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Nonstandard work schedules in the UK: What are the implications for parental mental health and relationship happiness?

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ABSTRACT

This article investigates the associations between nonstandard work schedules, parents' mental health and couple relationship happiness across childhood using the Millennium Cohort Study, a longitudinal, population-based data set of births in the UK. Using individual fixed effects models, we investigated the relationship between maternal and paternal nonstandard work schedules, examining both separate and joint work schedules and mental health and relationship happiness. Although we did not observe any associations between mothers' nonstandard work schedules and their mental health, we did find regularly working night schedules was associated with lower relationship happiness, and particularly so during the school-age period. Fathers' evening and weekend work schedules were associated with worse mental health. The joint work schedule in which mothers worked a standard schedule and fathers worked nonstandard schedules was associated with lower relationship happiness for mothers and worse mental health for fathers. These results demonstrate the salience of incorporating fathers' work schedules to understand the challenges and benefits to families of nonstandard work schedules. Our study also emphasizes the significance of investigating the family consequences of nonstandard work schedules in different country contexts.

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KEYWORDS

Parental nonstandard work schedules; mental health; relationship happiness; United Kingdom

Introduction

In the last half century, global economies have faced remarkable transformations to their labor markets. In particular, the growth of the service sector, technological changes and globalized labor markets reducing the cost of labor and access to global consumer markets have increased the demand for services during nonstandard hours, that is, work schedules in evenings, nights and weekends (Presser, 2003). The advent of around-the-clock services, in part due to the deregulation of the labor market in the

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last two decades, and a shift from the male-breadwinner to the dual-earner model has meant a considerable proportion of employees work outside traditional 9-to-5 hours in developed economies (Tammelin et al., 2017). For example, the prevalence of such work schedules is nearly 20–28% in North America (McMenamin, 2007), about 40% of Australian workers and ranges from 15% to 30% within Europe (Eurostat, 2021; Tammelin et al., 2017; Zilanawala, 2017). This revolution in working outside of standard hours has transformed family life and considerable evidence has been generated on the adverse implications of nonstandard work schedules for children's wellbeing, family dynamics and parents' wellbeing (Li et al., 2014).

A hypothesized mechanism between parents' nonstandard work schedules and child health and development is through parental mental health and relationship happiness. Current evidence on the associations between nonstandard work schedules, parental mental health and relationship quality is decidedly mixed, owing to differences in data examined, such as industry specific samples, broad age ranges and nongeneralizable cohorts (Maume & Sebastian, 2012; Mills & Täht, 2010; Perry-Jenkins et al., 2007; Strazdins et al., 2006). Unexplored questions remain regarding the extent fathers' relationship happiness and mental health are associated with their nonstandard work schedules. Lastly, the majority of the current evidence is from the United States (US), which arguably has limited work–family and safety net policies for children and their parents relative to Canada and Western European countries. Implications of parental work schedules depend on social, economic and political context, such as work and family policies, child-care and cultural orientation to work. The attendant question is if the findings from the US on the relationship between parents' nonstandard work schedules and their wellbeing is universal.

This study is guided by ecological theory, which recognizes the interrelationships of family and workplace (Bronfenbrenner, 1986), the family systems perspective, which emphasizes the interconnectedness among family members (Cox & Paley, 1997), and work–family conflict theory, which considers the conflict with both work- and family-related demands and resources (Greenhaus & Beutell, 1985), to examine whether parents' mental health and relationship happiness are associated with their experiences of working evenings, nights and weekends as well as their partners' experiences of working nonstandard schedules. The goal of this research is to provide new evidence on the implications of parents' nonstandard work schedules in a context that is akin to the US in terms of economic structure, but different in policy environment, to bring fresh understanding to the role of the 24/7 economy in the lives of working families. We leverage longitudinal data to estimate the relationship between work experiences and parental wellbeing, as measured by mental health and relationship happiness in this study. Further, we explore associations between work schedules and wellbeing across early childhood and school-age periods, which has been less emphasized in the mental health literature. Increasingly more studies incorporate both mothers' and fathers' nonstandard work schedules and evidence suggests fathers' work schedules also matter for child wellbeing (Li et al., 2020; Miller & Chang, 2015; Zilanawala et al., 2017). We extend the emerging literature on fathers' work schedules and child wellbeing by shifting the attention to the implications of work schedules on parental wellbeing. Thus, we examine fathers' nonstandard work schedules as a separate predictor but also interacted with mothers' work schedules. Couple-level joint work schedules are important

because the degree to which they overlap has important implications on not only parental wellbeing but the household division of labor, parenting activities and the challenges posed by the work–family nexus. Our research questions will be pursued by applying individual fixed-effects models to the Millennium Cohort Study – a nationally representative prospective study of children born in the United Kingdom (UK) between 2000 and 2002.

Theoretical pathways between nonstandard work schedules and parental wellbeing

Three separate theoretical models provide ample reason to expect that regularly working nonstandard schedules could be negatively associated with parents' mental health and relationship happiness. We discuss ecological theory, family systems theory and work–family conflict theory each in turn.

The concern about the possible influence of parental nonstandard work schedules on parental wellbeing can be demonstrated by Bronfenbrenner's ecological theory (1986), which explicates interactions between characteristics and resources of the family system. One element of this theory is the microsystem which includes the settings in which individuals interact, such as the family, schools, neighborhoods and child care centers. Microsystems are influenced by circumstances or events from the exosystem that have consequences for a parent even though he or she does not directly participate in them. In the case of the family system, this might include parents' workplace and parental employment (Repetti & Wang, 2010). Parental employment may diminish family time, disrupt family routines and strain regular interactions between parents. Such changes in family process and relationships may in turn influence not only parental wellbeing but child development (Strazdins et al., 2006).

The ecological theory motivates the broader interrelated environments families to encounter, whereas the family systems theory explicates the potential avenues through which mental health and relationship happiness may be associated with nonstandard work schedules. Specifically, this theory relies on the interdependence between family members and the extent these interrelated relationships influence individual wellbeing and family functioning (Cox & Paley, 1997). This perspective implies that characteristics of and changes occurring for one family member may affect other relationships connected to this individual. Family system theory has potential implications for understanding continuity in family functioning when one or more parents work a nonstandard work schedule. This idea highlights the transition points in the family life cycle and the roles and attitudes of partners, and the quality of the interactions between them in the face of managing family life. For example, it has been suggested that working desynchronized working hours or 'tag-team parenting', enables parents to minimize or avoid child care costs and maximize parental time with children and potentially lead to a more equal gender division of care (Riley & Glass, 2002). Although, even if parents choose to engage in tag-team parenting, such schedules and household employment arrangements may be stressful for parents' wellbeing. Nonstandard work schedules may interfere with the maintenance of family routines and social activities, which are instrumental for closeness. Working in the evenings or at nights may be accompanied by strains which in turn affect parental mental health and the way in which parents interact with each other. Thus,

investigating one parent's work schedule and wellbeing is incomplete without considering the partner's experiences.

Negative associations between nonstandard work schedules and parental mental health and relationship happiness are also predicted from the work–family conflict perspective. This model posits time and strain based conflicts resulting from competing and conflicting demands of work and life (Greenhaus & Beutell, 1985). Workers may experience or perceive role conflict between work schedules and home life, and the resulting stress can spill over to affect family life (Davis et al., 2008). For example, the bad moods, low energy and fatigue from working in the evenings or nights may affect a parent's mental health and interactions with their partner.

Collectively, all three theoretical frameworks refer to the quality and tone of social interactions between parents influenced by their respective work schedules. Work schedules, particularly during unsociable hours, may impede a parent's psychological resources and strain the interactions between parents, regardless of who is working that schedule. The scope of our study is to interrogate the associations between both parents' work schedules and individual and partner's wellbeing because of the salience of both parents to the organization of home life. One parent's nonstandard work schedule may lead to lower relationship happiness on the part of the other parent, because stress and exhaustion from such work schedules could hamper parental communication. Thus, considering both parent's work schedules jointly reinforces the interpersonal interactions, such as negotiations, decision making and balancing tasks and responsibilities, that continuously occur in managing home life.

Nonstandard work schedules and parental mental health

Investigating the mental health of parents who work nonstandard schedules is salient because mental wellbeing may disrupt sensitive, responsive and positive parenting behaviors (Hsueh & Yoshikawa, 2007), which in turn have long-term effects on children's life courses (Raby et al., 2015). Nonstandard work schedules may lead to depressive symptoms due to mental stress, fatigue, disruption to circadian rhythms (Moreno et al., 2019), in the case of night working and interference with shared family time. This argument is consistently made in the family literature, but the empirical evidence is mixed and limited. For example, using US data on parents, studies show that working nonstandard schedules, including evening or night schedules, in the first year of a child's life was related to more depressive symptoms among mothers and fathers (Daniel et al., 2009; Perry-Jenkins et al., 2007), whereas, in a small sample of economically disadvantaged mothers, also in the US, evening/night schedules were not associated with maternal depression across the child's first year of life (Grzywacz et al., 2016). Although, the aforementioned studies did not use nationally representative samples. Using more generalizable data on US mothers and a fixed-effects model, Shepherd-Banigan et al. (2016) found null associations between mothers' nonstandard work schedules and depressive symptoms in the first two years after birth.

The literature is equally inconclusive about cross-partner associations. A US study focused on new parents found no cross-over associations between one partner's work schedule to the other's mental health (Perry-Jenkins et al., 2007). On the other hand, in a Canadian study using population data, mothers experienced more depressive

symptoms across childhood and into early adolescence when both parents work nonstandard work schedules (Strazdins et al., 2006).

Nonstandard work schedules and relationship happiness

There is a growing body of evidence linking parents' nonstandard work schedules to relationship quality, family cohesion, union dissolution and conflict (Davis et al., 2008; Hertz & Charlton, 1989; Maume & Sebastian, 2012; Mills & Täht, 2010; Mott, 1965; Presser, 2000). Researchers within this line of research point to the concern that a parent working on days or at times that are reserved for family life may inhibit full participation in caregiving and household responsibilities, which in turn can hamper partnership cohesion and stability. Seminal studies focused on partnership quality found increased family arguments, interference with companionship and increased marital conflict resulting from one family member working a nonday shift (Hertz & Charlton, 1989; Mott, 1965). Presser (2000) found an increased incidence of divorce among couples in which wives worked night schedules. The perceived quality of intimate relationships has consequences for mental and physical health, subjective wellbeing and adult identity (for a full review, see Fincham and Beach (2010)).

Focusing on studies with findings on relationship happiness and its association with couples' nonstandard work schedules, evidence is limited and conflicting. For example, respondents' or their spouses' night work schedules in a US sample were related to perceptions of marital instability, particularly among parents of young children (Davis et al., 2008). Further evidence of an association between the late shift and marital quality comes from a small sample of American retail workers in which men's evening or night shifts were related to lower marital quality (Maume & Sebastian, 2012), irrespective of the presence of children in the household. In contrast, Perry-Jenkins et al. (2007) found that in a sample of new American parents, fathers' rotating shifts were not related to reports of relationship conflict, regardless of the type of nonstandard shift and additionally, there was no evidence of cross-partner associations. These null findings were replicated in a Dutch sample, which equally found no cross-partner associations and no substantial negative associations with other types of working schedules (Mills & Täht, 2010).

Relationship between types of nonstandard work schedule and parental wellbeing

The consequences of nonstandard work schedules may be contingent on the type of schedule. Physiological evidence from night working suggests the pernicious effects of such work schedules on individual and family wellbeing because of the resulting disruptions to biorhythms and sleep cycles (Moreno et al., 2019). Night working may also influence the 'sociorhythms' of daily life by desynchronizing activities with family, friends and institutional arrangements (Mills & Täht, 2010). On the other hand, working nighttime schedules may reduce the negative effects of work–family conflict on parenting stress among unpartnered mothers if these work schedules are used as a strategy to integrate work and family roles using informal childcare support (Hwang & Jung, 2019). Although Hwang and Jung focused on unpartnered mothers and argued that nonstandard work schedules may offer a break from parenting, using social and family support,

a similar attempt to integrate work and family domains could also be reflected among dual-earner couples who optimize their nonoverlapping work schedules to accommodate childcare. It has been hypothesized that evening working may limit sunlight exposure which may compromise a worker's mental health (Rosenbaum & Morett, 2009). Time-use data has also shown that evening and night schedules were related to a reduction in family leisure time and time with one's partner (Rapoport & Le Bourdais, 2008; Wight et al., 2008), which may, in turn, create interpersonal distress and relationship conflict. In contrast, Presser (2003) reasoned that weekend employment had more modest effects on family life, perhaps because sleep and physiological changes are minimized.

Overall, we find a strong conceptual argument for adverse associations between nonstandard work schedules and parental mental health and relationship happiness, and particularly for evening and night schedules. However, there is a paucity of studies examining the relationship between nonstandard work schedules and these parental outcomes, the empirical findings are mixed, and there is insufficient evidence from the UK context. These gaps demonstrate the need for more knowledge on this issue.

Nonstandard work schedules in the UK

Cross-national studies examining the consequences of nonstandard work schedules on the family environment highlight the importance of country context in moderating any observed associations (Anttila et al., 2015; Hook & Wolfe, 2013; Mills & Täht, 2010; Tammelin et al., 2017). For example, Anttila et al. found the adverse relationship between nonstandard work schedules and work-life balance was largest in European countries in which such schedules were the least common. Evidence also suggests strain- and time-based work-family conflict resulting from nonstandard schedules varies across countries (Tammelin et al., 2017), and similar heterogeneity in work schedule associations were found for children's wellbeing (Rönkä et al., 2017), fathers' parenting (Hook & Wolfe, 2013) and childcare (Verhoef et al., 2016).

Broadly it is unsurprising that the consequences of nonstandard work schedules on families are sensitive to social policy context given the substantial variation in welfare and labor institutions supporting work-family balance (Gornick & Heron, 2006), as well as the heterogeneity in how jobs are organized and regulated across countries (Gornick & Meyers, 2003). Liberal market economies like the UK have used deregulation and flexibilization of their labor markets to decrease unemployment (Mosher & Trubek, 2003). Importantly these policy changes are related to lower levels of union and collective agreement coverage and a more *laissez-faire* approach to the regulation of working times and working conditions (Glassner et al., 2011). Arguably a country like the UK with more modest union presence and coverage under collective agreements is likely to have less favorable regulations on working times and conditions for employment that involves nonstandard work schedules. In contrast, stronger workers' rights and good working conditions in coordinated economies, such as the Nordic countries and the Netherlands, may be in a better position to mitigate the potential negative effects of nonstandard work schedules on family wellbeing (Mills & Täht, 2010).

The cross-national studies are instructive for our current study, in which we use nationally representative cohort data from the UK that are similar to the longitudinal surveys used in the US research and offer contrasting policy and social contexts. Descriptively

the prevalence of nonstandard work schedules in the UK has remained fairly level over the last two decades. In the latest official statistics from 2019, 19% of employees work nonstandard schedules and men consistently have a higher prevalence compared to women (20.7% vs. 17.4%) (Eurostat, 2021). Despite a larger economy, overall figures and differences by gender in the US are comparable (Enchautegui, 2013).

The provision and extent of family-friendly policies in the UK may influence work and family dynamics and moderate the associations between nonstandard work schedules and parental wellbeing. The US may have cultural and linguistic similarities to the UK, and both are liberal welfare states, but there are stark differences on policies available to working families in both settings. Starting in the early 2000s, policies supporting families with young children expanded in the UK in the areas of parental leave, tax credits and child care benefits. Employee and welfare policies in the UK ensure employees who are not in standard employment enjoy the same benefits and protections as those in standard work schedules, such as sick days, paid annual vacation days and universal health insurance rather than employer provided (Ray et al., 2013). Additionally, UK workers are subject to European Union legislation known as the Working Time Directive, which covers regulations on working times and conditions, such as the right to rest periods (Gornick & Meyers, 2003). Included in the Working Time Directive are restrictions on weekly work hours and excessive night work, but workers can opt-out of these limitations. In the US, labor market regulations and family policy provisions are low, and workers in nonstandard schedules lack protection (Hook & Wolfe, 2013). Equally, child care is expensive in both the US and UK (Hook & Wolfe, 2013), but there is a greater provision of publicly funded childcare in the UK for 3–5 year olds. Nevertheless, after-school care is expensive and harder to find outside regular daytime hours (Sandstrom et al., 2012; Statham & Mooney, 2003). Thus, the challenges of securing evening, night or weekend child care and the potential lack of choice in working nonstandard hours may be features that are associated with parental wellbeing and family dynamics in both contexts.

The current study

The contradictory findings on the relationship between nonstandard work schedules, mental health and relationship happiness are unsurprising given the range of types of data, sample and approach in considering both parents' work schedules. In an effort to reconcile these findings, we make new contributions in a number of ways. The current evidence base has a distinct US focus and we extend the literature by examining the UK context. Additionally, relative to the US, research on the consequences of such work schedules on families has lagged in the European context, with the exception of a handful of recent work (Rönkä et al., 2017; Tammelin et al., 2017; Verhoef et al., 2016; Zilanawala, 2017, 2017), none of which take up the question of the relationship between work schedules and fathers' and mothers' mental health and relationship happiness. However, these studies reinforce the importance of social policy contexts influencing work and family dynamics and suggest the need to investigate the role of parents' nonstandard work schedules on parental wellbeing in the UK.

Another contribution to the literature is that our study examines a longer period of childhood, namely from infancy to early adolescence. The majority of the existing literature has focused on the early years of a child's life, which may prove to be particularly

exhausting, intensive and stressful for parents (Perry-Jenkins et al., 2007). The longer window of childhood used in this study allows for an examination of work schedule associations across different child developmental periods, such as infancy, middle childhood and early adolescence.

Lastly, we contribute to the incipient evidence base on fathers' nonstandard work schedules and mental health. More generally, the scholarship within the nonstandard work literature has increased its attention to the role of fathers' nonstandard work schedules on family life. Briefly, research has shown nonstandard work schedules among fathers are associated with parenting (Pilarz et al., 2020; Weinshenker, 2016), children's socioemotional adjustment (Han, 2020; Kaiser et al., 2019) and children's risk for obesity/overweight (Zilanawala et al., 2017). Clarifying the relationship between fathers' nonstandard work schedules and mental health furthers our understanding of the family system particularly as psychological wellbeing is relevant to support children's developmental outcomes (Gupta & Ford-Jones, 2014). Equally, the joint employment of mothers and fathers needs to be considered, given the tendency for parents to make decisions about family and employment routines together (Benson & Mokhtari, 2011). Our study is the first to examine both parent's work schedules and mental health across childhood and into early adolescence in the UK.

Taken together, we investigate the associations between nonstandard work schedules and mental health and relationship happiness. Our analyses consider both the separate and joint work schedules of mothers and fathers. We examine the associations of parental nonstandard work schedules with wellbeing using a large, national, longitudinal, population-based data set of births in the United Kingdom, an underdeveloped context in the nonstandard work schedule literature. We use five waves (and three for fathers) of panel data to examine these associations over nearly the first decade of a child's life and use individual fixed-effects models to examine changes within individuals, thus eliminating unobserved time invariant factors that may bias empirical results of cross-sectional data.

Data and methods

Data and sample

We draw on data from the Millennium Cohort Study (MCS), an ongoing longitudinal study following a cohort of approximately 19,000 babies born in the UK between September 2000 and January 2002. 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 (at least 98% of whom are mothers) and resident partners. Families were first interviewed when children were nine months old and were followed up at ages 3, 5, 7, 11, 14 and 17 (Joshi & Fitzsimons, 2016). The average response rate for the recruited 19,244 families across the first five surveys was nearly 74% (Studies, 2020). Of partner interviews, which were conducted among 80% of interviewed families, most respondents were fathers (nearly 94%; authors' calculations) and, on average, 87% of families with resident partners had responses from both mothers and fathers.

The MCS directly surveyed both mothers and fathers about their work schedules. As our research questions are investigating features of employment, we excluded parents who were not working. Mothers were asked about their nonstandard work schedules at baseline (9-month wave) and the first four follow-up waves. For mothers, we pooled data from the first five waves, resulting in 69,898 person-wave observations that had data on mental health and employment characteristics (56,021 for relationship happiness). We excluded person-wave observations in which mothers reported not working (removed $n = 30,744$ for mental health and $n = 22,429$ for relationship happiness). That is, we only use waves in which a mother reports working either a standard or nonstandard work schedule. Our final analytic sample predicting mental health included 37,814 person-wave observations (32,313 for relationship happiness) on 12,646 unique mothers (11,375 for relationship happiness) who were working at any wave and had no missing data on covariates.

Unlike mothers, data on nonstandard work schedules among fathers were collected at baseline and when children were 7 and 11 years old only. We pooled these three waves, resulting in 29,468 person-wave observations that had data on mental health and employment characteristics (29,292 for relationship happiness). We excluded person-wave observations in which fathers reported not working (removed $n = 3,052$ for mental health and $n = 2,947$ for relationship happiness). Our final analytic sample predicting mental health are based on a sample of 23,664 person-wave observations (23,440 for relationship happiness) on 11,675 unique fathers (11,580 for relationship happiness) who were working at any wave and had no missing data on covariates.

In analyses using both mothers' and fathers' work schedules jointly as the key predictor, we used three waves (9 months, age 7 and age 11 surveys). Pooling these three waves and conditioning on person-waves with information on mothers' mental health resulted in 29,258 person-wave observations (29,075 for relationship happiness). We removed person-wave observations in which neither parent was not working (excluded $n = 11,798$ for mental health and $n = 11,675$ for relationship happiness). Our final analytic sample for our joint work schedule regressions predicting mothers' mental health is based on 16,920 person-wave observations (16,794 for relationship happiness) that had complete data on covariates. Similarly, for fathers, pooled data began with 29,279 person-wave observations for mental health (29,097 for relationship happiness) and then removed person-waves in which neither parent was working (excluded $n = 11,922$ for mental health and $n = 11,772$ for relationship happiness). Regression analyses predicting fathers' mental health was based on 15,699 person-wave observations (15,594 for relationship happiness) after removing person-wave observations with incomplete data on covariates. Missingness on covariates among mothers was less than 2.5% and among fathers was less than 3%. In all analyses, we applied survey weights to take account of the survey's design, including clustered sampling and stratification.

Measures

Mental health. At the 9-month interview, parental mental health is measured using the Malaise Inventory, a set of 9 self-completion questions measuring levels of recent non-specific psychological distress or depression (Rutter et al., 1970). The questions cover emotional disturbance and associated physical symptoms. Scores range from 0 to 9 (α

= 0.70). In surveys since age 3, parental mental health was measured with the widely used Kessler 6 scale (Kessler et al., 2002). This scale was used at all follow-up waves used in this analysis and had scores ranging from 0 to 24 ($\alpha = 0.89$). Responses to the items were summed to create a scale and then standardized to have a mean of zero and a standard deviation of one. Unstandardized scores were only used in the descriptive tables. Higher scores reflect poorer mental health or more depressive symptoms. 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).

Relationship happiness. Parents in coresidential (married or cohabiting) relationships were asked how unhappy or happy they were in their relationships on a scale that ranged from 0 (*very unhappy*) to 6 (*very happy*). Single-item measures of different domains of subjective wellbeing have a satisfactory level of reliability (Diener et al., 2013). Similar to mental health, we standardized scale scores for regression analyses and present unstandardized continuous scale scores in descriptive tables. Higher scores reflect more relationship happiness.

Nonstandard work schedules. Maternal nonstandard work schedules were measured at each survey wave from baseline to the age 11 interview. Fathers' work schedules were only asked at baseline, age 7 and age 11 interview. Parents who reported being in paid work in the last week were asked if they regularly (daily/weekly) worked each type of nonstandard work schedule: evenings (between 6pm–10pm), nights (10pm–7am) and weekends. These three schedules were not mutually exclusive because the MCS allowed parents to choose multiple options for nonstandard work schedules. We only used information on work schedules for those who were currently employed at the time of the interview or for those who reported a job and did not work in the past week for reasons other than parental leave. In separate analyses not shown here, including parents on parental leave did not substantively alter the results. For each type of nonstandard schedule, respondents were coded as 1 if they worked a particular schedule or 0 if otherwise. Respondents 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.

In regression analyses, we used two measures of parental work schedules. We first considered whether parents worked any nonstandard work schedule (i.e. evenings, nights or weekends) versus working standard schedules only (i.e. responding 'no' to all nonstandard work questions). Second, we considered the timing of work and investigated the types of nonstandard work schedules: worked evenings; worked nights; worked weekends; and worked standard hours only (reference category). Examining each type of nonstandard schedule allows us to estimate the association between working a specific type of nonstandard schedule versus working standard hours only, holding constant working during other nonstandard work schedules. Each of these two measures was created for mothers and fathers separately.

Lastly, we examined joint parental work schedules by creating a mutually exclusive variable of four categories: both parents working standard (reference), both parents working nonstandard, mother nonstandard/father standard and mother standard/father nonstandard.

Control variables. We controlled for time-varying variables for both mothers and fathers that were associated with nonstandard work schedules, mental health, and relationship happiness. These included several employment and economic characteristics,

measured at each wave: a continuous variable for weekly work hours, occupation (Managerial/professional (reference), Intermediate, Small employer/self-employed or Lower supervisory/technical), and weekly net family income. We also included parental age (in years) and child age (in months). Three time-varying characteristics that captured changing circumstances in the household were family structure (one vs. two parent family), whether a grandparent lives in the household and number of siblings of the cohort member. Our analytic method controls for all time-invariant variables (see below), but we include descriptive statistics for parent's race/ethnicity and education from the

Table 1. Descriptive statistics of the pooled sample of employed mothers, by schedule (mean or percent).

Variable	Full Sample		Nonstandard		Standard		p value
	Mean or %	SD	Mean or %	SD	Mean or %	SD	
Mental health (0–24)	2.80	3.26	2.93	3.37	2.71	3.17	0.00
Relationship happiness (0–6) (<i>n</i> = 32,313)	4.72	1.41	4.69	1.42	4.75	1.41	0.01
Nonstandard schedule							
Evening	32.87		77.69		—		—
Weekend	24.33		57.49		—		—
Night	9.76		23.07		—		—
Standard (no to all nonstandard)	57.69		—		—		—
Time-stable characteristics							
Education							
No qualifications	4.33		5.63		3.37		0.00
Overseas	1.11		0.98		1.21		0.21
NVQ1	5.93		6.87		5.25		0.00
NVQ2 (GCSE)	29.01		28.69		29.25		0.49
NVQ3 (A-level)	15.78		14.45		16.76		0.00
NVQ4+ (degree or more)	43.83		43.38		44.16		0.39
Race/ethnicity							
White	93.72		94.19		93.37		0.04
Indian	1.76		1.74		1.77		0.88
Pakistani/Bangladeshi	0.91		0.67		1.08		0.00
Black/Black British	2.11		1.95		2.23		0.20
Other	1.50		1.45		1.54		0.64
Time-varying covariates							
Weekly work hours							
1–19 hours	37.05		36.77		37.26		0.52
20–34 hours	38.80		36.27		40.66		0.00
35–44 hours	19.88		19.30		20.31		0.09
45+ hours	4.26		7.66		1.76		0.00
Occupational categories							
Managerial/Professional	40.55		40.75		40.40		0.67
Intermediate	22.80		12.81		30.13		0.00
Small emp./Self-emp.	8.05		10.43		6.31		0.00
Lower supervisory/technical	3.73		5.11		2.72		0.00
Semi-routine and routine	24.86		30.90		20.44		0.00
Age (in years)	35.67	6.40	35.05	6.67	36.13	6.15	0.00
Child age (months)	66.86	43.26	65.52	42.95	67.85	43.46	0.00
Weekly net family income	591.88	304.09	570.35	303.02	607.67	303.91	0.00
Two-parent family	87.30		87.60		87.20		0.41
Presence of grandparent	3.46		3.82		3.19		0.02
Number of siblings	1.07	0.88	1.12	0.90	1.03	0.86	0.00
Person-year observations	37,814		15,984		21,830		

Note: Data were pooled across the first five waves of MCS. Higher scores on mental health indicate worse mental health whereas higher scores on relationship happiness indicate higher levels of happiness. The *p* value column denotes statistical differences between nonstandard and standard work schedule observations.

Small emp. = Small employer. Self-emp. = Self-employed. NVQ = National Vocational Qualification. GCSE = General Certificate of Secondary Education.

baseline survey in [Table 1](#). Race/ethnicity was categorized as White, Indian, Pakistani/Bangladeshi, Black/Black British or Other. Education level was measured with the following categories: none, overseas, National Vocational Qualification (NVQ) 1, NVQ2, NVQ3 or NVQ4+. The NVQ levels, in progressive order, are nearly equivalent to less than high school completion, high school degree, some college education and college degree or higher (Crosby & Hawkes, 2007).

Statistical analysis

Analyses are based on pooled data across five and three waves for mothers and fathers, respectively. To address our research questions on the associations between parents' non-standard work schedules and parental wellbeing, we build on previous empirical studies by taking account of unobserved selection into nonstandard work schedules which may be related to parental mental health and relationship happiness. It is plausible that unobserved time stable characteristics that influence a parent's choice of employment may be associated with mental health and relationship happiness. For example, personal work and family orientations along with person-specific response tendencies to poor mental health and lower relationship quality may prompt a parent to choose specific work schedules. Individual fixed effects regressions can account for unobserved heterogeneity due to this selectivity and produce less biased estimates compared to ordinary least squares regression (Allison, 2009). Fixed effects models estimate how changes in nonstandard work schedules influence changes in wellbeing by differencing out time-invariant, individual-level characteristics, such as gender, personality and family characteristics. Finally, this approach excluded respondents who exclusively worked standard or nonstandard schedules across all waves. That is, the variation in such models relies on mothers and fathers who change their work schedules across the panel. Overall, 35% of mothers in our sample (29% of fathers) experienced at least one change in work schedules across the five waves (3 waves for fathers).

Our first set of results estimated individual fixed-effects models that examined the association between parental nonstandard work schedules (separately) and mental health and relationship happiness. Model 1 excluded covariates and Model 2 added time-varying characteristics. Next, we created a categorical variable to reflect both mothers' and fathers' nonstandard work schedules jointly. Using the interacted variable, we predicted each parent's mental health and relationship happiness from joint parental nonstandard work schedules. In these fixed effects regressions, models for which were described above, the reference category was both parents working standard schedules. Control variables in these joint employment regressions aligned with the parent associated with the outcome examined. All standard errors were clustered at the individual level, and all analyses were weighted.

Results

Descriptive Statistics

[Table 1](#) reports descriptive statistics of all analysis variables and by work schedule type for employed mothers. During the observation period, slightly more than 40% of employed

mothers worked a nonstandard schedule. The most prevalent type of nonstandard work schedule was evening working (32.9%). The next most prevalent was weekend working (24.3%), followed by night schedules (9.8%), the least prevalent. [Table 1](#) also highlights differences in mothers who worked nonstandard and standard schedules. Mothers who worked nonstandard schedules reported worse mental health scores when compared with mothers working standard schedules. Mothers who regularly worked nonstandard work schedules across the panel had a higher prevalence of long working hours of 45+ and lower occupational categories, and had lower family income relative to their peers in standard work schedules. Additionally, mothers who worked nonstandard schedules were more likely to lower educational attainment relative to mothers who worked standard schedules.

[Table 2](#) presents descriptive results for the pooled sample of employed fathers and by work schedule type. Over the panel, more than half of fathers worked nonstandard schedules (56.9%). Similar to mothers, the most common type of nonstandard work schedule was evening (44.4%), followed by weekend (30.8%) and the least common was night working (17.2%). Fathers who worked nonstandard schedules reported worse mental health compared with fathers who worked standard schedules. Nearly 46% of nonstandard schedules was characterized by more than 45 hours of weekly work compared to nearly 20% of standard schedules. Additionally, fathers who worked nonstandard schedules were considerably more likely to be in intermediate and small employment occupation categories and to have higher weekly family income.

Maternal and paternal nonstandard work schedules, mental health and relationship happiness

[Table 3](#) presents results from fixed effects analyses, relating within-person changes in work schedules to changes in mental health and relationship happiness. These results suggest that movement into a nonstandard schedule, both overall and types of nonstandard work schedules, was not associated with mental health for mothers. Whereas for fathers, nonstandard work schedules were associated with 0.06 standard deviations higher (worse) mental health scores (see [Model 2, Panel 1](#)). Similarly, fathers who moved into an evening or weekend schedule had worse mental health scores ($B = 0.06$ and 0.05 , respectively; [Model 2, Panel 2](#)). These effect sizes are small in magnitude, indicating small associations between fathers' nonstandard work schedules and mental health.

[Table 4](#) presents associations between work schedules and relationship happiness for mothers and fathers. Among mothers, the overall measure of nonstandard work schedules was not related to relationship happiness. Although, night schedules were associated with 0.08 standard deviations lower relationship happiness scores ([Model 2, Panel 2](#)). Fathers' nonstandard work schedules were not significantly associated with relationship happiness.

Joint parental work schedules and parental outcomes

In [Table 5](#), we present fixed effects models examining the association between joint measures of parental work schedules and mental health and relationship happiness for each parent in two-parent families. In the top panel, we show results for mothers'

Table 2. Descriptive statistics of the pooled sample of employed fathers, by schedule (mean or percent).

Variable	Full Sample		Nonstandard		Standard		p value
	Mean or %	SD	Mean or %	SD	Mean or %	SD	
Mental health (0–24)	3.07	3.22	3.15	3.24	2.95	3.20	0.01
Relationship happiness (0–6) (<i>n</i> = 23,440)	4.80	1.39	4.81	1.39	4.80	1.38	0.50
Nonstandard schedule							
Evening	44.40		78.10		—		—
Weekend	30.84		54.25		—		—
Night	17.22		30.28		—		—
Standard (no to all nonstandard)	43.14		—		—		—
Time-stable characteristics							
Education							
No qualifications	6.62		6.54		6.72		0.68
Overseas	2.10		2.24		1.92		0.17
NVQ1	6.04		6.08		5.99		0.83
NVQ2 (GCSE)	26.70		26.37		27.14		0.34
NVQ3 (A-level)	16.14		15.44		17.06		0.02
NVQ4+ (degree or more)	42.40		43.34		41.18		0.02
Race/ethnicity							
White	92.03		91.02		93.35		0.00
Indian	2.07		2.38		1.67		0.01
Pakistani/Bangladeshi	2.50		3.15		1.64		0.00
Black/Black British	1.53		1.41		1.69		0.23
Other	1.87		2.03		1.66		0.12
Time-varying covariates							
Weekly work hours							
1–19 hours	1.52		1.39		1.71		0.11
20–34 hours	4.84		4.71		5.00		0.39
35–44 hours	58.83		47.52		73.74		0.00
45+ hours	34.80		46.38		19.55		0.00
Occupational categories							
Managerial/Professional	49.83		49.81		49.86		0.95
Intermediate	5.73		4.88		6.84		0.00
Small emp./Self-emp.	14.92		18.01		10.85		0.00
Lower supervisory/technical	12.54		11.00		14.57		0.00
Semi-routine and routine	16.98		16.30		17.88		0.01
Age (in years)	37.85	7.27	38.11	7.24	37.51	7.29	0.00
Child age (months)	63.31	52.56	65.43	52.50	60.52	52.52	0.00
Weekly net family income	598.68	304.48	615.55	321.20	576.46	279.38	0.00
Presence of grandparent	3.08		3.25		2.85		0.18
Number of siblings	1.16	0.96	1.20	0.96	1.12	0.96	0.00
Person-year observations	23,664		13,458		10,206		

Note: Data were pooled across the 9-month, Age 7 and Age 11 waves of MCS. Higher scores on mental health indicate worse mental health whereas higher scores on relationship happiness indicate higher levels of happiness. The *p* value column denotes statistical differences between nonstandard and standard work schedule observations.

Small emp. = Small employer. Self-emp. = Self-employed. NVQ = National Vocational Qualification. GCSE = General Certificate of Secondary Education.

outcomes. We did not find evidence that joint work schedules were related to mothers' mental health across the panel. Mothers had lower relationship happiness scores in families in which mothers worked standard schedules and fathers worked nonstandard schedules ($B = -0.09$; Model 2) compared to families in which both parents worked standard schedules only. This work schedule combination was also related to worse mental health for fathers ($B = 0.08$; bottom panel, Model 2). Joint work schedules were not related to fathers' relationship happiness. In analyses not shown, we added partners' work hours (e.g. adding fathers' work hours in regressions predicting mothers' outcomes) as a covariate (Model 2 only). These inclusions did not alter our results.

Table 3. Associations between nonstandard work schedules and mental health among mothers and fathers from fixed effects models.

	Mothers		Fathers	
	Model 1 B (SE)	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)
Panel 1: Nonstandard work schedule	0.001 (0.012)	0.000 (0.011)	0.064*** (0.018)	0.064*** (0.018)
Panel 2: Types of nonstandard work				
Worked evenings	-0.004 (0.012)	-0.007 (0.012)	0.055** (0.020)	0.058** (0.020)
Worked weekends	-0.003 (0.013)	-0.003 (0.013)	0.048* (0.020)	0.051* (0.020)
Worked nights	0.016 (0.018)	0.011 (0.018)	0.017 (0.026)	0.012 (0.026)
Person-years	37,814	37,814	23,664	23,664
Unique observations	12,646	12,646	11,675	11,675

Note: Regression coefficients are in standard deviation units. Reference category for the work schedule variables is standard hours only. Model 1 includes individual fixed effects. Model 2 includes individual fixed effects and time-varying covariates.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Associations between nonstandard work schedules and relationship happiness among partnered mothers and fathers from fixed-effects models.

	Mothers		Fathers	
	Model 1 B (SE)	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)
Panel 1: Nonstandard work schedule	-0.017 (0.016)	-0.017 (0.016)	-0.003 (0.020)	0.006 (0.020)
Panel 2: Types of nonstandard work				
Worked evenings	-0.002 (0.020)	-0.003 (0.020)	0.002 (0.021)	-0.000 (0.024)
Worked weekends	0.011 (0.022)	0.011 (0.022)	0.026 (0.022)	0.041 (0.026)
Worked nights	-0.074* (0.032)	-0.076* (0.032)	-0.043 (0.027)	-0.044 (0.032)
Person-years	32,313	32,313	23,440	23,440
Unique observations	11,375	11,375	11,580	11,580

Note: Regression coefficients are in standard deviation units. Reference category for the work schedule variables is standard hours only. Model 1 includes individual fixed effects. Model 2 includes individual fixed effects and time-varying covariates.

* $p < .05$.

Supplementary analyses

To test the sensitivity of our main results to analytic decisions, we employed a series of supplementary analyses. The implications of nonstandard work schedules may be more pronounced in single parent homes due to the lack of an additional partner who can assist with household responsibilities and provide emotional support – all of which could protect against the adverse impacts of such work schedules. Thus, we investigated whether the associations between mothers' nonstandard work schedules and mental health depend on family structure (one versus two parent families) using Model 2. The interactions were only assessed among mothers as there were too few cases of single fathers to analyze separately. We did not find evidence to support interactions with family structure ($p < .05$ level; see Appendix Table A1). To avoid potential endogeneity because family structure is time-varying, we also used baseline family structure and did not find nonstandard work schedules differed by one and two parent families (not shown).

For both mental health and relationship happiness outcomes, we assessed whether nonstandard work schedules were more strongly associated with wellbeing measures among mothers of young children. The additional pressure on parents' time and

Table 5. Associations between joint parental nonstandard work schedules, mental health and relationship happiness from fixed effects models.

Joint work schedules	Mothers' mental health		Mothers' relationship happiness	
	Model 1 B (SE)	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)
Both parents nonstandard (ref: Both parents standard)	-0.015 (0.024)	-0.001 (0.024)	-0.071 (0.041)	-0.070 (0.042)
Mother nonstandard/father standard	-0.005 (0.025)	-0.007 (0.025)	-0.012 (0.041)	-0.015 (0.041)
Mother standard/father nonstandard	-0.009 (0.021)	0.006 (0.020)	-0.089* (0.035)	-0.085* (0.035)
Person-years	16,920	16,920	16,794	16,794
Unique observations	9,305	9,305	9,256	9,256
	<i>Fathers' mental health</i>		<i>Fathers' relationship happiness</i>	
<i>Joint work schedules</i>	Model 1 B (SE)	Model 2 B (SE)	Model 1 B (SE)	Model 2 B (SE)
Both parents nonstandard (ref: Both parents standard)	0.054 (0.031)	0.059 (0.031)	-0.013 (0.035)	-0.002 (0.036)
Mother nonstandard/father standard	0.006 (0.033)	0.005 (0.033)	0.022 (0.036)	0.025 (0.036)
Mother standard/father nonstandard	0.071* (0.028)	0.076** (0.028)	0.013 (0.031)	0.020 (0.032)
Person-years	15,699	15,699	15,594	15,594
Unique observations	8,466	8,466	8,430	8,430

Note: Regression coefficients are in standard deviation units. Model 1 includes individual fixed effects. Model 2 includes individual fixed effects and time-varying covariates.

* $p < .05$. ** $p < .01$.

energy when children are younger may translate to more negative effects among parents of younger versus older children. We estimated Model 2 among two subgroups of mothers: early childhood survey years (9-months, age 3 and age 5 waves) and school-age period (ages 5, 7 and 11 survey waves). We also did not find significant associations between overall and types of nonstandard work schedules and mental health within child developmental period (see Appendix Table A2). We did find stronger associations between mothers' night schedules and relationship happiness (effect size = -0.14 standard deviations) among mothers of school age children (5–11 years) (using Model 2; see Appendix Table A3); although, the effect sizes were considered small. Mothers' overall and types of nonstandard work schedules were not related to relationship happiness in the early childhood period.

Discussion

The emergence and persistence of a diverse economy has led to a strong research base investigating the implications of nonstandard work schedules on family life. Studies on parental wellbeing are fewer in number relative to examining child wellbeing and often have conflicting findings. In addition, evidence is mostly situated in the US context. This study addresses these limitations in a number of ways. We present evidence on the associations between parents' nonstandard work schedules and their mental health and relationship happiness. Our analyses examine mothers and fathers separately and jointly. Importantly, we examine this research objective in the UK context, an underdeveloped area in the literature, using nationally representative data on births between 2000 and 2002.

One of the findings that emerged from this study is the absence of any overwhelmingly negative association between nonstandard work schedules and mothers' mental health. We did not find any significant associations within child developmental periods nor did we find work schedules contingent on family structure. One possible explanation for these null findings is that working nonstandard work schedules may be a mechanism to integrate work and family demands and thereby set routines and organize life. Thus, mothers in our study may not perceive a conflict between family responsibilities and work duties if they are using such work schedules as a deliberate strategy to balance work and family domains. That we do not find mothers' mental health to be compromised across nearly the first decade of a child's life stands apart from the existing evidence, which focuses on the first two years of a child's life and uses nongeneralizable data (Daniel et al., 2009; Grzywacz et al., 2016; Perry-Jenkins et al., 2007). However, we build on the methodological strengths of Shepherd-Banigan et al.'s study (2016) by also using a fixed effects model but expanding the window of observation to early adolescence and examining different types of nonstandard work schedules. We also differ from the aforementioned studies because they use US data, and, to the best of our knowledge, our study is the first to examine mental health outcomes from such work schedules using UK data. Our results reinforce the importance of social policy contexts as potential moderators of the relationship between work and family dynamics. The challenge for future research is to consider a cross-national study and explore the mechanisms in families in which nonstandard work schedules do not have a negative impact on mental wellbeing.

In contrast to results for mothers, a second finding is that nonstandard work schedules were associated with worse mental health for fathers. In particular, examining the types of nonstandard work schedules revealed that evening and weekend schedules were related to worse mental health across the panel. Although our results for evening schedules are in the same direction as evidence from Perry-Jenkins et al. (2007), we build on their work and extend the evidence base by examining fathers' mental health beyond the infancy period, including weekend schedules, disaggregating evenings from night schedules, and lastly, employing a more rigorous analytical approach that accounts for unobserved selection characteristics.

Why might results differ between mothers and fathers? Research by Zhao et al. (2021) suggests that the relationship between nonstandard work schedules and mental health may operate differently for mothers and fathers, as we see in our study. Specifically, fathers are increasingly seen as caregivers providing emotional support, time and day-to-day caring and upbringing of their children as well as income providers (Schoppe-Sullivan & Fagan, 2020). We can only speculate that fathers in our data potentially experience time-based and/or strain-based work–family conflict as they integrate work and family-related responsibilities.

An alternative explanation arises from the descriptive data on mothers and fathers in nonstandard work schedules (see Tables 1 and 2). Mothers who engage in such work schedules in our sample are more likely to be in lower occupation categories and have lower income, on average, compared to their peers in standard schedules. On balance, these negative selection characteristics are hypothesized to lead to more occupational stressors, which may spillover to family life. To explain the null associations for mothers, we speculate that mothers may not be in a position to leave nonstandard work hours due to lower bargaining power in the workplace. Mothers may cope with such hours and schedules, particularly if family considerations also select women into nonstandard work schedules (Presser, 1995).

In contrast to mothers in our data, fathers who work nonstandard work schedules represented a more positive selection profile; they had longer work hours, earned more income and had similar occupational status compared to fathers in standard work schedules. Although we cannot observe the detailed household and caregiving responsibilities carried out by fathers in our data, we hypothesize that fathers may feel frustrated and experience role overload. Evidence elsewhere suggests that fathers' evening and weekend work schedules do not compromise time with children (Hook & Wolfe, 2013), but there may be little time for fathers to recuperate from intensive nonstandard work hours alongside attending to caregiving and household work.

Turning to our third finding, mothers and not fathers, reported lower relationship happiness when they regularly worked night schedules. This is the first study in the UK to examine types of nonstandard work schedules among mothers and their associations with relationship happiness. Our finding is consistent with one other study, albeit using US data, which demonstrates night schedules are related to perceptions of marital instability (Davis et al., 2008). We are also distinct from the wider evidence on relationship happiness, because we employ a robust regression method to better account for unobserved selection and use large, nationally representative data instead of select samples based on occupation or new parents (Maume & Sebastian, 2012; Perry-Jenkins et al., 2007). Supplementary analyses showed that associations for night schedules were

stronger among mothers of school age children. School age children are certainly dependent on parents in relation to afterschool programming that requires transport and other logistical demands. Time diary data suggest that mothers may be able to spend time in activities related to children's educational development that occurs after classroom hours, but this may come at the cost of quality couple interaction (Wight et al., 2008). While we do not take up the question of time in activities while working nonstandard schedules, a reduction in relationship satisfaction suggests that losses in couple time may be the easiest to negotiate away to protect time for children.

Our last finding suggests nonstandard work schedules have implications for parents' spouse or partner. Specifically, the joint working pattern in which mothers worked a standard schedule and fathers worked nonstandard schedules was related to lower relationship happiness scores for mothers and worse mental health for fathers. Complementing evidence, which similarly uses nationally representative data, from Canada (Strazdins et al., 2006), we find adverse associations for mental health, but we extend the literature by also examining relationship happiness and using fixed-effects modeling. Although, the literature on joint nonstandard work schedules and parental outcomes is equivocal due to a handful of studies showing null associations between joint work schedules and parental wellbeing (Mills & Täht, 2010; Perry-Jenkins et al., 2007). That mothers', and not fathers', report of their relationship happiness is negatively associated with joint work schedules could be because women, more so than men organize and cultivate the pleasurable shared time that is instrumental to partnership stability (Kalil et al., 2010). Irrespective of the outcome examined in our models, our findings appear to support evidence that schedule discordance may be associated with stressors that outweigh potential benefits of increased family and childcare time (Maume & Sebastian, 2012; Strazdins et al., 2006). That we found similar effect sizes in the joint work schedule models as well as in models examining parents' own schedules only underscores a burgeoning knowledge base that fathers' nonstandard work schedules matter too. The task for future research is to uncover the characteristics and circumstances of families for whom schedule discordance is beneficial and for whom it less successful.

There are some limitations to note. The data do not include information on rotating or irregular and unpredictable work schedules. These details could provide more nuanced information on the relationship between nonstandard work schedules and parental wellbeing. We employed an individual fixed effects model, but such methods only account for time-invariant unobserved characteristics; they cannot account for unobserved characteristics that vary over time and may be associated with both work schedules and parental mental health and relationship happiness. In addition, fixed effects models cannot rule out the possibility of reverse causation.

It could be that a parent who has poor mental health is more likely to work nonstandard schedules. Related to this limitation is that the relationship between nonstandard work schedules and mental health may be due to characteristics that we could not address in this data. For example, we were not able to discern between parents who chose to work nonstandard schedules or considered them beneficial to their family routines compared to parents 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 choices to better understand family dynamics. Finally, we were not able to measure the extent parents feel

overwhelmed by their work and family responsibilities, which could be an important mechanism between shift work and the integration of work and family demands at different child ages (Perry-Jenkins et al., 2007).

Notwithstanding these limitations, we expanded the literature, which is almost exclusively in the US, on the associations between nonstandard work schedules and parents' wellbeing by testing this relationship in the UK context. It is plausible to consider the institutional context as a mechanism that does or does not alleviate the potential burdens of nonstandard schedules on families. For example, two studies examining the role of nonstandard schedules on work–family conflict and partnership quality found null associations among Dutch couples (Mills & Täht, 2010; Tammelin et al., 2017). These findings suggest the negative relationship between nonstandard work schedules and family life may be contingent on the national services or policies which may promote work–family integration in the context of such work schedules. In the Dutch case, these policies include limiting the incidence of nonstandard shifts, pay premiums for working the late shift and strict opening hours. Cultural norms around childcare and working times may also have an impact. Aside from the EU Working Time Directive, there are no regulations on types of nonstandard work schedules. The UK, relative to other EU countries, faces a less supportive environment from the perspective of services for children, family–friendly policies and work culture (Bradshaw & Richardson, 2009). Given the prevalence of nonstandard work schedules in this sample of parents and the negative relationship between such schedules and mental health and relationship happiness of parents, policies need to address the unique challenges parents face when working nonstandard schedules.

In sum our findings suggest that employment schedules are an important domain of disadvantage in parental wellbeing. Our study adds to a growing body of literature on the significance of the timing of both mothers' and fathers' work schedules. Policy discussions need to give more attention to the increasing complexity of the work–family interface, the timing of work and the role of gendered expectations for work and family role commitments to protect parents' relationships and wellbeing.

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Anne McMunn's research is concentrated on the social determinants of health within a life course epidemiological framework, increasingly with a focus on the biosocial interface. More specifically, she investigates the potential influence on health and wellbeing of aspects of work (defined broadly from a gender perspective) and social relationships (including within the family), how gender structures work and family relations and the impact of social change in this area on children and families. Professor McMunn's work mainly uses longitudinal quantitative techniques to analyse data from the British birth cohort studies, the English Longitudinal Study of Ageing and the UK Household Longitudinal Study and most of her work has been funded by the ESRC or the European Research Council. She is currently Head of the UCL Research Department of Epidemiology & Public Health as well as Deputy Director of the ESRC International Center for Lifecourse Studies in Society & Health, a collaborative research center between UCL and the Universities of Manchester and Essex in the UK and Orebro in Sweden.

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