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Congruence is not everything: a response surface analysis on the role of fit between actual and preferred working time arrangements for work-life balance

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ABSTRACT

Working time arrangements that match employees' preferences have been proposed as determinants of employees' well-being, an assumption rooted in person-environment fit theory. The aim of this study was to investigate the role of fit and misfit between actual and preferred working time arrangements (length of working hours, control over the beginning and end of workdays, and workplace segmentation) for employees' satisfaction with work-life balance. We analyzed data from 8,580 employees from the BAuA-working time survey – a representative study among the working population in Germany – by means of polynomial regression and response surface analyses. Analyses did not point toward congruence effects but revealed significant main effects: Satisfaction with work-life balance was higher in case of shorter actual and longer preferred weekly working hours, and it was decreased if employees worked longer than they preferred. Moreover, more supplies and lower preferences in terms of control over the beginning and end of workdays, more workplace segmentation supplies, and lower workplace segmentation preferences were related to higher satisfaction with work-life balance. Overall, this study sheds light on the roles of fit and misfit between actual and preferred working time arrangements for employees' work-home interface. Findings suggest that while employees' preferences should find entrance into the design of work schedules, congruence is not a precondition for achieving a good work-life balance. Most importantly, for a good work-life balance, working hours should not be longer than preferred, and employees should have some control over their scheduling and possibilities to segment work and private life.

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Introduction

Mismatches between actual and preferred working hours have been observed in many countries (Reynolds 2003; Stier and Lewin-Epstein 2003; Van Echtelt et al. 2006; Wooden et al. 2009). While in the past, standardized working time arrangements used to be predominant, nowadays there is a trend toward more individualized working hours (Hornung et al. 2008). Accordingly, not only employees but also employers expect potential benefits since working time arrangements customized to individual needs have become a key factor for staff recruiting and retention (Cappelli 2000). Working hours that match employees' preferences have also made it on the agenda of trade unions in Central Europe. For instance, some recent collective bargaining agreements provide employees with the right to choose between salary increases or a reduction of working hours (Schulten 2019). Such a choice often aims at granting employees with young children or elderly relatives in need of care additional time at their

disposal. Other employees would like to extend their working hours, which applies for instance to a considerable share of part-time workers (Golden and Gebreselassie 2007).

Furthermore, working time arrangements cannot only be defined in terms of length but also in terms of flexibility and permeability (Ashforth et al. 2000; Clark 2000). For instance, employees differ in their preferences for flexible work arrangements (Thompson et al. 2014). Thus, while some appreciate having control over their starting and end times, for others this is less relevant. Moreover, research on the work-home interface shows that employees differ in the extent to which employees appreciate a clear segmentation between work and private life or a blurring of boundaries between both life domains (Kreiner 2006).

In light of the manifold possible constellations of actual and preferred working time arrangements, the question arises as to whether working time arrangements that match employees' preferences in terms of

length, control, and work-life segmentation can actually facilitate the compatibility between work and private life. This idea is rooted in person-environment fit theory (French et al. 1982; Harrison 1978; Voydanoff 2005). This theory suggests that a fit between people's values or needs and the supplies that the environment offers may predict people's well-being. More specifically, in the present paper, we examine the link between fit in working time arrangements and satisfaction with work-life balance, which is the overall contentment with how well one deals with work and private demands (Valcour 2007). Thus, the present study contributes to the literature on the work-home interface in multiple ways:

First, we shed light on the role of fit between actual and preferred working time arrangements for employees' satisfaction with work-life balance. Thereby, we contribute to a more nuanced understanding of the work-home interface. These findings are highly relevant to employees, labor unions, employers, and policy makers, particularly in light of more individualized working time arrangements and a higher priority attributed to the reconciliation of work and private life. Moreover, we apply person-environment fit theory to three important aspects of working time arrangements (length, control over the beginning and end of workdays, work-life segmentation). By doing so, we go beyond previous research focusing only on single working time arrangement aspects (e.g., Kreiner 2006; Kugler et al. 2014). Thus, we not only provide a comprehensive test of this theory's validity and predictive value for the design of good working hours but also integrate psychological theorizing (French et al. 1982) and working time research. Finally, our analyses are based on a large and representative sample of dependent employees in Germany. Therefore, the derived implications for the design of sustainable working time arrangements are highly generalizable to the working population in Germany.

Person-environment fit and working hours

Person-environment fit in the work context is defined as the "compatibility between an individual and a work environment that occurs when their characteristics are well matched" (Kristof-Brown et al. 2005, 281). Person-environment fit theory proposes that well-being increases as supplies increase toward values (French et al. 1982; Harrison 1978). The reasoning behind this is that a lack of supplies implies that people's needs or desires remain unfulfilled, resulting in impairments in well-being (Edwards and Rothbard 1999). Higher well-being could be expected in case of perfect congruence, that is, if characteristics of the environment ideally

match a person's preferences (Kreiner 2006). However, besides a congruence effect, asymmetric effects or main effects are conceivable within the scope of person-environment fit theory (French et al. 1982; Harrison 1978). Thus, well-being may also increase or remain stable as supplies exceed preferences. In the following, we will address the interplay between employees' preferences and the supplies that the working environment offers in terms of three different dimensions of working time arrangements.

Weekly working hours

The allocation of time between work and private life is critical for employees' well-being (Tucker and Folkard 2012; Voydanoff 2005). Previous studies found relationships between a mismatch in working hours and various indicators of impaired well-being (for an overview see Kugler et al. 2014). Lower levels of well-being were observed both in case of longer actual than preferred working hours ("overemployment") and shorter actual than preferred working hours ("underemployment", see also Bench and Blanchflower 2019). However, these studies do not provide empirical evidence for the effects of a mismatch in working hours on satisfaction with work-life balance. Nevertheless, working hours that are longer than desired may hamper reconciliation between work and private life (Hughes and Parkes 2007). On the other hand, unfulfilled wishes for longer working hours might make employees feel that they cannot devote enough time to their professional life with potential consequences for career development and the present and future financial situation (Verbruggen et al. 2015). Thus, both overemployment and underemployment could be related to lower satisfaction with the work-life balance. Therefore, in line with person-environment fit theory, we aim to test the hypothesis that congruence between actual and preferred weekly working hours is related to higher levels of satisfaction with work-life balance:

H1a: Satisfaction with work-life balance is highest among employees with congruence between actual and preferred weekly working hours.

Certainly, long weekly working hours can be also viewed as a potential job stressor that may be a source of work-life conflict (O'Driscoll et al. 1992; Voydanoff 2005). After all, the length of working hours determines how much time remains for private responsibilities, leisure, recovery, and sleep (e.g., Wirtz and Nachreiner 2010). Many studies have showed that long working hours are associated with conflicts between work and

family or private life (for an overview, see Ng and Feldman 2008). Moreover, Brauner et al. (2019) found that satisfaction with work-life balance is lowest in the absence of working time demands, such as overlong working hours. Thus, we will also test whether there is a linear main effect of the actual length of working hours on satisfaction with work-life balance.

H1b: Satisfaction with work-life balance is higher among employees with shorter actual weekly working hours.

Note that congruence and main effects may occur at the same time, for instance, if there is a congruence effect that is stronger in the case of higher levels of the predictor variables. Therefore, support can be found for none, one, or both hypotheses.

Control over the beginning and end of workdays

Control over the beginning and end of workdays is an important facet of working time control and thus contributes to the degree of autonomy over the duration and scheduling of work employees experience (Thomas and Ganster 1995; Valcour 2007). Research has shown that employees vary in their basic need for autonomy (Schüler et al. 2016). Thus, employees also prefer different levels of control, when it comes to scheduling their work (Thompson et al. 2014). While some might favor complete sovereignty over the timing and duration of working hours, others might appreciate some guidance or rules in terms of when to begin and end the workday. One prediction in line with person-environment fit theory is that well-being is highest if the environment's supplies match employees' preferences. Thus, the optimal dose of working time control could be a fine line that strongly depends on personal preferences. To our knowledge, this assumption has not been tested previously. Thus, our second hypothesis reads as follows:

H2a: Satisfaction with work-life balance is highest among employees with congruence between supplies and preferences in terms of control over the beginning and end of workdays.

More commonly, working time control is considered a resource that helps employees reconcile work and private life (Hughes and Parkes 2007). For instance, being able to decide when to begin and end the workday could help employees adjust their working hours to their sleep preferences and chronotype (Takahashi et al. 2012). Control over the beginning and end of workdays may also help employees with time-sensitive private or family responsibilities, such as picking up children

from day care. In line with this, previous research has related working time control with a better work-life balance (Brauner et al. 2019; Nijp et al. 2012). In light of this evidence, we will also examine whether there is a main effect of supplies in terms of control over the beginning and end of workdays on satisfaction with work-life balance:

H2b: Satisfaction with work-life balance is higher among employees with higher supplies in terms of control over the beginning and end of workdays.

Workplace segmentation

In the work-home interface literature, the terms segmentation and integration refer to two poles of a continuum describing the extent to which the work and home domains of employees remain separate or blend into each other (Ashforth et al. 2000; Kreiner 2006). Research has shown that employees have differential preferences for integrating or segmenting both life domains (e.g., Edwards and Rothbard 1999). Workplace segmentation supplies refer to the degree to which workplaces allow employees to keep both life domains separate (Kreiner 2006), while workplace segmentation preferences describe the importance employees attribute to a workplace that promotes segmentation between work and private life. According to person-environment fit theory, satisfaction with work-life balance could be highest in case of a perfect match between workplace segmentation supplies and preferences. Indeed, Edwards and Rothbard (1999) found that most well-being indicators increased as segmentation supplies approached toward segmentation preferences and tended to decrease as segmentation supplies exceeded segmentation preferences. To examine whether there is also a congruence effect of workplace segmentation supplies and preferences on satisfaction with work-life balance, we test the following hypothesis:

H3a: Satisfaction with work-life balance is highest among employees with congruence between workplace segmentation supplies and preferences.

In contrast to this congruence effect, Kreiner (2006) came to a different conclusion. He found a strong main effect of workplace segmentation supplies: Work-home conflict decreased as the level of workplace segmentation supplies increased toward the level of workplace segmentation preferences. However, work-home conflict also continued to decrease as the level of workplace segmentation supplies exceeded the level of workplace

segmentation preferences. Thus, to examine whether workplace segmentation supplies represent a resource that has generally positive effects on satisfaction with work-life balance, we test the following hypothesis:

H3b: Satisfaction with work-life balance is higher among employees with higher workplace segmentation supplies.

Method

Sample

We used data from the second wave of the BAuA-working time survey, a panel study representative of large parts of the working population in Germany. During data collection of the second wave, 10,459 people took part in computer-assisted telephone interviews from May to October 2017. International ethical standards were followed in the conduction of the BAuA-Working Time Survey. Participants were informed that their data would only be used anonymized and for research purposes. Taking part in the interviews was voluntary and withdrawal was possible at any time; thus, participation acted as informed consent. Ethical approval was obtained from the BAuA Ethics Commission (ID 010_2017).

Interviews were conducted by professional interviewers of a social science research institute and lasted 35 min on average, covering a wide range of topics related to working hours, working conditions in general, and well-being. First-time participants were recruited using randomly generated landline and mobile phone numbers. Participants were eligible if they were aged 15 y and older and worked at least 10 h per week in a paid job. The sample consisted of 7,446 participants taking part in the panel survey the second time and

a refreshment sample of 3,013 employees. Because of the random sampling procedure, employees of all ages, educational groups, and a wide variety of economic branches and professions were included in the survey.

We included all dependent employees aged 65 y or younger who worked at least 10 h per week in a paid job in the analyses. The subsample consisted of 8,580 employees, almost half of which were female (48%). The mean age was 48.5 y. One-third (33%) of employees had children under 18 y living in their household. The majority of the employees (34%) worked in the public sector, 29% in the service sector, 22% in industry, 7% in the craft sector, and 8% in another sector. Slightly more than every second employee (51%) reported frequently working under high deadline or performance pressure. Nine percent of employees worked in rotating shift schedules. Table 1 gives an overview of the different characteristics of the subgroups examined in the present study.

Measures

As recommended (Humberg et al. 2019), we used commensurate scales with different item stems to measure the reality or supplies provided by the work environment and employees' preferences.

We measured *actual weekly working hours* with the question "How many hours do you actually work per week, on average, including regular overtime work, extra work, emergency service, etc.?" If employees were unable to indicate an average number of hours, we used the number of working hours during the last week as a proxy. We assessed *preferred weekly working hours* with the question "If you could freely choose the extent of your working hours and if you take into account that your earnings would change accordingly: How many hours per week would you prefer to work?"

Table 1. Overview of subgroup characteristics.

Variable	Women (n = 4146)	Men (n = 4434)	With children under 18 y (n = 2816)	Without chil- dren under 18 y (n = 5758)	Frequently high dead- line/performance pres- sure (n = 4407)	Less often high dead- line/performance pres- sure (n = 4167)	Rotating shifts (n = 795)
Mean age	49.2	48.8	44.3	50.5	48.5	48.5	48.1
Share of women	100%	0%	45%	50%	48%	49%	48%
Share of employees with children under 18 y	31%	35%	100%	0%	33%	33%	29%
Economic branch:							
Public sector	43%	27%	33%	35%	33%	36%	30%
Service sector	33%	26%	30%	29%	30%	29%	26%
Industry	11%	31%	23%	21%	23%	20%	33%
Craft sector	3%	10%	6%	7%	7%	6%	3%
Another sector	10%	6%	8%	8%	7%	8%	7%
Share of employees with frequently high deadline and performance pressure	51%	52%	51%	52%	100%	0%	56%
Share of employees working in rotating shifts	9%	9%	8%	10%	10%	8%	100%

We measured *supplies in terms of control over the beginning and end of workdays* with the question “How much control do you have over when you begin and end each work day?”, which was an adapted item of the control over work time scale by Valcour (2007), based on Thomas and Ganster (1995). Participants could answer on a Likert scale ranging from 1 „very little control“ to 5 „very much control“. With regard to *preferences in terms of control over the beginning and end of workdays* employees responded to the question “How important is it to you to have control over when you start or end each working day?” on a Likert scale ranging from 1 „not important at all“ to 5 „very important“.

We assessed *workplace segmentation supplies* with three items adapted from Kreiner (2006). A sample item is “Not having to think about work while I am at home is possible in my job”. Internal consistency was good (Cronbach’s $\alpha = 0.79$). Furthermore, we measured *workplace segmentation preferences* with three analog items adapted from Kreiner (2006), for instance “It’s important for me to not have to think about work while I am at home.” In both cases, we assessed employees’ answers on a 5-point scale ranging from „strongly disagree“ to „strongly agree“. Internal consistency was similar (Cronbach’s $\alpha = 0.82$).

We measured *satisfaction with work-life balance* with the following item adapted from Valcour (2007): “How satisfied are you with how your work life and your personal life fit together?” Participants could respond on a four-point scale ranging from “not satisfied at all” to “very satisfied”.

Analytic strategy

We used polynomial regression and response surface analysis as implemented in the RSA package in R (Schönbrodt 2016) to examine the effects of fit in working time arrangements on satisfaction with work-life balance. This approach is superior to fit indices (e.g., absolute differences, correlations), since fit indices discard information and conceal the distinct relationships of the person and environment with the outcome variable (Edwards 1991; Tinsley 2000). Furthermore, fit indices are ambiguous, since every value can result from various person-environment combinations (Tinsley 2000). The examination of surface parameters by means of response surface analysis overcomes these drawbacks and allows the correct testing of congruence effects (Humberg et al. 2019). Beforehand, the linear, curvilinear and joint effects of the person and the environment have to be modeled with polynomial regression analyses.

Prior to analyses, we centered the predictor variables to a meaningful common point, as recommended by

Edwards and Parry (1993). We centered the variables for actual and preferred weekly working hours to the value of 40 h, which corresponds to the median of actual weekly working hours. To avoid problems of collinearity, employees who reported working more than 70 h per week were excluded from the respective analyses on weekly working hours. This resulted in a range from -30 (which corresponds to 10 h) to 30 (which corresponds to 70 h). Moreover, we centered all other predictors by subtracting the scale midpoint, resulting in a range from -2 to 2.

As a preliminary analysis, we examined the share of employees with discrepant predictor pairs, as recommended by Shanock et al. (2010). Discrepancy was assumed if a standardized predictor score was half a standard deviation above or below the other predictor score.

To conduct a response surface analysis, we first fitted a polynomial regression model of second degree to the data. This statistical approach is based on the equation

$$Z = b_0 + b_1P + b_2E + b_3P^2 + b_4PE + b_5E^2 + e$$

where Z is the outcome of interest (here: satisfaction with work-life balance), P and E represent the linear main effects of the person and the environment, the interaction term PE captures the joint effects of person and environment and P^2 and E^2 represent curvilinear main effects of the person and the environment.

To display the results three-dimensionally, we created response surface plots, which we further analyzed in terms of congruence. To determine the nature of the relationship between the predictors and the outcome, we examined several lines of interests using surface tests as outlined by Edwards and Parry (1993) and Humberg et al. (2019). If we consider the PE plane that spans the floor of this three-dimensional coordinate system, the line that consists of all congruent predictor pairs ($P = E$) is the line of congruence. The line of congruence intersects the line of incongruence, where all predictor combinations are maximally incongruent ($P = -E$), at the origin point (0,0) at right angles. The estimated response surface consists of the predicted values for satisfaction with work-life balance based on the results of the polynomial regression. The shape of the surface above the line of congruence is given by the quadratic equation: $Z = b_0 + a_1P + a_2P^2$. The shape of the surface above the line of incongruence is expressed by: $Z = b_0 + a_3P + a_4P^2$. If the response surface has the shape of a saddle, the first principal axis, which resembles the ridge of the surface, indicates which predictor values are related to the highest outcome values. The first principal axis can be described as: $E = p_{10} + p_{11}P$.

To test for congruence effects, we followed the checklist provided by Humberg et al. (2019). In brief, this checklist contains a 6-step procedure to test for potential congruence effects in response surface analysis. To speak of congruence in a broader sense (also allowing for linear or curvilinear main effects of the predictors), the first four conditions of this checklist have to be satisfied (Humberg et al. 2019):

The projection of the first principal axis on the PE plane has to run along the line of congruence. This is the case if (1) p_{10} is not significantly different from 0 (indicating no lateral shift from the first principal axis) and (2) the confidence interval of p_{11} includes 1 (indicating no rotation from the first principal axis). Moreover, the surface above the line of incongruence has to be an inverted U-shape with a maximum at the congruent predictor combination (0,0). This is the case if (3) a_4 is significantly negative (indicating the inverted U-shape) and (4) a_3 is not significantly different from 0 (indicating the highest values at the point of origin).

The RSA package (Schönbrodt 2016) provides an estimate for all required coefficients described above.

To examine whether certain covariates may have an effect on these relationships, we conducted subgroup analyses. Thus, we conducted separate analyses for men and women, employees with and without underage children living in the household, employees frequently and less often working under high deadline and performance pressure, and employees working in rotating shift schedules.

Results

Table 2 displays the means, standard deviations, and correlations of all predictors and outcomes (before centering). For all three dimensions of working time arrangements, there is a considerable share of employees with discrepant predictor pairs. Merely, the percentage of employees with considerably shorter working hours than preferred is relatively low (5.9%), which limits interpretability for this group of employees. The results of the polynomial regression and analyses can be found in Table 3. The respective checklists for congruence are

shown in Table 4. Figure 1 shows the response surface plots, which we will analyze in the following for the three examined dimensions of working time arrangements. An overview of the supported and rejected hypotheses is given in Table 5. A detailed overview of the results of the subgroup analyses can be obtained from the authors upon request.

Weekly working hours

Hypothesis 1a proposed that satisfaction with work-life balance is highest in case of corresponding values for actual and preferred weekly working hours. The fact that the first condition (p_{10} is not significantly different from 0) was not satisfied contradicts a congruence effect. Thus, Hypothesis 1a suggesting a congruence effect for weekly working hours was not supported.

Hypothesis 1b proposed a negative relationship between actual weekly working hours and satisfaction with work-life balance. This hypothesis was supported because of the significant positive linear main effect of actual weekly working hours.

Table 3. Results of polynomial regression analyses for satisfaction with work-life balance for the overall sample.

Predictor	Coefficient
Model: Weekly working hours	
Intercept (b_0)	3.17***
Preferred weekly working hours (b_1)	0.02***
Actual weekly working hours (b_2)	-0.03***
Preferred weekly working hours ² (b_3)	0.00
Preferred x actual weekly working hours (b_4)	0.00***
Actual weekly working hours ² (b_5)	-0.00***
Model: Control over the beginning and end of workdays	
Intercept (b_0)	3.00***
Control preferences (b_1)	-0.03**
Control supplies (b_2)	0.06***
Control preferences ² (b_3)	0.02*
Control preferences x supplies (b_4)	0.02***
Control supplies ² (b_5)	0.02***
Model: Workplace segmentation	
Intercept (b_0)	2.96***
Workplace segmentation preferences (b_1)	-0.17***
Workplace segmentation supplies (b_2)	0.24***
Workplace segmentation preferences ² (b_3)	-0.02*
Workplace segmentation preferences x supplies (b_4)	0.06***
Workplace segmentation supplies ² (b_5)	0.01

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2. Means, standard deviations, and correlations of study variables.

Variable	M	SD	1	2	3	4	5	6
1. Satisfaction with work-life balance	3.08	0.77	-					
2. Preferred weekly working hours	35.34	8.57	-.05***	-				
3. Actual weekly working hours	39.11	9.84	-.22***	.71***	-			
4. Preferences in terms of control over the beginning and end of workdays	3.91	1.21	.01	-.05***	.00	-		
5. Supplies in terms of control over the beginning and end of workdays	3.06	1.61	.16***	.09***	.10***	.30***	-	
6. Workplace segmentation preferences	4.10	0.92	-.02	-.09***	-.06***	.10***	-.07***	-
7. Workplace segmentation supplies	4.00	0.96	.32***	-.05***	-.16***	.05***	.05***	.41***

Note. $N = 8,406-8,580$. *** $p < .001$.

Table 4. Results of surface tests for satisfaction with work-life balance for the overall sample.

Coefficient	Condition for congruence	Model: Weekly working hours		Model: Control over the beginning and end of workdays		Model: Workplace segmentation	
		Coefficient	Condition satisfied?	Coefficient	Condition satisfied?	Coefficient	Condition satisfied?
p_{10}	1. not significant	-21.28***	✘ no, thus no support	-6.12	✔ yes	6.70***	✘ no, thus no support
$Cl p_{11}$	2. includes 1	[0.34; 0.90]	for congruence effect	[0.31; 2.81]	✔ yes	[0.94; 2.20]	for congruence effect
a_4	3. significantly negative	-0.00***		0.02	✘ no, thus no support for congruence effect	-0.07***	
a_3	4. not significant	0.04***		-0.09***		-0.41***	
a_2	5. for strict congruence: not significant	-0.00		0.06***		0.06***	
a_1	6. for strict congruence: not significant	-0.01***		0.04***		0.06**	

Note. To test for a congruence effect, we followed the checklist provided by Humberg et al. (2019) stepwise for each condition for congruence. For a congruence effect, the first four conditions had to be satisfied, which was not the case in any of the models. ✘ = condition not satisfied; ✔ = condition satisfied. * $p < .05$; ** $p < .01$; *** $p < .001$.

Furthermore, the polynomial regression results also showed a significant positive coefficient for the linear main effect of preferred weekly working hours, a small significant negative coefficient for the curvilinear main effect of actual weekly working hours, and a small positive coefficient for the interaction effect. The significant negative coefficient a_4 indicates that the surface above the line of incongruence follows an inverted U-shape parabola (Humberg et al. 2019).

A look at the interpretable area of the respective response surface plot in Figure 1a confirms that satisfaction with work-life balance was higher in case of shorter actual working hours and longer preferred working hours. Within the interpretable area of the respective response surface plot, employees were less satisfied with their work-life balance if they worked longer than they preferred, which is the case on the right-hand side of the line of congruence.

Subgroup analyses for gender, children in the household, frequent deadline or performance pressure, and rotating shift schedules revealed a negative relationship between actual weekly working hours

and satisfaction with work-life balance in all subgroups (Hypothesis 1b), while no support for a congruence effect was found in any of the subgroups (Hypothesis 1a).

Control over the beginning and end of workdays

In Hypothesis 2a, we assumed that satisfaction with work-life balance is highest in case of congruence between supplies and preference in terms of control over the beginning and end of workdays. Surface tests showed that although the first two conditions for a congruence effect were satisfied, the third was not (a_4 is significantly negative), because the line of incongruence did not follow an inverted U-shape parabola. Thus, Hypothesis 2a suggesting a congruence effect for control over the beginning and end of workdays was not supported.

Hypothesis 2b predicted a positive relationship between supplies in terms of control over the beginning and end of workdays and satisfaction with work-life balance. Polynomial regression analysis provided

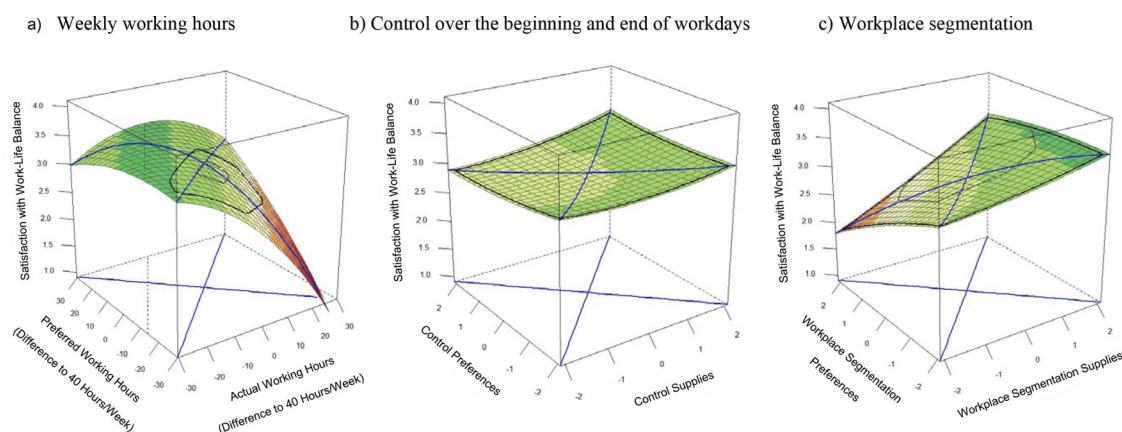


Figure 1. Response surface plots for satisfaction with work-life balance. Note. In Figure 1a, only the area in the black surrounded surface can be interpreted.

Table 5. Overview of supported and rejected hypotheses.

Hypotheses	Higher satisfaction with work-life balance in case of:	
	(a) Congruence effect	(b) Main effect
1. Weekly working hours	H1a: ✘ (in all analyzed samples)	H1b: ✔ Shorter weekly working hours (in all analyzed samples)
2. Control over the beginning and end of workdays	H2a: ✘ (in all analyzed samples)	H2b: ✔ Higher supplies in terms of control over the beginning and end of workdays (in all analyzed samples except for rotating shift workers)
3. Workplace segmentation	H3a: ✘ (in all analyzed samples)	H3b: ✔ Higher workplace segmentation supplies (in all analyzed samples)

Note. ✔ = supported hypothesis; ✘ = rejected hypothesis.

support for this hypothesis, as can be seen from the positive linear main effect of supplies in terms of control over the beginning and end of workdays.

Moreover, the polynomial regression model also estimated a significant negative coefficient for the linear main effect of preference in terms of control over the beginning and end of workdays, significant positive coefficients for the curvilinear effects of both preferences and supplies, as well a significant positive coefficient for the interaction effect.

The response surface plot in Figure 1b graphically displays the results of the response surface analysis for control over the beginning and end of workdays. In particular, it confirms that employees were more satisfied with their work-life balance in case of higher supplies and lower preferences in terms of control over the beginning and end of workdays. Satisfaction with work-life balance increased as supplies increased toward preferences and continued to increase as supplies exceeded preferences.

Subgroup analyses did not provide support for a congruence effect in any of the subgroups (Hypothesis 2a). Positive relationships between supplies in terms of control over the beginning and end of workdays and satisfaction with work-life balance (Hypothesis 2b) were found for all subgroups, except for rotating shift workers. Among shift workers in rotating shift schedules, there was a non-significant relationship between supplies in terms of control over the beginning and end of workdays and satisfaction with work-life balance.

Workplace segmentation

Hypothesis 3a suggested that satisfaction with work-life balance is highest for congruent levels of workplace segmentation supplies and preferences. Because the first condition for a congruent effect (p_{10} is not

significantly different from 0) was not satisfied, we have to reject Hypothesis 3a.

Hypothesis 3b proposed a positive relationship between workplace segmentation supplies and satisfaction with work-life balance. The positive linear main effect of workplace segmentation supplies estimated in the polynomial regression model provides support for Hypothesis 3b.

In addition, the polynomial regression analysis also estimated a significant negative coefficient for the linear main effect of segmentation preference, a significant negative coefficient for the curvilinear effect of segmentation preferences, and a significant positive coefficient for the interaction effect. Moreover, a_4 was significantly negative, which means that the line of incongruence follows an inverted U-shape parabola.

The response surface plot in Figure 1c displays the results of the response surface analysis for workplace segmentation. Most importantly, it illustrates that employees were more satisfied with their work-life balance in case of higher workplace segmentation supplies and lower workplace segmentation preferences. Satisfaction with work-life balance increased as workplace segmentation supplies approached preferences and continued to increase as workplaces segmentation supplies exceeded preferences.

Subgroup analyses did not reveal a congruence effect for any of the subgroups (Hypothesis 3a); however, positive relationships between workplace segmentation supplies and satisfaction with work-life balance (Hypothesis 3b) were found for all subgroups.

Discussion

The aim of the present paper was to examine working time arrangements from a person-environment fit perspective. In contrast to our hypotheses, response surface analyses revealed no evidence for congruence effects of actual and preferred working time arrangements on satisfaction with work-life balance. This indicates that exact congruence between employees' working time preferences and the actual working time arrangements offered by the work environment is not a precondition to satisfaction with work-life balance. Thereby, the current study challenges the congruence notion that is predominant in person-environment fit theory and has been discussed to underlie a strong confirmatory bias (Tinsley 2000).

Instead, we found notable main effects: Satisfaction with work-life balance was higher among employees with shorter actual weekly working hours, which is in line with previous meta-analytical findings (Byron 2005; Ng and Feldman 2008). It was particularly lower for

employees who worked longer hours than preferred and higher for employees with longer preferred weekly working hours. Along with previous evidence from a review by Nijp et al. (2012), satisfaction with work-life balance was also higher among employees with more control over the beginning and end of workdays. Moreover, it was higher among employees for whom such control was less important. Furthermore, employees working in jobs that allow for segmentation between work and private life and employees attributing less importance to such segmentation were also more satisfied with their work-life balance. By disentangling three facets of actual and preferred working time arrangements in a representative large-scale sample, we go beyond previous research on work hours and work-life balance.

The finding that control over the beginning and end of workdays was not related with satisfaction with work-life balance among rotating shift workers suggests, however, that the role of working time arrangements for the reconciliation between work and private life might differ across different work settings. Since control over the beginning and end of workdays is rather uncommon among shift workers (Brauner et al. 2019), for these employees it might be more promising to focus on other facets of work time control, such as roster control, which has been linked to a better work-life balance (Pryce et al. 2006).

Although we found no congruence effects, our results could support person-environment fit theory in the following way: Satisfaction with work-life balance was higher if actual working hours did not exceed preferred working hours. It was also higher if employees' required amount of supplies in terms of control over the beginning and end of workdays and segmentation was provided by the workplace. Employees who had more supplies than they required were even more satisfied with their work-life balance. The latter is in line with Kreiner's (2006) findings on the relationship between fit in workplace segmentation and work-home conflict. In summary, this underlines that supplies in terms of control over the beginning and end of workdays and workplace segmentation supplies are potentially beneficial for satisfaction with work-life balance. They represent important resources in the context of the work-home interface. On the other hand, long working hours may represent a demand that can hamper the reconciliation between work and private life, especially among employees who prefer shorter working hours.

Limitations and avenues for future research

Several limitations of the present study have to be mentioned that may be relevant for the interpretation of the

results. Most importantly, all analyses were based on cross-sectional data and do not allow for causal conclusions. Reverse or reciprocal relationships are very likely: Not only working time arrangements that match or mismatch employees' preferences might affect the satisfaction with work-life balance but also a strong unhappiness about the current reconciliation of work and private life might make employees change their working time preferences. Future research could, therefore, examine the effects of a match or mismatch in working time arrangements in panel studies.

Furthermore, our results could be biased by selection effects. An indication of this is that in terms of weekly working hours only a small range of theoretically possible predictor combinations was sufficiently reflected by the dataset allowing for interpretations. For instance, combinations of very long preferred and very short actual working hours were very rare. This suggests, that if they have the chance, employees tend to select themselves into jobs that satisfy their needs or adjust their jobs according to own preferences, as proposed by the theory of work adjustment (Dawis and Lofquist 1984). Such selection effects may have deflated the effects on satisfaction with work-life balance. Again, longitudinal studies over several years may help detect and control for such selection effects.

Moreover, all predictors as well as the outcome variable were measured via self-reports in questionnaires, which may be problematic in terms of common method bias (Podsakoff et al. 2003). Clearly, self-reports are the natural mode of measurement for assessing cognitive constructs, such as employees' preferences or satisfaction (Lucas 2018). However, future studies could obtain more objective measures to assess actual working time arrangements.

A related shortcoming of the present study is that, as pointed out by Edwards and Parry (1993), like all multiple regression models, polynomial regression and response surface analysis assume that the dependent variables are without measurement error. While this assumption probably does not hold for our data, we are currently not aware of any procedure or software that combines response surface analysis with structural equation modeling to overcome this limitation.

Finally, although analyses were based on a representative sample of employees in Germany, our findings may not be readily applied to other countries. A substantial body of research shows that processes at the work-home interface can be influenced by various aspects of national culture and structure (Ollier-Malaterre et al. 2013; Ollier-Malaterre and Foucreault 2017). Thus, future studies could examine whether the observed patterns replicate in other national contexts.

Implications for practice

This study points toward several implications that may help improve employees' satisfaction with work-life balance. In times when personnel are the most valuable resource for many companies, this should also be a major concern to employers, supervisors, and human resource professionals. Working time arrangements that allow for a good reconciliation between work and private life can be an asset in the tough competition for skilled personnel and may reduce costs related to turnover (Cappelli 2000). Thus, apart from employees, employers also may benefit if their employees are happier with how their work and private life fit together. Overall, this study showed that it is not so much perfect congruence between actual and preferred working time arrangements that makes employees more satisfied with their work-life balance. Instead, the following aspects should be considered in the design of working hours:

For a good work-life balance, employees should not work longer hours than they prefer. Thus, an obvious consequence could be the reduction of overtime work. If this is not feasible, overtime work should preferably be compensated by free time off within a narrow time period chosen by the employee. Moreover, part-time positions that do not entail career drawbacks could also be a welcome offer for those employees who wish to reduce their working hours. A precondition for all of these measures is, however, that there are enough employees available for the work to be done.

Furthermore, to promote the compatibility between work and private life, employees should be given some control over the scheduling of their work. For instance, flextime agreements can help employees start and end their working day at a time that allows them to take care of private matters. Among others, the advance of telework and other arrangements regarding working from home grant employees more autonomy, in general, and more control over the scheduling of work (Gajendran and Harrison 2007). Importantly, while we found beneficial effects of control over the beginning and end of workdays for work-life balance, this also entails the risk that employees overtax themselves to handle an enormous workload at home or at the workplace (Lott 2015). In line with this, several researchers have highlighted the ambiguousness of working time flexibility or autonomy, which can result in a self-exploitation of employees, especially when paired with goal-oriented management practices (e.g. Brannen 2005; Putnam et al. 2013). Thus, good boundary conditions on the legislative, organizational, and team level are required as well as the strengthening of individual competencies. Flexible working hours, therefore, have to be accompanied by appropriate measures that prevent

employees from overtaxing themselves, such as a recovery- and family-friendly organizational culture and a valid documentation of working hours. The political and legislative dimension of this issue was recently highlighted by the decision of the European Court of Justice (2019) that required a recording of working hours.

Moreover, our findings suggest that workplaces should provide sufficient segmentation supplies. Expressed, implicit or assumed, expectations to be available for work-related issues after hours or during holidays blur boundaries between work and private life and may lead to work-life conflicts (e.g., Dettmers 2017; Jay et al. 2018). If availability is necessary and cannot be avoided by a better organization of work routines, participatory agreements on the team level could be a means to find solutions that take account of individual preferences and organizational requirements. As another aspect, the workload should be adequate so that employees do not feel pressured to take work home. Employees in workplaces with few segmentation supplies could try to compensate this by strengthening their personal boundary management strategies and thus set up clear lines of demarcation between work and private life (Kreiner et al. 2009). Intervention studies have shown that such competencies can be learned and can be put into practice (Michel et al. 2014). This is also particularly relevant for employees doing telework, who have weaker spatial boundaries between work and home (Fonner and Stache 2012).

Conclusion

With this study among a representative sample of the German working population, we provide a holistic examination of the role of fit in terms of working time arrangements for employees' satisfaction with work-life balance. Overall, analyses did not reveal congruence effects. Thus, a perfect match between employees' preferences and the working time arrangements provided by the workplace does not seem to be a requirement for successfully balancing work and private life. More importantly, for a good work-life balance, working hours should not be longer than preferred. In addition, employees should be given sufficient control over the beginning and end of their workday and possibilities to segment work and private life. These aspects should be incorporated into the organization of working time to help employees reconcile work and private life.

Declaration of interest

The authors report no conflict of interest and did not receive any funding. The authors are responsible for the content and writing of the article.

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