

Healthy Work Revisited: Does Reducing Time Strain Promote Women's and Men's Well-Being?

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Abstract

We build on Karasek and Theorell (1990) to theorize and test the effects of changes in *time strain* (time demands and time control) in addition to job strain (job demands and job control) on employee health. We exploit a natural experiment, drawing on surveys from 659 employees at the headquarters of Best Buy Co., Inc. (in the Midwestern U.S.) fielded before and six months after the implementation of an organizational flexibility innovation, Results-Only Work Environment (ROWE) providing employees considerable flexibility around the time and timing of their work (Ressler & Thompson 2008). The ROWE flexibility initiative predicts changes in time control (but not time demands) for both women and men net of baseline home and job ecologies and changes in traditional job strain measures. Changes in time strain (increases in schedule control, time adequacy, decreases in overcommitment) predict improvement in self-reported health, energy, psychological well-being, mastery, somatic symptoms, psychological distress and emotional exhaustion, with some effects differing by gender. This study demonstrates the value of including time strain in theoretical and empirical models on the health effects of work conditions, showing a workplace flexibility innovation can change time control, and that time demand/control changes predict employee health-related outcomes, but differently for women and men. Results encourage inclusion of gender as a moderator and home as well as job ecological contexts in longitudinal models incorporating time strain and job strain as dynamic components of healthy work.

Keywords: Job demand-control, gender, healthy work, time strain, home ecologies, organizational change, flexibility

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Introduction

Scholars have increasingly focused on understanding the health of individuals embedded in particular social contexts (Berkman & Lochner, 2002; Stockdale et al., 2007), with job conditions in particular theorized as triggers of the stress process impacting health. Research shows that certain job conditions can promote, detract from, mediate, or moderate health-related outcomes, such as a sense of well-being, positive self-conceptions, self-reported health, somatic complaints, and distress (e.g. Muhonen & Torkelson, 2004; Karasek & Theorell, 1990; Keyes, 1998; Mirowsky & Ross 1998; Pearlin et al., 1981). But the real test of contextual effects is to try to *change* them and then assess the impacts of doing so.

This paper addresses the question: can shifts in temporal job conditions (time demands and time control) promote health and well-being? It makes four contributions to the study of healthy work. First, we build on the key job strain model (job demands and job control--see Karasek, 1979; Theorell & Karasek, 1996) pervading the occupational health literature by offering an additional *time strain model* incorporating time demands and time control. Second, we recognize the embeddedness of employees in multiple social environments by including baseline home ecologies (various combinations of home demands and home control) as well as baseline job ecologies (traditional job demands and job control). Third, we take advantage of a natural experiment (occurring whether we studied it or not) to test the effects of an *organizational innovation* on reducing time strain (by reducing time demands and/or increasing time control), assessing the potential moderating effects of *gender* at every step in the process. And fourth, we examine the *dynamics* of time strain over a six-month period to understand whether changes in time-related demands and control predict shifts in health-related outcomes.

We theorize *time demands and time control* (time strain) as having additive effects on well-being net of the classic job demands and job control (job strain) effects theorized by Karasek and Theorell (1990) and net as well of analogous home demands and home control (Ertel et al. 2008; Griffin et al. 2002). We draw on a natural experiment of an organizational innovation and two waves of survey data from employees at the headquarters of a major retail corporation (Best Buy Co, Inc) to test whether an organizational flexibility initiative reduces various dimensions of time strain, whether changes in time strain improve employees' health-related outcomes, and whether these effects differ by gender.

Background

Karasek (1979, p. 290) described job control as latitude: an employee's "potential control over his tasks and his conduct during the working day," operationalizing it as "decision authority" and "intellectual [or skill] discretion." Building on Karasek (1979) and Karasek and Theorell (1990), scholars have tested more complex and differentiated types of control (e.g. Elsass & Veiga, 1997; Carayon & Zijlstra, 1999). There is ample evidence in the occupational health literature linking job control to health and well-being, linking it to exhaustion (e.g. Karasek, 1979), cardio-vascular disease (Kivimaki et al. 2006), depressive symptoms (e.g. Karasek, 1979), happiness (e.g. Argyle, 1999), psychophysiological stress responses (e.g. Lundberg, 1996), blood pressure and mood (e.g. Rau & Triemer, 2004), and organizational wellness (Bennett et al., 2003).

There is also an emerging focus on home demands and home control (Ertel et al., 2008; Moen et al., 2008; Griffin et al., 2002; Chandola et al., 2004). Griffin and colleagues (2002) find that

low control at home is a strong predictor of depression and anxiety for both men and women; with home control a stronger predictor of women's anxiety than job control.

We argue that in today's post-Fordist work environment occupational stressors beyond traditional job demands and job control need to be theorized (Vanroelen et al. 2009). Working conditions and the labor force are both in flux, calling for new framings that move beyond existing models (Theorell, 2006). For example, Vanroelen and colleagues (2009) identify factors predicting health outcomes not captured in the job strain model, including immaterial demands, physical demands, control over the work environment, social relationships at work and employment uncertainty. We focus here on dimensions of *time strain* (employees' self-reported time demands and time control) by testing an innovation designed to both reduce time demands and increase time control and whether changes in time demands and time control impact employee health and well-being.

Time Demands

Time pressures are endemic to the contemporary U.S. work environment; professionals in particular have experienced a large increase in working hours and report the greatest gap between their ideal and actual work hours (Kalleberg 2008; Jacobs & Gerson 2004; Reynolds 2003). Recent studies have investigated the effects of work time captured in either actual work hours or work schedules on health (Kleiner & Pavalko, 2010; Davis et al., 2008; Florderus et al., 2009). We investigate the effects of two time demands: work hours and overcommitment, a psychosocial assessment of job pressures that don't "switch off" but continue to occupy one's thoughts.

We hypothesize that changes in time demands – work hours and overcommitment – predict health-related changes. Our sample regularly puts in long hours (on average 47.4 hours per week) in a corporate environment where long hours are expected (Kelly et al., 2010). Working long hours has been linked to poor mental health status, self-reported hypertension, and smoking (Artazcoz et al., 2009; Borg & Kristensen, 1999). In a cross-national study of civil servants in Britain, Finland and Japan, long (>9) work hours predicted poor physical functioning for Japanese and Finnish men net of job demands and job control, and was associated with poor mental functioning for Japanese men *and* women (Sekine et al., 2009). These findings suggest the need to consider gender as a potential moderator.

Overcommitment was originally theorized to capture the intrinsic efforts of certain personality types who are excessively preoccupied with their work (Kinman & Jones, 2008; Siegrist, 1986). We view overcommitment as a form of subjective time demand because the items in this measure captures rising job pressures. Evidence links overcommitment with health, predicting men's (but not women's) systolic blood pressure, with more pronounced cortisol awakening responses and higher cortisol outputs over the working day for overcommitted individuals (Steptoe et al., 2004), and poor self-reported health for both men and women, along with men's health one year later (Niedhammer et al., 2004).

Time Control

As with the job strain exemplar, our time strain model places special emphasis on control, in this case *time* control. Employees' degree of control over aspects of their jobs has long been theorized as conducive to health and well-being. Bandura (1982, p. 140) points out that having little ability to influence the circumstances of one's life can produce feelings of anxiety, futility, and despondency. Ross and Mirowsky (1989, p. 207) underscore a "sense of powerlessness arises from the inability to achieve one's ends, from inadequate resources and opportunities, from restricted alternatives, and from jobs in which one does not choose what to do and how to

do it.” Karasek and Theorell (1990) recognized the importance of job control (job latitude over how one does one’s job and over the skills used to do it). But there is also the matter of control over when and where one works. *Schedule control*, that is, the ability to decide when and where to do one’s job, may be an especially important job condition for the health and well-being of contemporary employees, given the increasing time pressures, time speed-up, and work-family time conflicts most are experiencing (Kelly & Moen, 2007; Moen et al., 2008; Thomas & Ganster, 1995; Hill et al., 2003).

However, time control is potentially broader than conditions of work, and may reflect time constraints more generally (such as in meeting occupational and family time demands and expectations – e.g. Hochschild, 1997; Thomas & Ganster, 1995; Vanrolen et al., 2009). We include *time adequacy* as a dimension of time control, capturing employees’ assessments of having “enough” time for oneself, for being with one’s family and participating in the community (Van Horn et al., 2001). A study of construction workers finds time adequacy predictive of work-to-family enrichment (Lingard et al., 2010). Included as well is a measure of baseline home ecologies that may affect perceptions of time control.

We hypothesize employees’ time control (schedule control and time adequacy) and time demands (work hours and overcommitment) are key ingredients affecting health-related outcomes. Increases in schedule control and time adequacy should predict improved health net of changes in traditional job control, as should reductions in time demands. We theorize these as dynamic processes, with health outcomes apt to shift in conjunction with changes in time demands and time control.

Gender

We theorize gender as a key marker of different experiences and different conditions at work and at home, proposing that the organizational flexibility initiative may differentially produce corresponding shifts in both time demands and time control, and shifts in time demands and time control may differently affect health-related outcomes for women and men. Research finds gender differences in time use (Bianchi & Raley 2005; Jacobs & Gerson 2004; Sayer et al., 2009), perceptions of time (Mattingly & Sayer 2006), and working conditions’ effects on health (Maume et al., 2009; Smock & Noonan 2005). Men also tend to have greater work-time or schedule control over their daily working hours than women (Ala-Mursula et al., 2005; Schieman & Young, 2011).

Methods

Data

We draw on data from a study of the ROWE initiative (Results-Only Work Environment) developed internally and implemented at the corporate headquarters for Best Buy Co., Inc., a Fortune 500 company (Ressler & Thompson 2008). The data come from two web-based surveys six months apart, distributed to employees before and after the implementation of ROWE. The quasi-experimental design comes from the absence of random assignment; instead there was a staggered rollout of ROWE, which provided us with a comparison group of those at the end of the cue. Those who went through the ROWE “treatment” are contrasted with those who had not done so as a comparison sample to see 1) whether participation in the ROWE innovation altered employees’ time demands and time control, and 2) whether changes in time demands and time control predicted changing health-related outcomes (Shadish et al., 2002; Strauss & Thomas 2008). A total of 659 employees completed both waves of the survey.

Employees moving through the ROWE innovation are told they do not need permission to modify their work schedules or their work location. Instead, employees can routinely change

when and where they work based on their individual needs and job responsibilities. Employees learn about the philosophy of ROWE through participating in four highly scripted and highly interactive workshop sessions discussing concerns and identifying new work practices focusing on results not time. (Moen et al., 2009; Kelly et al., 2010; Moen et al., 2011; Kelly et al., 2011)

Dependent variables

Self-reported health asks “In general, how would you say your health is?” with 5 being excellent and 1 being poor. *Somatic symptoms* are assessed through a count of how respondents answer (yes/no) whether they were afflicted over last four weeks with any of 15 symptoms: headache, constipation/diarrhea, muscle soreness, shortness of breath, tightness of chest, trembling/shaking, backache, cold/flu symptoms, heart pounding, nausea/upset stomach, hot or cold flashes, congestion, poor appetite, sore throat, and dizziness. *Energy* is a four-item subset of a scale on employee energy level during the past four weeks (Ware & Sherbourne 1992), from 1 ‘all of the time’ to 6 ‘none of the time’, including questions like “Did you feel worn out?” *Emotional exhaustion* scale is a five-item subset of items from the Maslach Burnout Inventory (Maslach & Jackson 1986). *Psychological Well-Being* is a six-item scale from Ryff and Keyes (1995) on employees’ general sense of well-being and outlook in life. *Personal mastery* is a seven item scale from Pearlin and Schooler (1978). *Psychological distress*, developed for the National Center for Health Statistics, measures overall personal distress over the last four weeks (Furukawa et al., 2003).

Independent variables

Job Strain and Job Ecologies Job control (decision latitude) is a combination of Karasek’s (1979) three-item decision authority scale, and a six-item skill discretion scale in terms of the skills they use on their job. Psychological job demands uses Belkic’s measures (Belkic et al., 2004) plus one effort item on interruptions and disturbances on the job (Siegrist et al., 2004). We replicate baseline job ecologies in Moen et al. (2008), using cluster analysis techniques, combining the Wave 1 measures of job control: decision latitude (which considers skill discretion and decision authority) and job demands (psychosocial job demands). The best fitting model suggests four job ecologies mirroring Karasek and Theorell’s typology with various combinations of high and lower (in this work environment there are no “low”) job demands, and high and low job control.

Home Ecologies. Perceptions of time strain may also be a function of demands and control on the home front. Replicating Moen et al. (2008), we operationalized home demands in terms of four dichotomous baseline variables: whether married or living with a partner, whether living with children younger than six, whether taking care of any infirm adults, and whether living with a child with a chronic health condition. A home control measure (two items) was also constructed mirroring Karasek’s (1979) job control measure.

Time Strain. Two measures capture time demands: work hours and overcommitment - a three item scale from Siegrist et al. (2004) gauging excessive effort on the job. Two time control scales consist of: schedule control, derived from Thomas and Ganster’s (1995) seven items indicating how much control employees have over when they work, and time adequacy, derived from Van Horn, Hellis and Snyder (2001) and Becker, Stuifbergen, Soo Oh, and Hall (1993) to assess employees’ having enough time to spend with family, community groups and for oneself.

Organizational Innovation We compare employees in the ROWE group with the comparison group across six months following the introduction of ROWE to half the sample.

Change in Job Strain, Home Strain and Time Strain Measures We test whether ROWE produces changes in time strain measures and whether changes in time strain produce

corresponding changes in health measures by subtracting Wave 1 baseline scores from Wave 2 scores. In multivariate modeling we estimate Wave 2 outcomes net of the Wave 1 measure that is included in the model. We also assess changes in employees' home lives with a Wave 2 measure summing changes in over the last six months (e.g., purchasing a home, birth/adoption of a child, etc.).

Analytic strategy

We assess whether participating in ROWE predicts changes in women's and men's time demands (work hours, overcommitment) and time control (schedule control, time adequacy), net of baseline job and home ecologies and changes in them. We then test whether changes in time strain predict changes in women's and men's health-related outcomes net of changes in job and home ecologies, using linear regression models with a lagged dependent-variable.

Baseline Constructs

Table 1 provides descriptive baseline results as well as changes in measures between survey waves for women and men. We also present baseline home ecologies derived from cluster analysis, revealing five home clusters. Two in every five respondents are in the "married couples, average home control" cluster. These married couples, with an average age of 31(women) and 32(men) tend to have no children at home, although one in five still has a school-age child. About one in five women and one in six men are in the "singles, high home control" cluster, with average ages of 32 (men) and 34 (women). Another 13.7% of our sample, men more than women, fall into an "adult care providers, low home control" cluster with an average overall age of 35. Women are more likely to be in the 8.1% of our sample who fit in the "parents of child with chronic health condition, low home control" cluster, with higher average ages (37 for men and 38 for women). Equal portions of women and men (17%) are in the "parents of preschoolers, low home control" cluster, with average ages of 33 and 34 respectively.

(Table 1 about here)

The best-fitting job ecology model consists of four clusters (as predicted in the job strain model): higher job demands/high job control, higher job demands/low job control, lower job demands/high job control, and lower job demands/low job control. (We use 'higher' and 'lower' given the nature of this professional sample who all have significant job demands; table not shown). There are no age differences but considerable gender differences, with men more apt to be in the higher demands, high control cluster(18.5% compared to 15.7%), and women more apt to be in the lower demands, low control cluster (32.4% to 23.9%). We find relationships between job and home clusters: those in the "singles, high control" home cluster are less likely to be in the "higher demands, high control" job cluster but more apt to be in the "lower demands, low control" job cluster. Respondents in the "adult care provider, low control" home cluster are more likely to be in the "higher demands, low control" job cluster, and those in the "married couples, average control" home cluster are more apt to be in the "higher demands, high control" job cluster (see Appendix A).

We also include baseline measures of both time demands (work hours, overcommitment) and time control (schedule control, time adequacy), finding men working longer hours than women (average 48.9 hours to 47.6 hours), but no statistically significant gender differences in baseline schedule control (contrary to some previous work –see Ala-Mursula et al., 2005; Schieman & Young, forthcoming) or in baseline time adequacy or overcommitment.

There are marginal gender differences in baseline health and well-being measures, with women scoring higher in self-reported health (3.77 to 3.65) and psychological well-being (5.10

to 5.00). Women also report a higher average number of somatic symptoms than men (3.7 to 3.1).

Results

Does ROWE Reduce Time Strain?

We theorized and find that ROWE promotes time control, especially for women. Participating in ROWE predicts an increase in schedule control, with the greatest increase experienced by women (0.577). Participating in ROWE also predicts an increase in time adequacy for women only (0.485). Note that these are net of any effects of baseline ecologies and any job demand or job control changes. Contrary to our hypothesis, we find no ROWE effects on time demands (work hours, overcommitment).

(Table 2 about here)

Baseline home ecologies have minimal effects on changes in time demands or time control. Compared to the singles cluster reference group, women the “parents with a preschooler” cluster report a decrease in time adequacy. Women in the reference group of lower demands/low control job ecology are the only ones reporting no increase in schedule control. Women in the higher job demands/ low job control cluster report decreased time adequacy. Women in a higher demands/ high control job cluster report increased work hours, while men in a higher demands cluster (regardless of job control level) report an increase in overcommitment.

Does ROWE Directly or Indirectly Promote Health and Well-Being?

We find no direct effects of ROWE on any of our health-related measures for either men or women, although there are some weak effects when including changes in time strain (Table 3).

(Table 3 about here)

Although there are some home and job ecology effects, what matters far more than these ecological contexts in predicting health changes are, as we hypothesized, changes in time strain. Specifically, increases in schedule control predict less emotional exhaustion and marginally reduce women’s psychological distress. For men, increases in time adequacy (even net of schedule control change) predict less psychological distress and greater psychological well-being, mastery, energy and self-reported health. Increases in time adequacy weakly predict a decrease in men’s and women’s emotional exhaustion. For women, increases in time adequacy also predicts increases in energy, decreases in somatic symptoms, and weakly predicts greater self-reported health.

Changes in time demands also predict health outcomes for both women and men: an increase in overcommitment predicts less mastery and energy and greater emotional exhaustion and psychological distress. An increase in overcommitment predicts a reduction in women’s psychological well-being and declines in men’s self-reported health together with an increase in men’s somatic symptoms. Contrary to expectations, an increase in work hours predicts women’s increased mastery and energy and weakly predicts a decrease in women’s psychological distress.

Discussion

Healthy Work, published by Karasek and Theorell in 1990, became a watershed book, underscoring importance of psychosocial working conditions in predicting health outcomes. They concluded that manageable job demands and especially high levels of job control are important components of healthy work. But in the 20 years since this classic was published the context of work has changed dramatically, with time overloads and pressures increasingly characterizing the lives of working women and men in the U.S. even as ever fewer employees have the support of a full-time homemaker to take care of their non-work obligations

(Hochschild, 1997; Jacobs & Gerson, 2004; Moen, 2003; Epstein & Kalleberg, 2004). Accordingly, we build on the job strain framework to theorize an additional time strain model affecting health-related outcomes. We control for both job and home ecologies (demands and control) at baseline to parse out the effects of time demands and time control, finding that time strain measures are related to but distinct from job strain or home strain measures.

Taking advantage of a natural experiment we examine the effects of an organizational flexibility innovation, ROWE, on changes in time strain (time demands and time control). The unique quasi-experimental design of this study allows us to compare changes in time strain among those who went through ROWE to the comparison group. We find that ROWE directly promotes time control (increases in schedule control and time adequacy), but does not affect time demands (work hours, overcommitment). This study thus provides evidence that a flexibility initiative can promote greater time control and that these effects are stronger for women.

These data also provide evidence that health outcomes are affected by changes in time strain, even though the ROWE flexibility initiative does not predict health outcome change over the six-month study period. are not directly produced by. A key part of the story is that, as hypothesized, health outcomes are impacted by changes in various dimensions of time strain, even net of any changes in job strain. Time control measures are clearly a fertile area of inquiry for seeking to understand ways to promote contemporary employees' well-being. We find increases in time adequacy improving women's and men's energy levels, men's self-reported health, psychological well-being, mastery, and psychological distress and women's somatic symptoms. Women employees with increased schedule control are more likely to experience less emotional exhaustion.

Time demands also matter for employee health, not in the form of work hours but rather, overcommitment. Employees who score higher on the overcommitment scale by Wave 2 experience increases in emotional exhaustion and psychological distress and decreases in mastery and energy. There are also gender-differentiated effects of increased overcommitment, which predicts decreases in self-reported health and increases in somatic symptoms (men), and decreases in psychological well-being (women). In some cases either home ecologies or job ecologies at baseline act to moderate the effects of ROWE or the effects of changes in time demands and time control on health outcomes.

. In sum, we have shown that a change in workplace policy and practices triggers changes in time control but not time demands. And changes in time control and time demands affect health-related outcomes. Finding gender differences is congruent with previous evidence suggesting that the effects of job conditions on employees' health differ depending on the family demands and social expectations that women and men experience outside of the workplace as well as within it. However, including home ecologies (home demands and home control) in our models reinforces existing evidence (Moen et al., 2008) that it is primarily *job* not home conditions that are paramount in shaping the health and well-being of employees. But changes in employees' home situation do predict declines in energy (for both men and women) and an increase in women's psychological distress, pointing to the need to further consider the dynamics of home as well as work contexts.

Limitations and Promising Future Directions

Scientific understanding of the relationship between conditions at work and employee health is based on narrow studies of people in particular occupations, particular family circumstances, particular socio-economic statuses – studies typically conducted in the cross-section. Given selection and causal direction issues, it is essential to have additional prospective experimental or

quasi-experimental studies such as this to examine changes in policies and practices, not simply differences in them.

But note a key limitation: this is very specific segment of the workforce, predominantly a white-collar, European-American, well-educated young sample of women and men employed at a large corporate headquarters in the midwest. Another key limitation: this study occurs over a six-month period only. Future research is needed on different types of workers, with differing home and work environments, and over longer periods of time. There is also the issue of contamination, since both those experiencing ROWE and those in the comparison group worked within the same building. Future research is required that entails a more rigorous experimental design with randomized assignment.

Nevertheless, we have shown the value of studying actual policy shifts, in this case the ROWE flexibility innovation, on shifts in the sense of time control of working women and men. While ROWE did not measurably improve health outcomes over the short six-month study period, we were able to chart the importance of changing time demands and time control for employee health and well-being. This research therefore points to the need for theorizing time strain as well as job strain as conditions affecting health, for dynamic models of change over time, and the need to theorize and investigate both home ecologies and changes in the home environment in addition to the work environment.

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Table 1: Descriptive Statistics of Dependent and Independent Variables in Wave 1 and Wave 2

Wave 1											Δ (Wave 2- Wave 1)										
Variable:	Full Sample				Women				Men				Full Sample			Women			Men		
	N	Mean or %	S.D.		Mean or %	S.D.		Mean or %	S.D.	Δ W-M	N	Δ Mean or %	S.D.	Δ Mean or %	S.D.	Δ W-M					
Gender	659																				
Women	319	51.6%																			
Men	340	48.4%																			
ROWE																					
ROWE	325	49.3%			157	48.3%		168	51.7%												
Non-ROWE	334	50.7%			162	48.5%		172	51.5%												
Home/Job Ecological Context																					
<i>Home Strain Ecology Clusters*</i>	556																				
Singles, High Home Control	103	18.5%			21.2%			16.0%													
Adult Care Providers, Low Home Control	76	13.7%			10.8%			16.4%													
Parents, Child Chronic Health, Low Home Control	45	8.1%			10.4%			5.9%													
Married, Average Home Control	234	42.1%			39.8%			44.3%													
Parents, Preschoolers, Low Home Control	98	17.6%			17.8%			17.4%													
<i>Job Strain Ecology Clusters*</i>	653																				
Lower Demands, Lower Control	183	28.0%			32.4%			23.9%													
Lower Demands, High Control	134	20.5%			17.3%			23.6%													
High Demands, Lower Control	224	34.3%			34.6%			34.0%													
High Demands, High Control	112	17.2%			15.7%			18.5%													
Home/Life Strain Change																					
Number of home/life strain changes between W1 and W2	659	0.85	1.08		0.93	1.15		0.77	1.01												
Job Strain Measures¹																					
Psychological Job Demands (scale: 1 -4)	653	2.96	(0.50)		2.95	(0.50)		2.98	(0.50)		-0.03		-0.03	(0.45)		-0.03	(0.43)	0.00			
Decision Latitude (Job Control) (scale: 1- 4)	654	2.93	(0.43)		2.88	(0.43)		2.97	(0.42)		-0.10	**	-0.02	(0.36)		-0.03	(0.35)	0.01			
Time Strain Measures																					
<i>Time Demands</i>																					
Work Hours	636	48.25	(6.83)		47.60	(6.93)		48.88	(6.67)		-1.28	*	1.21*	(7.03)		1.21**	(6.81)	-0.41			
Overcommitment (scale: 1- 5)	642	2.85	(0.97)		2.90	(0.98)		2.80	(0.95)		0.11		-0.01	(0.79)		0.08†	(0.79)	-0.09			
<i>Time Control</i>																					
Schedule Control (scale:1- 5)	649	3.22	(0.74)		3.20	(0.77)		3.23	(0.71)		-0.04		0.24***	(0.71)		0.17***	(0.68)	0.08			
Time Adequacy (scale: 1- 10)	645	5.08	(1.89)		5.02	(1.92)		5.15	(1.86)		-0.13		0.25**	(1.49)		0.05	(1.47)	0.21 †			
Well-being Measures																					
Self-reported Health (scale: 1- 5)	644	3.71	(0.84)		3.77	(0.80)		3.65	(0.87)		0.12	†	-0.07***	(0.70)		-0.07†	(0.67)	0.00			
Somatic Symptoms (scale: 0-15)	659	3.39	(2.46)		3.71	(2.39)		3.10	(2.49)		0.61	**	-0.04	(2.51)		-0.03	(2.50)	-0.03			
Energy (scale: 1- 6)	642	3.56	(0.87)		3.53	(0.87)		3.58	(0.87)		-0.05		-0.06†	(0.78)		-0.06	(0.81)	0.01			
Emotional Exhaustion (scale: 1- 7)	643	3.69	(0.98)		3.74	(0.99)		3.65	(0.97)		0.10		0.14***	(0.87)		0.12*	(0.93)	0.04 *			

Psychological Well-Being (scale: 1- 6)	640	5.05	(0.68)	5.10	(0.63)	5.00	(0.72)	0.10	†	614	-0.07**	(0.56)	-0.06†	(0.55)	-0.09**	(0.57)	0.03
Mastery (scale: 1- 6)	641	4.82	(0.80)	4.81	(0.79)	4.82	(0.81)	-0.01		615	-0.01	(0.66)	0.03	(0.64)	-0.04	(0.67)	0.07
Psychological Distress (scale: 0- 24)	633	4.62	(3.62)	4.80	(3.63)	4.46	(3.61)	0.34		594	-0.07	(3.19)	-0.37†	(3.27)	0.22	(3.10)	-0.59

*Note: See Job Ecology and Home Ecology table for descriptions of clusters; † p<0.10; * p<.05; ** p<.01; *** p<.001

¹Measures included in Job Strain Ecology

Table 2. Regression of Time Strain (Time Control and Time Demand) Measures at Wave 2: Unstandardized OLS coefficients by gender

	Time Control						Time Demands					
	Schedule Control Wave 2			Time Adequacy Wave 2			Work hours Wave 2			Overcommitment Wave 2		
	Model 2						Model 2					
	Men	Women		Men	Women		Men	Women		Men	Women	
<i>Home Ecologies^I</i>												
Adult care providers	0.065 (0.132)	0.193 (0.151)		-0.017 (0.270)	-0.471 (0.332)		2.192 (1.509)	-0.102 (1.551)		-0.225 (0.144)	0.143 (0.168)	
Parents,Child Hlth Cond.	0.103 (0.186)	0.112 (0.157)		-0.570 (0.381)	-0.329 (0.347)		-0.218 (2.093)	2.001 (1.628)		-0.324 (0.201)	0.002 (0.175)	
Married	0.028 (0.111)	-0.013 (0.107)		-0.077 (0.228)	-0.014 (0.231)		1.472 (1.276)	0.668 (1.106)		-0.119 (0.121)	-0.178 (0.117)	
Parents, Preschooler	0.215 (0.143)	-0.001 (0.143)		-0.169 (0.292)	-0.700* (0.310)		1.072 (1.637)	-2.215 (1.488)		-0.238 (0.154)	-0.071 (0.157)	
<i>Job Ecologies^{II}</i>												
Lo Job Demands, Hi Control	0.018 (0.115)	0.388** (0.130)		-0.212 (0.235)	0.362 (0.281)		1.842 (1.300)	-0.784 (1.344)		0.131 (0.125)	0.227 (0.142)	
Hi Job Demands, Hi Control	-0.108 (0.136)	0.291* (0.141)		-0.406 (0.279)	-0.164 (0.307)		1.986 (1.523)	5.055*** (1.464)		0.602*** (0.147)	0.154 (0.155)	
Hi Job Demands, Lo Control	-0.203+ (0.111)	0.241* (0.108)		-0.505* (0.227)	0.047 (0.234)		2.103+ (1.251)	1.606 (1.121)		0.627*** (0.120)	0.034 (0.119)	
<i>Time Strain, W1</i>												
Schedule Control	0.577*** (0.058)	0.535*** (0.057)		0.092 (0.118)	0.223+ (0.123)		0.161 (0.659)	0.199 (0.590)		0.020 (0.063)	-0.161* (0.063)	
Time Adequacy	0.026 (0.025)	0.009 (0.026)		0.563*** (0.052)	0.587*** (0.057)		-0.063 (0.291)	-0.159 (0.272)		-0.015 (0.028)	-0.034 (0.029)	
Work hours	-0.010+ (0.006)	-0.002 (0.006)		-0.028* (0.012)	-0.009 (0.014)		0.665*** (0.071)	0.466*** (0.067)		0.007 (0.007)	0.006 (0.007)	
Overcommitment	-0.006 (0.051)	-0.152** (0.049)		-0.152 (0.105)	-0.153 (0.106)		0.581 (0.594)	1.051* (0.504)		0.550*** (0.055)	0.574*** (0.054)	
<i>Org. Innovation</i>												
ROWE	0.286*** (0.080)	0.561*** (0.084)		0.172 (0.165)	0.485** (0.182)		-0.223 (0.907)	-0.208 (0.862)		0.088 (0.087)	-0.003 (0.092)	
<i>Home/Life Strain Changes</i>												
<i>Job Strain Change</i>												
Psych. job demands Change	-0.269** (0.094)	-0.133 (0.099)		-0.806*** (0.195)	-0.616** (0.215)		3.422** (1.060)	4.999*** (1.018)		0.696*** (0.104)	0.324** (0.110)	
Job Control Change	0.455*** (0.113)	0.422*** (0.115)		0.462* (0.231)	0.527* (0.248)		0.797 (1.312)	-2.270+ (1.190)		-0.201 (0.123)	0.037 (0.125)	
Constant	1.851*** (0.416)	1.752*** (0.421)		4.177*** (0.858)	2.441** (0.910)		13.170** (4.758)	22.040*** (4.379)		0.746 (0.455)	1.668*** (0.460)	
Observations	273	259		271	254		264	255		268	252	
R-squared	0.438	0.534		0.557	0.569		0.368	0.405		0.550	0.491	

*** = p<0.001 ** = p<0.01 * =p<0.05 † =p<0.10

Note: Unstandardized regression coefficients with standard errors shown in parentheses. Wave 1 lagged dependent variable italicized reference group: 'Singles; 'Lower job demands, Lower job control

Table 3. Regression of Health Outcomes at Wave 2 on ROWE, Job Strain Change and Time Strain Change: Unstandardized OLS coefficients by gender

Wave 2	Self-Reported Health		Somatic Symptoms		Energy		Psychological Well-Being		Emotional Exhaustion		Mastery		Psychological Distress	
	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>
Wave 1 measure	0.711*** (0.052)	0.515*** (0.057)	0.482*** (0.056)	0.597*** (0.065)	0.438*** (0.058)	0.629*** (0.054)	0.655*** (0.057)	0.631*** (0.053)	0.485*** (0.058)	0.605*** (0.050)	0.624*** (0.057)	0.599*** (0.048)	0.649*** (0.058)	0.534*** (0.057)
<i>Home Ecologies¹</i>														
Adult care providers	0.004 (0.143)	-0.338* (0.161)	0.086 (0.453)	0.597 (0.546)	0.196 (0.152)	0.007 (0.166)	0.088 (0.121)	0.091 (0.124)	-0.350* (0.168)	0.007 (0.156)	0.048 (0.139)	0.033 (0.139)	-0.189 (0.627)	0.180 (0.704)
Parents/Child Hlth Cond.	-0.143 (0.197)	-0.225 (0.169)	0.229 (0.625)	-0.019 (0.571)	-0.013 (0.213)	0.048 (0.170)	0.181 (0.167)	0.106 (0.128)	-0.243 (0.231)	-0.292* (0.163)	0.021 (0.193)	-0.071 (0.144)	-0.496 (0.894)	0.194 (0.733)
Married	0.004 (0.120)	-0.083 (0.111)	0.169 (0.379)	0.799* (0.377)	0.166 (0.128)	-0.044 (0.112)	0.045 (0.103)	0.110 (0.085)	-0.181 (0.141)	-0.066 (0.107)	-0.013 (0.117)	0.109 (0.095)	-0.228 (0.537)	0.025 (0.475)
Parents, Preschooler	0.089 (0.154)	-0.150 (0.153)	0.575 (0.488)	0.216 (0.518)	0.353* (0.166)	-0.005 (0.155)	0.106 (0.133)	0.008 (0.118)	-0.258 (0.181)	-0.273+ (0.148)	-0.010 (0.151)	0.123 (0.131)	-0.720 (0.694)	-1.120+ (0.670)
<i>Job Ecologies^{1/1}</i>														
Lo Job Demands, Hi Control	0.091 (0.122)	-0.312* (0.139)	-0.188 (0.389)	0.328 (0.472)	0.130 (0.130)	0.123 (0.141)	0.075 (0.108)	0.162 (0.107)	-0.328* (0.144)	-0.437** (0.135)	0.147 (0.122)	0.175 (0.120)	-0.433 (0.547)	-1.081+ (0.592)
Hi Job Demands, Hi Control	0.172 (0.147)	0.085 (0.154)	-0.339 (0.466)	0.259 (0.522)	0.191 (0.157)	0.236 (0.156)	0.117 (0.133)	0.216+ (0.117)	-0.248 (0.172)	-0.262+ (0.150)	0.163 (0.148)	0.108 (0.132)	-0.662 (0.657)	-1.290+ (0.663)
Hi Job Demands, Lo Control	0.062 (0.123)	0.031 (0.115)	-0.189 (0.390)	0.635 (0.390)	0.100 (0.131)	0.012 (0.117)	0.013 (0.106)	0.112 (0.088)	0.022 (0.147)	-0.043 (0.111)	0.079 (0.120)	0.079 (0.098)	-0.588 (0.546)	-0.989* (0.497)
<i>Time Strain, W1</i>														
Schedule Control	0.054 (0.068)	0.015 (0.073)	-0.260 (0.214)	-0.178 (0.248)	0.066 (0.072)	0.032 (0.074)	-0.022 (0.057)	0.035 (0.055)	-0.061 (0.080)	-0.102 (0.071)	0.101 (0.066)	0.010 (0.061)	-0.455 (0.306)	0.284 (0.307)
Time Adequacy	0.045 (0.032)	0.097** (0.031)	-0.267* (0.103)	-0.040 (0.106)	0.147*** (0.037)	0.042 (0.034)	0.033 (0.027)	0.009 (0.024)	-0.131*** (0.038)	-0.066* (0.030)	0.025 (0.032)	0.013 (0.027)	-0.317* (0.144)	-0.084 (0.136)
Work hours	-0.006 (0.007)	0.000 (0.008)	0.018 (0.022)	0.009 (0.026)	0.003 (0.008)	0.007 (0.008)	0.005 (0.006)	0.006 (0.006)	0.006 (0.008)	-0.007 (0.007)	0.003 (0.007)	0.023*** (0.006)	-0.018 (0.032)	-0.098** (0.032)
Overcommitment	-0.069 (0.064)	-0.009 (0.061)	0.143 (0.201)	0.161 (0.209)	-0.079 (0.068)	-0.212*** (0.062)	-0.124* (0.055)	-0.103* (0.047)	0.104 (0.075)	0.105+ (0.063)	-0.140* (0.063)	-0.204** (0.052)	0.805** (0.285)	1.198*** (0.270)
<i>Org. Innovation</i>														
ROWE	-0.078 (0.088)	0.020 (0.095)	0.008 (0.277)	-0.106 (0.324)	-0.072 (0.093)	0.170+ (0.096)	-0.033 (0.074)	-0.032 (0.072)	0.151 (0.102)	0.186* (0.092)	-0.124 (0.085)	-0.052 (0.081)	0.717+ (0.390)	0.535 (0.410)
<i>Home/Life Strain Changes</i>														
	-0.009 (0.039)	0.011 (0.037)	0.128 (0.125)	0.005 (0.127)	-0.088* (0.042)	-0.084* (0.038)	-0.044 (0.033)	0.016 (0.028)	0.027 (0.046)	0.009 (0.036)	-0.019 (0.038)	-0.044 (0.032)	0.402* (0.174)	0.147 (0.158)
<i>Job Strain Change</i>														
Psych. job demands Change	0.171 (0.111)	-0.074 (0.113)	-0.351 (0.351)	0.507 (0.382)	0.001 (0.118)	-0.141 (0.114)	0.100 (0.094)	0.042 (0.085)	-0.041 (0.130)	0.427*** (0.109)	0.048 (0.108)	-0.074 (0.095)	-0.631 (0.494)	0.462 (0.476)
Job Control Change	0.158 (0.126)	-0.142 (0.124)	-0.591 (0.402)	-0.203 (0.421)	0.242+ (0.135)	0.260* (0.125)	0.174 (0.106)	0.136 (0.094)	-0.643*** (0.148)	-0.730*** (0.119)	0.227+ (0.123)	0.272* (0.106)	-1.501* (0.590)	-0.839 (0.527)
<i>Time Strain Change</i>														
Time Control														
Schedule Control Change	0.033 (0.069)	-0.069 (0.073)	-0.285 (0.219)	-0.072 (0.250)	0.090 (0.074)	0.063 (0.075)	-0.044 (0.059)	0.049 (0.056)	-0.105 (0.081)	-0.184** (0.071)	0.029 (0.068)	0.020 (0.062)	-0.261 (0.313)	-0.596+ (0.316)
Time Adequacy Change	0.079* (0.035)	0.065+ (0.035)	-0.128 (0.112)	-0.248* (0.118)	0.149*** (0.038)	0.080* (0.035)	0.066* (0.030)	0.011 (0.026)	-0.078+ (0.041)	-0.055 (0.033)	0.086* (0.034)	0.018 (0.030)	-0.565*** (0.157)	-0.174 (0.147)
<i>Time Demands</i>														
Work Hours Change ¹	-0.001 (0.007)	-0.003 (0.008)	0.017 (0.022)	0.008 (0.026)	-0.005 (0.007)	0.016* (0.008)	0.003 (0.006)	0.006 (0.006)	0.009 (0.008)	-0.012 (0.007)	0.007 (0.007)	0.018** (0.007)	-0.036 (0.032)	-0.058+ (0.033)
Overcommitment Change	-0.198** (0.067)	0.006 (0.066)	0.587** (0.213)	0.163 (0.224)	-0.168* (0.072)	-0.138* (0.067)	-0.036 (0.056)	-0.177*** (0.050)	0.240** (0.079)	0.177** (0.064)	-0.136* (0.065)	-0.222*** (0.056)	0.880** (0.300)	1.243*** (0.278)
Constant	1.007+ (0.521)	1.358* (0.543)	2.392 (1.595)	0.798 (1.754)	0.898+ (0.534)	1.122* (0.517)	1.621*** (0.461)	1.483*** (0.437)	2.425*** (0.639)	2.506*** (0.536)	1.554** (0.512)	1.261** (0.468)	3.488 (2.292)	3.237 (2.178)
Observations	260	248	260	248	260	247	259	245	259	248	260	245	250	238
R-squared	0.566	0.418	0.410	0.383	0.485	0.555	0.525	0.482	0.514	0.654	0.519	0.544	0.592	0.534

*** = p<0.001 ** = p<0.01 * =p<0.05 † =p<0.10

Note: Unstandardized regression coefficients with standard errors shown in parentheses.

reference group: ¹ Singles; ^{1/1} Lower job demands, Lower job control

¹. Top code at increase of 20, and bottom code at decrease of 10