variables included parents who were employees or self-employed. At each interview, parents were able to select more than one type of nonstandard work schedule. For each type of nonstandard schedule, a binary variable was coded as 1 if they reported working a particular schedule and 0 if they responded otherwise (i.e., not working that schedule but employed). At each wave, a binary indicator of nonstandard employment captured exposure to working a particular type of nonstandard schedule (e.g., evening schedule) in isolation or in combination with other types of nonstandard work.

At each wave of available data, regression analyses used two measures of parental work schedules. One measure considered whether a parent worked any nonstandard work schedule (i.e., evenings, nights, or weekends) versus working a standard schedule only (i.e., responding 'no' to all nonstandard work questions). A second measure considered the timing of work and investigated the types of nonstandard work. Binary variables indicated the following: worked evenings, worked nights, and worked weekends. Consistent with prior studies using data on nonstandard work schedule variables that are

not mutually exclusive, the survey design reflects the potential complexity of parents' working lives and allows the selection of working a schedule in isolation or in combination with other schedules (Dunifon et al. 2013; Zilanawala et al. 2017).

2.2 Parental education

Parental education is drawn from the first interview and is grouped into four categories using information on highest level of academic or vocational education. The following categories were constructed for each parent: Less than National Vocational Qualification (NVQ) 2, NVQ2 (or O-level/GCSE), NVQ3 (or A-level), and NVQ4+ (or college degree or higher). These categories are an approximation of US measures of parental education: less than High School (HS), HS, Some college, and College degree or higher (Crosby and Hawkes 2007).

2.3 Controls

Several demographic variables that influence selection into employment and nonstandard employment and are related to parental education were included. All control variables were drawn from the baseline interview, with the exception of foreign-born status (age 3 interview), to avoid adjusting for potential mediators of the relationship between education and parental nonstandard employment. These background variables include parental ethnicity (White, Indian, Pakistani, Bangladeshi, Black Caribbean, Black African, or Other), number of children in the household, foreign-born status (UK or foreign-born), parental age at birth, and family structure (one- or two-parent family). Adjusting for these variables provides more confidence that potential educational differences in nonstandard work are due to education and not demographic background characteristics, such as migration history or household size.

3. Method

First, unadjusted prevalence estimates of nonstandard work schedules among employed parents are presented by demographic characteristics (described above) across child age using a sample of employed mothers and fathers at each wave separately. Second, linear probability models are used to predict participation in nonstandard work schedules at each survey wave by education for each parent, adjusting for control variables. This method estimates the education gradients in mothers' and fathers' nonstandard work

schedules net of potential correlates that may be related to participation in nonstandard work. Predicted probabilities are presented in figures. These models are preferred to logit models because the interpretations are more intuitive.

4. Results

4.1 Prevalence of parental nonstandard work schedules by sociodemographic characteristics and child age

Table 1 presents cross-sectional prevalence of nonstandard employment among employed mothers by child's age. Nearly 40% of employed mothers at each age wave regularly worked in nonstandard schedules, peaking at age 3 (47%). There was an education gradient in the raw prevalence of nonstandard employment across childhood: mothers with the least education had the highest rates of working a nonstandard schedule. Across child age, maternal nonstandard employment varied considerably across race/ethnicity. White and Indian mothers were most likely to participate in nonstandard work across child age, whereas Bangladeshi mothers were least likely to report nonstandard schedules. Prevalence of nonstandard work ranged between 22% and 47% for Pakistani, Black Caribbean, and Black African mothers. There was little difference in prevalence of nonstandard employment by family structure and immigrant status for mothers.

Table 1: Prevalence of nonstandard employment among employed mothers by demographic characteristics across child age (%)

	9 months	Age 3	Age 5	Age 7	Age 11
Employment rate	50.59	50.26	58.61	62.97	66.72
n	14,234	14,119	12,413	11,549	10,881
Nonstandard employment, among employed mothers	41.95	47.01	43.12	41.08	40.81
Education					
Less than NVQ2	54.86	60.66	53.86	49.06	45.74
NVQ2 (GCSE)	43.81	48.76	42.59	39.74	37.89
NVQ3 (A-level)	39.03	44.43	39.38	36.44	38.30
NVQ4 + (college +)	39.50	43.09	42.02	41.42	42.25
	p = 0.04	p = 0.00	p = 0.27	p = 0.03	p = 0.01
Race/ethnicity					
White	42.47	47.17	43.34	41.33	40.94
Indian	41.06	52.75	43.73	45.96	41.56
Pakistani	33.37	47.76	23.57	26.38	41.80
Bangladeshi	15.38	22.69	10.06	21.64	11.73
Black Caribbean	32.97	43.93	37.71	35.96	37.47
Black African	22.54	32.20	41.35	29.98	41.76
Other	36.69	48.43	49.34	45.76	40.09
	p = 0.08	p = 0.00	p = 0.00	p = 0.01	p = 0.00
Family structure					
One parent	47.49	46.90	42.97	38.97	41.49
Two parents	41.62	47.03	43.14	41.49	40.63
	p = 0.03	p = 0.96	p = 0.93	p = 0.20	p = 0.63
Immigrant status					
UK-born	42.04	46.96	43.15	40.95	40.56
Foreign-born	40.59	47.74	42.70	42.96	44.10
	p = 0.63	p = 0.78	p = 0.87	p = 0.46	p = 0.19
n	6,818	7,049	7,131	7,340	7,509

Note: All percentages are weighted by attrition weights at time of interview. Sample for employment rate includes parents who are not working but is conditional on complete data on work schedules and demographic characteristics. Sample sizes on nonstandard employment prevalence reflect an employed sample at each wave and complete data on demographic variables presented. Education, race/ethnicity, and immigrant status are from baseline interviews, whereas family structure varies by child age. P-values indicate results of F-test of null hypothesis that there is no association between nonstandard employment and demographic characteristic.

Table 2 presents equivalent descriptive statistics for employed fathers. Over half of employed fathers at each wave were working nonstandard schedules (53%–59%). The prevalence differences by education in nonstandard work were smaller than for mothers. Similar to mothers, racial/ethnic differences in paternal nonstandard employment were large, but, in contrast, nonstandard work participation was more likely among foreign-born fathers than UK-born fathers.

Table 2: Prevalence of nonstandard employment among employed fathers by demographic characteristics across child age (%)

	9 months	Age 7	Age 11
Employment rate	92.75	92.84	90.98
n	8,625	6,258	5,781
Nonstandard employment among employed fathers	53.39	58.33	59.12
Education			
Less than NVQ2	54.01	59.49	60.52
NVQ2 (GCSE)	54.42	57.74	56.68
NVQ3 (A-level)	48.81	56.93	56.91
NVQ4 + (college +)	54.30	58.91	61.05
	$p = 0.01$	$p = 0.60$	$p = 0.03$
Race/ethnicity			
White	53.06	57.64	57.98
Indian	53.92	70.69	71.45
Pakistani	66.04	70.93	78.12
Bangladeshi	89.17	97.62	89.75
Black Caribbean	39.51	47.98	47.59
Black African	43.18	59.37	77.38
Other	60.08	60.85	64.70
	$p = 0.00$	$p = 0.00$	$p = 0.00$
Family structure			
One parent	-	-	-
Two parents	53.41	58.44	59.37
Immigrant status			
UK-born	52.59	57.49	58.02
Foreign-born	62.59	68.37	70.67
	$p = 0.00$	$p = 0.00$	$p = 0.00$
n	7,830	5,809	5,286

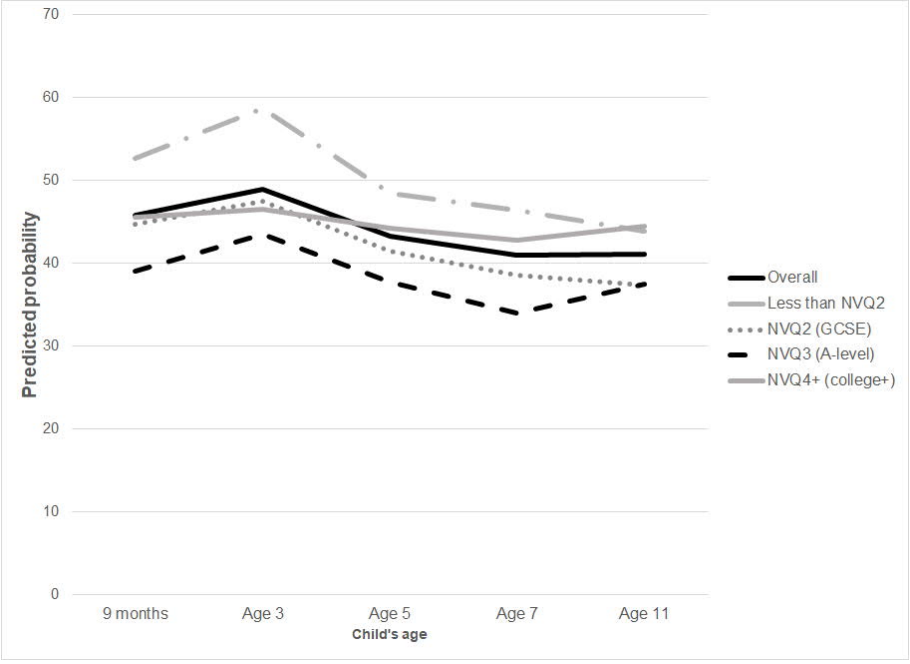
Note: All percentages are weighted by attrition weights at time of interview. The sample for employment rate includes parents who are not working but is conditional on complete data on work schedules and demographic characteristics. Sample sizes on nonstandard employment prevalence reflect an employed sample at each wave and complete data on demographic variables presented. Education, race/ethnicity, and immigrant status are from baseline interviews, whereas family structure varies by child age. P-values indicate results of F-test of null hypothesis that there is no association between nonstandard employment and demographic characteristic.

4.2 Prevalence of parental nonstandard work schedules by child age and education

Figure 1 documents the predicted probabilities of working any nonstandard work schedule among employed mothers. Overall, the prevalence of nonstandard employment increases in early childhood between the ages of 9 months and 3 before declining or

leveling off in early adolescence. However, the levels of participation vary by education. Mothers with less than NVQ2 were most likely to be working nonstandard schedules across early and middle childhood and into early adolescence (between 44% and 59%). By contrast, mothers with NVQ3 were least likely to be participating in these working hours. Mothers with NVQ2 and those with NVQ4 (or more) have very similar probabilities of working nonstandard schedules until their children are age 7, when mothers with NVQ2 decrease their participation in nonstandard work schedules.

Figure 1: Maternal nonstandard work schedules by education and child age

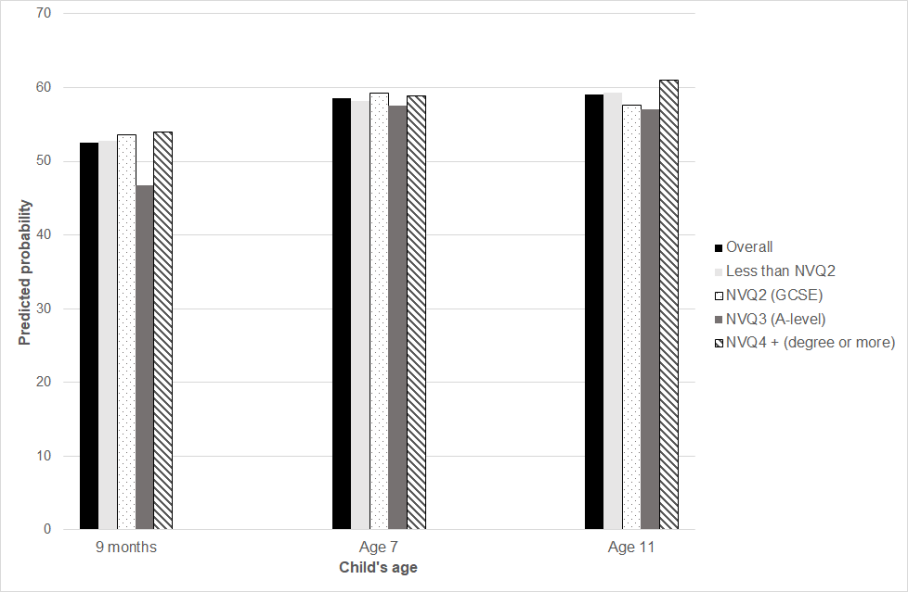


Note: All figures are predicted percentages among employed mothers and weighted with attrition weights at time of interview. Probabilities were adjusted for baseline control variables. Sample sizes vary by child age to allow for changes in employment status: 5,002 at 9 months; 5,128 at age 3, 5,755 at age 5, 6,287 at age 7, and 6,808 at age 11.

Figure 2 examines patterns in nonstandard work schedules for fathers at three time points: infancy, middle childhood, and early adolescence. There was little difference in the probability of working nonstandard schedules by education at all three time periods. Equally striking is the similar trend in nonstandard work across time: all fathers increase their probability of working these schedules when their children are between 9 months

and age 7, before leveling off. However, these results must be applied with caution, given the lack of data on fathers between the first interview and the age-7 interview.

Figure 2: Paternal nonstandard work schedules by education and child age

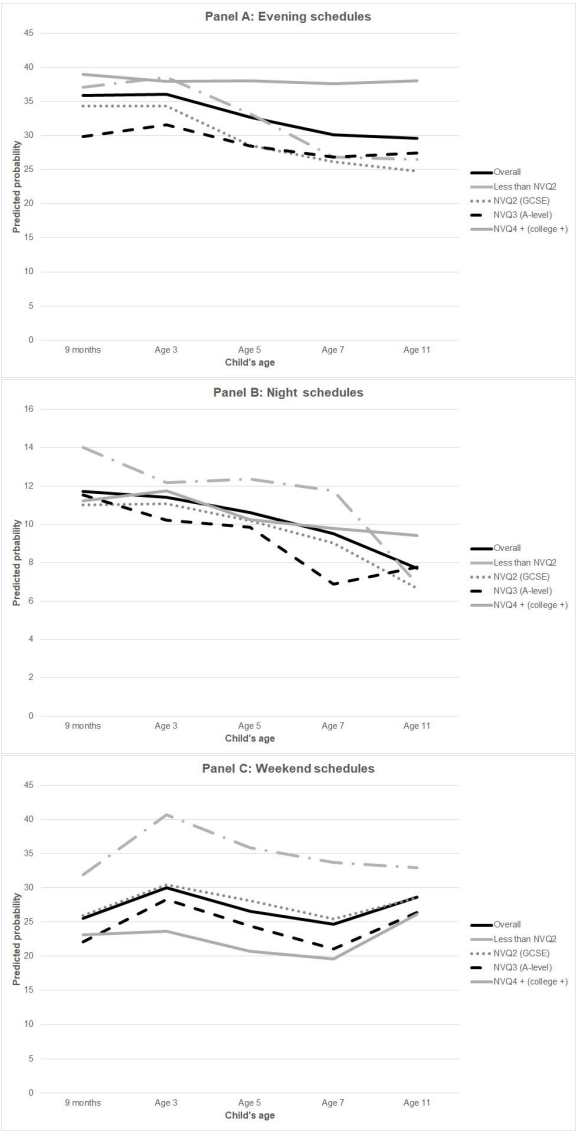


Note: All figures are predicted percentages among employed fathers and weighted with attrition weights at time of interview. Probabilities were adjusted for baseline control variables. Sample sizes vary by child age to allow for changes in employment status: 4,729 at 9 months, 4,750 at age 7, and 4,664 at age 11.

4.3 Prevalence of types of maternal nonstandard work schedules by child age and education

Figure 3 documents the educational pattern in the types of nonstandard work schedules among employed mothers. The most common type of schedule was evening work. Over time, at least 30% of employed mothers were engaged in this type of schedule, peaking in early childhood (36%). Weekend working was the next most common type of nonstandard working (25%–30%). Night schedules were least common during childhood (8%–12%) and declined when children entered adolescence.

Figure 3: Types of maternal nonstandard schedules by education and child age



Note: All figures are predicted percentages among employed mothers and weighted with attrition weights at time of interview. Probabilities were adjusted for baseline control variables. Sample sizes vary by child age to allow for changes in employment status: 5,002 at 9 months; 5,128 at age 3, 5,755 at age 5, 6,287 at age 7, and 6,808 at age 11.

Panel A shows that mothers with NVQ4 (or more) were most likely to work evening schedules across time. The prevalence of evening schedules for mothers in the middle two education groups, NVQ2 and NVQ3, was stable or declined into adolescence and was lower than for the most-educated mothers (26%–34%). The least-educated mothers had similar patterns to the most-educated mothers in early childhood (37%–38%), before following a similar trend to the middle education groups of declining participation in evening work by adolescence.

Panels B and C investigate the education gradient in night and weekend schedules, respectively. Across education levels, mothers decreased their participation in regularly working a night schedule across child age. There was little variation in the probability of working a night schedule by maternal education. Panel C shows that mothers with the least education were most likely to work weekend schedules at all ages (33%–41%). With increasing education there was decreasing prevalence of weekend working.

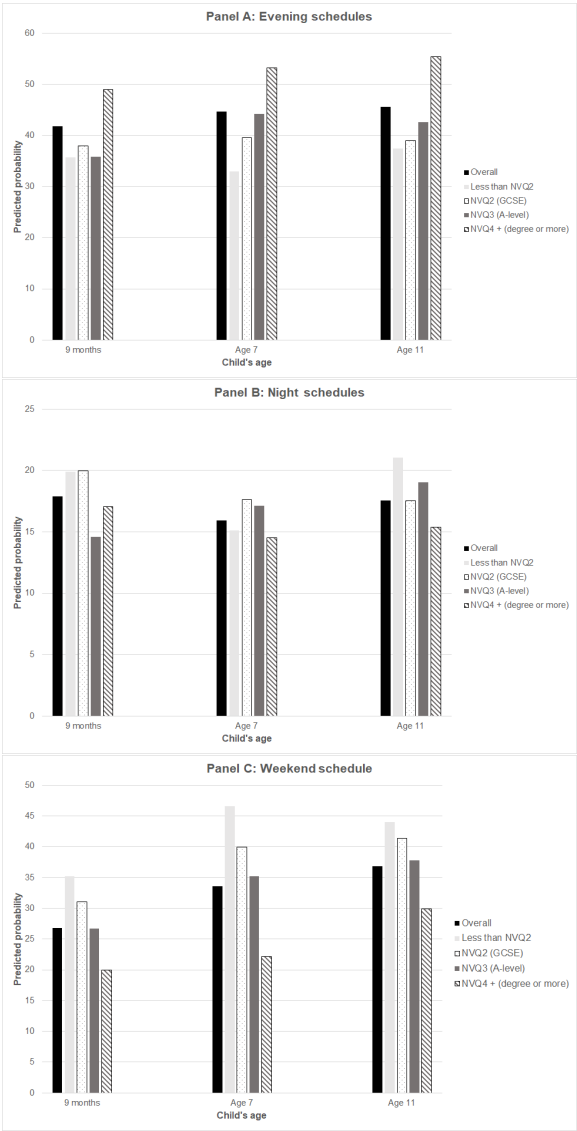
4.4 Prevalence of types of paternal nonstandard work schedules by child age and education

Figure 4 examines education patterns in the types of nonstandard work schedules among employed fathers. Similar to mothers' patterns, evening shifts were the most common type of nonstandard work schedule among fathers: 40%–45% of employed fathers regularly worked in the evenings. Akin to mothers, weekend working was the next most prevalent type of nonstandard work (27%–37%) and night schedules were the least common (16%–18%).

Panel A shows that fathers with NVQ4+ were most likely to work evening schedules and their overall trend increased from infancy to early adolescence (49%–55%). Fathers with NVQ3 also increased their participation in evening schedules over time. The least-educated fathers, those with NVQ2 or less, had lower prevalence of working in the evening compared with their more-educated counterparts, and across time these fathers had a fairly steady prevalence.

Panels B and C investigate educational patterns in fathers' night and weekend schedules, respectively. With respect to night shift working, there did not appear to be a consistent educational gradient. Turning to weekend working, there was a similar pattern to that of mothers: fathers with the least education were most likely to regularly work weekends (35%–47%) and with increasing education the prevalence declines. Over time, unlike mothers, fathers in all education groups increased their prevalence of working weekends.

Figure 4: Types of paternal nonstandard schedules by education and child age



Note: All figures are predicted percentages among employed fathers and weighted with attrition weights at time of interview. Probabilities were adjusted for baseline control variables. Sample sizes vary by child age to allow for changes in employment status: 4,729 at 9 months, 4,750 at age 7, and 4,664 at age 11.

4.5 Sensitivity analyses

Additional analyses (not shown) assessed whether the results were robust to changes in samples, methodology, and control variables. Substantive findings did not differ in analyses that allowed for inter-wave attrition, nor did they change in samples restricted to continuously employed mothers and fathers. Models that did not adjust for controls did not alter the pattern of results. Similarly, the findings remained robust when adding partner's employment as a baseline control. Lastly, logit models estimated similar patterns in education.

5. Discussion

The current descriptive study investigates the prevalence and the educational gradient of nonstandard work schedules among mothers and fathers in a contemporary British cohort in order to provide baseline prevalence estimates of overall nonstandard work schedules and types of nonstandard work schedules across the first decade of a child's life. The second demographic transition has underscored that children's life chances and social mobility are increasingly contingent on parental education. This study extends the current literature on educational gradients in parental nonstandard work by capturing a longer window of employment trajectory after a child's birth and incorporates information about fathers.

One of the findings that emerged from this analysis is that nonstandard work is common among employed mothers and fathers across childhood. Over 40% of employed mothers regularly work nonstandard schedules and over half of employed fathers at any one point in time engage in work that is outside standard daytime hours. For both mothers and fathers, evening shifts were the most common type of nonstandard work schedule, followed by weekend and night working. These findings document the pervasiveness of a social phenomenon that has been given little attention in the UK context. Mothers and fathers are engaging in a work life that could potentially be asynchronous with family time, parental time investment, and time with one's partner. Future research in the UK should prioritize the understanding of family dynamics in the context of parents working nonstandard hours.

Another finding from this study is that the education gradient of nonstandard work is contingent on type of schedule. There was not a clear and consistent education gradient in overall nonstandard work among mothers. Although mothers with less than NVQ2 (or high school) had the highest predicted rates of regularly working nonstandard schedules across childhood, nonstandard schedules among more-educated mothers did not follow a stepwise gradient. Contrary to findings elsewhere (Pilkauskas, Waldfogel, and Brooks-

Gunn 2016), mothers with NVQ3 (some college) were the least likely to work nonstandard schedules across child age. Fathers did not differ in their probability of working nonstandard schedules by education but their overall participation was higher compared to mothers. The education gradient in overall nonstandard work found in the US literature (Presser and Ward 2011) may not be universal – or at least it is less pronounced in the UK context, although the US evidence did not examine parents of young children. It could be that parents are choosing nonstandard schedules because of the potential opportunities for family life, such as more equal distribution of caregiving and household responsibilities (Mills and Täht 2010) and the availability of formal childcare (Bünning and Pollmann-Schult 2016). Although parents may choose to work such schedules and may prefer the flexibility afforded by working outside standard hours, the cost due to stress and fatigue cannot be ignored (Rosenbaum and Morett 2009). Equally, the quality of nonstandard work and the occupations associated with such work may vary considerably. Nonstandard work schedules are present in a range of occupations and industries, but, according to US data, they are more prevalent in service and blue-collar sectors with low wages. Future descriptive analyses are warranted to untangle differences in education, occupation, and quality of nonstandard work, and whether inequalities in family wellbeing result from these differences.

By contrast, college-educated mothers and fathers were most likely to work evening schedules across childhood. The least-educated mothers and fathers were most likely to regularly work weekends. Is working evenings and weekends consequential for families? On the one hand, working evenings is associated with less time helping children with their homework, and missing dinner and bedtime routines (Wight, Raley, and Bianchi 2008). On the other hand, evening shifts are linked to more breastfeeding (Zilanawala 2017), and, in comparison to working nights, mothers working evenings could be less fatigued and more involved with children. Also, mothers and fathers may switch to evening and weekend shifts to better combine childcare and paid work.

This study has some limitations. There is no information on nonstandard employment between interviews in the MCS. This means we may be underestimating the prevalence of nonstandard work among parents. Parents were not asked about starting and stopping times. The nonstandard work measure used in MCS is based on self-reporting and uses predetermined categories and times (e.g., night 10pm – 7am). Thus, it is not possible to ascertain what proportion of working hours occurred during standard and nonstandard times. However, this is a general concern for most research on parental nonstandard employment using secondary data (Dunifon et al. 2013). Future analyses should consider combining self-reporting and time-diary data to explore sensitivity in the prevalence of nonstandard work due to survey instrument. The analyses used baseline education to avoid changes in education level resulting from employment. However, parents in the sample may have increased their education since the first interview,

resulting in a sample biased educationally downward, and potentially misstated prevalence estimates. Lastly, there was no information on choice in working nonstandard schedules. Some parents may choose to opt in or out of such work schedules depending on child characteristics or other household circumstances, which means the prevalence estimates in this study may be misstated. However, this study did adjust for several background characteristics that may select some parents into nonstandard working.

This study offers important insights into nonstandard work schedules at a time when diverse work schedules are becoming increasingly common in the UK, and creates a foundation for understanding nonstandard work schedule experiences among British parents in a contemporary cohort. Equally, the descriptive findings provide a baseline to further our understanding of inequalities in child development resulting from types of nonstandard shifts.

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