Evening and Night Work Schedules and Children's Social and Emotional Well-being

Till Kaiser

till.kaiser@wzb.eu

WZB Berlin Social Science Center

Germany

Jianghong Li

jianghong.li@wzb.eu

WZB Berlin Social Science Center

Germany

Telethon KIDS Institute

The University of Western Australia, Perth

Australia

Centre for Population Health Research

Curtin University, Perth

Australia

Matthias Pollmann-Schult

matthias.pollmann-schult@wzb.eu

WZB Berlin Social Science Center

Germany

Abstract

An emerging body of evidence shows that parents' nonstandard 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 few studies have examined the impact of fathers' nonstandard 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 findings show that both mothers' and fathers' e work schedules are linked to an increase in children's externalizing and internalizing behavior and that this association is partially mediated by harsh and strict parenting.

Keywords: children, social and emotional wellbeing, dual-earner couples, parenting, nonstandard work

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 nonstandard work schedules – more often than not has a negative impact on family life. Evidence from large quantitative studies shows that parental nonstandard work schedule is associated with reduced parent-child closeness (Han & Waldfogel, 2007), reduced quality of home environment (Heymann & Earle, 2001) and harsh, insensitive and less effective parenting styles (Strazdins et al., 2004; Grzywacz et al., 2011; Gassman-Pines, 2011) . An emerging body of research also demonstrates that nonstandard work schedules are associated with lower levels of child well-being. Specifically, young children in families in which one or both parents work nonstandard 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 et al., 2014; Li et al., 2014; Miller & Chang, 2015). However, despite much research on the negative consequences of nonstandard work schedules for children, we know little about the underlying mechanisms. To date, only few studies explicitly examined potential mediators for this association (Strazdins et al., 2006, Han et al., 2010; Han & Miller, 2009).

We extend the existing literature in several ways. 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 nonstandard work schedules on child outcomes (see Hayes & Schwarkow, 2013). Using this method, we formally test harsh and strict parenting as a plausible mediator of the association between parents' nonstandard work schedules and children's social and emotional well-being in this study.

A further contribution of the study is that we utilized both mothers' and fathers' reports on child behavior and harsh and strict parenting. A major limitation of previous research in this field is the lack of data on fathers' work schedules in many studies as well as bias due to endogeneity that arises when both parenting style and child behavioral problems are reported by the same parent. Finally, only few studies have examined joint work schedules in dual-earner households, but with increasing economic uncertainty along with improvements in the labor markets for women, the pressure will continue for both partners to work. We take these trends in parents' employment into account by focusing on the nonstandard work arrangements within couples. This study addressed these issues in the context of Germany where no research to date has been conducted on the impact of nonstandard work schedules on children's social and emotional well-being.

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 et al. (1995) integrates multidisciplinary perspectives, including sociology, psychology and economics. This framework identifies four major categories of intrafamily resources 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 Beuttel (1985) define family conflict as "a form of interrole conflict in which the role pressures from the 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 frameworks we developed our hypothesis with regard to why nonstandard work schedules may have an impact on children's social and emotional well-being and what factors may mediate this association. We consider parents' workplace as an important factor that influences child development indirectly through the effects of parents' labor market activities. We argue that nonstandard 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 et al., 2003; McKee et al., 2007; Reitz et al., 2006). Fatigue and stress associated with working in evenings and at nights 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 it can have negative spillover effects on the partner. Thus having one parent working nonstandard 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 the ability for proper parenting.

Based on the theoretical considerations discussed above and exiting research, we hypothesized that children whose parents work nonstandard schedules show more behavior problems than children whose parents work standard schedules. This relationship is stronger when both parents work nonstandard schedules than when only one parent works such schedules. We further hypothesized that the negative effect of nonstandard work schedules is (partially) mediated through harsh and strict parenting.

Data and Method

The study was based on data from the Families in Germany Study (FiD) (Schröder et al., 2013). The FiD is an extension of the German Socio-Economic Panel Study (SOEP) (Wagner et al., 2007), and it includes an additional survey of families with young or a large number of children and disadvantaged families (e.g., lone parents or low income). The FiD survey started in 2010 and collected information on parents and children ages 0 to 10 (Schröder et al., 2013). We used two waves of the FiD survey (2010-11 and 2012-13) 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.

Analytic Strategy

[Figure 1]

We used multilevel modeling (random intercept models) to analyze the two wave data. Three models were fitted to estimate the mediated effect of nonstandard work schedules on children's social and emotional well-being via parenting (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 independent variable on the dependent variable, we multiplied (a) and (b). The total effect (c) was calculated by summing up (a), (b), and (c') (Rucker et al., 2011). The size of the product of (a) and (b) shows the magnitude of the mediated effect of the independent variable on the dependent variable. 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.

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 important for us to consider is that when parents work nonstandard 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 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. 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. In fact, it is a mistake

to make a significant total effect of the independent variable a condition for testing for indirect effects (Hayes, 2013, p.170; see also Rucker et al., 2011). Furthermore, significant effects of the independent variable on the mediator and those of the mediator on the dependent variable are also not a prerequisite for testing and interpreting indirect effects: "A single inferential test of the indirect effect is all that is needed" (Hayes, 2013, p. 169).

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) *Does not apply* to (3) *Fully applies*. The domains are aggregated to give the SDQ overall score, 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 et al. (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***), thus indicating considerable differences in parenting style by parent gender.

Independent Variables

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

Evening and night work schedules were measured by two items asking how often respondents work a) in the evening or b) at night. 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 worked evening or night schedules and parents who occasionally worked such schedules (once a week or less often work). Thus, we dichotomized in the first step the evening/night schedules as: 0=never, once a week, less often/as needed); 1=every day, several times a week, changing as shifts. In the next step 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, 40.7 percent fathers work at night and about 68 percent work in evenings, and the prevalence for mothers is about 19 percent and 45 percent respectively (see Table A1). Among fathers who work evening or night schedules, the majority of them work such schedules quite frequently (ranging from daily to weekly). The pattern holds true for mothers who work evening or a night schedules (see Table A1). The most common joint work schedules were "only father worked evening/night" (26%) and "both partner worked evenings/nights" (17%).

All models included control variables for both parents education (years of schooling), their weekly work hours and occupational status (International Occupational Prestige Scale by 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, migration background of mother and father. For a descriptive overview of the variables, see Appendix.

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 the evening/night work on the total SDQ score when controlling for the mediating variable (strict control or negative communication). 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 comparison 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).

[Table 1]

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 working 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 fathers’ strict and harsh parenting .This result suggests that there was a spillover 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 the mother’ parenting (negative communication). The strongest effects (direct and indirect) are observed for conduct problems. 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 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 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. The indirect effect operated through the mother's parenting (strict control and negative communication). Also 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 the mother's parenting (negative communication) when both parents worked evening and/or night schedules regularly.

[Table 2]

[Table 3]

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 differences. Regarding the different subdimensions we did not find a clear pattern of stratification.

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. The results showed that compared to parents who worked standard schedules, fathers and mothers who worked in the evening and or at night reported more behavior problems of their children across all domains, including hyperactivity, conduct problems, peer problems, and emotional problems. Moreover, the findings based on rigorous tests of mediation demonstrated that not only mothers' but also fathers' harsh and strict parenting style plays an important role in explaining the negative impact of working in evenings and nights on children's behavioral problems. In fact, father's harsh and strict parenting even played a greater role in explaining these effects than mothers' parenting. This finding reinforces the notion that fathers play an important and a unique role in children's social and emotional development (Lamb 2010; Li & Pollmann-Schult, 2015). 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 behaviour on the part of not only mothers but also fathers. Our further analysis stratified by parental education did not show a consistent

picture. While mothers with lower education reported more overall child behaviour problems, this was not true in case of the fathers. We expected a clearer picture because previous research (Strazdins et al. 2004, 2006) showing stronger associations between parents' nonstandard 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.

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 well-being reported by fathers, and vice versa, we could minimize the problem of endogeneity and a common method bias, an issue which has not been addressed in previous research. Additionally, we tested mediation formally by using a multilevel mediation approach and bootstrapping with bias corrected confidence intervals that have, to our knowledge, not been utilized in any previous study on this topic.

This study also has some limitations. 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' nonstandard work schedules and their children's well-being. 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, in comparison with 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. The study also reveals spill-over effects of having one parent working work evenings and nights on the other partner, particularly on fathers, again underscoring the importance of fathers in understanding the impact of 24/7 economy on children's social and emotional wellbeing.

References

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173.

Brooks-Gunn, J., Brown, B., Duncan, G. J., & Moore, K. A. (1995, September). Child development in the context of family and community resources: An agenda for national data collections. In *Integrating federal statistics on children: Report of a workshop* (pp. 27-97). Commission on Behavioral and Social Sciences and Education. The National Academy of Sciences.

Chang, L., Schwartz, D., Dodge, K. A., & McBride-Chang, C. (2003). Harsh parenting in relation to child emotion regulation and aggression. *Journal of Family Psychology*, *17*(4), 598.

Ender, P. (2014). How can I perform mediation with multilevel data? (Method 1). UCLA: Statistical Consulting Group. http://www.ats.ucla.edu/stat/stata/ado/analysis/.

Ganzeboom, H. B., & Treiman, D. J. (1996). Internationally comparable measures of occupational status for the 1988 International Standard Classification of Occupations. *Social Science Research*, *25*(3), 201-239.

Gassman-Pines, A. (2011). Low-Income Mothers' Nighttime and Weekend Work: Daily Associations With Child Behavior, Mother-Child Interactions, and Mood. *Family Relations*, *60*(1), 15-29.

Greenhaus, J. H. & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, *10*(1), 76-88. doi: 10.5465/AMR.1985.4277352

Grzywacz, J. G., Daniel, S. S., Tucker, J., Walls, J., & Leerkes, E. (2011). Nonstandard work schedules and developmentally generative parenting practices: An application of propensity score techniques. *Family Relations*, *60*, 45–59.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581-586**.** doi**:**10.1111/j.1469-7610.1997.tb01545.x

Han, W.-J., & Miller, D. P. (2009). Parental work schedules and adolescent depression. *Health Sociology Review*, *18*(1), 36-49. doi: 10.5172/hesr.18.1.36

Han, W.-J., Miller, D. P., & Waldfogel, J. (2010). Parental work schedules and adolescent risky behaviors. *Developmental Psychology, 46*(5), 1245-1267. doi:10.1037/a0020178

Han, W.-J., & Waldfogel, J. (2007). Parental work schedules, family process, and early adolescents' risky behavior. Children and Youth Services Review, 29(9), 1249–1266.

Hayes, Andrew F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. *A regression-based approach*. New York, NY: Guilford Press.

Hayes, A. F., & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology, 67*(3), 451-470.

Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis does method really matter? *Psychological Science, 24*(10), 1918-1927. doi:10.1177/0956797613480187

Heymann, S. J., & Earle, A. (2001). The impact of parental working conditions on school-age children: The case of evening work. *Community, Work & Family, 4*(3), 305–325.

Kalil, A., Dunifon, R., Crosby, D., & Houston Su, J. (2014). Work hours, schedules, and insufficient sleep among mothers and their young children. *Journal of Marriage and Family*, 76(5), 891-904. doi: 10.1111/jomf.12142

Kendall, G. E., & Li, J. (2005). Early childhood socialization and social gradients in adult health: A commentary on Singh-Manoux and Marmot's "Role of socialization in

explaining social inequalities in health"(60: 9, 2005, 2129–2133). *Social Science & Medicine*, *61*(11), 2272-2276.

Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research*, *36*(2), 249-277. doi:10.1207/S15327906MBR3602_06

Lamb, M. E. (2010). How do fathers influence children's development? Let me count the ways. In M. E. Lamb (Ed.), *The Role of the Father in Child Development* (5th ed., pp. 1–26). Hoboken, New Jersey: John Wiley & Sons, Inc.+

Li, J., Johnson, S. E., Han, W. J., Andrews, S., Kendall, G., Strazdins, L., & Dockery, A. (2014). Parents' nonstandard work schedules and child well-being: a critical review of the literature. *The Journal of Primary Prevention*, *35*(1), 53-73. doi:10.1007/s10935-013-0318-z

Li, J., & Pollmann-Schult, M. (2015). Fathers' commute to work and children's social and emotional well-being in Germany. *Journal of Family and Economic Issues*, 1-14. doi:10.1007/s10834-015-9467-y

Lokteff, M., & Piercy, K. W. (2012). "Who Cares for the Children?" Lessons from a Global Perspective of Child Care Policy. *Journal of Child and Family Studies*, *21*(1), 120-130.

McKee, L., Roland, E., Coffelt, N., Olson, A. L., Forehand, R., Massari, C., ... & Zens, M. S. (2007). Harsh discipline and child problem behaviors: the roles of positive parenting and gender. *Journal of Family Violence*, *22*(4), 187-196.

Miller, D. P., & Chang, J. (2015). Parental work schedules and child overweight or obesity: Does family structure matter? *Journal of Marriage and Family*, *77*(5), 1266-1281. doi: 10.1111/jomf.12215

Reitz, E., Deković, M., & Meijer, A. M. (2006). Relations between parenting and externalizing and internalizing problem behaviour in early adolescence: Child behaviour as moderator and predictor. *Journal of Adolescence, 29*(3), 419-436.

Rosenbaum, E., & Morett, C. R. (2009). The effect of parents' joint work schedules on infants' behavior over the first two years of life: evidence from the ECLSB. *Maternal and Child Health Journal, 13*(6), 732-744. doi:10.1007/s10995-009-0488-8

Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass, 5*(6), 359-371. doi:10.1111/j.1751-9004.2011.00355.x

Schröder, M., Siegers, R., & Spiess, C. K. (2013). 'Familien in Deutschland'–FiD: Enhancing research on families in Germany. SOEPpaper No. 556. doi:10.2139/ssrn.2268554

Schwarz, B., Walper, S., Gödde, M., & Jurasic, S. (1997). Dokumentation der Erhebungsinstrumente der 1. Haupterhebung (überarb. Version). Berichte aus der Arbeitsgruppe "Familienentwicklung nach der Trennung," 14.

Strazdins, L., Clements, M. S., Korda, R. J., Broom, D. H., & D'Souza, R. M. (2006). Unsociable work? Nonstandard work schedules, family relationships, and children's well-being. *Journal of Marriage and Family, 68*(2), 394-410.

Strazdins, L., Korda, R. J., Lim, L. L., Broom, D. H., & D'Souza, R. M. (2004). Around-the-clock: parent work schedules and children's well-being in a 24-h economy. *Social Science & Medicine, 59*(7), 1517-1527. doi:10.1016/j.socscimed.2004.01.022

Wagner, G. G., Frick, J. R., & Schupp, J. (2007). The German Socio-Economic Panel study (SOEP) – evolution, scope and enhancements. SOEPpaper No. 1. doi:10.2139/ssrn.1028709

Appendix

[Table A1]

Figures and Tables

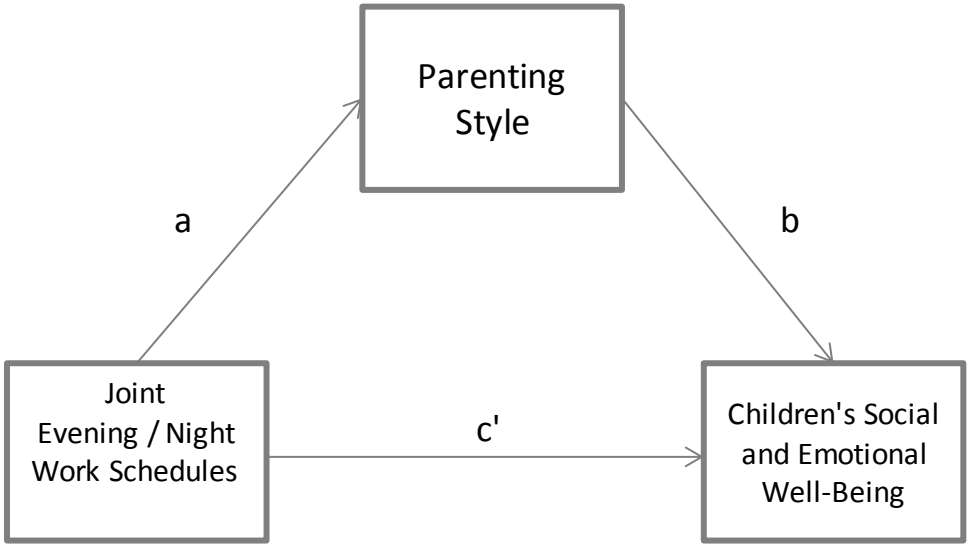

Figure 1: Stylized representation of the estimated models

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

Controls: Working hours father, working hours mother , sex (child), schooling in years (mother and father), SIOPS (mother and father), adjusted household income (log.), migrationbackground (mother and father), institutional child care, number of children in household, age (child)

Note. Significance of Total- Direct- and Indirect effects obtained from 95% - bootstrap bias corrected confidence intervals, *p < 0.05

Table 2: Subdimensions of SDQ (Fathers Ratings of SDQ, Mother's Parenting Style)

	Externalizing Problems				Internalizing Problems			
	Hyperactivity		Conduct problems		Peer problems		Emotional symptoms	
	Strict control	Negative commu-nication	Strict control	Negative commu-nication	Strict control	Negative commu-nication	Strict control	Negative commu-nication
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

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

Note. Significance of Total- Direct- and Indirect effects obtained from 95% - bootstrap bias corrected confidence intervals, *p < 0.05

Table 3: Subdimensions 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 commu-nication	Strict control	Negative commu-nication	Strict control	Negative commu-nication	Strict control	Negative commu-nication
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

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

Note. Significance of Total- Direct- and Indirect effects obtained from 95% - bootstrap bias corrected confidence intervals, *p < 0.05

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 x 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 x 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
Migrationbackground=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. Householdincome (log.)	8.14	6.75 - 9.62		
N = 838				