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The time-pressure reducing potential of telehomeworking: the Dutch case

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Keywords Telework; work–life balance; time pressure; work-home interference; overtime; survey.

Introduction

Nowadays, people in all walks of life are increasingly pressed for time. This may be engendered by the intensification of paid work, the increase in female labour-market participation resulting in a growing number of workers having substantive family obligations, and people's higher expectations of personal development and leisure-consumption (see Robinson and Godbey, 1997; Schor, 1992). In the present study we are concerned with how time and time use are experienced and how specific work and household conditions influence feelings of time pressure. We particularly focus on one work condition and its supposed capacity to reduce time pressure, i.e. telehomeworking. Telehomeworking refers to working at or from home during (at least part of) the employees' contractual working hours, often, but not necessarily, mediated by IT (Felstead *et al.*, 2000). Among the drivers for telehomeworking is its widely perceived potential to help workers cope with the mutual incompatability of paid work and the rest of life, and to reduce related time pressures, which may improve both the functioning of organizations, individual workers and their households. In previous telehomeworking studies, time pressure is often covered under the general heading 'quality of life' (France *et al.*, 2002; Vittersø *et al.*, 2003). Like many other work–family arrangements, however, telehomeworking can be double-edged (Mirchandani, 2000). The relationship between telehomeworking and time pressure has been occassionally looked into (Hill *et al.*, 1996) but rarely explicitly, let alone for various telehomeworking categories. The present study, therefore, questions whether telehomeworking can be regarded as a time-pressure reducing strategy, and whether this differs across gender and 'occassional', 'light' and 'heavy' telehomeworkers. Its main objective is to analyse *the time-pressure reducing potential of the telehomeworking practice* by showing how male and female telehomeworking categories differ with respect to their perceived levels of time pressure from their on-site working equivalents, and how the relationship between employees' telehomeworking behaviour and time pressure is mediated by factors that relate to work–life balance (WLB). The study uses data from a large-scale Dutch research programme entitled *Time Competition: Disturbed Balances and New Options in*

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Work and Care, which was set up in 2003 to develop and test new explanations for and solutions to the growing tensions between the competing time claims from work and family. Telehomeworking was one of the HRM practices under study. In this respect it is important to note that, in the beginning of this century, 20.6 per cent of the Dutch employed population could be categorized as telehomeworkers (Gareis, 2002). As telehomeworking makes up for a growing percentage of work practices across Europe (Bates and Huws, 2002) and time pressure is only likely to increase in size and impact, it is important to research how these two are interrelated. Although the study only involves employees and not the growing freelance telework population, the findings my be relevant to this latter group as well.

Theory and hypotheses

Viewing telehomeworking as a time-pressure reducing strategy, *we expect that the telehomeworking-practice 'in itself' contributes to a reduction of employees' experienced time pressure*. However, telehomeworking may have (often unintended) negative consequences that can counterbalance or even exceed the intended gains. In the present study, we assume the relationship between telehomeworking and time pressure to be mediated by two other telehomework outcomes: *work–home interference* and *overtime*. Therefore, the final effect of telehomeworking on time pressure remains an empirical matter.

One of the main hypotheses in the work–home conflict literature is the *role scarcity* hypothesis (Geurts *et al.*, 2005; Madsen, 2003 following Greenhaus and Beutell, 1985), which assumes that employees have multiple roles (e.g. of employee, spouse and parent) that draw on the same scarce resources. Consequently, work demands may interfere with home obligations. Although we acknowledge any possible positive interaction between employees' multiple roles, and that family obligations also interfere with work (*ibid.*), the focus in our study is on two types of negative work–home interference. *Time-based negative work–home interference*, first, refers to time-spatial aspects of work interfering with employees' private lives. *Strain-based negative work–home interference*, second, refers to work-related strain spilling over into the home domain (*ibid.*). The level of work–home interference (WHI) depends on employees' job and household characteristics (Bakker *et al.*, 2003; Karasek, 1979). That is, workers can differ with respect to the *demands* they meet in their professional and private lifes. Also the amount of *control* possibilities in work or at home (*resources*) to cope with work and family obligations can vary among workers (*ibid.*). In the literature, telehomeworking is often linked with more time sovereignty and higher levels of autonomy (Madsen, 2003), and hence viewed as a control. In the following, however, we argue that the self-control associated with telehomeworking can also be a serious pitfall possibly engendering WHI and overtime (Sullivan and Lewis, 2001), and thus time pressure.

Time-based WHI

It is likely that telehomeworking allows employees to cope better with 'incompatible' time schedules or demands from the work and family domains (Baruch and Nicholson, 1997). Although Madsen (2003) found no difference in perceived time-based WHI comparing employees working at home for at least two days per week with on-site workers, other studies indicate telehomeworking to leave employees with more time and energy for their families, recreation and local interaction. Through telehomeworking, employees can save 'unproductive' commuting time and commute-related hassle (Ory and Mokhtarian, forthcoming), they can more easily plan their work activities

themselves, and work at times they find convenient (France *et al.*, 2002; Tremblay, 2002: 163; Vittersø *et al.*, 2003). Altogether, telehomeworkers may report higher levels of satisfaction with their WLB (Collins, 2005). Also, in a longitudinal panel study looking into the relationship between telehomeworking and work-life interference, Duxbury *et al.* (1998) showed telehomeworkers to have significantly fewer problems managing their family time than they did before they began telehomeworking. Therefore, *we expect telehomeworkers to experience fewer problems harmonizing paid work and other activities than their on-site working equivalents (i.e. less time-based WHI)*. Moreover, *we expect a positive correlation between time-based WHI and time pressure.*

Strain-based WHI

Strain-based WHI refers to strain (e.g. tension, anxiety, fatigue, depression, irritability) created in the work domain, making it difficult to comply with demands from the household domain (Greenhaus and Beutell, 1985). Telehomeworking may either reduce or enhance strain-based WHI. In her study, Madson (2003), for example, explains the lower levels of strain-based WHI experienced by employees working at home by pointing out the more relaxed environment in the home, the reduction of distractions and the decreased time spent on, and strain from, commuting. Other telehomeworking studies note that advantages are often accompanied by severe risks that result from the loss of a clear demarcation between work and home. The loss of a clear demarcation to the workday may result in thoughts and emotions from the work sphere more easily spilling over into the household domain (Mirchandani, 2000). Consequently, strain developed during work may threaten to hamper employees' functioning in their private time (Dikkers *et al.*, 2004). Based on these two points of views, *we can either expect telehomeworking to decrease or to increase strain-based WHI*. Moreover, *we expect a positive correlation between strain-based WHI and time pressure*.

Overtime

From the beginning, the omnipresence of work in the home and employees' permanent accessibility and availability is said to stimulate overcommitment and employees to work overtime. To finish their work, telehomeworkers may not only use up saved commuting time, but also invest part of their non-working time (Baruch, 2000; Duxbury *et al.*, 1992; Families, 2002; Hill *et al.*, 1998). The European Commission (2000) presents figures reflecting the difference between actual and contractual fixed working hours. Whereas 50 per cent of on-site workers work more hours per week than contractually agreed, this figure increases to 80 per cent of all tele(home)workers. For some telehomeworkers, longer working hours may be attributable to the lack of 'checks and balances' such as the comparison with co-workers. Telehomeworkers may want to prove themselves, and therefore, put in longer hours. In an international study (SUSTEL, 2004), many telehomeworkers reported that their working hours had increased over the past two years. This held especially true for the employees in the UK and Netherlands. Summarizing, due to the proximity of work in the employee's dwelling *we expect telehomeworking to be associated with employees doing more overtime.* In addition*, doing overtime is expected to correlate positively with time pressure.*

Model

The presumed interrelationships between the telehomeworking practice, time-based WHI, strain-based WHI, overtime and time pressure are depicted in Figure 1.

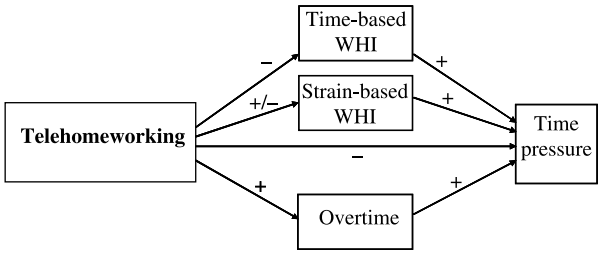

Figure 1 *Conceptual model representing correlations between telehomeworking, time-based WHI, strain-based WHI, overtime and time pressure*

Number of telehomeworking days and gender

In line with the literature, we distinguish several telework categories according to the number of telehomeworking days per week (Felstead *et al.*, 2000; Gareis, 2002). While the categories will be explained in more detail in the methodology section, they are: (1) occasional; (2) light; and (3) heavy telehomeworkers. Frequency may influence the effects of the telehomeworking practice. As there are reasons to expect that the effects of the telehomeworking practice on WHI, overtime and time pressure vary by gender, the model presented in Figure. 1 will be tested for men and women separately. In WHI-studies, for example, gender is found to be a significant factor (Duxbury and Higgins, 1991; Madson, 2003). Moreover, drivers for telehomeworking may also be gendered, and, therefore, its outcomes. Whereas British mothers are more likely to work at home to harmonize work and family, men's telehomeworking behaviour and childcare responsibiltities are often unrelated (Felstead *et al.*, 2000; Sullivan and Lewis, 2001). Also in a study among Dutch telehomeworkers, more women (16 per cent) than men (9 per cent) indicated a better harmonization of work and family to be the main rationale for telehomeworking. Strikingly, however, 50 per cent of both men and women mentioned that they worked at home primarily to meet deadlines (Families, 2002; Fouarge *et al.*, 2004).

Data and methodology

The data used in this study were collected in 2003 by means of a multi-stage sample of Dutch employees. First, organizations were approached using a variety of formal and informal contacts. The 30 participating organizations varied in size and were situated in a broad variety of sectors, covering both public and private organizations. Second, individual workers were approached with the organizations' permission and help. As the organizations were not allowed to give employees' home addresses, employees were called at work and asked whether they (and their spouse if applicable) would be willing to participate. If so, third, employees (and their spouses) were interviewed in their homes. Both written and oral fully structured questionnaires were used. The home-interviews lasted from about one hour (singles) to one and a half hours (couples). The response rate among employees was 29 per cent (N = 1,114). The data presented in this study were drawn from the interviews with non-single employees having a labour contract for at least 12 hours per week (N = 807); 467 were male workers (58 per cent) and 340 were female workers (42 per cent).

Dependent variables

The dependent variables are shown below:

- *time pressure* is measured through four items (Garhammer, forthcoming) stating 'I am under time pressure'; 'I wish to have more time to myself'; 'I feel myself under time pressure from others'; and 'I cannot deal with important things properly due to a lack of time' (Cronbach's alpha = 0.75). Each of these items had ascending answering categories ranging from 1 (= never) to 5 (= always);
- *time-based WHI* is measured through a single item (Geurts *et al.*, 2005) asking: 'How often does it happen that your work schedule makes it difficult for you to fulfil your domestic obligations?'
- *strain-based WHI* is measured through a two-item scale (Geurts *et al.*, 2005): 'How often does it happen that you find it difficult to fulfil your domestic obligations because you are constantly thinking about your work?' and 'How often does it happen that you do not fully enjoy the company of your spouse/family because you worry about work' (Cronbach's alpha = 0.77). Also for all WHI-items a 5-point Likert scale was used (1 = never; 5 = always).; and
- *overtime* is measured by subtracting employees' contractual working hours from their actual working hours per week. Because the overtime-variable was highly skewed, its square root is used.

Table 1 shows the Pearson correlation-coefficient between time pressure and strain-based WHI to be particularly high (0.40). Principal-axis-factoring (oblimin-rotated), however, shows time pressure (Eigen value = 2.84; $R^2 = 39.29$) and strain-based WHI (Eigen value = 1.125; $R^2 = 11.72$) to be two separate factors. Hence, both theoretically and empirically, strain-based WHI and time pressure can be considered two different concepts.

Telehomeworking

Telehomeworking is our primary independent variable. According to our definition, 32 per cent of the employees in our study work at home during some part of their regular working hours, paid or unpaid overtime worked at home being explicitly excluded. Although the use of IT was not explicitly mentioned in the definition presented to the respondents, all telehomeworkers in our study used a computer for their work. We distinguished four telehomeworking categories:

1 *on-site workers* not or hardly ever working at home;
2 *occasional telehomeworkers* (THW 1 d/w) working at home less than one day per week on average;
3 *light telehomeworkers* (THW = 1 d/w) working at home one day per week on average; and
4 *heavy telehomeworkers* (THW 1 d/w) working at home more than one day per week on average.

Table 2 shows the sum of the percentages of all 'light' and 'heavy' telehomeworkers in our study (7.9 per cent) to be slightly lower than that in the total Dutch working population (9 per cent) (Gareis, 2002). The percentage of occasional telehomeworkers in our study (23.8 per cent) is significantly higher than that in the total Dutch working population (11.6 per cent) (*ibid.*). This can be attributed to the over-representation of

Table 1 *Pearson correlations between dependent variables*

	All (N = 807)			*Men (N = 467)*				*Women (N = 340)*			
	Time	*Strain*	*Over*	*Press.*	*Time*	*Strain*	*Over*	*Press.*	*Time*	*Strain*	*Over*	*Press.*
Time-based WHI	1				1				1			
Strain-based WHI	.33***	1			.31***	1			.35***	1		
Overtime	.25***	.17***	1		.26***	.16***	1		.15**	.18***	1	
Time pressure	.38***	.40***	.20***	1	.42***	.43***	.25***	1	.32***	.36***	.14***	1

Notes: *** $p < 0.001$; ** $p < 0.01$.
Source: Time-competition data, 2003.

Table 2 *Means and percentages by telehomeworking (THW)-category and gender*

	All (N = 807)				*Men (N = 467)*				*Women (N = 340)*			
THW-category	1	2	3	4	1	2	3	4	1	2	3	4
THW-days p/w	= 0	<1	= 1	>1	= 0	<1	= 1	>1	= 0	<1	= 1	>1
N	551	192	39	25	313	112	27	15	238	80	12	10
Per cent of sample	68.3	23.8	4.8	3.1	67.0	24.0	5.8	3.2	70.0	23.5	3.5	2.90
Female (%)	43.2	41.7	30.8	40.0	0	0	0	0	100	100	100	100
Age	41.42	41.24	43.10	41.56	42.15	42.26	45.26	43.80	40.45	39.81	38.25	38.20
Education (1–9)	5.54	7.13	7.59	6.96	5.69	7.03	7.70	6.87	5.34	7.28	7.33	7.10
Formal hours	33.38	34.15	35.82	34.84	36.71	36.50	36.44	37.07	29.00	30.85	34.4	31.50
Child <12 (%)	44.5	55.2	53.8	44.0	47.6	58.9	55.6	26.7	40.0	50.0	50.0	70.0

Notes: 1 = on-site workers; 2 = occasional THWs; 3 = light THWs; 4 = heavy THWs.
Source: Time-competition data, 2003.

highly educated workers in our data who are also more likely to be in the occasional telehomeworking group (Felstead *et al.*, 2000). Note that the numbers of light and heavy telehomeworkers are only small. Table 2 also presents a short description of the telehomeworking categories in our study. Men account for a larger share of the telehomeworker sample. Moreover, telehomeworkers appear to be higher educated. Age does not seem to vary much across categories. Among women, telehomeworkers have longer contract hours. Generally speaking, employees in the telehomeworking groups more often have children under 12, the exception being the group of heavy telehomeworking men.

Among the heavy telehomeworkers we find police sergeants, insurance company managers and administrative workers, sales managers, organization and financial advisors, (university) researchers and HRM-managers. These kinds of job-holders are also present among the light and occasional telehomeworkers, followed by IT consultants, project managers, controllers, publishing house employees and business developers.

Control variables

The multivariate analyses were controlled for gender and relevant work and household *demands* that possibly lead to more WHI, overtime and time pressure. We also controlled for some work and household *resources*. The control variables used are presented below.

1 *Gender*: dichotomous variable (1 = women).
2 *Work demands*:
   - *Employees' contractual weekly working hours*.
   - *Commuting hours*: daily one-way commuting time expressed in minutes per day.
   - *Educational level*: 9 ascending categories.
   - Frequency of *deadlines*: ranging from (1) (= 'less than once a month') to (5) (= 'several deadlines per week').
   - *Work overload*: a scale based on three items scored on a 5-point Likert scale referring to the quantitative, demanding aspects of work (Cronbach's alpha = 0.74) (Bakker *et al.*, 2003).
   - *Perceived time competition-culture*: In some work cultures, employees can compete with each other to keep their jobs or to be promoted through spending more time on paid work. 'Time competition culture' is measured through a scale based on five items (Cronbach's alpha = 0.65).
3 *Work resources*:
   - *Job autonomy*: a scale based on three items concerning freedom of action in accomplishing the formal work task (Cronbach's alpha = 0.69) (Bakker and Geurts, 2004).
   - *Time sovereignty*: ranging from 1 to 5. 1 = 'mostly someone else controls my working hours', 5 = 'I mostly control my working hours.'
4 *Home demands*:
   - *Presence of children at home* (dichotomous variable: 1 = yes, children present).
   - *Number of children at home* (0 = no children; 1 = 1 child; 2 = 2 children; 3 = 3 or more children).
   - *Age of the youngest child* (dichotomous variable: 1 = child < 12).
5 *Home resources*: No or no full-time spousal labour-market activities implies that the employee's household has a relatively larger 'time reservoir' to draw on for non-market activities which is likely to reduce employees' reported work-home conflict and time pressure, whereas it may increase employees' (possibility to do) overtime.

- *Spouse's labour market activity*: dichotomous variable (1 = yes, spouse has paid work).
- *Spouse's weekly contractual working hours*: measured through the partner's questionnaire, a higher score implying spouse's time reservoir to be smaller.

Table 3 presents a description of the variables used. None of the Pearson correlations between the control variables were too high, i.e. over 0.70 (correlation matrix not presented).

Method

Multiple Analysis of Variance (MANOVA), one-way ANOVAs and independent T-tests were conducted to test whether the (combination of) mean scores on the dependent variables differ across telehomeworking categories and gender. To test our expectations, partial regression coefficients and significance levels were calculated, controlling for the control variables listed above. As the correlations between the dependent variables were high, we used MANOVA and Univariate analysis of variance. First, the effects of employees' telehomeworking behaviour were estimated for all dependent variables (i.e. time-based WHI, strain-based WHI, overtime and time pressure (Model 1)). Second, time-based WHI, strain-based WHI and overtime were included as independent variables in the time-pressure equation (Model 2). Model 2 allowed us to estimate the 'autonomous' effect of employees' telehomeworking behaviour as an indication of the 'contribution' of telehomeworking to a possible reduction of time pressure were the level of WHI and overtime kept constant. As our expectations were directed, we performed one-tailed tests. Only in the time-pressure-Model 1, were the effects of telehomeworking subjected to a two-tailed test. All analyses were performed separately for the male and female subsamples.

Descriptive analyses

Do the four telehomeworking categories differ among each other with respect to their *average levels of WHI, overtime and time pressure*? MANOVA-analysis, first, shows that telehomeworking categories differ significantly with respect to their average levels of WHI, overtime and time-pressure (Pillai's Trace = 0.128; F = 8.862, p = 0.000). We also find significant differences in average levels on the four dependent variables between men and women (Pillai's Trace = 0.036; F = 7.438, p = 0.000). One-way ANOVA-analyses, second, show differences in mean scores across telehomework categories for the dependent variables to be separately significant ($F_{time\text{-}basedWHI} = 8.715$, p = 0.000; $F_{strain\text{-}basedWHI} = 6.573$, p = 0.000; $F_{overtime} = 24.626$, p = 0.000; $F_{timepressure} = 13.314$, p = 0.000).

Post-hoc tests, third, show that the three telehomework-groups do not differ significantly among each other. The only significant differences are found between some telehomeworking groups and on-site workers. Independent T-tests show men's average levels of time-based WHI (T = 3.05, p = 0.002) and overtime (T = 9.43, p = 0.000) to be higher than women's. Average levels of strain-based WHI (T = 0.58, p = 0.563) and time pressure (T = −0.188, p = 0.851) do not vary significantly by gender. Below, the focus is on the male and female subsamples.

Men Mean scores on all four dependent variables (Table 4) vary significantly across telehomework-categories ($F_{time\text{-}basedWHI} = 6.455$, p = 0.000; $F_{strain\text{-}basedWHI} = 4.876$, p = 0.002; $F_{overtime} = 12.758$, p = 0.000; $F_{timepressure} = 8.476$, p = 0.000). Post-hoc

Table 3 *Minimum scores (Min), maximum scores (Max), mean scores (Mean) and standard deviations (SD) of dependent and independent variables in the analyses*

	All (N = 807)				*Men (N = 467)*				*Women (N = 340)*			
	Min	*Max*	*Mean*	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*	*Mean*	*SD*
Time-based WHI	1	5	1.75	0.80	1	5	1.83	0.84	1	5	1.65	0.74
Strain-based WHI	1	4.50	1.71	0.68	1	4	1.72	0.70	1	4.50	1.70	0.65
Overtime	0	5.20	1.41	1.30	0	5.20	1.76	1.31	0	4.58	0.93	1.12
Time pressure	1	4.75	2.53	0.75	1	4.75	2.52	0.76	1	4.25	2.53	0.73
Education	1	9	6.06	2.13	1	9	6.16	2.18	1	9	5.92	2.05
Working hours	12	40	33.73	6.47	16	40	36.66	3.88	12	40	29.70	7.12
Commuting time	0	180	36.80	26.91	0	180	39.02	27.80	0	180	33.74	25.35
Time competition	1	5	2.57	0.71	1	5	2.60	0.68	1	4.60	2.53	0.75
Deadline	1	5	3.03	1.35	1	5	3.14	1.33	1	5	2.89	1.37
Work overload	1	5	3.09	0.85	1	5	3.10	0.84	1	5	3.09	0.87
Time sovereignty	1	5	3.91	1.40	1	5	4.00	1.34	1	5	3.79	1.46
Autonomy	1	5	3.94	0.77	1	5	4.02	0.76	1	5	3.83	0.77
Child present	0	1	0.64	0.48	0	1	0.67	0.47	0	1	0.59	0.49
Child aged <12	0	1	0.47	0.50	0	1	0.50	0.50	0	1	0.44	0.50
No. of children	0	3	1.18	1.07	0	3	1.28	1.09	0	3	1.03	1.01
Working spouse	0	1	0.85	0.35	0	1	0.80	0.40	0	1	0.93	0.26
Spousal work hrs	0	40	26.19	13.74	0	40	20.59	13.09	0	40	33.87	10.54

Source: Time-competition data, 2003.

Table 4 *Dependent variable mean scores by telehomeworking (THW)-category and gender*

	All (N = 806)				*Men (N = 467)*				*Women (N = 340)*			
THW-categories	*Time*	*Strain*	*Over*	*Pres.*	*Time*	*Strain*	*Over*	*Pres.*	*Time*	*Strain*	*Over*	*Pres.*
On-site workers (= reference group)	1.67	1.64	1.15	2.43	1.71	1.64	1.51	2.41	1.59	1.64	0.94	2.45
Occassional	**1.92**	**1.85**	**1.92**	**2.78**	**2.04**	**1.87**	**2.23**	**2.81**	1.74	1.83	**1.27**	**2.74**
Light	**2.15**	1.88	**1.94**	**2.80**	**2.19**	1.87	**2.23**	2.68	2.08	1.92	1.17	**3.08**
Heavy	1.88	1.94	**2.28**	2.38	1.93	2.10	**2.60**	2.40	1.80	1.70	1.90	2.35
All	1.75	1.71	1.41	2.53	1.82	1.72	1.76	2.52	1.65	1.69	0.82	2.53

Notes: Occasional: 1 day per week; Light: = 1 day per week; Heavy: 1 day per week; Bold figures represent statistically significant higher mean scores across telehomeworking categories ($p < 0.05$) (Post-hoc tests one-way-ANOVAs).
Source: Time-competition data, 2003.

tests show that occasional telehomeworking men report significant higher average levels of time-based WHI, strain-based WHI, overtime and time pressure than on-site working men. Light telehomeworking men experience significant higher levels of time-based WHI and do more overtime than on-site working men. Heavy telehomeworking men do the most overtime.

Women Only differences in mean scores on overtime and time pressure are shown to vary significantly across telehomework categories ($F_{\text{time-basedWHI}} = 2.301$, $p = 0.077$; $F_{\text{strain-basedWHI}} = 2.226$, $p = 0.085$; $F_{\text{overtime}} = 13.518$, $p = 0.000$; $F_{\text{timepressure}} = 5.917$, $p = 0.001$). Occasional telehomeworking women do more overtime and experience greater time pressure. Light telehomeworking women report the highest degree of time pressure on average.

Explanatory analyses Can any difference (and non-difference) in average time-pressure levels across telehomeworking categories be attributed to employees' telehomeworking behaviour? To find out, Table 5 presents the *partial effects of telehomeworking* on time-based WHI, strain-based WHI, overtime and time pressure under the *ceteris paribus* condition, i.e. keeping constant the control variables entered in the model (i.e. gender and the various work and household conditions presented above). As our focus is primarily on the relationships between telehomeworking and the four dependent variables, as well as gender differences therein, only the partial effects of telehomeworking will be discussed for the male and female sub-samples separately, using their on-site equivalents as reference categories.

Effects by telehomeworking category

Men Occasional telehomeworking men experience significantly more time-based WHI, more strain-based WHI, do more overtime and report more time pressure than their on-site working equivalents (Model 1). The same applies when we keep constant any change in WHI and overtime resulting from telehomeworking (Model 2). Light telehomeworking men only report more time-based WHI than their on-site working equivalents. Heavy telehomeworking men report more strain-based WHI and do more overtime. Model 2, however, shows this male-category to experience less time pressure when WHI and overtime are kept constant, which shows the time-pressure reducing potential of telehomeworking for this group of telehomeworking men.

Women Occasional telehomeworking women do more overtime than their on-site working equivalents. Light telehomeworking women do not report any significant difference in WHI, overtime and time pressure. Heavy telehomeworking women do more overtime, but, when keeping constant for any change in WHI and overtime (Model 2), feelings of time-pressure are reduced.

Discussion

The effects of telehomeworking on WHI, overtime and time pressure are shown to vary by telehomeworking-category and gender (see Table 6), possibly reflecting different motivations for telehomeworking. Discussing our findings in the light of the expectations brought forward in the first section we find a somewhat mixed picture (see Table 6).

Table 5 *Unstandardized partial effects (b) of telehomeworking (THW) on time-based work-home interference, strain-based work–home interference, overtime and time pressure controlled for work and household demands and resources, by gender*

	Time-based negative work–home interference			*Strain-based negative work–home interference*			*Overtime*			*Time pressure (Model 1) (!)*			*Time pressure (Model 2)*		
	All	*Men*	*Women*	*All*	*Men*	*Women*	*All*	*Men*	*Women*	*All*	*Men*	*Women*	*All*	*Men*	*Women*
Reference category = On-site workers															
Occasional THW	.18**	.27***	.08	.12*	.17*	.07	.42***	.50**	.27*	.16**	.28***	−.00	.10*	.19**	−.02
Light THW (= 1 day p/w)	.39***	.47**	.20	.14	.18	.08	.27	.37	−.01	.22*	.17	.32	.13	.04	.29
Heavy THW (>1 day p/w)	.15	.16	.13	.21	.32*	.01	.72***	.74***	.73*	−.20	−.18	−.33	−.27*	−.31*	−.31*
Women (!)	.06	#	#	.11	#	#	−.44***	#	#	.13*	#	#	.09	#	#
Work hours	.03***	.05***	.02**	.02***	.02**	.01*	.03***	.05***	.02**	.01*	.02**	.01	−.00	.01	.00
Commute hrs	.00***	.00*	.00**	.00	.00	−.00	.00	.00	.00	.00*	.00	.00	.00	.00	.00
Education	.02	.01	.04*	.05***	.04**	.06**	.13***	.14***	.14***	.04*	.03	.05**	.02*	.01	.04*
Work overload	.22***	.23***	.23***	.16***	.15***	.17***	.22***	.24***	.22***	.38***	.39***	.39***	.31***	.31***	.36***
Deadlines	.00	.02	−.04	−.01	−.04	.02	.07*	.09*	.05	.06**	.07**	.06**	.07***	.07***	.06**
Competition	.07*	.11*	.02	.06*	.10*	.00	.12*	.17*	.07	.12**	.14***	.09*	.09***	.09*	.08*
Sovereignty	−.08***	−.05*	−.13***	.00	.02	−.01	.02	−.01	.06	−.01	.03	−.05*	.00	.03	−.04
Job autonomy	−.15**	−.17***	−.13**	−.15***	−.14***	−.19***	.11*	.09	.14*	−.15***	−.14***	−.14**	−.09***	−.08*	−.09*
Children present	.07	.07	.08	−.21*	−.26*	−.14	.07	.43*	−.41*	−.01	−.12	.06	.04	−.06	.08
No. of children	−.02	−.00	−.08	.02	.05	−.07	−.03	−.12	.11	.00	.04	−.03	.00	.02	−.01
Young child <12	.23***	.17*	.31**	.08	.07	.09	−.18*	−.29*	−.03	.19**	.08	.35***	.13*	.03	.31***
Spouse works	−.03	−.04	.07	.11	.09	.34*	−.11	−.10	−.44	.03	.09	−.09	.01	.08	−.19
Spousal hours	−.00	−.00	−.00	−.00	−.01	−.00	−.01	−.00	−.00	−.00	−.01	.00	−.00	−.00	.00
Time-based WHI	#	#	#	#	#	#	#	#	#	#	#	#	.13***	.16***	.05
Strain-based WHI	#	#	#	#	#	#	#	#	#	#	#	#	.26***	.28***	.22***
Overtime	#	#	#	#	#	#	#	#	#	#	#	#	−.00	.01	−.03
Adj. R^2 in (%)	17.8	19.0	15.4	13.0	11.9	15.6	30.6	20.2	28.6	36.0	35.5	40.3	43.6	45.5	43.7

Notes: * = $p < 0.05$; ** = $p < 0.01$; * = $p < 0.001$ (one-tailed test); (!) = two-tailed test. # = not included in the analysis.
Source: Time-competition data 2003.

Table 6 *Summary of expectations and results (partial effects), broken down by telehomework group and gender*

	Men			*Women*		
Expectations:	*THW category*	*Effect*	*Support* [b]	*THW category*	*Effect*	*Support* [b]
Telehomeworking reduces time-based WHI	Occassional	+	No	None		No
	Light	+	No	None		No
Telehomeworking reduces strain-based WHI	Occassional	+	No	None		No
	Heavy	+				
Telehomeworking increases strain-based WHI	Occassional	+	Partly	None		No
	Heavy	+				
Telehomeworking is associated with more overtime	Occassional	+	Partly	Occassional	+	Partly
	Heavy	+		Heavy	+	
Telehomeworking affects time pressure (Model 1)	Occassional	+	No	None	+	No
Telehomeworking has a time-pressure reducing capacity (Model2)	Occassional	+	Partly			Partly
	Heavy	−		Heavy	−	
Time-based WHI correlates positively with time pressure		+	Yes			No
Strain-based WHI correlates positively with time pressure		+	Yes		+	Yes
Overtime correlates positively with time pressure			No			No

Notes: [a]Statistically significant effect only found for the groups presented (reference group = on-site workers); + = positive effect; − = negative effect; [b] Partly = hypothesis is supported for some telehomeworking-categories, but not for others; occasional THW = 1 day per week; light THW = 1 day per week; heavy THW = 1 day per week.

Time-based WHI

In contrast to our expectations, telehomeworking men do not experience fewer problems harmonizing working activities and non-work activities (i.e. time-based WHI). Instead, occasional and light telehomeworking men reported more time-related problems combining work and family than their on-site-working equivalents. Several explanations might be given. First, higher levels of interference of working hours with household obligations were *drivers* for telehomeworking, but working at home one day per week or less does not suffice to reduce the level of time-based WHI to the level of that is experienced by on-site workers. Second, maybe a reduction of time-based WHI was not their primary reason for telehomeworking. Given that occasionally-telehomeworking men do more overtime, working extra hours may in fact increase their sense of time-based WHI. Third, generally speaking, working at home may make people more aware of the work/non-work interface. Surprisingly, however, none of the women telehomeworking categories experienced *more* or *less* difficulty harmonizing work and family schedules than their on-site equivalents. Possibly, any initial higher level of time-based conflict is reduced such that no significant differences with their on-site working peers are found. Moreover, women may be more used to combining tasks, and, hence, their experience of work–life interference is not affected by telehomeworking (cf. Sullivan and Lewis, 2001).

Strain-based WHI

We find that occasional and heavy telehomeworking men experience more trouble enjoying non-working time with friends and family for they more often keep thinking about work (i.e. strain-based WHI). The former finding is in line with Dikkers *et al.*, (2004). Possibly, occasional telehomeworking men use working at home as an *ad hoc* strategy to work in isolation, to have time to contemplate or to finish work in time, which is often one of the main drivers for telehomeworking (Fouarge *et al.*, 2004; Peters *et al.*, 2004). Also for heavy telehomeworking men, their substantial number of telehomeworking days may blur the physical and mental boundaries between work and home, expressing itself in more strain-based conflict as was hypothesized. Women-telehomeworkers' strain-based WHI, however, does not differ from their on-site working equivalents. Perhaps the presence of (young) children may 'prevent' them more than men from thinking about work during non-working hours as women are more likely to fit work demands around home-demands (Sullivan and Lewis, 2001). Hence, women may be better suited (or forced) to create a demarcation between their work and private lives than men.

Overtime

Our results showed working hours of occasional and heavy telehomeworking men and women to exceed contractual hours. Strikingly, light telehomeworking men and women do not report more overtime than their on-site working equivalents. One obvious explanation might be that these telehomeworkers have integrated a telehomeworking day into their weekly routines to be more flexible, to save commuting time, or to work more efficiently and undisturbed, not intending to do overtime. In contrast, for occasional telehomeworkers, telehomeworking may be an *ad hoc* strategy to cope with (extremely) high work demands as they occur. In fact, doing more overtime might exactly be the purpose of their telehomeworking strategy. Heavy telehomeworkers may do more overtime as they have less comparison with their non-telehomeworking peers. Moreover,

(heavy) telehomeworking practices are often accompanied by output demands (Peters and Van der Lippe, forthcoming) and more competition among co-workers which may be an incentive for their longer hours.

Time pressure

Only occasional telehomeworking men indicate to be more pressed for time than their on-site working peers. Obviously, the higher *average* levels of time pressure among occasional and light telehomeworking women presented earlier can not be attributed to the telehomeworking practice as such, but to other work and household conditions. Model 2 even shows that telehomeworking does have a time-pressure reducing capacity, but only for heavy male and female telehomeworkers. Also in this analysis, occasional telehomeworking men still reported higher levels of time pressure. The difference in time-pressure reducing potential between light and heavy teleworkers may be explained by accumulated 'telework know-how' through experience of the latter group.

Mediating variables

Looking into the partial effects of the mediating variables in Model 2, we find that a reduction of time-based conflict cuts men's time pressure, but not women's. Higher levels of strain-based WHI, however, increase both men's and women's feelings of time pressure. Strikingly, doing overtime does not increase men's nor women's time pressure. Three explanations may apply. First, the effect of doing overtime may be captured by an increase in work–home interference resulting from working extra hours. Second, although overtime leaves less time for non-work activities, it may reduce the time pressure that results from employees not being able to finish work within contractual working hours. Third, telehomeworking can make work more 'leisurely'.

Conclusion

This study showed that (heavy) telehomeworking practices do have a time-pressure reducing potential. Given the growing need of individual workers to harmonize their professional and private lives, and for organizations to cope with traffic jams and the loss of productive hours, telehomeworking can be a promising strategy. However, the current shift from close supervision to forms of control by positive reinforcement and output management have enabled telehomeworking practices, but can also bring about risks, especially when standards are constantly driven up. This might explain why (especially men's) heavy telehomeworking practices are often accompanied by higher levels of strain spilling over into the home domain and by longer working hours. In the short run, employers and employees might be pleased with the higher productivity or production levels that telehomeworking can bring about. In the long run, however, this situation can harm both the individual worker and the organization as being subject to these circumstances for a longer period of time runs parallel with psychological and physical disorders (Bakker and Geurts, 2004). To prevent strain from work spilling over into their private lives and, hence, to reduce time pressure, it is important for individual telehomeworkers to develop strategies for creating physical, temporal and psychological transitions between work and non-work roles (Nippert-Eng, 1996). While some employers might seek to alleviate these problems by offering time-management courses and emphasizing the importance of leisure time, more important is promoting a shift from a culture of face-hours to a culture of accessibility, preventing telehomeworkers from feeling they have to prove themselves to their managers and (on-site working)

colleagues, assuming the lack of 'checks and balances' to be one of the reasons for doing overtime.

The results of this study do not provide a clear-cut answer to the time-pressure question. They rather show that the impact of teleworking is complex and most likely mediated by work-coping/home-coping strategies as well as whether telework is an integrated, integral work–life response or an *ad hoc* crisis response. In the former, accumulated experience may be a critical time-pressure mitigator, whereas in the latter the crisis context itself may act essentially as a time-pressure exacerbater. As such, future research should focus on whether occasional telework in a crisis-response context is a more effective time-pressure reducer than on-site work.

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