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Evening and night work schedules and children's social and emotional well-being

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Keywords
Non-standard work; children; social and emotional wellbeing; SDQ; dual-earner couples; parenting

Palabras-clave
trabajo no-estándar; niños; bienestar social y emocional; SDQ; parejas con doble ingreso; crianza

Abstract
An emerging body of evidence shows that parents' non-standard work schedules have a detrimental effect on children's well-being. However, only a limited number of studies have investigated mediating factors that underpin this association. Likewise, only a few studies have examined the impact of fathers' non-standard work schedules on children's well-being. Based on data from the Families in Germany Study (FiD), this study aimed to address these research gaps. The sample consists of parents and their children at ages 7–8 and 9–10 (*n* = 838 child observations in dual-earner families). The data were collected in the years 2010–2013. Non-standard work hours were defined as working in evenings and or at night (every day, several times a week, or changing as shifts). Children's social and emotional well-being was measured with the Strengths and Difficulties Questionnaire (SDQ). The findings show that both mothers' and fathers' evening and night work schedules are linked to an increase in children's externalizing and internalizing behavior and that this association is partially mediated by mothers' and fathers' harsh and strict parenting, with a stronger mediation effect for fathers parenting.

Resumen
Un conjunto de nueva evidencia sugiere que los horarios laborales no-estándar de los padres tienen un efecto perjudicial en el bienestar de los niños. No obstante, solamente un número limitado de estudios han investigado los factores intervinientes que sustentan esta asociación. Asimismo, son escasos los estudios que examinan el impacto de los horarios laborales no-estándar de los padres en el bienestar de los niños. Basada en datos del estudio 'Familias en Alemania' (FiD, por sus siglas en alemán), esta investigación tiene el objetivo de abordar estas brechas de investigación. La muestra consiste en padres y sus hijos entre 7–8 y 9–10 años de edad (*n* = 838 observaciones de niños en familias con doble fuente de ingresos). Los datos fueron recopilados durante los años 2010–2013. Las horas de trabajo no-estándar se definen como horas trabajadas por las tardes o por la noche (diariamente, varias veces a la semana o alternando en turnos). El bienestar social y emocional de los niños se midió con el Cuestionario de Fortalezas y Dificultades (SDQ, por sus siglas en

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inglés). Los resultados muestran que los horarios de trabajo vespertino y nocturno tanto de las madres como de los padres, están vinculados a un aumento en el comportamiento externalizado e internalizado de los niños, y que esta asociación está parcialmente mediada por la crianza severa y estricta por parte de las madres y los padres, teniendo la crianza paterna un efecto de mediación más fuerte.

Introduction

Increasingly more employees work in the evening, at night, or on weekends. Work outside the typical Monday to Friday, nine-to-five schedule – also called non-standard work schedules – more often than not has a negative impact on family life. An emerging body of research also demonstrates that non-standard work schedules are associated with lower levels of child well-being. Specifically, young children in families in which one or both parents work non-standard hours have more social and emotional difficulties, higher levels of externalizing and internalizing problems, higher overweight and obesity, and lower levels of cognitive development (Kalil, Dunifon, Crosby, & Houston Su, 2014; Li et al., 2014; Miller & Chang, 2015).

Previous studies have examined various mediating factors that link parental non-standard work schedules with child behavioral problems, including parental depressive symptoms (Daniel, Grzywacz, Leerkes, Tucker, & Han, 2009; Rosenbaum & Morett, 2009; Strazdins, Clements, Korda, Broom, & D'Souza, 2006), family functioning (Strazdins et al., 2006), inadequate parental supervision (Han, Miller, & Waldfogel, 2010), reduced parent-child closeness and less time spent with children (Han & Miller, 2009; Han et al., 2010; Rosenbaum & Morett, 2009), and a less supportive home environment (Han & Miller, 2009; Han et al., 2010; Han & Waldfogel, 2007).

We extend the existing literature in several ways. Few studies have examined parenting styles as a potential pathway (Strazdins et al., 2006). In our study, we examine the mediating role of harsh and strict parenting styles in the association between parents' work schedules and their children's social and emotional well-being.

Moreover, in contrast to most previous studies, we analyze the joint work schedules of mothers and fathers or their interaction. There are increasingly more studies that have included both mothers' and fathers' non-standard work schedules in the analysis as two separate predictors. Evidence from these studies suggests that fathers' work schedules, as well as those of mothers, matter for family well-being (Han & Fox, 2011; Han & Miller, 2009; Rosenbaum & Morett, 2009; Strazdins et al., 2006; Strazdins, Korda, Lim, Broom, & D'Souza, 2004). However, as Li et al. (2014) have pointed out, few existing studies examined the joint work schedules of both parents or their interaction. Two notable exceptions are those by Champion et al. (2012) and Miller and Chang (2015). Champion et al. (2012) examined joint NS schedules worked by both parents in nine-year-old children and found that these schedules were associated with increased risk for child overweight and obesity, but with a weak statistical significance. Miller and Chang (2015) found that the joint schedules where mothers worked standard schedules in her main job but non-standard schedules in her secondary job and fathers worked any schedules was associated with a significant increase in the probability of child overweight or obesity, compared to the

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reference (mothers worked standard and fathers worked any schedules). However, no research has examined the effect of joint work schedules of both mothers and fathers on child social and emotional well-being. Joint work schedules are important because they reflect the way in which families cope with challenges posed by the family and work imperative.

In our study, we also take into account fathers' reports on child well-being. Most studies lack fathers' reports of children's emotional and behavioral problems, in the field of non-standard work schedules. Children may behave differently in the home, depending on whether it is the mother or the father who is on child care duty at home. Mothers and fathers may also observe children's behavioral or emotional symptoms differently. Thus, it is recommended that multiple reports of children's behavior be analyzed to reduce information bias (Li et al., 2014).

Analyzing information from both mothers and fathers also allows us to address concerns of endogeneity that arises when both parenting style and child behavioral problems are reported by the same parent, usually the mother. We address these concerns by cross-classifying mothers' reports and fathers' reports of child behavioral problems and parenting styles.

Germany is an interesting country for studying the connection between fatherhood and work hours because its family support policies are different from those in the countries that have been studied so far. Germany has undergone various family policy reforms in the last decades. These include a right for both parents to do part-time work (since 2001), the entitlement for fathers and mothers to take parental leave simultaneously (since 2001) and to paid parental leave for 14 months (since 2007), which encourages fathers' uptake of parental leave, and legal entitlement to public day care for children older than 1 year (since 2013). These reforms have led to an increase in child care provisions and may well have altered parents' labor supply. Thus, German parents are less likely than their American and Australian counterparts to work non-standard schedules to meet their child care needs and to juggle work and family commitments in general. Consequently, working non-standard schedules might have a less adverse effect on the well-being of families and children in the German context.

Theoretical framework

This study was motivated by two theoretical frameworks: the conceptual resource framework and the work–family conflict framework. The conceptual resource framework developed by Brooks-Gunn, Brown, Duncan, and Moore (1995) integrates multidisciplinary perspectives, including sociology, psychology, and economics. This framework identifies four major categories of intrafamilial and extrafamilial resources that are considered important for parenting and child development: income, human capital, and psychological capital such as mental health of the parent, relationship-quality, and beliefs about the parental role in child rearing. The extrafamilial resources involve schools, peer groups, and the wider social context (Kendall & Li, 2005). According to this framework, child development is influenced by the interaction among the intrafamilial and extrafamilial resources, parents' decisions about allocating these resources, and the endowments of the child.

Further, we refer to the work–family conflict framework. Greenhaus and Beutell (1985) define family conflict as 'a form of interrole conflict in which the role pressures from the

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work and family domains are mutually incompatible in some respect' (p. 77). Greenhaus and Beuttel differentiate three forms of family conflict: time-based, strain-based, and behavior-based conflict. Time-based conflict occurs when time constraints hinder the person from taking another role. Strain-based conflict appears if the strain undergone in one role inhibits the participation in another role. Roles that contradict each other lead to behavior-based conflict.

Combining these two frameworks we developed our hypothesis with regard to why non-standard work schedules may have an impact on children's social and emotional well-being and what factors may mediate this association. We consider parents' workplaces as an important factor that influences child development indirectly through the effects of parents' labor market activities. We argue that non-standard work schedules are likely to have an effect on family resources (e.g. parents' mental and physical health) which in turn will affect parenting behavior.

It is well-established that parenting plays a key role in optimal child development. Harsh and strict parenting has been shown to be a strong predictor of child behavior problems (Chang, Schwartz, Dodge, & McBride-Chang, 2003; McKee et al., 2007; Reitz, Deković, & Meijer, 2006). Fatigue and stress associated with working in the evening and at night can reduce parents' capacity for adequate parenting. Working these schedules may also lead to strain- and time-based work–family conflicts: Being exhausted leads to a decrease in psychological resources, strains the ability to fulfill the role as a parent, and can have negative spill-over effects on the partner. Thus having one parent working non-standard work schedules may also lead to harsh and strict parenting on the part of the other parent, because being confronted with an exhausted and stressed partner could impede effective communication between parents and the ability for proper parenting.

Based on the theoretical considerations discussed above and existing research, we hypothesized that children whose parents work non-standard schedules are more likely to have emotional and behavioral problems than children whose parents work standard schedules. This relationship is stronger when both parents work non-standard schedules than when only one parent works such schedules. We further hypothesized that the negative effect of non-standard work schedules is (partially) mediated through harsh and strict parenting.

Previous research shows significant interactions between family socio-economic status and the effect of parental non-standard work schedules on child outcomes: the association between non-standard work schedules and increase in child social and emotional problems is more pronounced in families with low-income or single-parenthood or low occupational status (Li et al., 2014). In light of this evidence and the German context where educational qualifications serve as a critical social divider, we expect the detrimental effect of parental non-standard work schedules to be stronger in the lower educational strata (parents without a university or tertiary degree) than in the higher educational group.

Data

The study was based on data from the Families in Germany Study (FiD) (Schröder, Siegers, & Spieß, 2013). The FiD is an extension of the German Socio-Economic Panel Study (SOEP; Wagner, Frick, & Schupp, 2007), and it includes an additional survey of families with young

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or a large number of children and disadvantaged families (e.g. lone parents or low income). The FiD survey started in 2010 and ended with the last wave in 2013 and collected information on parents and children ages 0–10 (Schröder et al., 2013). We used two waves of the FiD survey (2010–2011 and 2012–2013) that collected information on child well-being for children ages 7–8 and 9–10. Our final sample included 838 child-year observations in dual-earner families. For a detailed overview of the sample, see Appendix (Table A1).

Measures

Dependent variables

Children's behavior problems (social and emotional well-being) were measured with the Strengths and Difficulties Questionnaire (SDQ) which was developed by Goodman (1997) and covers four domains: hyperactivity, emotional symptoms, conduct problems, and peer problems. Each domain includes five items on a scale of (1) *Not true*, (2) *Somewhat true* (3) *Certainly True*. The four SDQ domains were scored as follows: The mean of the summed items used in each domain is calculated if they answered at least three of the five items of the domain. In the following step it is multiplied by 5 and rounded. The four domains are aggregated to give the overall score SDQ, whereby a higher score corresponds to more behavior problems. We were able to analyze the child SDQ scale based on both fathers' and mothers' reports (inter-correlation of overall SDQ ratings: $r = 0.63^{***}$).

Mediators

To measure harsh and strict parenting we used the scales of 'negative communication' and 'strict control' that are based on a parenting style instrument developed by Schwarz, Walper, Gödde, and Jurasic (1997). Both mothers and fathers were asked to answer three items for strict control and negative communication on a scale from (1) *never* to (5) *frequently*. Negative communication is measured with the items: 'I criticize my child', 'I yell at my child when he/she does something wrong', and 'I scold my child when I am angry at him/her'. The scale 'strict control' is measured with the items: 'I tend to be a strict parent', 'If my child does something against my will, I punish him/her', 'I make it clear to my child that he/she is not to break my rules or question my decisions'. The rating of mothers' own negative communication as well as strict control and that of fathers had a low to moderate correlation (inter-correlation: strict control $r = 0.27^{***}$; negative communication $r = 0.40^{***}$), indicating considerable differences in parenting style by parent gender.

Independent variables

The FiD provides information on non-standard work schedules in evenings and nights and on weekends for both parents. Extensive preliminary analysis showed no significant effect of joint weekend work schedules on children's social and emotional well-being. This finding is in line with previous research showing that child behavioral problems are

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much more strongly affected by evening and night work schedules than by weekend work (Gassman-Pines, 2011; Rosenbaum & Morett, 2009). Therefore we focused on evening and night schedules in our analysis.

Evening and night work schedules were measured with two items asking how often respondents work (a) in the evening (after 7.00 PM) or (b) at night (after 10.00 PM). The frequency of evening and night work was measured in six categories: *every day; several times a week; once a week; changing as shifts; less often/as needed; never*. We conducted a sensitivity analysis that did not show significant differences between parents who did not work evening or night schedules and parents who occasionally worked such schedules (once a week or less often). Thus, as a first step we dichotomized the main independent variable, evening/night schedules, as: 0 = never, once a week, less often/as needed; 1 = every day, several times a week, changing as shifts. Next, we created a joint work schedule in evenings and nights with four categories: 0 = neither parents worked evenings/nights (reference group), 1 = father worked evenings/nights but mother did not, 2 = mother worked evenings/nights but father did not, and 3 = both parents worked evenings/nights.

In our sample, 23 percent of fathers work regularly at night and about 40 percent work regularly in evenings, and the prevalence for mothers is about 11 percent and 28 percent, respectively (see Table A1). The most common joint work schedules were 'only father worked evening/night' (26%) and 'both partner worked evenings/nights' (17%). The reason for collapsing evening and night schedules is that there is not sufficiently large sample size for separating them, especially when cross-classified these schedules separately by parent gender.

All models included relevant control variables: both parents' education (years of schooling), their weekly work hours and occupational status (International Occupational Prestige Scale, Ganzeboom & Treiman, 1996), and monthly net household income (with imputations for missing cases). In addition, we controlled for child gender, the number of children in the household (one child, 2 children, 3 or more children), mothers' age, use of child daycare or after-school care, and migration background of mother and father. For a descriptive overview of the variables, see Appendix (Table A1).

Methods and analytic strategy

Unlike previous studies that examined mediators, we used resampling methods (bootstrap) to test the significance of mediation effects. It is important to use the bootstrap method (or similar methods) to minimize downward bias in estimating the mediated effects of non-standard work schedules on child outcomes (see Hayes & Scharkow, 2013). Using this method, we formally test harsh and strict parenting as a plausible mediator of the association between parents' non-standard work schedules and children's social and emotional well-being in this study.

We used multi-level modeling (random intercept models) to analyze the two-wave data. Three models were fitted to estimate the mediated effect of non-standard work schedules on children's social and emotional well-being via parenting styles (see Figure 1): First, a model that estimates the effect of the independent variable on the mediator (a); second, a model including the mediator that estimates the direct effect of the independent variable on the dependent variable (c'); and finally, a model that estimates the effect of the mediator on the dependent variable (b). To calculate the indirect effect of the

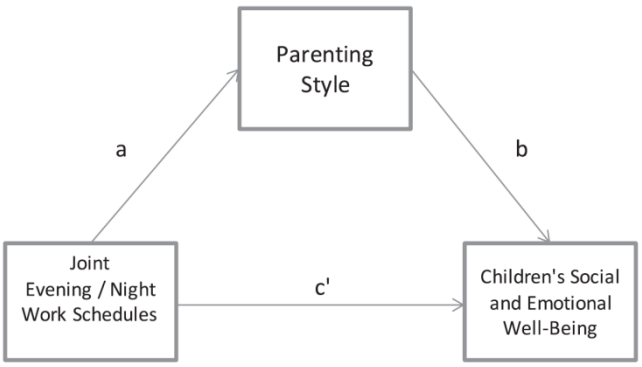

Figure 1. Stylized representation of the estimated models.

independent variable on the dependent variable, we multiplied (a) and (b). The size of the indirect effect shows the magnitude of the mediated effect of the independent variable on the dependent variable. The total effect (c) was calculated by summing up the direct effect and the indirect effect (Rucker, Preacher, Tormala, & Petty, 2011). To calculate the significance of the indirect (meditated) effect, we used the STATA program ml-mediation (Ender, 2014) which is based on the approach of Krull and MacKinnon (2001). The program calculates the significance of the indirect effect via bootstrapping with bias-corrected confidence intervals, which are more robust than the commonly used Sobel's test and do not lead to downward bias (Hayes & Scharkow, 2013). We used bias-corrected confidence intervals to obtain the significance of the effects based on 1000 re-samplings.

In the results section, the findings show significant indirect effects without significant total effects. Scholars who follow the causal steps approach of Baron and Kenny (1986) may not be familiar with this situation because they would suggest a significant total effect as a prerequisite for going further to test for indirect effects. But this prerequisite is not necessary (Hayes, 2013, pp. 169–170; Rucker et al., 2011).

One common problem confronting researchers who use self-reported data to analyze the relationship between parenting and children's social and emotional well-being is endogeneity. Endogeneity can occur when information on parenting behavior and children's well-being is reported by the same parent. Another potential problem is that when parents work non-standard hours, they have fewer opportunities to observe their children during those hours (e.g. evenings and nights). Therefore, their ratings of child well-being may be inadequate or biased. The FiD data enabled us to address these problems as they contain the ratings of child well-being from both mothers and fathers and parenting behavior reported by both parents. To minimize the problem of endogeneity and bias, we used fathers' ratings of child well-being when estimating the effect of mothers' parenting style as a mediator on child social and emotional well-being, and vice versa.

Results

Table 1 shows the multivariate results for total, direct, and indirect effects of joint evening and/or night work schedules on the total score of child behavior. The direct effect represents the effect of evening/night work schedules on the total SDQ score when

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Table 1. Overall SDQ score.

	Effects on overall SDQ (father ratings)		Effects on overall SDQ (mother ratings)	
	Strict control (mother)	Negative comm. (mother)	Strict control (father)	Negative comm. father)
Both work evening/night regularly				
Indirect effect	0.09*	0.20*	0.12*	0.30*
Direct effect	1.14*	1.08*	0.46	0.06
Total effect	1.22*	1.27*	0.58	0.36
Only mother works evening/night regularly				
Indirect effect	0.06	0.07	0.16*	0.23*
Direct effect	0.89	0.90	0.70	0.37
Total effect	0.95	0.97	0.87	0.60
Only father works evening/night regularly				
Indirect effect	0.07	0.04	0.08	0.08
Direct effect	0.29	0.35	0.18	0.10
Total effect	0.35	0.39	0.27	0.18

Notes: *Controls:* Working hours father, working hours mother, sex (child), schooling in years (mother and father), SIOPS (mother and father), adjusted household income (log.), migration background (mother and father), institutional child care, number of children in household, age (child). Significance of Total- Direct- and Indirect effects obtained from 95% – bootstrap bias-corrected confidence intervals, *$p < .05$.

controlling for the mediating variable (strict control or negative communication) and family socioeconomic and demographic characteristics. The indirect effect demonstrates the effect of evening/night work schedules on SDQ that is transmitted via strict control or negative communication. The total effect is the sum of the direct and indirect effects. Total, direct, and indirect effects of the joint evening/night schedules need to be interpreted in relation to the reference category (neither parents work evenings and or nights regularly). Therefore, some scholars call such effect as 'relative' total, direct, and indirect effects (Hayes & Preacher, 2014).

Based on fathers' rating of child SDQ (Table 1, Panel 1), when both parents worked evening/night schedules, there were both direct and indirect effects via mothers' parenting (strict control and negative communication) on child behavior problems. Interestingly, based on mothers' rating of child SDQ (Table 1, Panel 2), fathers' harsh and strict parenting (negative communication and strict control) also played a significant role in the connection between parental work in evenings and/or at nights and child behavior problems. Compared to the reference group (neither parent works in evenings or nights regularly), when either only the mother or both parents worked evening or night schedules regularly, children had a higher SDQ score for behavior problems. This effect was mediated through the father's strict and harsh parenting. This result suggests that there was a spill-over effect on the father when only the mother worked evening and night schedules, as manifested in the indirect effect via the father's harsh and strict parenting.

The results for the four specific SDQ domains were presented in Tables 2 and 3. The results based on fathers' ratings of child SDQ were shown in Table 2, and the results based on mothers' ratings were presented in Table 3. In Table 2, based on fathers' ratings, the category 'both parents work evening and/or night schedules regularly' had an indirect effect on child hyperactivity via mothers' parenting (negative communication), whereby the strongest effect on hyperactivity was the direct effect of mothers evening/night work The strongest effects (direct and indirect) are observed for conduct problems, whereby the direct effects are stronger than the indirect effects. When both parents worked evening/night work schedules or when only the mother worked such schedules, there were increases in conduct problems. These effects were both direct and indirect and

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Table 2. Sub-dimensions of SDQ (father's ratings of SDQ, mother's parenting style).

	Externalizing problems				Internalizing problems			
	Hyperactivity		Conduct problems		Peer problems		Emotional symptoms	
	Strict control	Negative communication	Strict control	Negative communication	Strict control	Negative communication	Strict control	Negative communication
Both work evening/night regularly								
Indirect effect	0.02	0.07*	0.03	0.06*	0.01	0.02*	0.03*	0.05*
Direct effect	0.09	0.06	0.54*	0.51*	0.06	0.05	0.40*	0.38*
Total effect	0.11	0.13	0.57*	0.58*	0.07	0.07	0.43*	0.43*
Only mother works evening/night regularly								
Indirect effect	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02
Direct effect	0.15	0.14	0.40*	0.40*	0.25	0.25	0.18	0.18
Total effect	0.16	0.16	0.42*	0.42*	0.26	0.26	0.20	0.20
Only father works evening/night regularly								
Indirect effect	0.02	0.01	0.02*	0.01	0.01	0.00	0.02*	0.01
Direct effect	0.12	0.14	0.22	0.24	−0.13	−0.13	0.12	0.13
Total effect	0.14	0.15	0.24	0.25	−0.13	−0.13	0.14	0.14

Notes: *Controls:* Joint weekend work schedules, working hours father, working hours mother (log.), sex (child), schooling in years (mother and father), SIOPS (mother and father), adjusted household income (log.), migration background (mother and father), institutional child care, different FiD-samples. Significance of Total- Direct- and Indirect effects obtained from 95% – bootstrap bias-corrected confidence intervals, *$p < .05$.

Table 3. Sub-dimensions of SDQ (mother's ratings of SDQ, father's parenting style).

	Externalizing problems				Internalizing problems			
	Hyperactivity		Conduct problems		Peer problems		Emotional symptoms	
	Strict control	Negative communication	Strict control	Negative communication	Strict control	Negative communication	Strict control	Negative communication
Both work evening/night regularly								
Indirect effect	0.04*	0.12*	0.05	0.12*	0.01	0.00	0.03*	0.07*
Direct effect	0.11	0.06	0.16	0.08	0.02	−0.06	0.28	0.19
Total effect	0.16	0.18	0.21	0.20	0.03	−0.06	0.31	0.26
Only mother works evening/night regularly								
Indirect effect	0.06*	0.09*	0.07*	0.09*	0.01	0.00	0.04*	0.06*
Direct effect	−0.06	−0.07	0.08	0.03	0.39*	0.31	0.32	0.22
Total effect	0.00	0.02	0.15	0.13	0.40*	0.31	0.36	0.28
Only father works evening/night regularly								
Indirect effect	0.03	0.03	0.03	0.03	0.00	0.00	0.02	0.02
Direct effect	−0.16	−0.15	0.20	0.20	0.10	0.06	−0.05	−0.05
Total effect	−0.13	−0.12	0.23	0.23	0.10	0.06	−0.03	−0.03

Notes: *Controls:* Joint weekend work schedules, working hours father, working hours mother (log.), sex (child), schooling in years (mother and father), SIOPS (mother and father), adjusted household income (log.), migration background (mother and father), institutional child care, different FiD-samples. Significance of Total- Direct- and Indirect effects obtained from 95% – bootstrap bias-corrected confidence intervals, *$p < .05$.

the indirect effect was through the mother's parenting (negative communication). When only the father worked such schedules, there was also an indirect effect on conduct problem, via the mother's parenting (strict control), suggesting a spill-over effect of the father's evening/night schedules on the mother.

For emotional symptoms, both direct and indirect effects were observed when both parents worked evening and/or night work schedules regularly. Also here the direct effect was stronger than the indirect effect, which operated through mothers' parenting (strict control and negative communication). When only fathers worked in evenings or nights there was an increase in emotional symptoms that was mediated via mothers' strict control. In the case of peer problems there was only an indirect effect via mothers' parenting (negative communication) when both parents worked evening and/or night schedules regularly.

The results based on mothers' ratings of child hyperactivity show indirect effects of both parents working evening/night work schedules regularly (Table 3) via fathers' parenting behavior (strict control and negative communication). There were also indirect effects via fathers' parenting styles when only the mother worked such schedules, suggesting spill-over effects. A similar pattern was observed with regard to conduct problems: Having both parents working evening or night schedules and only the mother working such schedules had indirect effects via the father's parenting, again implying a spill-over effect. The same held true for emotional symptoms. For peer problems, there was a direct effect of only the mother working evening and/or night schedules.

In further analysis, we estimated the models separately for children whose parents had high education (e.g. university degree) and those whose parents had low education (without university degree). We found that when both parents worked evening/night work schedules regularly, mothers from households with low education reported higher overall SDQ scores than mothers from high education households (coefficient = 1.41** versus 0.24 for parents with high education). For fathers' ratings we did not find any significant difference between two educational groups. Regarding the different sub-dimensions of child behavior problems, there was not a clear pattern of stratification, and this could be due to smaller subsample size of the two educational groups by the SDQ sub-dimensions.

Discussion

Are joint evening and night work schedules predictive for child behavior problems? If so, does harsh and strict parenting play a role in mediating such effects? This study aimed to answer these questions. Regarding the overall SDQ score, results showed that compared to parents who worked standard schedules, fathers and mothers who both worked in the evening and or at night reported more behavior problems of their children, and that this association was (partially) mediated through mothers and fathers' strict and harsh parenting. This is in line with one of the very few studies on this topic (Strazdins et al., 2006). Strazdins et al. (2006) reported an increase in child behavior problems if both parents work non-standard work schedules and this association was partially mediated by ineffective parenting. Our study adds to this research by testing mediating effects more vigorously using a more advanced analytical technique for mediation effects and more

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differentiated parenting style assessments based on ratings of both parents and by explicitly analyzing subdomains of child behavior problems.

Our findings show that children have more behavior problems across all domains if both parents work evening and or night schedules. However, there are differences across domains. For example, mothers and fathers report more problems if both parents work evening and night schedules, and this effect seems to be stronger in the domain of conduct problems than in other domains. This is important since conduct problems in childhood have been shown to be predictive for crime, substance use, educational under-attainment and unemployment in adolescence and adulthood (Colman et al., 2009; Fergusson & Horwood, 1998; Fergusson, John Horwood, & Ridder, 2005). Also we found, that the direct effects of mothers evening/night work on child SDQ are the strongest, if fathers rate the SDQ and that the indirect effect of mothers evening/night work on child SDQ are stronger when mothers rate the SDQ of the children.

Taking a more precise look at the role of parenting as a mediator, our findings also indicate cross-partner effects with regard to conduct problems: If only the father works evening and or night schedule he reports an increase in conduct problems in his children, which is mediated through maternal parenting. If mothers work evening and or night works regularly they also report more conduct problems in her children, and this effect is mediated through fathers' parenting style. So there is evidence that evening and or night work is associated with strict and or harsh parenting of the partner, which in turn is linked to an increase in conduct problems. Such spill-over effects can also be observed for other domains of SDQ, especially true for fathers parenting: If only mother works evening and or night work schedules she also reports an increase in hyperactivity and emotional symptoms that is transmitted through fathers' strict and harsh parenting. If only fathers work non-standard work schedules, they also report more emotional symptoms in their children, and this is mediated through paternal strict control. Taken together parenting plays an important role in explaining the association between parental evening and nights work schedules and child behavior problems, especially fathers' parenting style.

Our finding reinforces the notion that fathers play an important and a unique role in children's social and emotional development (see also Lamb, 2010; Li & Pollmann-Schult, 2016). Overall, the results support our general hypothesis that parents' work schedules in evenings and nights have detrimental effects on children's social and emotional well-being and that this impact is to an important extent attributed to parenting behavior on the part of not only mothers but also fathers.

Further analysis stratified by parental education did not show a consistent pattern. For the total SDQ score, while mothers with lower education reported more overall child behavior problems, this was not the case for fathers. In additional analysis on the four specific dimensions of child behavior, we did not find significant differences between the two educational groups. We had expected a more consistent pattern across educational groups because previous research (Strazdins et al., 2004, 2006) showed stronger associations between parents' non-standard work schedules and child social and emotional outcomes in low SES families (e.g. low-income and low occupational status) than in high SES families in Canada. The weaker educational stratification pertaining to the impact of working standard schedules on children's social and emotional in Germany might be attributed to a stronger social support system for families and children in the German context.

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The study has strengths as well as limitations. By analyzing how mothers' harsh and strict parenting mediates the effect of mothers' evening and night work on child wellbeing reported by fathers, and vice versa, we were able to minimize the problem of endogeneity and a common information bias. These issues have not been addressed in previous research. Additionally, we tested mediation formally by using a multi-level mediation approach and bootstrapping with bias-corrected confidence intervals. To our knowledge, these methods have not been utilized in any previous study on this topic. A major limitation of our study is that our analysis was mainly based on between subjects variance rather than within subject variance. Consequently, we cannot make causal inferences about the association between parents' non-standard work schedules and their children's well-being. Factors other than parenting may operate to mediate the association between non-standard work schedules and child well-being. There is evidence that physical health (such as fatigue and reduced sleep and its quality) and mental health (such as depression and stress) might be other mediators as ample research has shown that non-standard work schedules have detrimental health effects on workers who work evening and nights shifts (see Kantermann, Juda, Vetter, & Roenneberg, 2010 for a review). Reduced marital or union quality is another potential mechanism (Presser, 2003). Due to lack of data on these variables, we were not able to examine them in the present study. Despite these limitations, this study has demonstrated for the first time that from both mothers' as well as fathers' point of view, child behavior problems increase when parents work in evenings or at nights, compared to when parents do not work such schedules. The findings highlight that not only mothers' but also fathers' parenting behavior plays an important role in mediating such detrimental effects on children's social and emotional well-being. Parenting of fathers and mothers act as partial mediators, if both parents work evening and night work schedules. The study also reveals spill-over effects of one parent working evenings and nights on the other parent, particularly on the father. If only the mother works evening and night work schedules, only the father's parenting behavior is a partial mediator. This finding again underscores the importance of fathers for understanding the impact of the 24/7 economy on children's social and emotional well-being.

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Appendix

Table A1. Frequency distribution of the variables.

Variables	Mean/Percent	Range	Mean/Percent	Range
	Father		*Mother*	
Strengths and difficulties	Ø		Ø	
Overall score	8.36	0–33	8.22	0–36
Hyperactivity	3.35	0–10	3.04	0–10
Conduct problems	1.99	0–10	1.97	0–10
Peer problems	1.36	0–9	1.32	0–10
Emotional symptoms	1.66	0–10	1.87	0–10
Evening work	%		%	
No	31.50		55.13	
Daily	5.25		3.70	
Several times a week	14.56		13.13	
1×per week	12.65		9.90	
Shift weekly	20.64		11.34	
Less often	15.39		6.80	
Night work	%		%	
No	59.31		81.03	
Daily	2.27		1.43	
Several times a week	5.49		4.42	
1×per week	7.16		3.70	
Shift weekly	15.39		5.25	
Less often	10.38		4.18	
Harsh parenting styles	Ø		Ø	
Strict control	2.85	1–5	2.96	1–5
Negative communication	2.45	1–5	2.54	1–4.67
Sociodemographics	Ø		Ø	
Schooling in years	12.93	7–18	13.15	7–18
Treiman index (SIOPS)	45.21	13–78	42.29	15–78
Working hours	44.38	4–75	22.33	1–70
Age	42.12	26–66	39.02	25–56
Migration background = yes	20.79	0–1	26.76	0–1
Household Variables				
Joint evening/night work schedules		%		
Mother (No) Father (No)	43.61			
Mother (No) Father (Yes)	26.40			
Mother (Yes) Father (No)	13.26			
Mother (Yes) Father (Yes)	16.73			
Number of children		%		
One child	2.75			
Two children	39.43			
More than two children	57.83			
Sex = Female (child)	49.46			
Institutional childcare = yes	35.21			
		Ø		
Age (child)	8.77	7.25–10.58		
Adj. Household income (log.)	8.14	6.75–9.62		
$N = 838$				

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