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Impact of working hours on work–life balance

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Impact of working hours on work–life balance

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Abstract

To examine the influence of working hours on employees' satisfaction, this article uses a large, representative set of panel data from German households (GSOEP). The results show that high working hours and overtime in general do not lead to decreased satisfaction. Rather, increasing working hours and overtime have positive effects on life and job satisfaction, whereas the desire to reduce working hours has a negative impact on satisfaction. In 2009, nearly 60% of employees wanted to reduce their working hours. The overall number of hours by which employees want to reduce their working time is driven mainly by overtime compensation.

JEL-Classification: J22, J28, J81, M12

Keywords: satisfaction, overtime, work–life balance, working hours, working time arrangements

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1. Introduction

In recent years, work–life balance has become a keyword for balancing working time and free time. Literature on the topic mainly focuses on family-friendly measures and how companies operationalize them (e.g., DILGER AND KÖNIG [2007], PROGNOS [2003]). In particular, time is a crucial resource for balancing work and life, because it can be allocated to either work or free time. We examine the effect of working hours and overtime on satisfaction, with data from a German socioeconomic panel (GSOEP).[1]

Specifically, we analyze which factors influence working hour mismatches, as well as the effect of those mismatches on employee satisfaction. Unlike existing literature, which mostly uses general satisfaction and cross-sectional data sets, we examine working hours and overtime effects on employees' satisfaction in various parts of life across a panel data set. These panel data enable us to control for individual heterogeneity, as psychologists agree that each person has a specific level of satisfaction, but we can eliminate such distortions in our data, in contrast to cross sectional analyses (GRÖZINGER ET AL. [2008]). Furthermore, we address not only overall life satisfaction but also satisfaction with the job, family life, and free time and thereby extend HANGLBERGER'S [2010b] research on job satisfaction.

Our results show that high working hours and overtime do not lead to lower satisfaction. Rather, more working hours and overtime have positive effects on life and job satisfaction, but the desire to reduce working hours has a negative impact on job and life satisfaction. Our results for job satisfaction mirror HANGLBERGER'S [2010b] main findings, but we also detail the underexplored effect of overtime on employees' satisfaction. Working conditions have additional impacts on satisfaction: A home office triggers wishes to reduce working hours, and commuting lowers satisfaction with free time and family life, with no influence on job satisfaction. These results show that diverse perceptions and influences determine employees' overall life satisfaction. The interplay of working hours and work–life balance remains important for companies and their human resource policies.

To address these issues, this research begins in the next section with a review of previous literature. We then explain our data set and variables, which lead into our hypotheses. The results follow, and finally, we provide a discussion of the findings and conclusions.

2. Literature Review

Existing literature offers little evidence about the influence of working time preferences on employees' satisfaction in Germany. HOLST AND SCHUPP [1998] asked about desired working hours among German employees and found that

[1] The Socio-Economic Panel (SOEP) data we used came from the Deutschen Institut für Wirtschaftsforschung (DIW), Berlin.

those hours are much lower than actual working hours, a preference that persisted for at least the next decade (HOLST [2007]). MERZ [2002] connects working hours to individual well-being by using the number of working hours an employee wants to change as an indicator of economic well-being, based on GSOEP data from the mid-1980s to the mid-1990s. GRÖZINGER ET AL. [2008] use more current data from 2004 and find that working time preferences are highly relevant to life and job satisfaction. In addition, HANGLBERGER [2010b] analyzes the effect of working hours on job satisfaction with 2005 and 2007 GSOEP data and finds a positive effect of self-determined working hours on job satisfaction for full-time employees.

Our analysis extends GRÖZINGER ET AL.'S [2008] research with a detailed examination of possibly different impacts of a wish to reduce versus extend working hours. Furthermore, we employ panel data, rather than a cross-sectional analysis. In comparison with HANGLBERGER [2010b], we include the 2009 data wave to examine working time arrangements, and we add several other satisfaction variables to identify trends in satisfaction and working hours.

Working time mismatches are also common research topics in other countries (e.g., JACOBS AND GERSON [2004], REYNOLDS [2004] and WOODEN ET AL. [2009]). HANGLBERGER'S [2010a] overview of job satisfaction in 31 European countries indicates that patterns of explanation vary, such that negative effects of working hours are lower in countries with lower welfare levels. Furthermore, work autonomy is only relevant in countries with high welfare status. Noting the importance of job characteristics in 19 OECD countries, CLARK [2005] suggests that working hours are important only when actual and desired working time differ. VALCOUR [2007] uses data from U.S. call center agents to test the effects of working hours, job complexity, and control over work time on work–life balance satisfaction; that study implies in contrast to our results a general negative effect of the amount of working hours on satisfaction with work-family balance. In Great Britain, WHITE ET AL. [2003] examine both working hours and their effect on work–life balance, finding a conflict between high performance practices and work-life balance policies, whereas GASH ET AL. [2010] analyze the effect of changes from full-time to part-time work on satisfaction for women in the United Kingdom and Germany and find a positive effect of decreasing working hours on life satisfaction. Finally, an Australian panel survey used by WOODEN ET AL. [2009] reveals that it is not the number of working hours that matters but the working time mismatch. Some of our results match these existing studies, though others are in conflict. CLARK [2005] focuses only on job satisfaction and uses a multicultural data set; we focus on a large German panel data set and expand the research by analyzing the effect of working hours on employees' satisfaction with different parts in life. In terms of job satisfaction, our results for Germany are in line with CLARK'S [2005].

In comparison with existing literature, we also focus on overall life satisfaction, together with satisfaction with the job, family life, and free time. Thus, we question whether all human satisfaction can be affected (for an overview see CLARK ET AL. 2008]. Although people's satisfaction levels are genetically

determined, some influence seems possible. In their set-point theory study, LYKKEN AND TELLEGEN [1996] show that subjective well-being is genetically predetermined at a rate of 50%. HEADEY [2007] offers counterevidence of the set-point theory though, such that 20% of respondents indicated permanent changes of their life satisfaction over the previous 20 years. Because individual life satisfaction thus appears changeable in the long run, various indicators should have an influence on satisfaction. We test the effects of working hours with a fixed effects model and control for unobserved employee heterogeneity.

We find a positive impact of actual working hours and working overtime on the job satisfaction of full-time employees; a negative effect on job satisfaction only arises when full-time employees want to reduce their working hours. If employees' overtime is appropriately compensated, satisfaction rises, and the working hour mismatch decreases. Although the effect of actual working hours we find is in line with WOODEN ET AL.'S [2009] findings, our results provide additional evidence pertaining to overtime. Because our panel structure can control for differences in employees' satisfaction levels, our results cannot be driven by those levels. In this sense, our study strengthens and expands GRÖZINGER ET AL.'S [2008] work.

Yet we also identify a home office as a significant driver of the wish to reduce working hours. Employees who work at home daily or several times a week want to reduce their hours significantly more. Flexible working hour arrangements also decrease satisfaction, compared with strictly fixed working hours. Although commuting has no effect on job satisfaction, its influence is significantly negative for free time and family life. Therefore, we posit that the time component affects satisfaction with free time and family life; overall, types of satisfaction with various aspects of life interact. Similarly, STUTZER AND FREY [2006] and DETTE [2005] observe interaction effects for satisfaction measures, though without explaining them fully.

3. Data and Variables

Our analysis relies on the GSOEP data set, which is an annual representative household survey of households and persons in Germany. Since 1984, approximately 20,000 household members have been surveyed annually, which indicates it provides a representative sample of German inhabitants (SOEP GROUP [2001]). We use the years from 1999 to 2009 to address long-term effects, though not all questions that are of interest for this study appeared in each year, so some analyses are based on specific periods.[2] The overall analysis includes German full- and part-time, white- and blue-collar workers. We exclude self-employed persons and civil servants, as well as employees without contracted labor

[2] The data used in this paper was extracted using the Add-On package PanelWhiz for Stata®. PanelWhiz (http://www.PanelWhiz.eu) was written by Dr. John P. Haisken-DeNew (john@PanelWhiz.eu). See HAISKEN-DENEW AND HAHN (2006) for details. The PanelWhiz generated DO file to retrieve the data used here is available from me upon request. Any data or computational errors in this paper are my own.

relations, whose working hour arrangements differ. We also exclude employees older than 65 years, the age of retirement for our German sample. Thus the data include employees between 16 and 65 years of age, and in 2009, they represented 24% part-time employees, of which 9% were men, and 34% of the full-time working employees were women.

Our research questions suggest multiple relevant variables for measuring satisfaction and working hours. Items to measure satisfaction with job, family life, and free time appear at the very beginning of the SOEP questionnaire (*How satisfied are you today with the following areas of your life?)*, measured on an 11-point scale (0 = *totally unhappy* to 10 = *totally happy*). The family life satisfaction item began appearing in the questionnaire in 2006; all other questions were asked from the first year. The life satisfaction item (*How satisfied are you with your life, all things considered?*) appears at the end of the questionnaire, measured on an 11-point scale (0 = *completely dissatisfied* to 10 = *completely satisfied*).

The survey items referring to working hours include actual, stipulated, and desired working hours of employees.[3] The desired working hours item stipulates that income will change according to the number of hours worked. We calculate the desired reduction in the number of working hours by subtracting desired from actual working hours. However, some employees want to extend their working hours, so we generate two variables: one for the number of hours an employee wants to reduce and another that describes the number of working hours an employee wants to extend. Both variables thus are strictly positive, which enables us to compare employees with the desire to change their working hours with those whose desired and actual working hours indicate a perfect match.

We also include overtime and overtime compensation variables.[4] The 2003, 2005, 2007, and 2009 survey waves included questions about types of working hours and working hour arrangements (though this latter measure did not appear in 2003]. The type of working hours is measured with the following item: *Nowadays, there are a number of different types of working hours available. Which of the following possibilities is most applicable to your work?* Respondents could indicate: *Fixed daily working hours; working hours fixed by employer, which may vary from day to day; no formally fixed working hours; decide my own*

[3] Questions about working hours in the SOEP asked: *How many hours are stipulated in your contract (excluding overtime)?, and how many hours do your actual working-hours consist of including possible over-time?* and *if you could choose your own number of working hours, taking into account that your income would change according to the number of hours, how many hours would you want to work?* We exclude all working hour data beyond 80 hours per week, in line with the variables that the SOEP Group (2001) generated.

[4] The overtime question in the SOEP questionnaire read *How was your situation with regards to overtime last month? Did you work overtime?* The overtime_dummy applies from 2002 onward, because the question had been revised. For overtime_hours, we used the SOEP-generated variable that indicated the difference between actual and stipulated working time. Compensation for overtime means that hours were totally paid, partly paid, or compensated for with vacation days.

working hours and flexitime within a working hours account; and *a certain degree of self-determination of daily working hours within this account.* This item thus could differentiate employees by the organization of their working hours and reveal the effects of such arrangements.

Variables	Obs	Mean	Std Dev
Age (in years)	187942	29.873	17.865
Commute (dummy):			
Commutefreq_daily	187942	0.223	0.416
Commutefreq_weekly		0.014	0.117
Commutefreq_infrequently		0.003	0.055
East_germany (dummy)	187942	0.213	0.409
Female (dummy)	187942	0.470	0.499
Home office (dummy):			
Homeoffice_asneeded	23419	0.058	0.234
Homeoffice_daily		0.021	0.144
Homeoffice_every2_4weeks		0.022	0.148
Homeoffice_weekly		0.033	0.178
Industries (dummy):			
Agriculture	50410	0.015	0.123
Manufacturing		0.364	0.481
Retail, Tourism, Transportation		0.204	0.403
Financial/Corporate Services		0.075	0.263
Public and private services		0.341	0.474
Job Status (dummy):			
Untrained blue collar worker	90817	0.333	0.179
Semi-trained blue collar worker		0.121	0.326
Trained blue collar worker		0.164	0.371
Foreman		0.023	0.149
Master craftsman		0.011	0.104
Untrained white collar worker		0.008	0.089
Trained white collar worker		0.133	0.340
Qualified professional		0.299	0.458
Highly qualified professional		0.182	0.386
Managerial position		0.025	0.158
Kids_u16 (dummy)	159393	0.599	0.490
Leadership (dummy):			
Highly_qualified	15657	0.070	0.255
Lowermanagement		0.124	0.330
Middlemanagement		0.074	0.261
Topmanagement		0.022	0.146
Limited_job (dummy)	90866	1.632	0.482
Married (dummy)	92025	0.652	0.476

Variables	Obs	Mean	Std Dev
Net_income (in € per month)	84903	1913.475	1245.705
Net_income_household (in € per month)	150487	3526.333	2064.908
New_job (dummy)	92125	0.135	0.342
Overtime (dummy):			
O_time_dayoff	89385	0.351	0.477
O_time_paid		0.094	0.292
O_time_partlypaid		0.160	0.366
O_time_unpaid		0.139	0.346
Overtime_dummy	53571	0.753	0.431
Overtime_hours (in hours per week)	86642	2.485	3.775
Parttime (dummy)	90972	0.209	0.406
Satisfaction*:			
Family_life	31464	7.710	1.922
Free_time	90706	6.499	2.142
Household_income	90162	6.450	2.072
Job	89635	7.030	1.971
Life	90812	7.090	1.613
Personal_income	39524	6.217	2.137
Work_autonomy (dummy)	90817	2.646	1.045
Working days (dummy):			
Evening_work	23410	1.999	1.147
Night_work	22516	1.477	0.897
Saturday_work	23518	2.341	1.378
Sunday_work	22592	1.724	1.156
Working hours (in hours per week):			
Actual_wh	89536	39.503	10.703
Desired_wh		35.640	8.859
Extend_wh		0.970	3.370
Reduce_wh		4.807	6.592
Stipulated_wh		35.425	7.746
Working time arrangements (dummy):			
Wh_employer_directed	31999	0.220	0.414
Wh_fixed		0.432	0.495
Wh_flexitime		0.218	0.413
Wh_self_directed		0.130	0.336

* Satisfaction is scaled from 0 (totally unhappy) to 10 (totally happy).

Notes: The descriptive statistics do not change if we use only 2002–2009.

Table 1: Descriptive statistics of main variables (1999-2009)
Source: Own calculations.

To estimate the effects of working hours on satisfaction, we include some independent variables pertaining to personal and socioeconomic characteristics,

further satisfaction with various parts of life, economic worries, and job-related variables (e.g., tenure, company size, industry). The descriptive statistics for the main variables appear in Table 1.

4. Hypotheses

We expect working time to affect satisfaction, in line with GRÖZINGER ET AL.'S [2008] finding that working time has influences on job and life satisfaction and WOODEN ET AL.'S [2009] comments about the mismatch between actual and desired working hours. Not only the number of working hours but also employees' preferences for the number of their working hours should be significant, such that a violation of preferences leads to dissatisfaction, according to motivation–hygiene theory (HERZBERG ET AL. [1959]). To extend current research into influences on job and overall life satisfaction, we observe potential influences on family life and free time.

Hypothesis 1: If employees want to reduce their working hours, a negative effect on various types of satisfaction occurs.

Overtime relates closely to working hours, except that overtime is handled differently for different companies, industries, and hierarchical levels. The compensation for overtime and expectation of overtime hours also vary for each job. For some jobs, overtime is common but not directly compensated; for others, every single additional hour worked requires additional payment, or else overtime is not allowed.[5] Following WOODEN ET AL. [2009], we expect that overtime has no overall negative effect on satisfaction, because it is more or less voluntary and compensated. Because we remain interested in its effect on satisfaction with several aspects of life, we predict that overtime has a negative effect on satisfaction only if the desired working hours are lower than actual ones, and paid overtime should mitigate this negative effect.

Hypothesis 2a: Overtime has a negative effect on satisfaction only if the desired working hours are lower than actual ones.

Hypothesis 2b: Paid overtime mitigates this negative effect of overtime on satisfaction.

Flexible working time arrangements allow employees to adjust their working hours to their specific needs, which should have a positive effect on satisfaction. But flexibility also eliminates the clear end to a working day. That is, fixed working hours have clear beginnings and endings, whereas daily changing working times or flexitime can lead to extended hours. With a heavy workload, flexible working hours and overtime that is neither paid nor accounted for could push employees to work nearly round the clock. This effect likely has been enhanced by the permanent access to work and availability to colleagues,

[5] For example, compare consultancies and companies with collective bargaining agreements.

supervisors, and customers with the Web 2.0 age. In happiness research, ANDRESEN [2009] offers a broad overview of economic and psychological evaluations of working time flexibility and suggests it increases working hours and hinders satisfaction. ANDRESEN [2009] also shows that individual working time flexibility extends working hours and has strong effects on private life and education. Therefore, in contrast with HANGLBERGER [2010b], who shows a positive effect on satisfaction, we predict that flexible working time arrangements have a negative overall effect on life and job satisfaction.

Hypothesis 3: Flexible working time arrangements have a negative effect on life and job satisfaction.

5. Results

We begin with a discussion of the development of working hours, working arrangements, and satisfaction over the past decade, to reveal how working conditions have changed and if any differences arise with regard to gender or full- versus part-time employment status. We then test our hypotheses with longitudinal, cross-sectional analyses to examine determinants of employee satisfaction and their desire to change their working hours.

5.1. Working Hours

In Figure 1, we show that for full-time employees, actual working hours equal 43.4 hours on average, but the desired hours of 38.3 are significantly lower (paired t test, 1% significance level). Both actual and desired working hours have increased significantly in the past decade, by 2.3% and 1.9%, respectively (two-sample t tests, 1% significance level). For part-time workers, we discern a smaller but still significant difference between the average actual working hours, 24.6, and the desired hours, 25.4. Thus the desired hours are significantly higher than the number of actual working hours, which contrasts with the full-time sample. That is, employees in part-time contracts tend to want to expand their working hours, which also would increase their income. When we test for gender effects, we find significantly different desired working times: Among full-time employees, women want to work 3.5 hours less each week than men, and among part-timers, women want to work 5 hours less per week than men (two-sample t tests, 1% significance level). Those gender differences match HOLST'S [2007] results from a sample of civil servants.

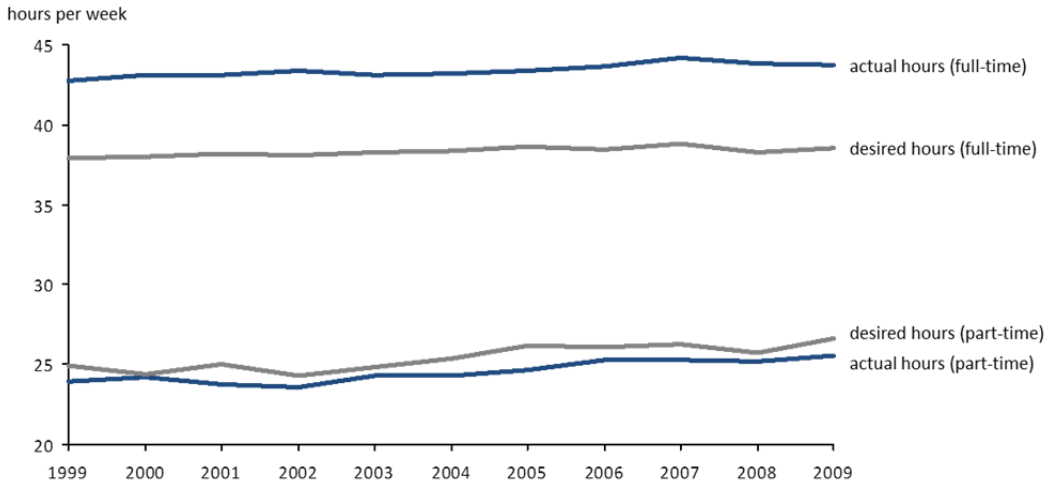


Figure 1: Actual and desired working hours, full-time and part-time employment (hours per week)
Source: Own calculations.

The amount of overtime worked by full-time employees equals approximately 2.8 hours per week for both genders; it has not changed significantly over time. However, the number of overtime hours in part-time jobs significantly increased by 25%, up to 1.5 hours per week (two-sample t test, 1% significance level). The results also reflect the general observation that significantly more full-time employees work overtime than part-timers, at 77% and 70%, respectively (two-sample t test, 1% significance level). Yet the number of part-time employees who work overtime has nearly doubled in the past decade. Overtime hours are significantly higher for men compared with women in both full-time employment (3.1 versus 2.1) and part-time employment (1.5 versus 1.3) (two-sample t tests, 1% significance level).

In 2009, 28% of employees expressed total satisfaction with their amount of working hours; they neither wanted to reduce nor extend their hours. However, 57% wanted to reduce their hours, even though it would lower their incomes, and 15% wanted to extend those hours. Furthermore, employees who wanted to reduce or extend their working hours were significantly less satisfied with all parts of their life, compared with those whose actual and desired working hours matched (two-sample t tests, 1% and 5% significance level), which is consistent with GRÖZINGER ET AL. [2008]. We further recognize that between those who wanted to reduce versus extend their working hours, the latter were happier with their free time, whereas the former were happier with their whole life (two-sample t tests, 1% significance level). That is, it seems as if those who are happy with their lives want to reduce their working time to add more family and free time activities.

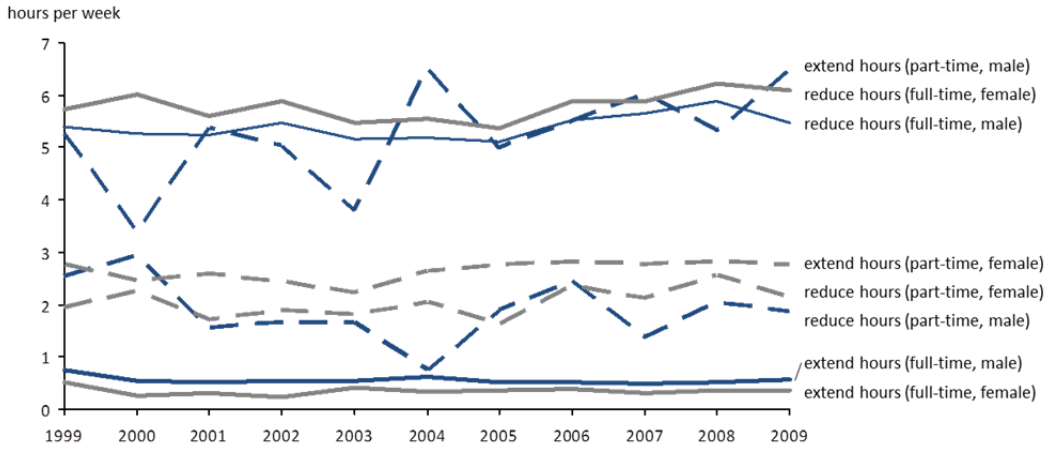


Figure 2: Number of working hours employees want to extend or reduce, differentiated by genders, full-time and part-time (hours per week)
Source: Own calculations.

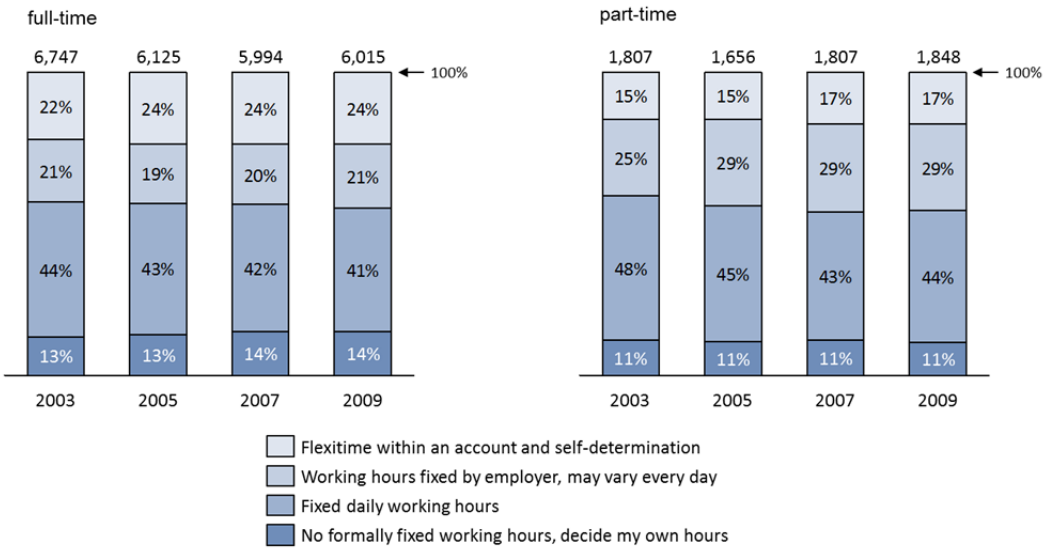
More specifically, among full-time employees, 28% were happy with their amount of working hours, and among part-time employees, the share was even higher at 36%. However, 32% of part-time employees wanted to increase their working hours and 32% wanted to decrease them. In full-time jobs, only 9% wanted to work more; the biggest divergence appears for the full-time employees, nearly 63% of whom wanted to reduce their working hours. The disequilibrium of working hours in Figure 2, differentiated by gender and controlling for part- or full-time employment, shows that the biggest mismatch exists for full-time employed women, who want reduce their working hours by an average of 5.8 hours per week, significantly more than men do (two-sample t test, 1% significance level). Furthermore, men in part-time jobs want to extend their working hours by 5.3 hours, significantly more than women at 2.6 hours (two-sample t test, 1% significance level). Part-time employees who want to reduce their working hours have similar preferences across both genders, of 2 hours less on average. Finally, extending hours is not particularly critical among full-time employees; only 9% of them want to increase their work time, and the desired expansion averages only 0.4 hours per week.

A willingness to reduce or extend hours also depends on the employee's age. As they grow older, employees' preference to reduce hours rises significantly, independent of full- or part-time work (two-sample t tests, 1% significance level). Accordingly, actual working hours decrease significantly with age (two-sample t tests, 1% significance level). Younger employees are more willing to extend their hours (two-sample t test, 1% significance level). In Canada, DROLET AND MORISSETTE [1997] instead observe a larger group of satisfied employees who did not want to change their working hours, and the remainder would rather work more than less, with these results appearing robust across age groups.

5.2. Working Time Arrangements

Since 2003, every two years the SOEP questionnaire has included a question about working time arrangements. In Figure 3 we present these data for both full- and part-time employees. Approximately 44% of all employees work with fixed daily conditions. In part-time jobs, the working hours of 29% of employees are fixed by the employer and may vary from day to day. In full-time jobs, 24% have flexitime accounts and thus some self-determination. We observe no significant changes across the seven years of data.

Working on Saturdays is relevant for 55% of part-time employees and 65% of full-time employees; working on Sundays is only relevant for 33% of part-time and 39% of full-time jobs. In addition, 30% of full-time employees work in the evenings (after 7:00 pm) once a week and 14% do so several times a week. In the part-time sample, those numbers are slightly lower: 10% once a week and 12% several times a week work in the evenings. Evening work also has increased by 3% in full-time jobs and 6% in part-time jobs. In general though, working conditions have been robust for the past five years (also see the appendix, Figures 5 and 6).



Notes: Not all figures sum to 100%, due to rounding.

Figure 3: Working hour arrangements, differentiated between full- and part-time (percentage)
Source: Own calculations.

5.3. Satisfaction

Satisfaction with life and job both provoke average values of 7 on the 11-point satisfaction scale, whereas satisfaction with family life is higher and satisfaction with free time lower. Figure 4 contains these values, differentiated by age groups.

Just as the overall average values for life and job satisfaction are similar, so do the different age groups behave similarly. The 45–60-year-old group is significantly less satisfied with their lives and jobs though; we observe higher satisfaction values among the youngest and oldest groups. For satisfaction with free time, we note that employees are less satisfied with their free time than with other areas, but in line with other satisfaction measures, the highest values appear for the youngest and oldest groups. However, the lowest values come from the 25–45-year-old group. Nearly all two-sample t tests are significant at 1% level. Because satisfaction with family life has been included in the questionnaire only for four years, we present initial tendencies, which indicate high values but no significant differences across age groups.

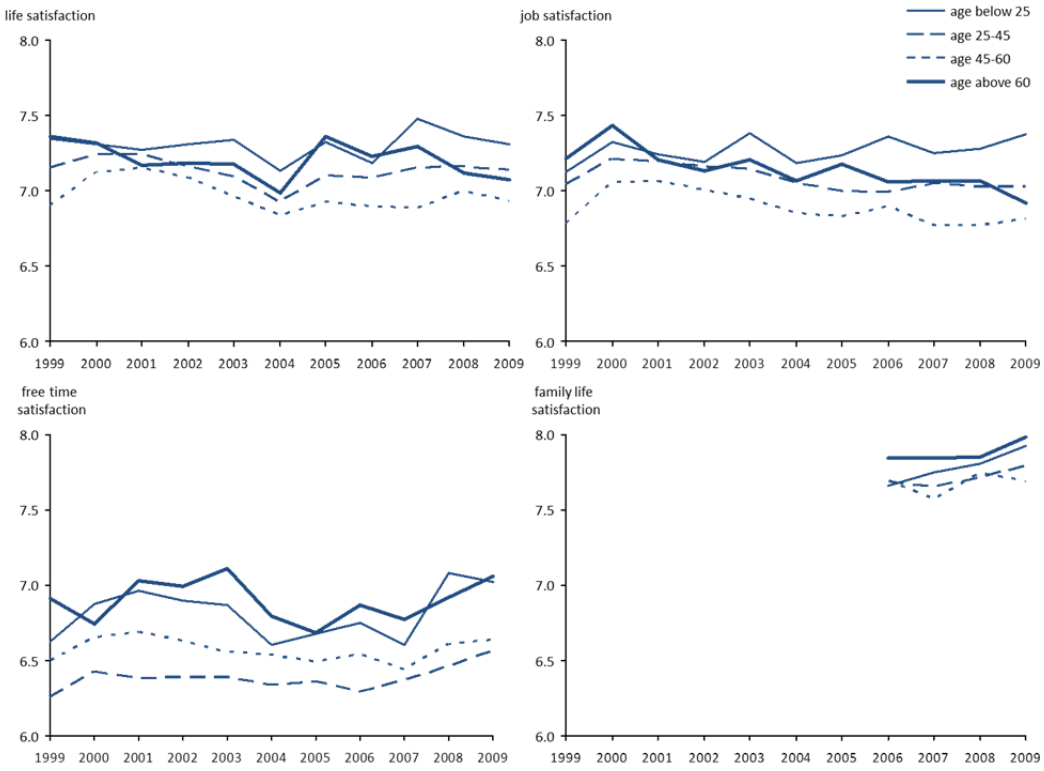


Figure 4**:** Satisfaction with life, job, family life, and free time, by age groups (11-point scales)
Source: Own calculations.

The results regarding overall life satisfaction also are consistent with happiness and well-being literature (e.g., CLARK [2007]), and the job satisfaction results for Germany match those of CLARK ET AL. [1996], who find a U-shaped relationship between age and job satisfaction among British employees. To the best of our knowledge, the relationship between free time satisfaction and age has not previously been examined separately from life satisfaction; therefore, our results contribute to extant literature by confirming the characteristic U-shaped relationship for free time too.

In the past ten years, men's and women's life satisfaction has been marginal but also significantly different. Men are more satisfied with their lives. In contrast, the satisfaction with free time measure reveals the opposite, such that women are more satisfied with their free time (two-sample t tests, 1% significance level). No significant satisfaction differences in relation to life or jobs arise between full- and part-timers. However, part-time employees are significantly more satisfied with their family life and free time than their full-time counterparts (two-sample t tests, 1% significance level).

5.4. Estimations

To control for other factors that might influence the four different satisfaction measures, we run several regressions focusing on the effects of working hours, overtime, and working time arrangements. We thus examine the influence of job characteristics on satisfaction with the whole life—not only job satisfaction but also life, family life, and free time satisfaction. Furthermore, influences related to the mismatch between actual and desired working hours should emerge.

Table 2 shows the effects of working hours and overtime on job satisfaction. The fixed effects regressions include 2002–2009; we provide hierarchical models for the whole sample in the appendix (Table 6). The main effects, including preferences for reduced hours and the overtime effect, are robust across models. We also run clustered ordinary least squares (OLS) regressions that confirm the results. Model 1 features impacts on job satisfaction for the whole sample. Models 2 and 3 specify the effects for men and women; models 4 and 5 are regressions for full-time and part-time employee samples. Model 6 includes only employees who want to reduce their hours. We also include a dummy variable for commuting, because STUTZER AND FREY [2008] report decreasing job satisfaction with greater commute time. TAYLOR ET AL. [2003] also indicate a positive relation between work autonomy and job satisfaction, which we test too. We add several other control variables as well, including socio-demographics, other satisfaction measures, detailed job characteristics, and industry and year controls.

An outstanding result is the significant, positive impact of the increase in actual working hours, in the whole sample, for men, and for full-time employees, as well as an even higher positive impact of working overtime on job satisfaction. Apparently overtime creates satisfaction, because the employee feels needed and perceives the work as important, though it is possible that satisfied employees simply work more overtime (STUTZER AND FREY [2006]). A significant negative effect on job satisfaction arises only if employees want to reduce working hours, in support of our first hypothesis in terms of job satisfaction and the Australian results of WOODEN ET AL. [2009]. A positive effect of the wish to extend working hours appears only among men and full-time workers. Children in the household have a positive effect on job satisfaction for the whole sample and for women. Marriage also has a positive effect on job satisfaction, except for part-timers. Most research focuses on desires to reduce working hours, but our results contribute to

this literature by also noting the desire for extended hours, which has been insufficiently examined. AYERS ET AL. [2007] find that underemployment has a negative effect on health and well-being, and VOYDANOFF [2007] reveals that underemployed people lose important well-being resources, such as time structures, social contacts, societal involvement, personal identity status, and social activities. Further research is necessary to understand the various influences on the wish to extend working hours and the consequences of underemployment.

In model 6, we cannot confirm the first part of our second hypothesis, namely, that overtime has a negative effect on satisfaction when desired working hours are lower than actual hours. Instead, we find a significant positive effect of overtime, even when employees want to reduce their working hours. Moreover, the compensation method for overtime has a highly significant impact on job satisfaction. All partly and totally paid overtime, as well as compensation through additional vacation time, has highly significant, positive effects on satisfaction, compared with overtime that is not compensated. This finding confirms the latter part of our second hypothesis, because paid overtime softens the negative effect. Altogether our observations expand satisfaction research, which has barely considered the effects of overtime.

Employees with some work autonomy are significantly more satisfied with their jobs, though this satisfaction decreases with tenure and increases significantly when they start a new job. These results are in line with GRUND AND SLIWKA'S [2007] observation, as well as the growing tendency for employees to change jobs. The positive effect of a limited contract on job satisfaction could result from higher job motivation or a desire for a longer contract, or it might imply the job itself is highly important to the employee, so the limitation has no effect on satisfaction. An increase of personal income increases job satisfaction, but an increase of household income decreases satisfaction, presumably because families must exert more coordination efforts to manage their schedules. This effect does not appear in the part-time sample, probably based on the fact that a lot of part-time employees rely on the household income. Overall, satisfaction with various parts of life is interdependent; employees with high job satisfaction are also highly satisfied with other parts of their lives, in support of DETTE [2005].

	(1) Satisfaction_ job	(2) Satisfaction_ job	(3) Satisfaction_ job	(4) Satisfaction_ job	(5) Satisfaction_ job	(6) Satisfaction_ job
	Whole sample	Men	Women	Full-time	Part-time	With reduction wish
				2002-2009		
Actual_wh	0.006*	0.009**	0.004	0.009**	0.000	-0.006
	(1.87)	(2.08)	(0.81)	(2.37)	(0.05)	(-1.61)
Reduce_wh	-0.017***	-0.015***	-0.021***	-0.017***	-0.013	
	(-5.46)	(-3.74)	(-4.26)	(-5.22)	(-1.23)	
Extend_wh	0.004	0.014*	-0.003	0.013*	-0.000	
	(0.82)	(1.79)	(-0.40)	(1.74)	(-0.02)	
Overtime_dummy	0.115***	0.098**	0.135***	0.112***	0.077	0.136***
	(3.56)	(2.33)	(2.68)	(3.10)	(0.93)	(3.05)
O_time (base: unpaid)						
O_time_dayoff	0.330***	0.345***	0.314***	0.340***	0.617***	0.310***
	(6.49)	(5.39)	(3.79)	(6.28)	(3.34)	(4.92)
O_time_partlypaid	0.303***	0.326***	0.259***	0.301***	0.505***	0.276***
	(5.62)	(4.97)	(2.81)	(5.27)	(2.61)	(4.16)
O_time_paid	0.282***	0.250***	0.385***	0.297***	0.281	0.195**
	(4.17)	(3.16)	(3.04)	(4.11)	(1.22)	(2.22)
Commute (base: infrequently)						
Commutefreq_daily	-0.004	-0.032	0.033	0.005	-0.056	0.004
	(-0.09)	(-0.58)	(0.47)	(0.10)	(-0.44)	(0.08)
Commutefreq_weekly	0.111	0.055	0.141	0.089	0.240	0.064
	(1.19)	(0.51)	(0.78)	(0.88)	(0.88)	(0.54)
Work_autonomy	0.155***	0.167***	0.125**	0.148***	0.249***	0.141***
	(5.26)	(4.64)	(2.51)	(4.62)	(2.77)	(3.61)
Age (base: above 60)						
Age_below25	-0.081	0.082	-0.265	-0.070	0.104	-0.109
	(-0.52)	(0.41)	(-1.01)	(-0.42)	(0.19)	(-0.54)
Age_25to45	-0.157	-0.134	-0.232	-0.165	-0.242	-0.183
	(-1.29)	(-0.93)	(-1.06)	(-1.24)	(-0.70)	(-1.22)
Age_45to60	-0.106	-0.108	-0.149	-0.112	-0.117	-0.036
	(-1.01)	(-0.89)	(-0.77)	(-0.98)	(-0.38)	(-0.29)
Married	0.188***	0.137*	0.235**	0.200***	0.235	0.267***
	(3.02)	(1.68)	(2.39)	(2.93)	(1.19)	(3.23)
Kids_u16	0.084*	0.035	0.167**	0.058	0.085	0.060
	(1.75)	(0.60)	(2.02)	(1.09)	(0.59)	(0.95)
East_germany	0.008	-0.181	0.365	0.071	1.166	-0.217
	(0.05)	(-0.84)	(1.19)	(0.39)	(0.95)	(-0.89)
Economicworries (base: no)						
High_economicworries	-0.434***	-0.427***	-0.458***	-0.438***	-0.278*	-0.343***
	(-8.18)	(-6.42)	(-5.26)	(-7.63)	(-1.80)	(-4.96)
Few_economicworries	-0.265***	-0.225***	-0.324***	-0.262***	-0.181	-0.234***
	(-6.93)	(-4.82)	(-4.98)	(-6.41)	(-1.54)	(-4.78)
Parttime	0.094	-0.061	0.069			0.083
	(1.23)	(-0.40)	(0.73)			(0.73)
New_job	0.264***	0.206***	0.321***	0.221***	0.493***	0.289***
	(6.56)	(3.99)	(5.06)	(5.03)	(4.32)	(5.53)
Limited_job	0.146***	0.151**	0.133*	0.194***	-0.078	0.109*
	(3.12)	(2.35)	(1.93)	(3.64)	(-0.61)	(1.72)
Log_net_income	0.308***	0.334***	0.274**	0.316***	0.353*	0.183*
	(3.98)	(3.10)	(2.33)	(3.29)	(1.81)	(1.74)
Log_net_income_ household	-0.144***	-0.115	-0.155**	-0.169***	0.068	-0.153**
	(-2.69)	(-1.54)	(-1.99)	(-2.82)	(0.48)	(-2.19)
Tenure	-0.039***	-0.038***	-0.048***	-0.033***	-0.140***	-0.029***
	(-7.39)	(-6.29)	(-4.68)	(-6.03)	(-6.22)	(-4.46)
Company_size	0.047**	0.062**	0.021	0.025	0.101*	0.051*
	(2.06)	(2.09)	(0.58)	(0.96)	(1.66)	(1.67)
Satisfaction_life	0.270***	0.297***	0.236***	0.285***	0.219***	0.286***
	(23.31)	(19.68)	(13.11)	(22.40)	(6.91)	(18.84)
Satisfaction_household_ income	0.249***	0.288***	0.197***	0.260***	0.189***	0.258***
	(25.62)	(22.88)	(12.84)	(24.32)	(7.04)	(20.19)
Satisfaction_free_time	0.079***	0.075***	0.088***	0.078***	0.090***	0.086***
	(9.48)	(7.01)	(6.67)	(8.44)	(3.83)	(8.03)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupational status dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.004	-0.158	2.468**	0.752	0.845	2.295***
	(1.54)	(-0.18)	(2.34)	(0.97)	(0.46)	(2.66)
Observations	24293	13602	10691	19848	4445	16497
R^2-within	0.179	0.216	0.147	0.190	0.167	0.183

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. Job satisfaction is measured on an 11-point scale. All regressions are based on 2002–2009. Model 6 includes all employees who want to reduce their hours, so the numbers of hours must be greater than 0.

Table 2: Fixed effects regressions on the impact of working hours and overtime on job satisfaction
Source: Own calculations.

Testing the effect of working hours and overtime on overall life satisfaction and satisfaction with free time and family life reveals, in contrast with previous results, no general influence (see Table 3). Hierarchical models underline the robustness of these regressions (see the appendix, Tables 7 and 8). Working overtime has a highly significant positive effect on life satisfaction, and its negative effect on free time is even greater. This result reflects the diverse perceptions of job conditions and their influences on employees' life satisfaction, a finding not previously established, to the best of our knowledge. Actual working hours and hours that employees wish to reduce have negative impacts exclusively on satisfaction with free time. The hours employees wish to reduce or extend have a different and positive effect on satisfaction with family life. Perhaps the desire to reduce hours is triggered by the wish to spend more time with their family, in line with evidence that children increase family life satisfaction. The positive effect of the desire to extend hours cannot be explained as easily; perhaps it indicates a desire to earn more money for the family. Therefore we reject our first hypothesis in terms of life and family life satisfaction but confirm our hypothesis regarding free time.

The positive effect of work autonomy on job satisfaction also influences life satisfaction, but not free time or family life. With more autonomy, employees' responsibility increases, and their jobs infringe on their private lives. ANDRESEN [2009] also finds that autonomy leads to longer working hours, caused partially by higher availability demands. Commuting does not affect job satisfaction but exerts a significant negative effect on free time and family life satisfaction. In this context, the time component clearly affects free time and family life. The same can be seen in terms of personal income; increasing income has a negative effect on free time and family life. The effect is even further differentiated if we consider household income, because there is a positive effect on life and family life but a significantly negative effect on free time, which can be interpreted as a loss due to the heavy workload needed to earn high incomes. Furthermore, there is a positive effect of new jobs on life satisfaction, but it becomes negative for free time and family life, likely due to the period of vocational adjustment. The positive effect of a limited contract on job satisfaction also changes into a negative effect on free time, but the explanation for this finding is not obvious.

	(1) Satisfaction_life	(2) Satisfaction_free_time	(3) Satisfaction_family_life
	2002-2009	2002-2009	2006-2009
Actual_wh	-0.001	-0.023***	0.000
	(-0.55)	(-8.84)	(0.05)
Reduce_wh	-0.002	-0.012***	0.005*
	(-1.30)	(-5.24)	(1.86)
Extend_wh	-0.001	-0.005	0.013**
	(-0.36)	(-1.32)	(2.47)
Overtime_dummy	0.043***	-0.099***	-0.039
	(2.70)	(-4.18)	(-1.26)
O_time (base: o_time_unpaid)			
O_time_dayoff	0.005	0.096**	-0.018
	(0.21)	(2.40)	(-0.34)
O_time_partlypaid	0.021	0.039	-0.025
	(0.77)	(0.93)	(-0.46)
O_time_paid	0.033	0.037	-0.062
	(0.95)	(0.70)	(-0.88)
Commute (base: infrequently)			
Commutefreq_daily	-0.011	-0.049	0.040
	(-0.52)	(-1.57)	(0.82)
Commutefreq_weekly	-0.038	-0.255***	-0.202**
	(-0.76)	(-3.39)	(-2.03)
Work_autonomy	0.047***	-0.054**	-0.054*
	(3.20)	(-2.39)	(-1.85)
Age (base: age_above60)			
Age_below25	0.059	-0.048	-0.275
	(0.72)	(-0.38)	(-1.52)
Age_25to45	-0.072	-0.165*	-0.238*
	(-1.17)	(-1.73)	(-1.81)
Age_45to60	-0.110**	-0.102	-0.111
	(-2.10)	(-1.25)	(-1.01)
Married	-0.017	-0.017	0.099
	(-0.51)	(-0.33)	(1.29)
Kids_u16	0.054**	-0.199***	0.320***
	(2.12)	(-5.02)	(4.99)
East_germany	0.059	0.182	-0.200
	(0.56)	(1.10)	(-0.80)
Economicworries (base: no)			
High_economicworries	-0.517***	0.101**	0.139***
	(-19.95)	(2.56)	(2.77)
Few_economicworries	-0.194***	0.036	0.035
	(-10.15)	(1.24)	(0.95)
Parttime	-0.023	0.080	-0.120
	(-0.59)	(1.34)	(-1.46)
New_job	0.013	-0.096***	-0.132***
	(0.62)	(-2.99)	(-3.18)
Limited_job	0.046*	-0.118***	0.091
	(1.77)	(-3.05)	(1.40)
Log_net_income	0.098**	-0.370***	-0.225**
	(2.40)	(-5.81)	(-2.52)
Log_net_income_household	0.065**	-0.180***	0.160***
	(2.36)	(-4.19)	(2.67)
Satisfaction_job	0.141***	0.098***	0.038***
	(32.53)	(14.96)	(4.47)
Satisfaction_household_income	0.130***	0.148***	0.096***
	(26.63)	(20.13)	(9.83)
Satisfaction_free_time	0.078***		0.214***
	(18.95)		(26.01)
Satisfaction_life		0.145***	0.261***
		(17.09)	(23.18)
Year dummies	Yes	Yes	Yes
Constant	3.619***	9.382***	4.052***
	(10.69)	(17.89)	(5.41)
Observations	42669	36755	20671
R^2-within	0.133	0.074	0.145

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. Satisfaction with life, free time, and family life is measured on 11-point scales. Data in models 1 and 2 include 2002–2009; model 3 features 2006–2009. Clustered OLS regressions confirm these results.

Table 3: Fixed effects regressions on the impact of working hours and overtime on satisfaction with life, free time, and family life (11-point scales)
Source: Own calculations.

In Table 4 we present the regression models for influences on the number of working hours that employees want to reduce or extend; in so doing, we pursue a deeper understanding of the factors that might trigger employees' behavior. Models 1 and 3 are cross-sectional analyses; models 2 and 4 use longitudinal data from 2002–2009, clustered by subjects. Regarding the determinants of the number of hours employees want to change their working time, Table 4 confirms all our descriptive results: Women want to reduce their hours more and extend them less than men; older employees want to reduce but younger workers want to extend their hours. Furthermore, married employees are more likely to reduce working hours and have lower extending wishes. Fixed effects regressions show that employees who work overtime and have children are always more satisfied with their whole life, their job, and their family life than those who work overtime and have no kids (confirmed by two-sample t tests, 1% significance level). Furthermore, if employees have children, they are significantly more satisfied with their job if they work overtime than those who do not work overtime (two-sample t test, 10% significance level). The effect changes only when we note satisfaction with free time. On the one hand, employees who work overtime are more satisfied with their free time if they have no children compared with those with children (two-sample t test, 1% significance level). On the other hand, employees with children are more satisfied with their free time if they have no overtime hours (two-sample t test, 1% significance level). In line with our previous results, Table 4 shows that children under the age of 16 years, living in their parents' households, decrease the number of hours that parents want to change. Reducing or extending preferences thus shift with the presence of children, which implies a trade-off among career, family, and earning a livelihood. The additional factor, child, in an employee's utility function leads to changes in the time allocation. Parents want to increase their time with their family but without losing career opportunities, and their financial situation is critical, because parents' financial responsibility increases when they have children.

For working conditions and overtime, we find that employees' preferences for reducing their hours jump significantly, whereas preferences for extending hours decrease if employees work overtime. Compensation for overtime only affects the reduction preference; the preferred reduction in hours decreases significantly if overtime is paid in some way. This result largely matches our previous finding and confirms the latter part of our second hypothesis. If employees are paid for their overtime, their satisfaction rises and the hour mismatch decreases.

	(1) Reduce_wh	(2) Reduce_wh	(3) Extend_wh	(4) Extend_wh
	2009	2002-2009	2009	2002-2009
Female	1.214***	1.104***	-0.602***	-0.615***
	(5.09)	(8.05)	(-5.46)	(-10.20)
Age (base: age_above60)				
Age_below25	-2.130***	-1.160***	0.430	0.628***
	(-3.15)	(-3.58)	(1.38)	(4.04)
Age_25to45	-1.426***	-0.382	-0.046	0.256**
	(-2.84)	(-1.33)	(-0.20)	(2.25)
Age_45to60	-0.958**	0.084	-0.220	0.105
	(-1.97)	(0.30)	(-0.98)	(0.97)
Married	0.285	0.384***	-0.299***	-0.287***
	(1.32)	(3.35)	(-2.99)	(-5.56)
Kids_u16	-0.433**	-0.232**	-0.185*	-0.166***
	(-1.96)	(-2.11)	(-1.82)	(-3.29)
East_germany	0.015	0.094	0.191*	0.283***
	(0.07)	(0.72)	(1.90)	(5.23)
Health_status	0.237**	0.242***	-0.104*	-0.034
	(2.00)	(4.06)	(-1.89)	(-1.16)
Satisfaction_job	-0.381***	-0.261***	0.028	0.042***
	(-7.52)	(-9.97)	(1.22)	(3.27)
Satisfaction_free_time	-0.444***	-0.436***	0.002	0.024**
	(-8.56)	(-17.35)	(0.07)	(2.32)
Satisfaction_family_life	0.153***		0.058**	
	(2.82)		(2.32)	
Satisfaction_household_income	0.278***	0.264***	-0.121***	-0.115***
	(5.07)	(9.65)	(-4.77)	(-8.44)
Parttime	0.062	0.009	0.041	0.584***
	(0.15)	(0.04)	(0.22)	(4.51)
Limited_job	0.109	-0.161**	0.477***	-0.021
	(0.33)	(-2.09)	(3.18)	(-0.56)
Log_net_income	-0.201	-0.136	-0.043	-0.117
	(-0.67)	(-0.83)	(-0.32)	(-1.37)
Stipulated_wh	0.251***	0.240***	-0.167***	-0.122***
	(10.73)	(17.24)	(-15.39)	(-13.70)
Overtime_dummy	1.249***	1.474***	-0.259***	-0.181***
	(6.15)	(16.57)	(-2.77)	(-3.86)
O_time (base: o_time_unpaid)				
O_time_dayoff	-2.120***	-2.331***	0.013	0.022
	(-7.86)	(-15.17)	(0.10)	(0.45)
O_time_partlypaid	-1.466***	-1.518***	-0.139	-0.051
	(-4.79)	(-8.70)	(-0.99)	(-0.91)
O_time_paid	-1.023***	-0.975***	-0.029	0.103
	(-2.71)	(-4.80)	(-0.17)	(1.19)
Homeoffice_asneeded	-0.053		-0.048	
	(-0.15)		(-0.30)	
Homeoffice_every2_4weeks	0.118		-0.169	
	(0.24)		(-0.73)	
Homeoffice_several_times_aweek	0.916*		0.131	
	(1.94)		(0.60)	
Homeoffice_daily	1.742**		-0.519	
	(2.45)		(-1.58)	
Evening_work	0.399***		0.034	
	(3.70)		(0.68)	
Night_work	0.074		-0.038	
	(0.53)		(-0.59)	
Saturday_work	0.181*		-0.053	
	(1.89)		(-1.20)	
Sunday_work	0.257**		0.006	
	(2.28)		(0.12)	
Commute (base: infrequently)				
Commutefreq_daily	0.234	0.038	-0.042	-0.009
	(1.26)	(0.41)	(-0.48)	(-0.23)
Commutefreq_weekly	0.859*	0.821***	-0.048	-0.010
	(1.69)	(2.81)	(-0.20)	(-0.08)
Work_autonomy	0.127	0.003	-0.150	0.139***
	(0.43)	(0.05)	(-1.10)	(5.71)
Economicworries (base: no)				
High_economicworries	-0.560*	-0.285*	0.367**	0.405***
	(-1.81)	(-1.84)	(2.57)	(6.09)
Few_economicworries	-0.763***	-0.443***	0.176	0.055
	(-3.17)	(-3.92)	(1.59)	(1.26)
Industry dummies	Yes	Yes	Yes	Yes
Occupational status dummies	Yes	Yes	Yes	Yes
Leading position dummies	Yes	Yes	No	No
Constant	-0.326	0.702	8.691***	6.953***
	(-0.13)	(0.56)	(7.58)	(8.72)
Observations	4415	23481	4415	23481
R^2	0.209	0.179	0.171	0.139

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. The dependent variable is the number of working hours employees want to reduce (models 1 and 2) or extend (models 3 and 4). Models 1 and 3 include data from 2009, models 2 and 4 include data from 2002–2009 and are clustered by subject pairs.

Table 4: Ordinary least squares regressions on the number of working hours employees prefer to reduce or extend
Source: Own calculations.

Employees who work at home daily or several times a week want to reduce their hours significantly more. We posit that this desire is caused by the unobservability of work, with regard to both quality and quantity, such that a tendency to work later emerges, and performance feedback is rare. Our results confirm ANDRESEN'S [2009] observation that flexible working times lead to longer working hours, including in home offices. In addition to weekly commuting, evening and weekend work trigger a greater desire to reduce the number of hours worked too. If employees' satisfaction with life and free time increases, the number of hours they want to reduce decreases; an increase in satisfaction with household income leads to an increase in this measure. This effect requires a cautious interpretation though, because satisfaction and desired working hours interact. STUTZER AND FREY [2006] also indicate that satisfaction interacts with multiple factors, and CLARK ET AL. [2008] state that incidences and satisfaction levels correlate. These results all align though: Employees who have a family want to have more time for their family, and when income is secured, their wish to work weakens.

We next address the arrangement of working hours. By regressing on satisfaction with different parts in life (see Table 5), we show that employer-determined working hours have a significant negative effect on life satisfaction, whereas self-directed hours have a significant positive effect. This effect is predictable; in contrast, decreasing satisfaction in life, family life, and free time measures due to flexitime arrangements are not. HANGLBERGER [2010b] shows a positive effect of self-determined working hours on job satisfaction. Unlike self-directed arrangements, employees with flexitime have a working hour account and thus only a certain degree of self-determination; it is possible that these arrangements do not allow any overtime or that employee's feel restricted by the rules. We partially reject our third hypothesis, because we cannot show that flexible working hours affect job satisfaction negatively. We recognize that flexible looking arrangements lead to decreased satisfaction, compared with strictly fixed working hours, which is remarkable considering the widespread trends toward more flexible working arrangements among German companies.

	(1) Satisfaction_job	(2) Satisfaction_life	(3) Satisfaction_family_life	(4) Satisfaction_free_time
Wh (base: wh_fixed)				
Wh_employer_directed	-0.170**	-0.064	0.062	-0.024
	(-2.26)	(-1.12)	(0.84)	(-0.30)
Wh_self_directed	0.170*	-0.069	-0.140	0.032
	(1.69)	(-0.91)	(-1.41)	(0.30)
Wh_flexitime	-0.110	-0.191***	-0.264***	-0.158*
	(-1.38)	(-3.16)	(-3.34)	(-1.88)
Evening_work	0.037	0.004	-0.065**	-0.144***
	(1.12)	(0.18)	(-2.00)	(-4.16)
Night_work	-0.029	0.026	0.001	0.105**
	(-0.69)	(0.83)	(0.02)	(2.40)
Saturday_work	0.032	-0.002	-0.032	-0.067**
	(1.08)	(-0.08)	(-1.09)	(-2.17)
Sunday_work	-0.047	-0.058**	-0.061*	-0.046
	(-1.40)	(-2.27)	(-1.83)	(-1.30)
Commute (base: infrequently)				
Commutefreq_daily	-0.024	-0.035	0.071	-0.230***
	(-0.42)	(-0.81)	(1.26)	(-3.86)
Commutefreq_weekly	-0.030	-0.027	-0.137	-0.418***
	(-0.20)	(-0.24)	(-0.92)	(-2.64)
Work_autonomy	0.197**	0.181***	0.002	-0.121
	(2.29)	(2.77)	(0.02)	(-1.34)
Control variables included[a]	Yes	Yes	Yes	Yes
Constant	6.236***	9.295***	12.169***	10.251***
	(7.94)	(15.18)	(15.25)	(12.42)
Observations	4590	4606	4593	4605
R^2	0.170	0.277	0.118	0.154

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. Satisfaction with job, life, free time, and family life is measured on 11-point scales. The models include data from the year 2009. The complete regressions appear in Table 9 in the appendix.

[a] These variables include socio-demographic characteristics, job characteristics, occupational status, leadership position, and industry.

Table 5: Ordinary least squares regressions on the effect of working time arrangements on satisfaction
Source: Own calculations.

6. Discussion and Conclusion

With this study, we connect working hours and satisfaction with desirable work–life balance. This balance is specific to each person and relates to satisfaction with a job and all other parts in life, especially family life and free time. Therefore, a good work–life balance results in high satisfaction. Our results show diverse perceptions and influences of job conditions on employees, so the connection between working hours and work–life balance is very important for companies and their human resource policies. Measures that affect jobs positively could also affect life satisfaction negatively and result in counterproductive policies.

Two results are particularly interesting with regard to flexible working conditions. A significant driver of the wish to reduce working hours is the use of a home office. Employees who work at home regularly want to reduce their hours significantly more, which we hold may be driven by the unobservability of their performance. Furthermore, flexible working hour arrangements decrease satisfaction, compared with fixed working hours, which is remarkable considering the increasing tendency among German companies to offer flexible working arrangements. Our results are in line with ANDRESEN'S [2009] and strengthen the

prediction that not only the number of hours, but also the arrangement of those, matters. Further effort is needed to examine the effects of those arrangements and develop working conditions with positive impacts on employee satisfaction.

Our findings offer greater understanding of the influence of working hour conditions on employee satisfaction. Compensated overtime has a positive effect on job satisfaction; therefore, companies can satisfy their employees, even those with high workloads, if they compensate them for overtime, whether in full, partially, or with additional holidays. Compensation for overtime also decreases employees' wishes to reduce their working hours.

Our results cannot differentiate any variations due to occupational status though, so further examination on this topic would be of interest. Because we observe different effects of working hours and overtime on employees' satisfaction with different parts of their life, we might conclude that companies struggle to generate optimal human resource policies overall. Furthermore, the balance challenges employees, who must trade off a positive effect on one part of their life with a negative effect on another.

Children living in their parents' households also decrease the number of hours that parents want to reduce or extend their work. Further research should seek deeper insights into the interplay of different elements of satisfaction. Nearly 60% of employees would take less money to work fewer hours, which implies high dissatisfaction with working conditions, likely related to the tremendous increase in evidence of burn-out in recent years. This finding is a hint to rethink working conditions; a mismatch between actual and desired working hours is highly relevant. Although we provide new evidence in this field, many questions have yet to be answered.

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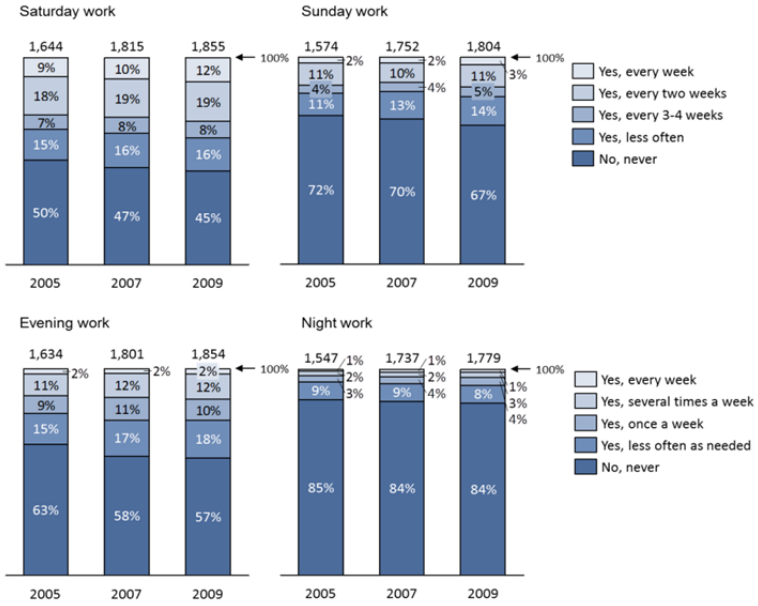
Appendix

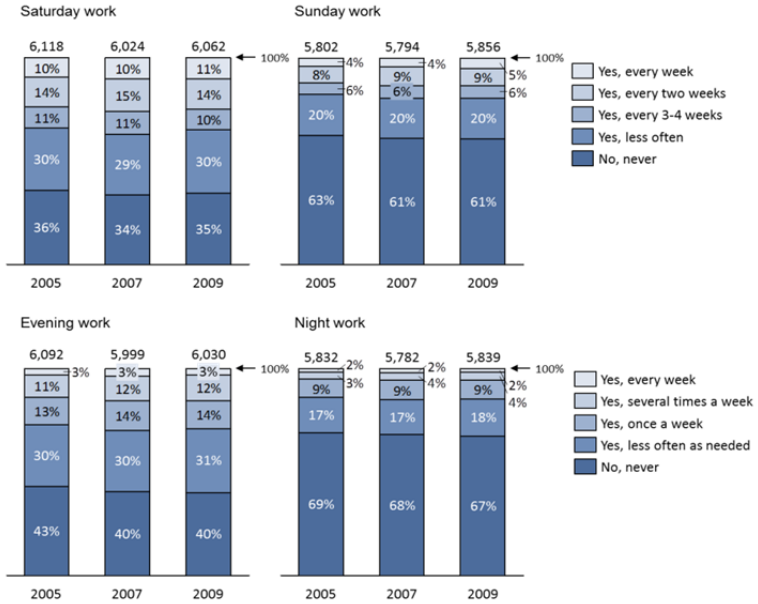
Figure 5: Working hour arrangements for part-time employees (percentage)



Notes: Not all sums equal 100%, due to rounding. Evening work occurs after 7:00 pm; night work is after 10:00 pm.

Source: Own calculations.

Figure 6: Working hour arrangements for full-time employees (percentage)



Notes: Not all sums equal 100%, due to rounding. Evening work occurs after 7:00 pm; night work is after 10:00 pm.

Source: Own calculations.

Table 6: Fixed effects regressions on the impact of working hours and overtime on job satisfaction (hierarchical models)

	(1) Satisfaction _job	(2) Satisfaction _job	(3) Satisfaction _job	(4) Satisfaction _job	(5) Satisfaction _job	(6) Satisfaction _job
Actual_wh	0.005**	0.006***	0.007***	0.007***	0.001	0.006*
	(2.44)	(2.59)	(3.09)	(3.20)	(0.22)	(1.81)
Reduce_wh	-0.019***	-0.019***	-0.020***	-0.019***	-0.018***	-0.017***
	(-9.83)	(-9.74)	(-9.91)	(-9.82)	(-5.59)	(-5.44)
Extend_wh	-0.007**	-0.006*	-0.006	-0.004	-0.003	0.004
	(-2.06)	(-1.81)	(-1.64)	(-1.11)	(-0.54)	(0.80)
Overtime_dummy	0.072***	0.076***	0.076***	0.071***	0.125***	0.115***
	(3.41)	(3.60)	(3.60)	(3.37)	(3.65)	(3.55)
O_time (base: unpaid)						
O_time_dayoff		0.268***	0.272***	0.248***	0.338***	0.332***
		(7.59)	(7.70)	(7.10)	(6.25)	(6.52)
O_time_partlypaid		0.239***	0.241***	0.209***	0.292***	0.304***
		(6.48)	(6.52)	(5.71)	(5.10)	(5.63)
O_time_paid		0.351***	0.345***	0.289***	0.294***	0.284***
		(7.56)	(7.42)	(6.26)	(4.08)	(4.20)
Commute (base: infrequently)						
Commutefreq_daily		-0.092***	-0.076***	0.007	-0.034	-0.002
		(-4.03)	(-3.29)	(0.24)	(-0.73)	(-0.04)
Commutefreq_weekly		0.073	0.098	0.172**	0.077	0.105
		(1.09)	(1.47)	(2.57)	(0.77)	(1.13)
Work_autonomy		0.180***	0.181***	0.174***	0.805	0.795
		(9.16)	(9.18)	(8.93)	(1.54)	(1.62)
Age (base: above 60)						
Age_below25			0.486***	-0.061	-0.074	-0.079
			(4.76)	(-0.56)	(-0.45)	(-0.50)
Age_25to45			0.276***	-0.101	-0.147	-0.153
			(3.49)	(-1.22)	(-1.14)	(-1.25)
Age_45to60			0.055	-0.117*	-0.149	-0.103
			(0.78)	(-1.65)	(-1.34)	(-0.98)
Married			0.106**	0.191***	0.233***	0.188***
			(2.38)	(4.31)	(3.51)	(3.01)
Kids_u16			0.103***	0.041	0.049	0.086*
			(3.05)	(1.22)	(0.95)	(1.78)
East_germany			0.018	-0.004	-0.015	0.013
			(0.12)	(-0.03)	(-0.08)	(0.07)
Economicworries (base: no)						
High_economicworries				-0.782***	-0.944***	-0.433***
				(-23.10)	(-17.23)	(-8.16)
Few_economicworries				-0.364***	-0.482***	-0.265***
				(-14.31)	(-12.00)	(-6.95)
Parttime					0.019	0.028
					(0.23)	(0.37)
New_job					-0.057*	0.030
					(-1.65)	(0.92)
Limited_job					0.144***	0.146***
					(2.91)	(3.12)
Log_net_income					0.538***	0.304***
					(6.58)	(3.94)
Log_net_income_household					0.145***	-0.142***
					(2.60)	(-2.66)
Tenure					-0.041***	-0.039***
					(-7.40)	(-7.42)
Company_size					0.070***	0.049**
					(2.88)	(2.11)
Satisfaction_life						0.270***
						(23.30)
Satisfaction_household_income						0.249***
						(25.61)
Satisfaction_free_time						0.079***
						(9.50)
Year dummies	No	No	No	Yes	Yes	Yes
Occupational status dummies	No	No	No	No	Yes	Yes
Industry dummies	No	No	No	No	Yes	Yes
Constant	6.818***	6.115***	5.757***	6.590***	0.401	0.100
	(82.08)	(58.83)	(42.72)	(47.10)	(0.46)	(0.12)
Observations	47038	46656	46553	46438	24490	24293
R^2-within	0.003	0.008	0.011	0.033	0.066	0.180

* p < 0.10. ** p < 0.05. *** p < 0.01.

Notes: *t*-statistics are in parentheses. Job satisfaction is measured on an 11-point scale. All regressions are based on the years 2002–2009 and the whole sample.

Source: Own calculations.

Table 7: Fixed effects regressions on the impact of working hours and overtime on life and free time satisfaction (hierarchical models)

	(1) Satisfaction _life	(2) Satisfaction _life	(3) Satisfaction _life	(4) Satisfaction _life	(6) Satisfaction _free_time	(7) Satisfaction _free_time	(8) Satisfaction _free_time	(9) Satisfaction _free_time
Actual_wh	-0.000	0.000	0.000	-0.003*	-0.027***	-0.028***	-0.027***	-0.026***
	(-0.12)	(0.03)	(0.19)	(-1.91)	(-12.47)	(-12.86)	(-12.70)	(-10.78)
Reduce_wh	-0.006***	-0.006***	-0.006***	-0.005***	-0.014***	-0.013***	-0.014***	-0.014***
	(-3.96)	(-3.92)	(-4.21)	(-2.88)	(-6.77)	(-6.53)	(-6.78)	(-6.77)
Extend_wh	-0.008***	-0.008***	-0.005**	-0.004	-0.011***	-0.012***	-0.011***	-0.009**
	(-2.92)	(-2.77)	(-1.97)	(-1.38)	(-3.18)	(-3.37)	(-3.12)	(-2.50)
Overtime_dummy	0.050***	0.052***	0.045***	0.048***	-0.093***	-0.090***	-0.088***	-0.066***
	(3.11)	(3.23)	(2.83)	(2.89)	(-4.38)	(-4.23)	(-4.13)	(-2.95)
O_time (base: unpaid)								
O_time_dayoff	0.073***	0.073***	0.060**	0.055**	0.114***	0.113***	0.118***	0.105***
	(2.74)	(2.72)	(2.29)	(2.01)	(3.20)	(3.17)	(3.30)	(2.84)
O_time_partlypaid	0.078***	0.080***	0.064**	0.051*	0.049	0.048	0.046	0.039
	(2.80)	(2.85)	(2.30)	(1.77)	(1.30)	(1.29)	(1.24)	(1.00)
O_time_paid	0.103***	0.101***	0.071**	0.068*	0.032	0.035	0.024	0.012
	(2.93)	(2.86)	(2.04)	(1.89)	(0.69)	(0.74)	(0.52)	(0.24)
Commute (base: infrequently)								
Commutefreq_daily	-0.038**	-0.027	-0.007	-0.017	-0.050**	-0.057**	-0.049*	-0.057**
	(-2.16)	(-1.57)	(-0.33)	(-0.80)	(-2.15)	(-2.44)	(-1.74)	(-1.96)
Commutefreq_weekly	-0.029	-0.016	0.008	-0.018	-0.206***	-0.206***	-0.200***	-0.240***
	(-0.58)	(-0.32)	(0.17)	(-0.34)	(-3.07)	(-3.06)	(-2.93)	(-3.37)
Work_autonomy	0.107***	0.110***	0.096***	0.082***	-0.012	-0.011	-0.016	-0.007
	(7.14)	(7.39)	(6.53)	(5.30)	(-0.62)	(-0.54)	(-0.81)	(-0.34)
Age (base: above 60)								
Age_below25		0.230***	0.071	0.013		-0.119	-0.065	-0.037
		(2.97)	(0.87)	(0.16)		(-1.16)	(-0.58)	(-0.32)
Age_25to45		0.015	-0.094	-0.136**		-0.251***	-0.214**	-0.207**
		(0.26)	(-1.50)	(-2.10)		(-3.15)	(-2.53)	(-2.37)
Age_45to60		-0.088*	-0.136**	-0.179***		-0.191***	-0.170**	-0.176**
		(-1.66)	(-2.55)	(-3.25)		(-2.70)	(-2.36)	(-2.36)
Married		0.010	0.037	0.026		0.019	0.014	0.036
		(0.30)	(1.11)	(0.74)		(0.43)	(0.31)	(0.77)
Kids_u16		0.055**	0.038	0.034		-0.189***	-0.186***	-0.207***
		(2.12)	(1.51)	(1.29)		(-5.51)	(-5.38)	(-5.74)
East_germany		0.081	0.074	0.026		0.054	0.067	0.108
		(0.75)	(0.70)	(0.23)		(0.38)	(0.47)	(0.72)
Economicworries (base: no)								
High_economicworries			-0.794***	-0.769***			-0.218***	-0.230***
			(-31.05)	(-28.90)			(-6.29)	(-6.40)
Few_economicworries			-0.316***	-0.304***			-0.083***	-0.090***
			(-16.46)	(-15.29)			(-3.19)	(-3.33)
Parttime				-0.035				0.105*
				(-0.86)				(1.90)
New_job				0.080***				-0.006
				(3.63)				(-0.21)
Limited_job				0.064**				-0.084**
				(2.32)				(-2.28)
Log_net_income				0.245***				-0.121**
				(5.75)				(-2.11)
Log_net_income_household				0.196***				-0.032
				(6.94)				(-0.85)
Year dummies	No	No	Yes	Yes	No	No	Yes	Yes
Constant	6.688***	6.627***	7.199***	3.998***	7.661***	7.952***	8.024***	9.202***
	(84.92)	(64.84)	(68.27)	(11.43)	(73.10)	(58.44)	(56.23)	(19.46)
Observations	46790	46687	46587	43135	46748	46645	46530	43085
R^2-within	0.003	0.004	0.038	0.042	0.016	0.017	0.020	0.022

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. Satisfaction with life and free time is measured on 11-point scales. Data include the years 2002–2009.

Source: Own calculations.

Table 8: Fixed effects regressions on the impact of working hours and overtime on family life satisfaction (hierarchical models)

	(1) Satisfaction _family_life	(2) Satisfaction _family_life	(3) Satisfaction _family_life	(4) Satisfaction _family_life
Actual_wh	-0.009**	-0.008**	-0.007**	-0.006*
	(-2.53)	(-2.23)	(-2.04)	(-1.70)
Reduce_wh	0.002	0.002	0.001	0.001
	(0.70)	(0.55)	(0.33)	(0.45)
Extend_wh	0.003	0.003	0.004	0.006
	(0.60)	(0.64)	(0.72)	(1.10)
Overtime_dummy	-0.049	-0.046	-0.043	-0.036
	(-1.57)	(-1.48)	(-1.35)	(-1.10)
O_time (base: unpaid)				
O_time_dayoff	0.031	0.025	0.038	0.054
	(0.58)	(0.46)	(0.70)	(0.96)
O_time_partlypaid	-0.001	-0.012	-0.002	0.011
	(-0.02)	(-0.22)	(-0.04)	(0.19)
O_time_paid	-0.007	-0.019	-0.018	0.006
	(-0.10)	(-0.26)	(-0.25)	(0.08)
Commute (base: infrequently)				
Commutefreq_daily	-0.006	-0.015	-0.015	-0.016
	(-0.11)	(-0.32)	(-0.30)	(-0.32)
Commutefreq_weekly	-0.182*	-0.163	-0.161	-0.229**
	(-1.81)	(-1.62)	(-1.60)	(-2.14)
Work_autonomy	-0.012	-0.009	-0.014	-0.015
	(-0.40)	(-0.32)	(-0.49)	(-0.47)
Age (base: above 60)				
Age_below25		-0.210	-0.119	-0.131
		(-1.19)	(-0.65)	(-0.68)
Age_25to45		-0.302**	-0.250*	-0.247*
		(-2.33)	(-1.85)	(-1.76)
Age_45to60		-0.153	-0.135	-0.142
		(-1.36)	(-1.18)	(-1.20)
Married		0.112	0.110	0.086
		(1.42)	(1.39)	(1.04)
Kids_u16		0.295***	0.302***	0.273***
		(4.57)	(4.65)	(3.99)
East_germany		-0.261	-0.245	-0.234
		(-0.98)	(-0.92)	(-0.87)
Eeconomicworries (base: no)				
High_economicworries			-0.230***	-0.195***
			(-4.58)	(-3.70)
Few_economicworries			-0.123***	-0.108***
			(-3.31)	(-2.77)
Parttime				-0.066
				(-0.75)
New_job				-0.092**
				(-2.09)
Limited_job				0.114
				(1.64)
Log_net_income				-0.090
				(-0.95)
Log_net_income_household				0.297***
				(4.70)
Year dummies	No	No	Yes	Yes
Constant	8.079***	8.169***	8.234***	6.394***
	(49.31)	(37.57)	(36.86)	(8.10)
Observations	22748	22690	22634	20885
R^2-within	0.001	0.004	0.006	0.008

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. Satisfaction with life and free time is measured on 11-point scales. Data include the years 2006–2009.

Source: Own calculations.

Table 9: Ordinary least squares regressions on the effect on working time arrangements on satisfaction

	(1) Satisfaction_job	(2) Satisfaction_life	(3) Satisfaction_family_life	(4) Satisfaction_free_time
Female	0.212***	0.197***	0.040	-0.218***
	(2.88)	(3.54)	(0.55)	(-2.83)
Age	-0.053**	-0.076***	-0.128***	-0.065***
	(-2.42)	(-4.53)	(-5.87)	(-2.81)
Agesq	0.001**	0.001***	0.001***	0.001***
	(2.53)	(4.42)	(5.34)	(2.99)
Married	0.079	0.268***	0.830***	0.066
	(1.18)	(5.30)	(12.59)	(0.94)
Kids_u16	0.153**	0.045	0.218***	-0.341***
	(2.26)	(0.87)	(3.25)	(-4.78)
East_germany	-0.025	-0.225***	-0.079	-0.150**
	(-0.38)	(-4.50)	(-1.21)	(-2.17)
Health_status	-0.604***	-0.689***	-0.443***	-0.571***
	(-17.52)	(-26.48)	(-13.02)	(-15.83)
Parttime	0.061	0.140*	0.009	0.208*
	(0.56)	(1.70)	(0.09)	(1.81)
Limited_job	0.169*	0.093	-0.116	-0.017
	(1.65)	(1.20)	(-1.15)	(-0.16)
Log_net_income	0.386***	0.149**	-0.088	0.107
	(4.13)	(2.11)	(-0.95)	(1.09)
Tenure	-0.008**	0.002	0.010***	0.005
	(-2.19)	(0.60)	(2.86)	(1.22)
Company_size	-0.024	0.050**	0.029	0.051*
	(-0.85)	(2.30)	(1.02)	(1.69)
Actual_wh	-0.005	-0.001	0.006	-0.019***
	(-0.85)	(-0.14)	(1.13)	(-3.28)
Reduce_wh	-0.036***	-0.006	-0.003	-0.028***
	(-6.84)	(-1.49)	(-0.53)	(-5.09)
Extend_wh	-0.012	-0.008	0.017*	-0.014
	(-1.27)	(-1.10)	(1.78)	(-1.40)
Overtime_dummy	-0.088	-0.025	-0.085	-0.171***
	(-1.41)	(-0.53)	(-1.38)	(-2.61)
O_time (base: o_time_unpaid)				
O_time_paid	0.212*	0.142	0.008	0.161
	(1.85)	(1.63)	(0.07)	(1.34)
O_time_partlypaid	0.308***	0.093	0.059	0.194*
	(3.25)	(1.30)	(0.64)	(1.96)
O_time_dayoff	0.249***	0.143**	0.090	0.297***
	(2.93)	(2.22)	(1.07)	(3.32)
Wh (base: wh_fixed)				
Wh_employer_directed	-0.170**	-0.064	0.062	-0.024
	(-2.26)	(-1.12)	(0.84)	(-0.30)
Wh_self_directed	0.170*	-0.069	-0.140	0.032
	(1.69)	(-0.91)	(-1.41)	(0.30)
Wh_flexitime	-0.110	-0.191***	-0.264***	-0.158*
	(-1.38)	(-3.16)	(-3.34)	(-1.88)
Evening_work	0.037	0.004	-0.065**	-0.144***
	(1.12)	(0.18)	(-2.00)	(-4.16)
Night_work	-0.029	0.026	0.001	0.105**
	(-0.69)	(0.83)	(0.02)	(2.40)
Saturday_work	0.032	-0.002	-0.032	-0.067**
	(1.08)	(-0.08)	(-1.09)	(-2.17)
Sunday_work	-0.047	-0.058**	-0.061*	-0.046
	(-1.40)	(-2.27)	(-1.83)	(-1.30)
Commute (base: infrequently)				
Commutefreq_daily	-0.024	-0.035	0.071	-0.230***
	(-0.42)	(-0.81)	(1.26)	(-3.86)
Commutefreq_weekly	-0.030	-0.027	-0.137	-0.418***
	(-0.20)	(-0.24)	(-0.92)	(-2.64)
Work_autonomy	0.197**	0.181***	0.002	-0.121
	(2.29)	(2.77)	(0.02)	(-1.34)
Economicworries (base: no)				
High_economicworries	-1.177***	-1.367***	-0.722***	-0.831***
	(-13.29)	(-20.41)	(-8.24)	(-8.94)
Few_economicworries	-0.532***	-0.570***	-0.429***	-0.380***
	(-7.41)	(-10.49)	(-6.05)	(-5.04)
Control variables included[a]	Yes	Yes	Yes	Yes
Constant	6.236***	9.295***	12.169***	10.251***
	(7.94)	(15.18)	(15.25)	(12.42)
Observations	4590	4606	4593	4605
R^2	0.170	0.277	0.118	0.154

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: *t*-statistics are in parentheses. Satisfaction with job, life, free time, and family life is measured on 11-point scales. The models include data from the year 2009.

[a] These variables include industry, occupational status, and leadership position.

Source: Own calculations.