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Parents' nonstandard work schedules and children's social and emotional wellbeing: A mixed-methods analysis in Germany

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Abstract

Many children live in households where either one or both parents work nonstandard schedules in the evening, night or weekend. Using a mixed methods design, this study examined whether nonstandard work schedules were linked to lower social and emotional wellbeing in children. The quantitative analysis based on the German Family Panel Study (pairfam) showed that children whose parents worked rotating shifts and other types of nonstandard schedules reported elevated levels of emotional and conduct problems. However, not all types of nonstandard schedules were detrimental to child wellbeing: fixed shift work did not have a negative impact on child social and emotional wellbeing. Overall, the effect of mothers' work schedule on child wellbeing was stronger than that of fathers. The qualitative interviews revealed that nonstandard work schedules made everyday life unsettling and family environment chaotic because it was difficult to plan. Thus, for most families where one or both parents worked such schedules stress was a defining feature of the daily life and parents accepted it as "part of their life". Families used different strategies to deal with stress and attempted to protect children from it. Contingent on what resources available to them, some families managed well, while others did not cope so well and children were adversely affected.

Key words: nonstandard work schedules, shift work, parents, social and emotional wellbeing, children, mixed methods, pairfam



1. Introduction

Many societies around the globe are witnessing a significant labour market transition from industrial and post-industrial economies to service economies, which Presser (2003) calls the "24/7 economy." A 24 hours/7 days economy demands services around the clock, and this has led to the rise in work schedules in evenings, nights, and weekends (so called "shift work" or "nonstandard work schedules"). Research to date has documented a high prevalence of shift work in developed economies (Australian Bureau of Statistics 2009; McMenamin 2007; Kaiser, Li & Pollman-Schult 2017).

It is well established that working nonstandard schedules is detrimental to workers' health (Kantermann et al. 2010; Moreno et al. 2019). Increasing evidence shows that parents' nonstandard schedules also have a negative impact on children's health and development (Li et al. 2014; Dockery, Li & Kendall 2016; Kaiser, Li & Pollmann-Schult 2017; Han 2018). This study aimed to extend this empirical literature by conducting a mixed methods study to examine the effect of parents' nonstandard work schedule on social and emotional wellbeing in children ages from 8 to 16, using quantitative data from the German Family Panel Study and qualitative data from interviews with six families.

The majority of previous quantitative studies report negative associations between nonstandard work schedules and child developmental outcomes, including social and emotional wellbeing, risk-taking behavior, cognitive development, overweight and obesity, and other related outcomes (see Li et al. 2014 for a comprehensive review). The negative association between nonstandard work schedules and child social and emotional wellbeing is in part mediated through family resources, such as parental mental health (Strazdins et al. 2006; Rosenbaum & Morrett 2009). It is also mediated through family processes, such as low quality parenting (Han, Miller & Waldfogel 2010; Strazdins et al. 2006), reduced child-parent interaction and closeness (Han & Miller 2009; Han et al. 2010; Rosenbaum & Morrett 2009), and a less supportive home environment (Han & Miller 2009; Han et al. 2010; Han & Waldfogel 2007). Qualitative studies, however, indicate that nonstandard work schedules are beneficial for father-child interaction and for gender equality in the division of child care and household work. This is because mothers' absence from the home due to shift work allows fathers to take up more of these responsibilities (Barnett & Gareis 2007; Thompson 2009). In the Dutch context, Täht and Mills (2012) show that couples chose to work nonstandard schedules to avoid formal child care. By having one partner or both partners working nonstandard schedules at different times, couples are able to engage in "tag-team" parenting so that one parent is always present with their children. These studies suggest that family strategies play an important role in our understanding of whether and to what extent parental nonstandard work schedules impact children's wellbeing either negatively or positively.

However, to date there are no studies that have combined quantitative methods with a qualitative approach to investigate the impact of parents' nonstandard work schedules on child wellbeing. While a quantitative study by Täht and Mills (2012) in the Netherlands was combined with qualitative interviews to examine parental nonstandard work schedules and parent-child interaction, this study did not examine children's wellbeing directly. A combination of quantitative and qualitative methods holds the promise to shed light on everyday experiences of families where one or both parents work nonstandard

schedules. A mixed methods study also has the potential to reveal pathways (mediators) that underpin or moderators that modify the impact of nonstandard work schedules on child wellbeing.

2. Theoretical background

The research field on parental work and child development is strongly motivated by Bronfenbrenner's bioecological theory (1979, 2005). In Bronfenbrenner's ecological theory, early human development is conceptualized as taking place within nested systems. The microsystems consist of family, school, childcare center and these are the immediate environments in which a child develops and this developmental process is influenced by the mesosystems, namely the interrelationships between microsystems. Children and their immediate settings are then nested within the exosystem that children may never encounter directly, such as parental workplace and parental employment (Repetti & Wang 2010). The microsystems and the exosystem are situated within the wider society and culture, the "macrosystem." The bioecological theory also highlights the importance of genetic and other physiological characteristics of the child and the reciprocal interaction between the child and environment over time (Bronfenbrenner 2005). In order to be effective and beneficial for the developing child, such interactions ought to take place on a regular and long-term basis. Bronfenbrenner and Evans refer to such enduring interactions in the immediate environment as the "proximal processes" (Bronfenbrenner & Evans 2000). Repetti & Wang (2010) point out that parental employment as part of the exosystem can influence child development by modifying the family environment in which children develop. Family time and family routine and activities are valuable resources for parents to bring up healthy and happy children. Long work hours and nonstandard work schedules (evening, nights and rotating shifts) can deplete family time, disrupt family routines and regular interactions and hence add chaos to family life. This in turn has a detrimental influence on child development.

An alternative perspective to explain negative effects of nonstandard work hours on family well-being has been developed by Brooks-Gunn and her colleagues (Brooks-Gunn et al. 1995). Brooks-Gunn et al. (1995) identified four categories of intra-familial resources that are considered to be important for optimal child development, namely income, time, human capital, and psychological capital (e.g., the mental health of the parents, the quality of their relationships). The conceptual resource framework is useful for understanding the connection between parents' work schedules and child social and emotional wellbeing in two ways. First, for example, parental mental health problems, such as depressive symptoms, have been found to mediate the negative impact of nonstandard work schedules on children's social and emotional wellbeing (Strazdins et al. 2006). Second, Brooks-Gunn and co-authors emphasized the importance of decision-making and the choices parents face about allocating limited resources (Brooks-Gunn et al. 1995), for example making a trade-off between additional income by working longer hours and less time available for the family and children. Thus, optimal child development is not simply a function of the quantity of a single domain of these resources, but it is the quality and

mix of different familial and extra familial resources. This suggests that the relationship between parents' nonstandard work schedules and child wellbeing is complex and the nature and magnitude of the impact is contingent upon family characteristics and different resources available to parents.

Negative effects of nonstandard work schedules on family and child wellbeing are also expected from the work-family conflict perspective. Work to family conflict (WFC) refers to a situation where workers perceive or experience incompatibility or a role conflict between the work and family domains, due to time, energy, and behavioural constraints and a psychological carryover of strain from work to family. A poor fit between work and family life can cause stress (Barnett, Gareis & Brennan 2008; Davis et al. 2008; Liu et al. 2011), which in turn leads to adverse child outcomes (Van den Eynde et al. 2020). Mothers typically experience higher levels of WFC than fathers because they bear the double burden of paid and unpaid work. Women still have the vast share of household work and child care responsibilities and spend significantly more time on these responsibilities than men, even when they are employed full-time (Hochschild & Machung 2012; Procher, Ritter & Vance 2018). Thus, the negative effects of nonstandard work schedules on child wellbeing may be stronger for mothers than for fathers.

3. The present study

In the present study, we conducted a mixed methods study to examine the effect of parents' nonstandard work schedule on social and emotional wellbeing in children ages from 8 to 16, using six waves of the longitudinal quantitative data from the German Family Panel Study (2011 - 2016) and qualitative data from interviews with six participating families from different socioeconomic backgrounds and living in urban and rural regions of Germany.

Germany represents an interesting and important national context for analyzing the impact of parental nonstandard work schedules on child wellbeing, as its family support policies differ from those in countries that have been the focus of previous research. Despite the strong male breadwinner model in Germany, various policy measures have been implemented in recent decades that aim at reconciling work and family life. These measures include a substantial expansion of state child care provision with low fees and the right for both parents to reduce their working hours to part-time. In addition, German workers enjoy more control and discretion of the number and scheduling of their work hours than workers in the U.S. (Lyness et al. 2012). Thus, German parents may be better able than their counterparts in the US to balance between work and family responsibilities. Consequently, in Germany the negative impact of working nonstandard work schedules on parents and their children may be less pronounced.

Building upon the existing theoretical and empirical literature reviewed above our quantitative and qualitative parts of the study were conceptualized at the same time and conducted in synergy, with the intention to allow the qualitative and quantitative arms of the whole study to inform, confirm, and enrich each other. Based on the theoretical frameworks discussed above, our broad hypothesis is that parents' nonstandard work schedules are associated with increased risk for behavioural and emotional problems in

their children. We hypothesize that this association is in part mediated by stress due to a poor fit between work and family life. Stress is an indicator of parents' mental health, which is a part of familial resources important for optimal child development (Brooks-Gunn et al. 1995).

We further hypothesize that the negative effect of working nonstandard schedules on children's social and emotional wellbeing is stronger for irregular schedules (e.g., rotating shifts or variable shifts or on call) than for fixed nonstandard schedules. While both regular and irregular nonstandard schedules are unsociable because they occur in evenings, nights or weekends, irregular schedules may be more detrimental to family and child wellbeing because they are unpredictable. Working irregular schedules makes it difficult for the family to adjust because routines (regular interactions) cannot be established and child care cannot be arranged on a regular stable basis. This in turn can cause chaos and stress for both parents and children. This hypothesis was also informed by the initial results from our qualitative study that difficulties in making plans and setting up routines made the family life particularly stressful when parents worked irregular schedules. Empirical evidence is consistent that family chaos is associated with externalizing problems in children (Fiese & Winter 2010). Fixed nonstandard schedules (e.g., regular evening or night shifts), in contrast, allow families to adapt to them by setting up routines and hence working such shifts may have a lesser negative impact on parents and children. Few studies have distinguished regular nonstandard schedules (fixed shifts) from irregular nonstandard schedules (rotating and variable shifts and on call) and elucidated differential impacts of these two types of nonstandard schedules on children's social and emotional wellbeing.

4. Methods

4.1 *Quantitative analysis*

4.1.1 Data

The data for this study came from the German Panel Analysis of Intimate Relationships and Family Dynamics (pairfam). Pairfam is a nationally representative longitudinal survey of respondents in three birth cohorts, born in 1971/73, 1981/83, and 1991/93, who were interviewed annually since 2008. The unit of analysis was children aged 8 to 16 years who answered the child questionnaire. As not all relevant information was collected in waves 1-3, we restricted our analyses to waves 4-9 (2011-2016). Furthermore, we restricted the analysis to children in two-parent families as family and child wellbeing in single-parent families is influenced by different factors than those for two-parent families (Loter et al. 2019). Because we were interested in the effects of both parents' work schedules, we further restricted our analysis to families where both parents were gainfully employed. Our analytical sample included 1,944 children. Because information on shift work was collected only for the main respondents (anchor persons), and of these 1269 were mothers and 675 were fathers, we could not construct joint parental work schedules. Instead we conducted separate analysis for mothers and fathers.

4.1.2 Variables

Child outcome: Children's behaviour problems were measured with the Strengths and Difficulties Questionnaire (SDQ) which was developed by Goodman (1997). The SDQ covers five domains and there are five items for each domain on a scale of 0 (*Not True*) to 2 (*Certainly True*). We restricted our analysis to emotional problems and conduct problems because the other three domains (hyperactivity, peer problems and prosocial behavior) were not collected in all waves. Emotional problems reflect children's internalizing problems, whereas conduct problems reflect children's externalizing problems (Achenbach et al. 2012; Goodman et al. 2010). Emotional symptoms are measured by items such as "I am nervous in new situations", "I easily lose confidence" and "I am often unhappy, depressed or fearful". Conduct problems includes items such as "I get very angry and often lose my temper" and "I fight a lot and I can make other people do what I want". We constructed a summary score for each domain and divided it by the number of items evaluated. Higher scores indicate higher levels of emotional problems and conduct problems, respectively.

Parents' work schedule: Our key independent variable was the main respondents' working schedule. All gainfully employed main respondents (anchors) were asked whether they worked a) standard daytime schedules (e.g. 9am -5pm) on weekdays only, b) fixed shift schedules (evenings or nights) only on weekdays, c) fixed shift schedules also on weekends, d) rotating shift (evenings or nights) schedules only on weekdays, e) rotating shift schedules also on weekends, or f) other shift schedules. These categories were mutually exclusive. Unfortunately, the dataset does not provide clear information on whether the respondents worked only at night or only in evenings. Therefore, it is not possible to differentiate between evening shifts and night shifts. We collapsed these six categories into four categories: standard daytime schedules (a), fixed shift work schedule (b and c), rotating shift work schedule (d and e), and other shift schedules (f).

Mediator: The main mediator was parents' level of stress, which was measured with three items. The respondents were asked whether they felt predominantly stressed, overburdened or under pressure in the past four weeks. The response categories ranged from 1 'Not at all' to 5 'Absolutely'. These items were adapted from the "Perceived Stress Questionnaire" (Fliege et al. 2001).

Control variables: In the multivariate regression models, we controlled for various parent and child characteristics that have been found to affect child wellbeing. Parent characteristics included parents' age, educational level, and working hours. These characteristics might covary with both parents' work schedules and child wellbeing, hence confounding the relationship between the two (Bianchi & Milkie 2010). Parents' education was coded as lower, intermediate, or higher secondary schooling. We controlled for work hours by distinguishing between marginally employed, part-time employed and full-time employed respondents. Because only few fathers were marginally employed in our sample (0.9%), we combined "marginally employed" and "part-time employed" into one category for fathers. Child characteristics included child gender and age (8-11 years old, 12-16 years old). Descriptive statistics for child behavioural and emotional problems and the explanatory variables are provided in Table 1. Thirty-two percent of mothers and 38 percent of fathers worked nonstandard schedules. Roughly 10 percent of fathers and mothers worked in fixed shifts, and 11 percent of mothers and 13 percent of fathers

worked in rotating shifts. Another 11 percent of mothers and 15 percent of fathers worked other schedules. Only 29 percent of mothers, but 96 percent of fathers worked full-time.

Table 1: Descriptive statistics

	Mean	SD	Min	Max
Emotional problems	2.47	1.96	0	10
Conduct problems	1.55	1.38	0	10
Mothers' work schedules				
<i>Standard work schedules</i>	0.68			
<i>Shift work: Fixed schedules</i>	0.09			
<i>Shift work: Rotating schedules</i>	0.11			
<i>Other schedules</i>	0.11			
Fathers' work schedules				
<i>Standard work schedules</i>	0.62			
<i>Shift work: Fixed schedules</i>	0.10			
<i>Shift work: Rotating schedules</i>	0.13			
<i>Other schedules</i>	0.15			
Mothers' stress level	3.08	1.06	1	5
Fathers' stress level	3.06	1.06	1	5
Mothers' employment status				
<i>Marginally employed</i>	0.13			
<i>Part-time employed</i>	0.58			
<i>Full-time employed</i>	0.29			
Fathers' employment status				
<i>Marginally/part-time</i>	0.04			
<i>Full-time employed</i>	0.96			
Mothers' educational level				
<i>lower</i>	0.06			
<i>intermediate</i>	0.58			
<i>upper</i>	0.35			
Fathers' educational level				
<i>lower</i>	0.06			
<i>intermediate</i>	0.51			
<i>upper</i>	0.43			
Mothers' age (in years)	39.51	3.82	26	46
Fathers' age (in years)	40.50	3.38	24	46
Child age				
<i>8-11 years old</i>	61.44			
<i>12-17 years old</i>	38.56			
Child gender: girl	0.48			

4.1.3 Analytic strategy

In our multivariate analysis, we estimated random-effects linear regressions with cluster-robust standard errors to correct for possible heteroscedasticity and serial correlation within clusters. We did not consider a fixed-effects regression model because of limited intra-individual variation in the shift work variable. We conducted the analysis in two steps and obtained separate estimates for mothers and fathers. In the first step, we examined whether or not shift work is related to parents' stress. In the second step, we investigated the association between shift work and children's emotional and conduct problems. To test whether a possible effect of shift work on emotional and conduct

problems in children might be mediated by parental stress level, we estimated models with and without the parental stress variable.

4.2 *Qualitative study*

In the qualitative study, we used open qualitative interviews to record the life situation of families where parents worked shifts or atypical long working hours. Our aim was to gain insights into the daily life of the families from the parents' perspective. To this end, semi-structured interviews were conducted, which also made it possible to evoke narrative elements. Six families¹ were interviewed, with the working hours of the parents and the presence of children aged 1 to 12 as the inclusion criteria. Five families of the recruited sample came from urban regions and one family resided in a rural region. The interviews were designed as couple interviews, but in three cases only the mothers took part in the interview. The data were collected in the domestic environment of the families. The interview guideline included open and narrative-generating questions on general topics, such as the wellbeing of the children, the situation at the workplace of the parents (work-life conflict), the organization of family life, possible solution strategies. The guideline was modified and calibrated during the six-week survey.

The interviews were completely transcribed, anonymized and openly coded after a detailed inspection of the material. The analysis procedure followed an iterative-cyclical approach of the Grounded-Theory Methodology (Strübing 2014). The analysis of the qualitative data was based on the theoretical coding and theoretical sensitivity as suggested by Glaser (1978, 1992) and Kelle (1995). The formation of categories was based on empirically meaningful concepts suggested by Kelle and Kluge (2010). The aim of the analysis was not to create fixed and defined categories; rather, the qualitative inspection of the data should be carried out in contrast to the results of the quantitative study and offer wider meanings and suggestions for a further and broader study. To reach this aim we constructed an analysis plan as follows: 1) a classical open coding as suggested within the Grounded Theory approach according to Glaser and Strauss (1967), 2) a reassessment of the categories developed in the first step, 3) openness to new discoveries resulting from comparison with the relevant literature and results of the quantitative study, 4) the differentiation of developed and designed categories that were sent to quantitative researchers in the first step as support for the survey design, and 5) an identification of possible gaps for future research.

1 The results presented in the qualitative part of the study refer to five interviews, which were conducted with six families in urban as well as in rural areas around Berlin. One of the interviews was conducted with two sisters, each has their own family, as a group interview (for more details see Interview Family Schmidt)

5. Results

5.1 Quantitative findings

5.1.1 Shift work and stress

In the first step, the shift work indicators were regressed on fathers' and mothers' stress level. As can be seen in Table 2, shift work was associated with higher levels of stress in fathers, but not in mothers. Fathers working rotating shifts or other irregular schedules reported significantly more stress than fathers who worked standard schedules. However, neither mothers nor fathers working fixed shift schedules experienced higher levels of stress than their counterparts working standard schedules. Mothers' stress level, nevertheless, was significantly associated with their work hours: Marginally employed and part-time working mothers reported less stress than full-time working mothers. Fathers who worked less than full-time, in contrast, did not experience less stress than full-time workers. These findings show that mothers' stress level was predominantly affected by the number of their work hours, whereas fathers' stress level was mostly influenced by the timing of their work.

Table 2: Effects of shift-work on mothers' and fathers' stress level: random-effects regression

	Mothers' stress	Fathers' stress
Work schedule ¹		
Shift work: Fixed schedules	0.043	0.012
Shift work: Rotating schedules	0.012	0.214*
Other schedules	-0.066	0.166*
Mothers' employment status ²		
Marginally employed	-0.382**	0.162
Part-time employed	-0.294**	0.060
Fathers' employment status ²		
Marginally/part-time employed	0.171+	0.140
Mothers' educational level ³		
lower	-0.045	0.512**
upper	-0.017	0.290**
Fathers' educational level ³		
lower	0.013	-0.343+
upper	-0.003	0.094
Parent age (in years)	-0.001	-0.008
N (individuals)	1,264	672
R ² (overall)	0.02	0.05

¹) Ref: standard work schedule. ²) Ref: full-time employed. ³) Ref: intermediate educational level.

** p < .01; * p < .05; + p < .1

5.1.2 Shift work and children's conduct and emotional problems

In the next step, we examined the association between parental shift work and children's emotional and conduct problems. Models 1 and 3 in Table 3 show the effect of mother's shift work on their children's conduct problems. The coefficients shown in Model 1 indicate that working rotating schedules ($b = 0.175$, $p < .05$) and other schedules ($b = 0.179$, $p < .05$) was associated with higher levels of conduct problems in children, compared to children whose mothers worked standard schedules (e.g., 9 am-to-5pm). Children whose mothers worked fixed shift schedules, in contrast, did not report higher levels of conduct problems than children whose mothers worked standard schedules. Model 3 shows that rotating schedules were also associated with higher levels of emotional problems in children ($b = 0.221$, $p < 0.1$).

To test whether the effect of shift work on child wellbeing was mediated by maternal stress, we added mothers' stress level to the models (Models 2 and 4). These models show that maternal stress was significantly associated with conduct problems ($b=0.090$, $p<.05$) and emotional problems ($b=0.118$, $p<.05$). The coefficients indicate that children of mothers with the highest level of stress scored 0.26 standard deviations higher on the conduct problems scale and 0.24 standard deviations higher on the emotional problems scale than children whose mothers reported the lowest level of stress. Adding the stress variable to the models, however, did not significantly alter the coefficients for three different types of shift work schedules. The low R^2 for all models in Table 3 (and also for those models in Table 4) indicate that although there is a significant association between child social and emotional wellbeing and the predictors considered in this analysis, other factors may account for the major part of the observed variation in child social and emotional wellbeing. For instance, previous research suggests that child wellbeing is strongly affected by personality traits (Bradshaw et al. 2011), which we were not able to account for in this study.

Table 3: Effects of mothers' shift-work on children's conduct and emotional problems (reported by child), random-effects regression

	Conduct Problems Model 1	Conduct Problems Model 2	Emotional Problems Model 3	Emotional Problems Model 4
Work schedule ¹				
<i>Shift work: Fixed schedules</i>	0.021	0.017	0.169	0.163
<i>Shift work: Rotating schedules</i>	0.175*	0.174*	0.221+	0.217+
<i>Other schedules</i>	0.179*	0.186*	0.172	0.179
Mothers' employment status ²				
<i>Marginally employed</i>	0.013	0.049	0.034	0.078
<i>Part-time employed</i>	0.001	0.027	-0.191+	-0.157
Fathers' employment status ²				
<i>Marginally/part-time employed</i>	-0.125	-0.138	-0.069	-0.088
Mothers' educational level ³				
<i>lower</i>	-0.021	-0.017	0.052	0.059
<i>upper</i>	-0.008	-0.007	-0.143	-0.140
Fathers' educational level ³				
<i>lower</i>	-0.048	-0.052	0.008	0.001
<i>upper</i>	-0.220**	-0.219**	-0.258*	-0.256*
Child sex: girl (vs. boy)	-0.259**	-0.268**	0.540**	0.528**
Child age: 12-16 years old ⁴	-0.305**	-0.300**	-0.301**	-0.296**
Stress		0.090**		0.118**
N (individuals)	1,264	1264	1264	1264
R ² (overall)	0.03	0.04	0.04	0.06

¹) Ref: standard work schedule. ²) Ref: full-time employed. ³) Ref: intermediate. ⁴) Ref: 8-11 years old.

*** p < .001; ** p < .01; * p < .05; + p < .1

Table 4 shows our findings for fathers. Children whose fathers worked rotating shifts reported significantly more conduct problems (Model 1) but not more emotional problems (Model 3) than children whose fathers worked standard daytime schedules. Fixed shift schedules as well as other types of schedules, in contrast, were not associated with an increase in emotional and conduct problems in children. Paternal stress was associated with higher levels of emotional problems, but not with conduct problems. Again, the effect of fathers' shift work on child wellbeing was not mediated by paternal stress level (Model 2 and Model 4).

The coefficients for the control variables show that neither mothers' nor fathers' work hours were associated with child wellbeing over and above the effect of parents' work schedules (Tables 3 and 4). Also, parents' educational level had only a modest effect on emotional and conduct problems in children. However, child wellbeing strongly varied with child age and child gender. Generally, older children reported less emotional and conduct problems than younger children. Girls experienced more emotional problems than boys, whereas boys reported more conduct problems than girls. In further analysis we tested the interactions between child age, gender and three types of parental shift work, but none of these was significant.

Table 4: Effects of fathers' shift-work on children's conduct and emotional problems (reported by child), random-effects regression

	Conduct Problems Model 1	Conduct Problems Model 2	Emotional Problems Model 3	Emotional Problems Model 4
Work schedule ¹				
<i>Shift work: Fixed schedules</i>	0.202	0.201	-0.164	-0.161
<i>Shift work: Rotating schedules</i>	0.290*	0.282*	0.163	0.141
<i>Other schedules</i>	0.133	0.127	0.170	0.150
Mothers' employment status ²				
<i>Marginally employed</i>	-0.046	-0.052	0.126	0.107
<i>Part-time employed</i>	-0.000	-0.002	0.056	0.048
Fathers' employment status ²				
<i>Marginally/part-time employed</i>	0.322	0.318	0.066	0.053
Mothers' educational level ³				
<i>lower</i>	0.271	0.256	-0.088	-0.143
<i>upper</i>	0.010	-0.001	-0.113	-0.148
Fathers' educational level ³				
<i>lower</i>	-0.283	-0.273	-0.583*	-0.542*
<i>upper</i>	-0.105	-0.109	-0.341*	-0.353*
Child sex: girl (vs. boy)	-0.293**	-0.297**	0.316*	0.308*
Child age: 12-16 years old ⁴	-0.262**	-0.263**	-0.370**	-0.372**
Stress		0.034		0.119*
N (individuals)	672	672	672	672
R ²	0.06	0.06	0.04	0.05

¹) Ref: standard work schedule. ²) Ref: full-time employed. ³) Ref: intermediate. ⁴) Ref: 8-11 years old.

*** p < .001; ** p < .01; * p < .05; + p < .1

5.2 Qualitative findings

5.2.1 Family characteristics

The Safadi family had lived in Berlin for 10 years. The children were eight and five years old. They were born in Berlin. The interviewee (Nadja Safadi, the mother) grew up in southern Germany. Her parents escaped to Germany in the eighties. Nadja worked as a junior researcher at the university and is currently working on her habilitation. At her work, Nadja was exempted from teaching or administrative tasks at the university. Amin, her husband, worked in a leading position in an international company and traveled almost on a weekly basis.

The second interview was carried out in a form of a small group interview with the Schmidt family(ies) in the eastern part of Berlin. The interviewees were two sisters. Andrea Schmidt had a 3 year old boy and worked part-time as a secretary in the Federal Ministry from 9:00 am to 4:00 pm. She described her work as calm. Two days a week she worked from home (home-office). Her husband worked in the penitentiary prison in a shift work system. Beate Schmidt, the sister, had two boys (3 years old and 4 months old)

and she was also employed as a secretary and worked 40 hours a week. Her husband worked as a federal policeman in a three-shift system, which changed every five weeks. The work schedule was handed out one year in advance. The mother also thought there were advantages in the shift-working system.

The Southgate family lived in one of the central districts of Berlin, with two boys (4 years old and 7 years old). Konrad Southgate was born in a midsize town in northern Germany in 1974. He studied business administration in Hannover and in the USA. In the following years he worked mainly in the USA, where he met his wife (then a working colleague). At the time of the interview he worked as the managing director of an online start-up company in Berlin. His wife Eva studied in Columbia and in the USA and worked for many years in a leading position in an international insurance company. Eva gave up her job at a certain point in order to have more time for her family.

Family Kamal has a 7-year-old daughter. The mother worked as the managing director of a federal association with five employees. The child was mentally handicapped (institutionally recognized as handicapped). In early childhood, the daughter visited the nursery until 4:30 pm. Recently, she went to a regular school in the neighborhood. The mother's work was characterized by flexible work hours. However, her function as a contact person and organizer put a certain pressure on her. In general, she noticed that the demands and the stress had increased over the years. The father (Georg) worked as a freelancer up to 30 hours a week and could arrange his working hours flexibly.

The Gras family lived in a small village (approx. 900 inhabitants) in the Harz region. The family had two boys (4 years and 8 months old). Stefanie Gras worked as a nurse in a three-shift system in the intensive care unit of a nearby hospital. Stefanie loved her job, despite the pressures she sometimes had to carry, which were mentioned multiple times during the interview. The hospital where she worked was 30 km away from where she lived.

5.2.2 The discovery of categories and concepts from the empirical material

During the evaluation of the interviews, four main categories and concepts were identified, which strongly influenced the everyday family life of parents with nonstandard working hours or shift work. The categories, "social status of the family" and "everyday family life", were derived from the material in a descriptive way. The categories, "strategies for dealing with the situation" and "perception of the situation", show typical patterns, which are briefly explained below.

5.2.3 Major categories and concepts

Social status of the family	housing situation living environment social and economic capital of families
Everyday family life	Organization of everyday life (distribution of daily tasks) Career advancement orientations Child education Leisure activities Familial Interactions Solution strategies Time management Familial wellbeing
Strategies for dealing with stress	Organization as a strategy Solutions through financial possibilities Acceptance of the difficult situation Support from the extended family as a solution Good coordination between the parents Women in responsibility Partnership faces challenge
Perception of the stress situation	Adaptive perception "We will manage that" Resignative perception: stress is accepted as unavoidable

The concepts and categories presented above served as "lenses" (Lauden cited by Kelle 2010: 21) or as heuristics through which researchers could see and rediscover the world of families. In the following, we developed a brief presentation of these concepts and categories, using quotations and everyday depictions of the families studied as anchor examples.

The social status of families was important for activating resources and finding solutions for reconciling work and family life. High-income families could use their economic capital to cope with stress associated with nonstandard work schedules, for example by hiring a nanny or an au pair. For middle-income families with limited financial resources, support from the extended family was immensely important and essential as the case of the Schmidt family or the Gras family shows. The families reported that without the support of grandparents or other relatives, they would not be able to reconcile work and family life, or only at great expense (especially if the children were still young).

The everyday family life was described as stressful by all families interviewed. The parents made every effort to ensure that this stress did not have a direct effect on the children; Stefanie (a nurse in an intensive care unit working shifts):

"I don't know whether it directly affects health. Of course, the night shifts are unpleasant, but unfortunately they are part of the job (...) If I could I would not work night shifts any more. Night shifts are unhealthy for the body and biological rhythm. This unpleasant part of my job stays in the hospital. I don't take the problems home with me. I try not to let the children have it."

The Schmidt family (mother a clerk, father an officer in federal prison, child three years old) coped with stress through good organization and family support.

"Because I'm not on shift work, I have this everyday life, this planning security is of course nicer. It's the strategy, the father runs shifts, so to speak, and is there when he's there and the rest, the main daily planning runs through me as the mother."

The Gras family (both parents on shift work, two children of 4 years and 4 months) said: *"Without the support of our parents everything would collapse"*.

In reference to the quantitative literature (Kaiser, Li & Pollmann-Schult 2017), harsh parenting has been found to be associated with mothers' nonstandard work schedules. In line with this finding, some passages from the qualitative interviews refer to similar parenting behaviours in the mother-child relationship. For example, in the interview with Stefanie (a nurse in an intensive care unit, typical of shift work), she talked about how her 4-year-old son "has to help!" Nadja (Junior Professor) depicted stressful situations with her children "as part of life". While Stefanie seemed to overcome her life and everyday stress with the support of her parents, Nadja rejected any support from her parents.

In dealing with the effects of shift work and nonstandard working hours, mothers assumed a great deal of responsibility. Although fathers increasingly supported mothers in care tasks (childcare and household) and assumed increasing responsibility, as found in previous studies (Barnett & Gareis 2007; Thompson 2009), the organization of everyday life remained the responsibility of the mothers. In this context a comparison between this increasing responsibility of fathers and the incomplete (female) revolution (Esping-Anderson 2009) is extremely interesting for further examination from a gender study perspective. In the families interviewed, the women usually played the role of a family manager in addition to their professional roles. This included responsibility for financial matters and duties in child rearing, as well as maintaining social contacts with family and friends. A typical division of labour was described by Andrea:

"So tasks that have to do with office and paper work, I do. So I have to say. Tax returns and stuff like that. What we share in the household is the cleaning of the flat and the shopping, which he does because he usually travels by car (...). The rest is almost exclusively done by me."

All families reported time deficits in dealing with the growing professional demands and the demands placed on child rearing. All parents who worked shifts or nonstandard working hours reported stress in everyday family life. Nonstandard working hours and schedules caused stress in families in particular as it was more difficult to plan everyday family life:

"The problem is also that shift work makes everyday life very unsettled. You can never, you can never plan. That's very chaotic. And the children and also you as a person need a certain plan for a certain everyday life." (Schmidt Family)

The parents, who worked in the three-shift system, also reported a lack of sleep, sometimes irritability and limited performance.

Strategies for dealing with stress situation: To deal with stressful situations in everyday family life, we have seen that families with two working parents depended on the support of other family members, such as grandparents (Schmidt Family and Gras Family). In the absence of such family support, the existing role models and the classical (heteronormative) family models associated with them mean that, as a rule, one of the

parents has to forego their own career — or to at least make considerable sacrifices in favour of family responsibilities. More often than not, it was the women who gave up their career. For example, two of the mothers reported that they had decided against a professional career by working less in order to spend more time with their children. In Southgate Family, it was also the mother who decided to quit her executive position, at least for a few years, in order to support the family. In Kamal Family, it was the man who gave up on his career to look after their daughter in favor of his wife's managerial position.

Another strategy for dealing with stressful situations in everyday family life was the creation of a *family myth* (Hochschild & Machung 1998) whereby both partners perceive that "we are equal partners in the household" in order to avoid a conflict taking a toll on the family and the marital relationship. Here is the example of Nadja from Family Safadi who presented "equal division of household work" as a myth:

"It also has something to do with the fact that the boss of the home and the children is still me, therefore I need the overall view. He does what I tell him to do very well. But he is not the boss of family issues. This means that I sit at work and have to think about what I cook today, for example, he doesn't do that, I have to keep an eye on everything."

The families dealt with stress with different strategies. The perception of stress was connected with direct or indirect intervention and possible coping strategies of the parents. If close relatives (e.g., grandparents, great-grandparents or other relatives) live nearby, their support was regularly used. In addition to using "support by grandparents or relatives", an effective organization and the organization of everyday life was a basic strategy to meet the requirements of reconciling nonstandard work hours and family life. Brooks-Gunn et al (1995) name four resources for child development, which are also crucial for the wellbeing of parents: Income, time, human capital and psychological capital. The decisive factor in the model is how the above-mentioned resources are handled: Thus, optimal child development is not simply a function of the quantity of a single domain of these resources, but it is the quality and mix of different familial and extra familial and extra familial resources.

As our qualitative sample has shown, the way in which these resources are handled in everyday family life is decisive for the creation of a largely stress-free family environment for the children. However, there is no simple "magic formula" for an optimal mix of different resources. The strategies developed by the families varied according to the resource available to them and depended on the respective family cycle. For young children, institutions such as day care centers, schools and after-school care played an important role. Even if the parents tried to keep the stress away from the children caused by the high organizational effort, parental lack of sleep and absence from the home, the children could not be completely shielded from the stress. Mrs Safadi reported:

"I think my strategy is that my children don't notice how stressed I am. I try, but of course it doesn't always work that my children don't notice how stressed we parents are."

Mrs Safadi reported that it was noticeable that the children were also worried if both parents were not there or if longer working hours were due again. The children (5 and 8 years old) slowly realized that in other families the children were picked up earlier from

the nursery or after-school care, and the children often asked the parents: "I don't want to go to the nursery, why can't I go home earlier? Why do you have to work?"

The perception of the stress situation was one of the central criteria for measuring possible consequences for family and child well-being. The strategies differed by the perception of the situation and the possibilities of activating resources. The strategies varied from the approach "we manage that" to "I give up my career in favour of the family". On the one hand, families tried to alleviate stress through adaptive strategies and involved children in coping with everyday life: for example, during the interview with Stefanie (a nurse on an intensive station/shift work), she talked about how her 4-year-old son had to "get involved" with small things in everyday life. She accepted the stress as a result of the long working hours and the high logistical and organizational effort when both parents went to work. These families reported that their children had to learn to live with stress because "stress is part of life".

6. Discussions

6.1 Main findings

Our quantitative findings have demonstrated that not all types of nonstandard schedules are detrimental to children's social and emotional wellbeing: fixed shift work schedules did not have a negative effect on children's conduct and emotional problems. For mothers, it was rotating and other types of nonstandard schedules that were associated with increases in their children's conduct problems. Moreover, mothers' rotating schedules, to a lesser extent, were also associated with an increased risk of emotional problems in their children. For fathers, it was rotating shifts that were linked to increases in their children's conduct problems which in general are more common in boys than in girls.

Our qualitative sample shows three main findings. First, nonstandard work schedules made everyday life unsettling and the family environment chaotic because it was difficult to plan. For most families where one or both parents worked nonstandard schedules stress was a defining feature of the daily life and parents accepted it as "part of their life". Second, families used different strategies to deal with stress and tried to protect children from it, depending on resources available to them. These resources included the financial ability of the family to purchase private care and services (hiring nannies and au-pairs), use of extra familial resources (daycare centers, schools and after school care), intensive support from grandparents with child care, the capacity of spouses (often the mother) who worked standard daytime schedules to organize for the daily family life, and a career change and reduction in work hours. Contingent on what resources available to them, some families managed well and other families did not cope so well and children were adversely affected. Our qualitative sample shows that high-income families with dual earners used their financial capital to deal with stress associated with nonstandard work schedules by purchasing services (hiring nannies or au pairs); whereas lower and middle income families with dual earners relied on extensive family support to cope with stress.

Without family support these families would not be able to cope with stress. This social inequality in how families reconcile work and family in the 24/7 economy is in line with what Esping-Anderson (2009) called the “female revolution” in his book *The Incomplete Revolution*. Led by middle-class women, this revolution refers to gains in women’s economic autonomy through increases in educational attainment and labour force participation and consequently less gender specialization in the home. This revolution, however, also produces social inequality by widening the gap between low-income and high-income families (Esping-Anderson 2009: 169). In most families we interviewed, it was the mother who took the mental load of doing intensive organizing and planning to ensure the daily family life was less stressful, less chaotic and more settling, even when she also worked full time. This type of mental work is a new dimension of the “second shift” for working mothers who do the vast share of house work and childcare (Hochschild & Machung 2012; Procher, Ritter & Vance 2018).

Bioecological theory emphasizes regular and enduring interactions between children and the family environment (Bronfenbrenner 1979; 2005; Bronfenbrenner & Evans 2000). Family routines and family time are important for optimal child development because they enable families to maintain such regular and good quality interactions among family members (Repetti & Wang 2010). Our quantitative findings have shown that when parents worked irregular and rotating, there was an increased risk for emotional and conduct problems in their children. While we could not directly quantify and test these mechanisms due to lack of data, our qualitative findings based on a sample of six families confirmed that family routines and regular activities were important for the wellbeing of the family and children, but shift work made everyday life unsettling and chaotic because parents could not plan ahead. Thus these findings are consistent with the bioecological theory.

6.2 *How quantitative and qualitative findings complement and enrich one another*

The quantitative finding that working fixed-shifts in either mothers or fathers did not have a negative impact on child wellbeing, compared to standard daytime schedules, was consistent with and confirmed by the qualitative study which showed that families managed well when one parent worked fixed shifts and the other parent worked standard daytime schedules, because they were able to set routines and organize the family life.

Working rotating and other types of nonstandard schedules also had a negative impact on fathers’ wellbeing by increasing stress and strain. For mothers, nonstandard schedules (any type) were not associated with stress and strain after work hours were taken into account: it was full-time work that caused stress and strain for mothers. This effect was possibly attributable to the fact that mothers shoulder most of the housework and childcare, so that the timing of their work did not increase stress above and beyond the number of paid and unpaid work hours. These findings are in line with the notion of the “second shift” (Hochschild & Machung 2012) and the work-family conflict theory: a poor fit between work and family life occurs when parents work long hours and unpredictable

work schedules and this causes stress for the family (Barnett, Gareis & Brennan 2008; Davis et al. 2008; Liu et al. 2011), which in turn may lead to adverse child outcomes.

We hypothesized that stress and strain would in part mediate the negative impact of unpredictable and precarious work schedules on child wellbeing, but the quantitative finding did not support this hypothesis. Our qualitative findings suggest that even though stress was a feature of the families where parents work nonstandard shifts and schedules, some families coped with the stress better than others, depending on resources available to them. Thus stress may be the mediator only in families which have no or limited resources to cope with stress. Future research should take this into consideration, using a larger sample. Taken together, our quantitative and qualitative findings regarding stress as a mechanism linking nonstandard work schedules to child social and emotional wellbeing can be better understood in light of the conceptual resource framework (Brooks-Gunn et al. 1995) which emphasizes that for optimal child development, it is the quality and mix of different familial and extra familial resources (income, time, parents' social capital and mental wellbeing), but not a single domain of these resources, that matter. In some families stress caused by nonstandard work schedules can be mitigated with other domains of family resources, such as income, time and capacity of the other parent (who works standard day hours in part-time) to organize everyday life for the family or extensive support from grandparents.

The qualitative findings reinforce or confirm the quantitative analytical approach. For example, the importance of using child-reported measure of their social and emotional wellbeing instead of parent-reported measures was underscored by the qualitative finding that in some families parents normalized high levels of stress associated with their working life as "part of their life", but their children felt insecure or distressed when their parents were absent from the home while doing shift work or travelling long distance for work. Thus, a reliance of parental reports of child behavioural and emotional problems could lead to downward bias.

Our qualitative findings also suggest some potential pathways and moderators that could not be addressed in this study due to lack of reliable data to operationalize them in the pairfam study. For example, sleep deprivation and fatigue in parents, and lack of family routines (chaos) when one or both parents work nonstandard schedules may underpin the link between working unsociable and unpredictable schedules and emotional and behavioral problems in children. Having a child with disability makes nonstandard work schedules even a greater stressor for the family and the child; but the availability of grandparents who can assist on a regular basis enables families to manage well even when both parents work nonstandard schedules. These factors need to be examined in future quantitative research.

6.3 Strengths and limitations

This study is the first to use mixed methods to investigate the impact of parents' nonstandard schedules on children's social and emotional wellbeing. The advantage of combining quantitative and qualitative approaches is that the quantitative and qualitative arms of the study can inform and enrich one another in terms of both theories guiding the analytical design, statistical modeling and sampling for the qualitative component and

the interpretation of the results, as Li and Earnest (2015) have advocated. The findings from our qualitative sample provide insights into the daily life of families affected by the 24/7 economy and reveal new pathways linking this economy to children's social and emotional wellbeing and moderators that either mitigate or augment the impact. These findings stimulate further quantitative research in this field. We distinguished fixed shift schedules from those that were less predictable and more precarious (rotating and variable and irregular schedules) to show that it was the latter that were detrimental to children's social and emotional wellbeing. This is an important contribution to the existing literature which generally shows that it is evening and night work schedules that negatively impact children's wellbeing (Li et al. 2014; Kaiser et al. 2017). Our qualitative study used a diverse sample of families from different socioeconomic backgrounds and living in urban and rural areas in Germany. Nonetheless, it is important to increase the sample size and diversity in future qualitative interviews by including lower working class families, migrant and ethnic families where one or both parents work in precarious and services sectors in which rotating and irregular work schedules are the most common.

A major limitation of the quantitative study is that the sample size for fathers was much smaller than that for mothers, which could result in less reliable estimates. Also, we could not simultaneously examine the effect of both parents' nonstandard work schedules on child wellbeing due to data limitations. Future research should examine the association between parental work schedules and child wellbeing from a family perspective by taking into account interaction between mothers' and fathers' work schedules. Another limitation is that there were not sufficient changes in work schedules within the mother and hence a fixed-effect model could not be estimated with a view to more vigorously tackle the problems of selection bias. Finally, we were not able to take into account the duration of time parents spent in nonstandard work hours due to lack of data. Previous longitudinal research based on US samples has shown that the number of years that mothers and fathers worked evening or night shifts was associated with increases in behavioural problems in children ages 4 to 10 and an increased risk for depression and risk-taking behaviours (smoking, drinking, drug use, delinquency, and sexual activity) in adolescents (Han 2008; Han & Miller 2009; Han et al. 2010). Future research is warranted to examine to what extent these findings may hold in the German and other non-US contexts.

7. Conclusions

The 24/7 economy continues unabated and in some ways it has intensified in the era of digitalization and globalization. Our study has shown that families are under stress and children's social and emotional wellbeing is compromised when parents work unpredictable and precarious schedules such as rotating and other irregular shifts in Germany. Our results from qualitative and quantitative analyses show that some families with adequate resources can manage the stress so that families and children seem to be buffered from the negative impact of working under the 24/7 economy, but others with limited resources are not able to cope with the stress and thus their children are adversely

affected. Supportive policy measures are needed at the national level to help all families, especially vulnerable families and children, cope and thrive in the continuing (enduring) 24/7 economy. Our findings have implications for other countries, particularly those under neoliberalist regimes where casual employment and unpredictable work schedules are common, such as Australia and the US (Australian Bureau of Statistics 2009; Golden 2015), as employers increasingly adopt casual employment and “on-call” scheduling practices to reduce labor cost in order to maximize profits under deregulation. Finally, our study demonstrates the benefit of combining both quantitative and qualitative data, thus having “the best of both worlds” to deepen our understanding of the impact of the 24/7 economy on the wellbeing of families and children (Li & Earnest 2015).

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Information in German

Deutscher Titel

Elterliche Schichtarbeit und das soziale und emotionale Wohlbefinden von Kindern: Eine Mixed-Methods Analyse für Deutschland

Zusammenfassung

Eine beträchtliche Anzahl an Kindern lebt in Familien, in denen ein oder beide Elternteile abends, nachts oder am Wochenende arbeiten. Anhand eines Mixed-Methods Designs untersucht diese Studie, inwiefern solche atypischen Arbeitszeiten das soziale und emotionale Wohlergehen von Kindern negativ beeinflussen. Die quantitativen Analysen auf Basis der deutschen pairfam-Daten zeigen, dass atypische Arbeitszeiten das Wohlbefinden von Kindern beeinträchtigen können. Kinder von Eltern, die in Wechselschicht arbeiten, verzeichnen ein signifikant niedrigeres soziales und emotionales Wohlbefinden als Kinder, deren Eltern keine Schichtarbeit verrichten. Allerdings wird das Wohlbefinden von Kindern nicht beeinträchtigt, wenn die Eltern in fester Schichteinteilung arbeiten. Insgesamt wirkt sich das mütterliche Arbeitszeitarrangement stärker auf das kindliche Wohlbefinden aus als die väterlichen Arbeitszeitregelungen. Die qualitativen Befragungen zeigen, dass atypische Arbeitszeiten zu einem weniger planbaren und turbulenteren familiären Alltagsleben führen. Für die meisten Familien mit atypischen Arbeitszeiten ist Stress ein fester Bestandteil des Alltagslebens. Dabei nutzen Familien – jeweils abhängig von den zur Verfügung stehenden Ressourcen – unterschiedliche Strategien, um Kinder vor den negativen Folgen des elterlichen Stresses zu schützen.

Schlagwörter: Atypische Arbeitszeiten, Schichtarbeit, Kinder, soziales und emotionales Wohlbefinden, Mixed Methods, pairfam.

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