

## His and her working hours and well-being in Germany: A longitudinal crossover-spillover analysis

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### Abstract

This paper investigates the relationship between work time arrangements and personal well-being in married and cohabiting couples. Using data from the German Socio-Economic Panel Survey (SOEP), we study how the number of hours worked by the survey respondents and their partners influenced their own well-being. We also investigate possible transmission mechanisms between the two variables, namely income, hours spent in homemaking and care activities, and possible mismatch between desired and actual hours. Using Hybrid panel models we find evidence of different relations according to the respondent's gender: Women report no change or lower satisfaction with the increase of their partner's working hours, and the same holds true for men. However, own hours have a small non-significant positive effect on men's life satisfaction, while they have the opposite effect for women. The presence of young children in the household and the addition of income to the regression equations further amplifies these results. Our conclusion is that respondents seem to experience greater life satisfaction when their and their partner's behavior conforms to the roles of female homemaker and male breadwinner. Considering the absence of a strong mechanism related to time needs and time desires, we suggest those results are related to strong traditional attitudes towards gender roles and female labor force participation in the country considered.

**Key words:** work time, life satisfaction, family, gender roles, hybrid models



## 1. Introduction

Time is a central resource for well-being. The way in which families structure and organise their everyday lives determines the health and life satisfaction of all family members (Ross et al. 1990). Numerous studies point to a change over time in time spent in paid work as well as in unpaid work and leisure (Krekel et al. 2018). In particular, women's working hours have risen in many Western countries. In some countries, there has been an increase in men's domestic working time, with the bulk of domestic work still performed by women (Altinas & Sullivan 2016; Leopold et al. 2018; Skopek & Leopold 2018; Sullivan et al. 2018). From a theoretical point of view, working hours may affect well-being because of potential direct health impacts of work (e.g. longer working hours leading to exhaustion) or because of its impact on the remaining time for household and leisure (e.g. longer working hours reducing the time for physical exercise) (Moen et al. 2011).

Previous research provides contradictory evidence concerning the relationship between working hours and subjective well-being both for men and for women (Pereira & Coelho 2012; Ávarez & Miles-Touya 2014; Greenhaus & Powell 2006; Schröder 2018). Some studies show that women are most satisfied when they work part-time (Holst & Trzcinski 2003; Gash et al. 2012; Rätzel 2012). Other studies suggest that women working full-time or longer are most satisfied with life (Schröder 2018). For women with children, some studies suggest that part-time work is associated with the highest life satisfaction, while others suggest that this is the case for full-time work instead (Berger 2013), and still others suggest not working at all is conducive to highest life satisfaction instead (Pollmann-Schult 2014; Treas et al. 2011; Trzcinski & Holst 2012). Schröder (2018) shows that for mothers more or less hours in employment hardly affect their life satisfaction. Men with and without children seem to be most satisfied with life when working full-time or longer (Schröder 2018). Where the differences in the results for women with and without children originates is an open question. It is conceivable that these are results of differences in the methods of analysis, or can also be traced back to country-specific differences.

Furthermore, empirical evidence suggests that the working hours of a family member do not only determine their own well-being, but also that of other family members (Ross et al. 1990; Gareis et al. 2003; Stolzenberg 2001; but: Springer 2010). However, previous research on the relationship between working hours and well-being of men and women with and without children has focused primarily on one family member (e.g. Schröder 2018). Empirical evidence on the relationship between working time and health in the US shows that weekly working hours of more than 50 hours for men are accompanied by better health for their partner, while working hours of between 41 and 49 hours for women reduce the health of their partner (Kleiner & Pavelko 2014). As it is conceivable that partner effects vary with gender equality, further empirical evidence is desirable for other countries with a different context.

In order to overcome these shortcomings in the literature, we study the combined effects of one's own (i.e. intra-individual spillover effects) and partners' (crossover effects) working hours on well-being using longitudinal data from Germany. We are interested in investigating different potential transmission pathways through which working time may

affect well-being. Identifying the ways through which work time spills over to one's own and to their partners' well-being will increase our understanding of division of labor processes within the household and shed light on gender asymmetries in work time. In particular, we examine three potential ways of transmission: resources, worktime desires, and time needs.

## 2. Background

### 2.1 *Work and well-being*

Work and employment play a central role in most people's lives. In OECD countries, for example, people spend around a third of their waking hours engaging in paid work (OECD 2019). There is strong evidence, that work affects health and subjective well-being (Kleiner & Pavalko 2014: 985): „Resources gained from the job – such as income, social networks, and access to health insurance – are essential for maintaining health (Ross & Mirowsky 1995; Pavalko & Smith 1999), while other job characteristics such as demands, conflicts, and hazardous environments create mental and physical stress (Karasek 1979; Karasek & Theorell 1990).“ Thus, being simultaneously a source of exposure to job stressors as well as job resources, time spent at work may lead to both benefits and strains with respect to the individual's well-being.

In the existing theoretical approaches on the relation between work and well-being however, the role of the time spent at work is not explicitly addressed, and theoretical reflection on the subject is scarce at best. In the two central theories on the benefits and strains of gainful employment - the job demands-control model (Karasek 1979; Karasek and Theorell 1990) and the effort-reward imbalance model (Siegrist 1996) - the time spent at work is seen merely as one among many other characteristics of gainful employment that is limited to the gainfully employed and their work context. The fact that individual working time can have far-reaching effects on the family is not the subject of theoretical considerations.

Better in this regard is border theory, often used to explain how strains and resources of gainful employment affect other life domains (Schieman et al. 2009). According to this theory (Clark 2000; Voydanoff 2007), a resource in a job can prove to be a strain in another area. Focusing on the case at hand, it can be assumed that family-friendly working hours increase the work-life balance of the individual and thus their well-being.

Long working hours naturally reduce the time available for household, family and leisure (Lesnard 2008; Voydanoff 2004). It can therefore be assumed that the work-life balance suffers from long working hours, and thus overall quality of life and well-being are reduced (Barnett 2006). Nonetheless, Bianchi et al. (2006) show that some families adapt to the increase in paid work of women and the consequent compression of non-work time by reducing the amount of unpaid work that gets done at home (Kleiner & Pavalko 2004:985f). However, even those strategies may have implications for well-being, for instance if they involve eating fast food or spending less time on caring for significant others.

Another take on the relationship between worktime and well-being can be derived from Boundary theory. Boundary theory describes the border management between work and family or private life (Ashforth et al. 2000), and identifies two main strategies of work-family conciliation, designed as endpoints on a continuum: Segmentation, or separation of spheres of life and their roles by inflexible boundaries, and Integration of roles due to their similarity and flexible boundaries. Which strategies are used by individuals depends to a large extent on their personal preferences, which are also to be found on the continuum from segmentation to integration (Kreiner 2006). Central to individual life satisfaction is therefore the fit between preferences and border management strategies (Rothbard et al. 2005; Kreiner 2006; Chen et al. 2009). In an international comparison, the preferred balance between work and private life is likely to be a question of culturally determined preferences (Fehr & Hoff 2011).

## 2.2 Gender differences

There are still differences between men and women in their household burden, even if both are employed (Blossfeld & Drobnič 2001; Drobnič & León 2014). As women continue to perform the main part of domestic work, labour supply is likely to have a different impact on the integration of work and private life of women and men. Due to prevailing gender norms, women may also have different expectations of how work and private life should be integrated. These different expectations of women and men can in turn lead to different levels of satisfaction with the integration of the two spheres of life, even if they have the same demands or resources as men.

Studies on gender differences in working hours and well-being have failed to provide clear and consistent evidence for such a gender effect (Ganster et al. 2018). Some studies found no gender differences (e.g. Ford et al. 2007; Bianchi & Milkie 2010). However, other studies have found differences between men and women in the relationship between working conditions and well-being (Nomaguchi et al. 2005; Robone et al. 2011), and have shown that experiencing the same level of job demands leads to a greater conflict in working life for women rather than for men (Grönlund & Öun 2010). Kossek & Ozeki (1998) show that work-family life conflicts are more closely related to women's life satisfaction than to men. Most recently, a paper by Schroeder (2018) highlighted how in Germany worktime arrangement in the couple that align with traditional gender roles seem to be conducive to higher levels of life satisfaction for both men and women, especially when young children are present.

Coherently with this framework, our first hypothesis is *(HP1a) women will be negatively affected in their life satisfaction by their amount of working hours, especially when young children are present in the household and (HP1b) men will be positively affected in their life satisfaction by the amount of hours they work.*

## 2.3 Spillover effects on the partner

Previous research on the relationship between labour supply and well-being in families has typically focused on a single person (Barnett et al. 2008; Liu et al. 2011). However, the

amount of work affects not only the well-being of the worker but also that of their partner (Ross et al. 1990; Gareis et al. 2003), which suggests a couple perspective in the analysis.

Partner effects are increasingly coming to the fore (e.g. Lu et al. 2016; Bakker et al. 2011; Young et al. 2014; Symoens & Bracke 2015; Kleiner & Pavelko 2014; Shafer et al. 2017; Yuçel & Latshaw 2018), although there is little empirical evidence to date on the effects of the volume of work on well-being in the partner context. Kleiner & Pavelko (2014) use panel data from the National Longitudinal Survey of Youth to examine the consequences of working time for men and women on subjective health and on an index of the spouse's physical health. Using two measurement points, they show that 41+ working hours per week of wives significantly negatively affects the health of men and 50+ working hours per week of husbands negatively affects the health of women. Pausch et al. (2016), on the other hand, find that for Germany with a supplementary sample from the Linked Employer-Employee Panel Surveys of over 6000 employees in companies with at least 500 employees and working spouses, the negative effects of work requirements on work-life balance, which are evident for men and women, are primarily due to their own work requirements rather than those of the partner. Since working life in small and medium-sized enterprises can be different than the one in large companies, the external validity of this study is limited regardless of the large sample.

When analysing partner effects, gender effects must also be taken into account, since empirically spillover effects from men to women are more frequent than in the opposite direction (Fagen & Press 2008). It can therefore be assumed that women are more affected than men by the work demands of their partners and by the accumulation of demands experienced by both (Pausch et al. 2016). Fagen & Press (2008) also show that professional stress among husbands is accompanied by a lower work-family balance among their wives. In their study of 426 Japanese couples, Bakker et al. (2011) find partner effects of work commitment on the work commitment of women, but not of men. Shafer et al. (2018) find that women with partners that work long hours (50+ hours per week) have significantly higher stress and lower relationship quality than women with a normal full-time working partner (35-49 hours) on the basis of a sample of 590 IT employees; conversely, there is no effect of long working hours of women on their partners. Whether women in Germany are also more affected by the workload of their partners is an open research question.

Therefore, our second hypothesis is that *(HP2a) the relationship between partner's working hours and personal life satisfaction will be negative for women and (HP2b) The relationship between partner's working hours and personal satisfaction will be negative for men as well.*

## 2.4 Possible transmission mechanisms

### 2.4.1 Resources

Individual well-being is significantly influenced by the resources generated by paid work (Ross et al. 1990). As a central component of socio-economic status, income is a "fundamental cause" of health, morbidity and mortality (Link & Phelan 1995). The causal relationship between income and physical well-being is generated via various health-

promoting paths. For example, a corresponding income enables the acquisition of health-promoting goods and services for prevention, intervention and rehabilitation.

In view of the well-known positive correlation between income and health, we expect the same positive effect on the well-being both for the respondent's own labour income as well as the labour income of the partner. Since men in Germany still achieve higher average labour incomes than women, we should expect gender-specific differences in the intensity of the effects of wages (McDonough et al. 1999). A certain share of the relationship between working time and well-being should be explained by one's own labour income and the partner's labour income.

Therefore, we expect that (HP3) *the addition to wages in the model will affect negatively the relationship between personal and partner's working hours and well-being for both men and women.*

#### 2.4.2 Time allocation desires

Notwithstanding the higher resources associated with longer working hours, longer hours usually lead to a greater burden in the household. A high number of working hours can lead to stress for both partners due to increasing demands on work-life balance (Schieman et al. 2009). Long working hours can also reduce the possibility of interaction with family members and increase the potential for conflict due to the reduced time available for family and household. Available studies also show that a higher workload of one or both partners is associated with a higher work-life conflict and increased stress (Moen & Yu 2000). In particular, a very high workload of more than 40 hours per week is expected to be accompanied by increased physical stress and reduced well-being of all family members (Kleiner & Pavelko 2014).

There are still differences in the household burden between men and women, even when both are employed (Blossfeld & Drobnič 2001; Sayer 2005; Drobnič & León 2014). Since women still bear the main burden of household work, the demands and resources at the workplace are likely to have a different influence on the well-being of women and men. Drawing from boundary theory, due to the prevailing gender norms women may also have different expectations of how work and private life should be integrated. These different expectations of women and men can in turn lead to different levels of satisfaction, even if they have the same demands or resources.

We expect that an increased workload, measured by a positive difference between the current and desired working hours, will have a negative effect on life satisfaction. Due to the higher participation of women in household work, it can be assumed that overwork has a stronger effect for women than for men.

Consequently, (HP4) *the addition of overemployment should therefore weaken the relationship between work hours and well being.*

#### 2.4.3 Time needs

Working time naturally also has an impact on the time available for personal activities. The increase in women's working time combined with largely unchanged family and household responsibilities leads to a reduced share of time for family and household

activities compared to men (Mattingly & Bianchi 2003; Giménez-Nadal & Sevilla-Sanz 2010). However, women's working hours also influence the free time of men, who increasingly spend more time on domestic work (Bianchi et al. 2000).

We expect a high workload to influence the well-being of the partner through the reduced time that can be spent in activities other than household work and family activities. With the number of working hours of the partner, the time spent on household and - if necessary - childcare increases under otherwise equal conditions. This reduces the time available, leaving less time for individual well-being (time for sport, relaxation and recreation). In this way, long working hours can negatively influence not only individual well-being (Nomaguchi & Bianchi 2004), but also the well-being of the partner (Kleiner & Pavelko 2014).

Due to the still existing unequal distribution of household work to the disadvantage of women, we expect that (HP5a) *a higher number of own domestic work time will have no effect on the relationship between men's work hours and life satisfaction*. Conversely, it is to be expected that (HP5b) *a high amount of care work time will have a negative effect on the relationship between working time and well-being of women*.

### 3. Data and methods

#### 3.1 Sample

Our empirical analysis is based on data from 32 waves (1985–2016) of the German Socio-economic Panel Study (SOEP, version 34, 2019). The SOEP is a large-scale survey running since 1984, and provides a representative sample of the German adult population living in private households (Wagner et al. 2007). As one of the longest running panel studies, the SOEP is ideally suited to track changes in life satisfaction and health among couples.

For our analysis, we restricted the dataset to married and cohabiting individuals, aged 20-64, the resulting sample consisting of 11,171 individuals. Due to the fact that some of the possible mediating variables of interest, namely “desired hours of employment” and “hours spent in childcare activities”, were to the best of our knowledge not investigated in the first year of the survey, we excluded wave 1 (1984) from our analysis.

#### 3.2 Measures of well-being

Our measure of choice for investigating global well-being is general life satisfaction, which captures respondent's cognitive evaluation of their life overall. This construct is widely used in research on subjective well-being (see Diener et al. 2013, for a review and Luhmann et al. 2012, for a meta-analysis). Well-being is empirically linked to, but conceptually distinct from, related constructs such as affective well-being, mental health, and physical health, and it shows discriminant validity from such related constructs (Diener et al. 2013). The SOEP provides annually data on this variable since 1984, using the following survey question: “How satisfied are you with your life, all things considered?” Respondents answer on an 11-point Likert scale ranging from 0 (*completely*

*dissatisfied*) to 10 (*completely satisfied*). According to the methodological literature on single-item assessments of life satisfaction, this measure has sufficient validity, sensitivity, and reliability (Diener et al. 2013; Lucas & Donnellan 2012).

### 3.3 *Independent variables*

Our key independent variables are the respondent's and their partner's actual number of hours spent at paid work per week, as reported by the respondent. We include them as continuous variables in the model. Self-reported hours are considered as a reliable indicator of time spent at work (Kleiner et al. 2014).

### 3.4 *Possible mechanisms of transmission*

We included some additional variables to examine the possible mediating effect of income, time spent in childcare and homemaking activities and over/under employment on the relationship between partner's working hours and life satisfaction of the couple.

The respondent's labor income is included as log-transformation (natural logarithm) of the net income declared by the respondent. The same variable is also generated for the partner's income. Additional sources of income other than net labor income were not included in the analysis, since we are interested in investigating a possible mediating effect of the income on the relation between working hours and life satisfaction, and not the general effect overall income and wealth have on life satisfaction.

The questionnaire includes two variables investigating the amount of hours spent daily in childcare activities and housework, both on working days and in the weekends. We included the variables reporting the number of hours usually spent in childcare and homemaking activities during workdays in our analysis. The questions asked are respectively, "How many hours do you spend on these activities on a typical weekday: childcare" (from 1985 onwards) and "[...] housework (washing, cooking, cleaning)".

As last possible mediating factor, we included a categorical variable registering the possible overemployment of the respondent compared to his or her desired hours. The variable measuring desired working time entered the questionnaire in 1985 as well. The desired weekly working hours of the respondent were compared as continuous variable with the actual hours worked weekly by the respondent. If the desired hours were lower than the worked hours, we registered an "overemployment" situation.

### 3.5 *Moderator variables*

Assuming different relationships between our dependent and independent variables by respondent's gender and family situation, we run separate regression models for female and male respondents, both with and without young children in the household. The presence of young children is defined as at least one child under age 14 living in the household. We assume children older than 14 to be independent enough not to influence the time allocation decisions of their parents with their care needs, as in Schroeder (2018).

### 3.6 Controls

Educational level of the respondent is included with a categorical variable, with three possible values (“primary and less than primary education”, “secondary education” and “tertiary education”) based on the ISCED-97 classification’s categories. “Primary education” includes ISCED-97 categories “Inadequately completed education” and “Elementary education”; “Secondary education” includes the categories of “middle vocational education” and “vocational + Abitur”; “tertiary education” includes both tertiary vocational and university tertiary education.

The age of the respondent is included as additional control.

Table 1 shows means, by gender, for all variables included in the study. In case of categorical variables, the frequencies of each category are shown. For continuous variables we include means and both within-individual as well as between-individuals standard deviations.

*Table 1:* Descriptive statistics (means and standard deviations) by gender

	Men		Women	
	Mean	Sd(between) Sd(within)	Mean	Sd(between) Sd(within)
General life satisfaction	7.40	1.32 0.95	7.51	1.32 0.97
Partner's working hours	25.67	10.82 4.82	38.56	5.86 2.84
Own working hours	38.65	5.65 2.84	25.67	10.78 4.73
Educational level (0/1)				
- Primary and less	0.05		0.11	
- Secondary	0.59		0.64	
- Tertiary	0.36		0.25	
Age	46.08	8.82 3.75	43.30	8.77 3.75
Children under 14 in the household (0/1)	0.41		0.41	
Respondent's income (log-transformed)	7.59	0.53 0.21	6.65	0.72 0.27
Partner's Income (log-transformed)	6.65	0.71 0.28	7.57	0.53 0.21
Daily hours devoted to childcare	0.81	1.52 0.99	2.44	3.81 2.06
Daily hours devoted to homemaking activities	0.72	0.64 0.53	2.54	1.36 0.90
Overemployed (0/1)	0.34		0.31	
Number of cases	5583		5588	

*Source:* German Socio-Economic Panel Survey 1985-2016, release 2019.

### 3.7 Models

Analysis techniques for panel data are usually centered on fixed and random effects models. While fixed effects models exclusively show the within-person effect and therefore cannot include time-invariant variables, random effects models mix between and within-individual effect into one effect size. Hybrid effects models – also known as Mundlak models (Wooldridge 2010) or within-between random effects models (Bell & Jones 2015) – disentangle a between and a within-individual effect. The advantage of hybrid regressions over random and fixed effects regressions is that they can compare time-invariant between-individual effects and time-varying within-individual effects (Schunck 2013).

The Hybrid model equation in the between-within specification used in our analysis takes the following form,

$$y_{it} = \alpha + \beta(x_{it} - \bar{x}_i) + \gamma\bar{x}_i + \delta z_i + \alpha_i + \varepsilon_{it}$$

where  $i$  and  $t$  respectively identify year and respondent observations,  $x_{it}$  is a vector of time-varying covariates and  $z_i$  a vector of time-constant covariates.  $\alpha_i$  is the respondent-level residual that allows for different intercepts for each respondent (the “random” part of the model), and  $\varepsilon_{it}$  the error term for individual  $j$  at time  $i$ .  $\hat{\beta}$  reproduces exactly the fixed effect estimate,  $\hat{\gamma}$  reproduces approximately the between effect estimate, and  $\hat{\delta}$  is the effect of a time-constant regressor.

Therefore, hybrid effects regressions can show whether people with on average long working hours are less satisfied with life (between effect), and whether the same individual is less satisfied with life in those years where work hours are higher than what he/she is used to (within effect). All regressions cluster standard errors at the person level, thus controlling for heteroskedasticity and within-person autocorrelation from one year to the next.

## 4. Results

We estimated five Hybrid models for general life satisfaction separately for men and women, with and without young children in the household, for a total of 20 models. Model 0, the baseline model, includes averages and deviations from the mean for the respondent’s and their partner’s working hours and age, and educational level as a time constant variable. Model 1 controls also for the respondent’s and partner’s income (average and deviation). Model 2 controls for overemployment (as dummy variable). Model 3 includes controls for hours allocated daily to childcare and homemaking activities (average and deviation). Model 4 includes all of our variables of interest and control variables. We report the gender-specific results for our main variables of interest, i.e. working hours, as coefficient plots separately. Full regression tables are available in the Appendix.

Figure 1: Own and partner's work hours coefficient from the hybrid models for women (CIs at 95%)

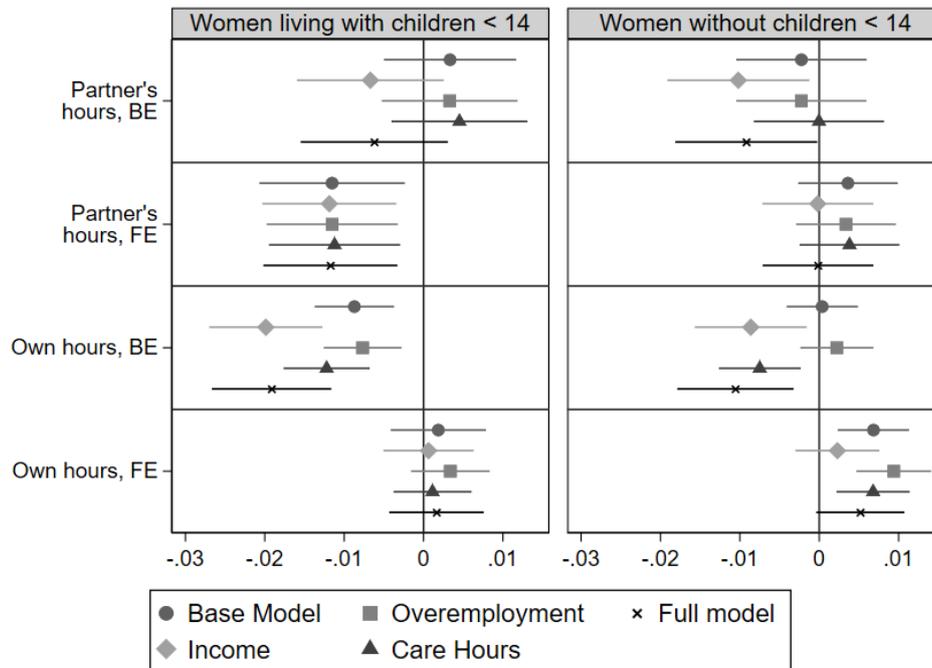


Figure 1 displays the estimated coefficients of the five Hybrid models. As suggested by HP1a, women with young children in the household show a negative relationship between the hours they work weekly on average and their life satisfaction (the BE estimator). However, additional work hours seem to have no significant effect on life satisfaction (the FE estimator). For women without young children living in the household on the contrary, there seem to be a small positive and significant effect of additional hours (FE estimator) but no significant effect of the average number of hour (BE estimator).

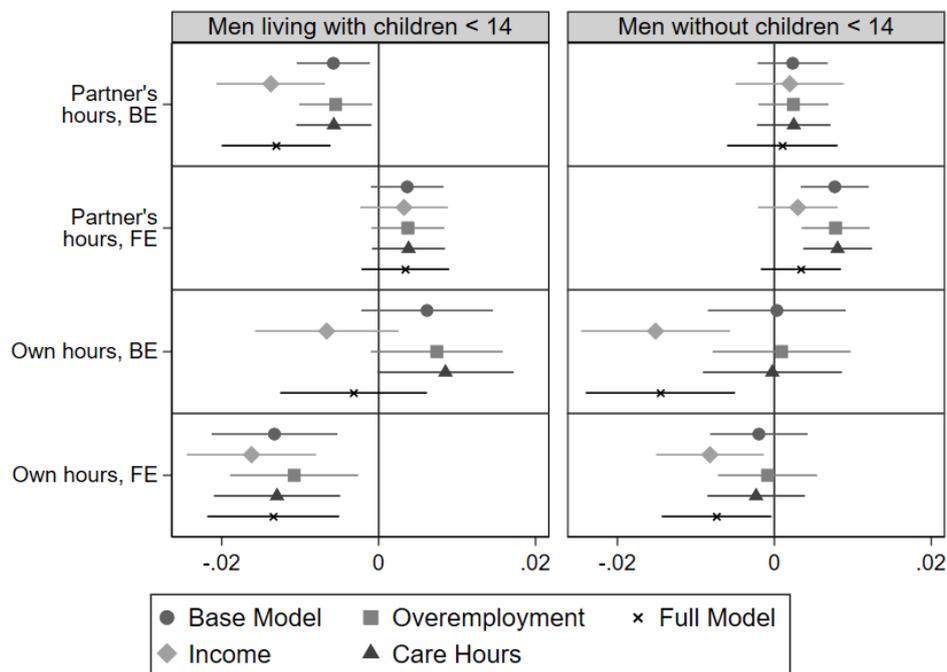
When considering the hours worked weekly by the partner, as expected according Hypothesis 2a, we can see a negative effect of additional hours worked by the partner when there are young children living in the household (FE estimator). However, the average amount of hour worked by the partner seem to have no significant effect on the reported life satisfaction (BE estimator).

As held by our Hypothesis number 3, adding income to the model changes the relationship between both own and partner's average hours, that becomes strong and negative for women both with and without young children living in the household. Interestingly enough, there seem to be no effect of income on the FE estimators, apart from own hours of women living without young children in the household.

The addition of overemployment indicators does not change the estimators significantly, therefore invalidating hypothesis 4.

As expected according to hypothesis 5b, the relationship between own work hours and life satisfaction is influenced by the time spent in care activities. Once we account for time spent in homemaking and childcare activities, the relationship between average number of weekly work hours and life satisfaction becomes significantly negative. This variable seems to influence more the BE estimator than the FE estimator, especially for women without young children in the household.

Figure 2: Own and partner's work hours coefficient from the hybrid models for men (Cls at 95%)



For men, the relationship between own hours and life satisfaction appears more complicated (Figure 2). Men living with young children in the household seem to show a positive relationship between the two variables when the average weekly work time is taken in consideration. Though, additional hours decrease life satisfaction (FE estimator). This contradicts hypothesis 1b. Men living without young children in the household show a weaker correlation between the two variables, with small and not significant coefficients.

As hypothesis 2b suggests, the relationship between the amount of hours worked by the partner and the respondent's life satisfaction is negative when young children are living with the respondents. However, for men additional hours worked by the partner seem to correlate positively with the dependent variable.

As for women and as expected in the third hypothesis, adding income to the regression equation makes the BE estimators for the relationship between own hours and

life satisfaction negative for men without young children, and cancels out the positive (but not significant) effect of average hours on life satisfaction for men with young children. FE estimators seem to be less influenced by the addition of income.

As for women, our indicator for overemployment does not influence the estimates significantly, therefore contradicting hypothesis 4. Finally, as expected in Hypothesis 5a, the addition of care hours to the model does not influence the relationship between hours worked and life satisfaction among men.

## 5. Discussion

In this paper, we investigated the effects of own (i.e. intra-individual spillover effects) and partners' (crossover effects) working hours on the individual's general well-being. In addition, we were interested in investigating possible mediating effects of other variables measuring resources (income) and time use/time needs (overemployment and homemaking hours) on the relationship between working time and well-being. Identifying the pathways through which working time spills over onto own and crosses over to partner's well-being can increase our understanding of the underlying processes and shed light on gender asymmetries in working time.

Using West German data from 31 waves of the German Socio-Economic Panel and within-between hybrid models, we regressed the respondents' self-reported satisfaction with life as a whole over our two main variables of interest separately for men and women, with and without children under 14 years of age living in the household.

Our results indicate that variations (FE) in working hours of the partner have little effect on life satisfaction for men living with children below 14 years of age. The effect of the average weekly number of hours (BE) is, however, stronger and negative concerning partner's hours, but positive (although not statistically significant) for the respondent's own hours. When there are no young children in the household, men appear not to be strongly influenced by their partner's average working hours in their life satisfaction assessments. Increases in worktime of the partner seem however to have a small positive effect. This result is partially consistent with a result of a robustness test by Schröder (2018), who found that life satisfaction of German men stays the same regardless of how much their partners work.

For women living with young children in the household, partner's working hours had a negative and strong effect for variations (FE), and positive but not significant effect for average weekly working hours (BE). This changes when there are no young children in the household, with smaller effects for the additional number of hours spent working by the partner.

The addition of income as a control variable decreases the positive effect of partner's average working hours for women, and increases the negative effect of the partner's working hours for men, especially with young children in the household. It also increases the negative effect of own average working hours for women and decreases the positive effect of own average working hours for men. It seems however to not have any significant effect on the FE coefficients with the exception of men's own working hours.

The addition of care hours to the model impacts mostly women's coefficients, increasing the negative effect of own average weekly working hours. This can be because of the average number of hours negatively affecting the number of hours spent for care activities, in turn affecting less life satisfaction. In other words, the effect of partner's working hours on the respondent's satisfaction seem to be fundamentally independent from the respondent's time needs. The relationship between income and working hours masks in any case the intensity of the negative relationship between the average weekly hours and life satisfaction, both for own and partner's hours.

Nonetheless, the effect of hours worked, even when they are highly significant, remain in our opinion quite small in substantive terms. The generally low explanatory power of our models also seems to indicate that working hours are not the main driver of life satisfaction among our respondents. However, we still think some meaningful conclusions can be taken from the results of our research.

The results of our analysis point towards a relationship between well-being and working hours of spouses that is not exclusively mediated by rational processes of time allocation, but it is in any case influenced by the amount of resources working hours contribute to in the household. On top of that, the relationship between the respondent's and the partner's working hours and the respondent's well being seemed to reflect prevailing cultural approaches to gender roles and expectations.

This is mostly evident through the effect average weekly own hours have on women's life satisfaction (especially when income is added as control variable) and through the effect partner's average weekly work hours have on the male respondent's life satisfaction. Those effect are stronger when the household children are younger.

This evidence supports the interpretation of the role of cultural preferences in determining strategies of work-family life balance (Fehr & Hoff 2011), which in their turn influence life satisfaction, as can be derived from boundary theory (Rothbard et al. 2005, Kreiner 2006). However, the relationship between partners' working hours and personal satisfaction is flat for women with young children, once income is controlled for, and additional hours worked by the partner seem to influence life satisfaction negatively. This could originate from a trade-off between the need for help from the partner in the family sphere and the satisfaction given by a more providing partner.

In conclusion, we find that respondents in our sample are reportedly happier when both their and their partner's behavior in terms of the average number of hours worked weekly outside the household conform to the roles of female-homemaker and male-breadwinner, especially when additional resources deriving from longer work hours are taken out of the picture. Considering the absence of a strong mechanism related to our time variables, we suggest those results are related to strong traditional attitudes towards gender roles and female labor force participation in the country considered. However, the external validity of our results is restricted to a single very specific combination of cultural context and participation to labor force. Further comparative research as well as the inclusion in the analysis of unemployed people is in our opinion indispensable to have a more solid grasp on the relation between well-being and working hours, and within-couples spillover effects.

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## Appendix

Table A.1: Estimated coefficients of the hybrid model: Men with children < 14 in the household; p values in parentheses<sup>1</sup>

	Base model	Income	Over- employment	Care work hours	Complete model
Partner's hours, BE	-0.006 (0.015)	-0.014 (0.000)	-0.005 (0.021)	-0.006 (0.019)	-0.013 (0.000)
Partner's hours, FE	0.004 (0.123)	0.003 (0.256)	0.004 (0.115)	0.004 (0.107)	0.003 (0.234)
Own hours, BE	0.006 (0.149)	-0.007 (0.157)	0.007 (0.084)	0.009 (0.055)	-0.003 (0.503)
Own hours, FE	-0.013 (0.001)	-0.016 (0.000)	-0.011 (0.010)	-0.013 (0.002)	-0.013 (0.002)
Educational level (Ref. primary)					
Secondary education	0.228 (0.030)	0.093 (0.371)	0.233 (0.026)	0.220 (0.036)	0.093 (0.368)
Tertiary education	0.559 (0.000)	0.171 (0.123)	0.567 (0.000)	0.558 (0.000)	0.184 (0.097)
Age, BE	-0.016 (0.0000)	-0.024 (0.000)	-0.016 (0.000)	-0.014 (0.000)	-0.022 (0.000)
Age, FE	-0.037 (0.000)	-0.048 (0.000)	-0.036 (0.000)	-0.037 (0.000)	-0.047 (0.000)
Own income (log), BE		0.483 (0.000)			0.484 (0.000)
Income (log), FE		0.266 (0.000)			0.271 (0.000)
Partner's income (log) BE		0.255 (0.000)			0.240 (0.000)
Partner's income (log), FE		0.029 (0.540)			0.033 (0.484)
Overemployment			-0.099 (0.001)		-0.092 (0.002)
Daily childcare hours, BE				0.048 (0.001)	0.038 (0.009)
Daily care hours, FE				0.027 (0.001)	0.029 (0.000)
Daily housework hours, BE				-0.035 (0.412)	-0.005 (0.907)
Daily housework hours, FE				-0.034 (0.102)	-0.029 (0.165)
Constant	7.710 (0.000)	3.582 (0.000)	7.662 (0.000)	7.473 (0.000)	3.382 (0.000)
N (person x year)	9862	9862	9862	9862	9862
N of cases	3078	3078	3078	3078	3078
Rho (variance due to u <sub>i</sub> )	0.483	0.470	0.482	0.484	0.469
R2 - Within	0.014	0.017	0.014	0.015	0.018
R2 - Between	0.019	0.056	0.022	0.022	0.060
R2 - Overall	0.017	0.044	0.019	0.021	0.049

1 Given the ongoing debate on the subject, we refrained from signaling statistical significance of the coefficient through stars or asterisks, but we offer the full p-value instead. See for ex. Bernardi, F., Chakhaia, L. and Leopold, L. (2017). 'Sing Me a Song with Social Significance': The (Mis)Use of Statistical Significance Testing in European Sociological Research. In: European Sociological Review, 33(1)

Table A.2: Estimated coefficients of the hybrid model: Men without children < 14 in the household; p values in parentheses

	Base model	Income	Over- employment	Care work hours	Complete model
Partner's hours, BE	0.002 (0.306)	0.002 (0.576)	0.002 (0.285)	0.002 (0.301)	0.001 (0.774)
Partner's hours, FE	0.008 (0.001)	0.003 (0.248)	0.008 (0.000)	0.008 (0.000)	0.003 (0.193)
Own hours, BE	0.000 (0.942)	-0.015 (0.002)	0.001 (0.835)	0.000 (0.955)	-0.015 (0.003)
Own hours, FE	-0.002 (0.535)	-0.008 (0.019)	-0.001 (0.791)	-0.002 (0.464)	-0.007 (0.039)
Educational level (Ref. primary)					
Secondary education	0.309 (0.001)	0.192 (0.037)	0.307 (0.001)	0.305 (0.001)	0.191 (0.038)
Tertiary education	0.574 (0.000)	0.238 (0.018)	0.573 (0.000)	0.569 (0.000)	0.237 (0.018)
Age, BE	0.003 (0.329)	-0.003 (0.224)	0.003 (0.322)	0.002 (0.458)	-0.004 (0.173)
Age, FE	-0.029 (0.000)	-0.039 (0.000)	-0.029 (0.000)	-0.029 (0.000)	-0.039 (0.000)
Own income (log), BE		0.524 (0.000)			0.523 (0.000)
Income (log), FE		0.246 (0.000)			0.238 (0.000)
Partner's income (log) BE		0.086 (0.094)			0.092 (0.076)
Partner's income (log), FE		0.189 (0.000)			0.191 (0.000)
Overemployment			-0.046 (0.060)		-0.038 (0.122)
Daily childcare hours, BE				-0.035 (0.338)	-0.053 (0.149)
Daily care hours, FE				-0.012 (0.555)	-0.011 (0.612)
Daily housework hours, BE				-0.032 (0.420)	0.017 (0.671)
Daily housework hours, FE				-0.031 (0.077)	-0.027 (0.124)
Constant	6.798 (0.000)	3.351 (0.000)	6.788 (0.000)	6.880 (0.000)	3.362 (0.000)
N (person x year)	13944	13944	13944	13944	13944
N of cases	3443	3443	3443	3443	3443
Rho (variance due to $u_i$ )	0.533	0.522	0.531	0.532	0.520
R2 - Within	0.011	0.016	0.011	0.012	0.016
R2 - Between	0.030	0.058	0.032	0.031	0.059
R2 - Overall	0.018	0.034	0.020	0.19	0.035

Table A.3: Estimated coefficients of the hybrid model: Women with children < 14 in the household; p values in parentheses

	Base model	Income	Over- employment	Care work hours	Complete model
Partner's hours, BE	0.003 (0.431)	-0.007 (0.156)	0.003 (0.452)	0.005 (0.300)	-0.006 (0.189)
Partner's hours, FE	-0.012 (0.014)	-0.012 (0.006)	-0.012 (0.006)	-0.011 (0.008)	-0.012 (0.007)
Own hours, BE	-0.009 (0.001)	-0.020 (0.000)	-0.008 (0.002)	-0.012 (0.000)	-0.019 (0.000)
Own hours, FE	0.002 (0.543)	0.001 (0.829)	0.003 (0.183)	0.001 (0.654)	0.002 (0.592)
Educational level (Ref. primary)					
Secondary education	0.320 (0.001)	0.132 (0.102)	0.321 (0.000)	0.262 (0.001)	0.122 (0.131)
Tertiary education	0.612 (0.000)	0.185 (0.050)	0.612 (0.000)	0.515 (0.000)	0.176 (0.062)
Age, BE	-0.012 (0.002)	-0.023 (0.000)	-0.012 (0.001)	-0.009 (0.029)	-0.022 (0.000)
Age, FE	-0.046 (0.000)	-0.052 (0.000)	-0.046 (0.000)	-0.048 (0.000)	-0.053 (0.000)
Own income (log), BE		0.341 (0.000)			0.306 (0.000)
Income (log), FE		0.042 (0.375)			0.036 (0.455)
Partner's income (log) BE		0.397 (0.000)			0.387 (0.000)
Partner's income (log), FE		0.083 (0.228)			0.085 (0.219)
Overemployment			-0.074 (0.036)		-0.064 (0.066)
Daily childcare hours, BE				0.012 (0.065)	0.003 (0.644)
Daily care hours, FE				0.000 (0.930)	0.001 (0.860)
Daily housework hours, BE				-0.098 (0.000)	-0.040 (0.053)
Daily housework hours, FE				-0.018 (0.136)	-0.016 (0.180)
Constant	7.765 (0.000)	3.813 (0.000)	7.756 (0.000)	7.927 (0.000)	4.123 (0.000)
N (person x year)	9969	9969	9969	9969	9969
N of cases	3053	3053	3053	3053	3053
Rho (variance due to $u_i$ )	0.476	0.463	0.476	0.474	0.463
R2 - Within	0.017	0.018	0.017	0.018	0.019
R2 - Between	0.019	0.052	0.019	0.025	0.053
R2 - Overall	0.016	0.044	0.016	0.022	0.046

Table A.4: Estimated coefficients of the Hybrid model: Women without children < 14 in the household; p values in parentheses

	Base model	Income	Over- employment	Care work hours	Complete model
Partner's hours, BE	-0.002 (0.593)	-0.010 (0.026)	-0.002 (0.591)	0.000 (0.994)	-0.009 (0.044)
Partner's hours, FE	0.004 (0.259)	0.000 (0.959)	0.003 (0.293)	0.004 (0.234)	0.000 (0.966)
Own hours, BE	0.000 (0.870)	-0.009 (0.017)	0.002 (0.344)	-0.007 (0.004)	-0.011 (0.005)
Own hours, FE	0.007 (0.003)	0.002 (0.396)	0.009 (0.000)	0.007 (0.004)	0.005 (0.068)
Educational level (Ref. primary)					
Secondary education	0.173 (0.005)	0.026 (0.675)	0.172 (0.005)	0.125 (0.044)	0.016 (0.793)
Tertiary education	0.297 (0.000)	-0.026 (0.745)	0.297 (0.000)	0.221 (0.003)	-0.031 (0.694)
Age, BE	0.006 (0.024)	0.000 (0.883)	0.006 (0.022)	0.005 (0.074)	-0.001 (0.623)
Age, FE	-0.025 (0.000)	-0.033 (0.000)	-0.025 (0.000)	-0.026 (0.000)	-0.033 (0.000)
Own income (log), BE		0.254 (0.000)			0.230 (0.000)
Income (log), FE		0.175 (0.001)			0.170 (0.001)
Partner's income (log) BE		0.333 (0.000)			0.331 (0.000)
Partner's income (log), FE		0.139 (0.007)			0.136 (0.009)
Overemployment			-0.095 (0.000)		-0.093 (0.001)
Daily childcare hours, BE				-0.053 (0.001)	-0.063 (0.000)
Daily care hours, FE				-0.009 (0.421)	-0.007 (0.487)
Daily housework hours, BE				-0.100 (0.000)	-0.037 (0.090)
Daily housework hours, FE				-0.024 (0.039)	-0.022 (0.055)
Constant	7.110 (0.000)	3.892 (0.000)	7.089 (0.000)	7.629 (0.000)	4.337 (0.000)
N (person x year)	14078	14078	14078	14078	14078
N of cases	3462	3462	3462	3462	3462
Rho (variance due to $u_i$ )	0.512	0.503	0.511	0.509	0.501
R2 - Within	0.009	0.011	0.009	0.010	0.012
R2 - Between	0.018	0.040	0.021	0.026	0.047
R2 - Overall	0.010	0.024	0.012	0.016	0.030

## Information in German

### Deutscher Titel

Sein(e) und ihr(e) Arbeitszeiten und Wohlbefinden in Deutschland: Eine Längsschnitt-Crossover-Spillover-Analyse

### Zusammenfassung

Diese Arbeit untersucht den Zusammenhang zwischen Arbeitsstunden und Wohlbefinden bei verheirateten und unverheirateten Personen auf Paarebene. Auf Grundlage von Daten aus dem German Socio-Economic Panel Survey (SOEP) untersuchen wir, wie das individuelle Wohlbefinden der Befragten und ihrer Partner von der geleisteten Anzahl an Arbeitsstunden beeinflusst wird. Wir untersuchen auch mögliche Übertragungsmechanismen zwischen den beiden Variablen, nämlich das Einkommen, die Stunden, die mit Hausarbeit und Betreuungsarbeit verbracht werden, und eine mögliche Diskrepanz zwischen gewünschten und tatsächlichen Stunden. Mit Hilfe eines hybriden Panelmodells finden wir Ansatzpunkte für geschlechtsabhängige Zusammenhänge: Frauen berichten keine andere oder eine geringere Zufriedenheit, wenn sich die Arbeitszeit ihres Partners erhöht, und dasselbe gilt für Männer. Die eigene Arbeitszeit hat jedoch einen kleinen, nicht signifikanten positiven Effekt auf die Lebenszufriedenheit von Männern, wohingegen sie für Frauen den gegenteiligen Effekt hat. Das Vorhandensein von kleinen Kindern im Haushalt unter Kontrolle des Einkommens untermauern diese Ergebnisse. Wir schließen daraus, dass die Befragten zufriedener sind, wenn ihr Verhalten und das Verhalten ihres Partners den traditionellen Rollen, wo die Frau den Haushalt führt und der Mann der Haupternährer der Familie ist, entspricht. Das Fehlen eines starken Zusammenhangs bzgl. aktueller und gewünschter Zeit weist zusätzlich daraufhin, dass die Ergebnisse mit traditionellen Einstellungen hinsichtlich der Geschlechterrollen und der Erwerbsbeteiligung von Frauen zusammenhängen.

**Schlagwörter:** Arbeitszeit, Lebenszufriedenheit, Familie, Geschlechterrollen, Hybrid-Modelle

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