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Article

Trajectories of Worktime Control From Midlife to Retirement and Working Beyond Retirement Age

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ABSTRACT

The extent to which long-term individual-oriented flexibility in working hours is associated with working beyond retirement age is not known. The aims of the present study were to identify trajectories of worktime control (WTC) and to examine whether the membership of WTC trajectories was associated with working beyond individual's pensionable age. A total of 1,953 older employees participated in the study and had data up to 16 years before pensionable age. Group-based latent trajectory modeling was used to identify WTC trajectories and Cox proportional hazard regression models were used to examine the associations of WTC trajectories with duration of employment. Seven trajectories described WTC: "Stable very low" (7%), "Stable low" (21%), "Declined" (12%), "Stable mid-low" (28%), "Improved" (10%), "Stable high" (16%), and "Stable very high" (5%). When compared with the lowest WTC trajectory groups, trajectories of "Stable high/very high" (hazard ratio [HR] 1.34, 95% confidence interval [CI] 1.17–1.54) and "Improved" WTC (HR 1.49, 95% CI 1.25–1.78) were associated with longer duration of employment. Although the memberships of the "Stable high/very high" and "Improved" WTC trajectories correlated with gender, marital status, occupational position, and self-rated health, the association between WTC and duration of employment was not fully confounded or mediated by these factors. These findings support the hypothesis that having improved or constantly high control over working times from midlife to retirement age may prolong working lives at retirement age.

KEYWORDS: worktime control, flexible work, retirement, trajectory analysis, career

The number of people aged 60 years or older is expected to rise globally from 962 million in 2017 to 2.1 billion in 2050 (United Nations, 2017). In addition, many high-income countries, including Finland, have low birth rates and thus a need to increase labor market participation in all age groups to prevent a rise in the old-age dependency ratio (Rechel et al., 2013). In response to governments' efforts to support extended working lives, working postretirement age has become more common (Behr & Bennett, 2015; Carlstedt et al., 2018). This is often known as "bridge employment," which is defined as paid work after retirement, either for the same employer as before, for a new employer, or as self-employed (Behr & Bennett, 2015) although it usually refers to engagement in a part-time job after formal retirement (Dingemans & Henkens, 2014). Previous research has identified both facilitators and barriers to extending employment postretirement. Facilitators may include financial rewards, learning and updating skills, stimulating work, and high job satisfaction, whereas common barriers are a stressful psychosocial work environment and ageism, that is, negative attitudes toward aged employees at the workplace (Carlstedt et al., 2018). In studies on public-sector employees, high socioeconomic status (Virtanen et al., 2017), good working conditions, as well as good self-reported health near retirement age have been associated with working beyond the pensionable age (Virtanen et al., 2014, 2017). Earlier

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studies have also shown that good physical and mental health (van der Zwaan et al., 2019) and good functional capacity (Scharn et al., 2017; Stafford et al., 2017) may increase working beyond retirement age.

Of the psychosocial factors at work, worktime control (WTC) has been shown to predict working life beyond retirement age (Virtanen et al., 2014, 2017). WTC is defined as "an employee's possibilities of control over the duration, position and distribution of worktime, i.e., autonomy with regard to worktime" (Lundberg & Cooper, 2010) or as the "opportunity to gain leaves and vacations, to obtain the start and end times one needs, to compress or extend working hours, and to choose where to work" (Correll et al., 2014; Gerstel & Clawson, 2018). WTC is thus flexibility based on employees' rather than employers' needs and the positive effect on the motivation to continue working longer is assumed to be linked to greater possibilities to balance one's resources to better cope with job- and home-based demands (Ala-Mursula et al., 2006).

Although WTC has been studied in relation to employee health, well-being, work capacity, and timing of retirement (Ala-Mursula et al., 2004; Nijp et al., 2012; Vahtera et al., 2010; Virtanen et al., 2014), the focus of these studies has been on current work context. In contrast, the extent to which long-term WTC from midlife to late career might be associated with future extensions of employment beyond pensionable age is unknown although a life-course developmental approach provides a justified theoretical background to expect long-term impacts (Amick et al., 2016; Kuh et al., 2013; Wan et al., 2018). This study contributes to the existing literature by taking a dynamic life-course approach over a longer period of time than in previous studies. We were able to explore whether different developmental trajectories of WTC from midlife to older age can be identified. Furthermore, to increase understanding of the long-term impact of WTC on extended working lives, we applied several theories of motivational and health psychology, such as the job strain model (Karasek & Theorell, 1990), the effort-recovery theory (Mejman & Mulder, 1998), self-determination theory (Cagne & Deci, 2005), and theories on work-home interaction (Geurts & Demerouti, 2003).

THEORY AND HYPOTHESES

The question of flexibility in a working life context is about whose flexibility we are talking about, employers' or employees' (Gerstel & Clawson, 2018). For the employer, flexibility typically means adjustments of employees and working hours to business fluctuations. However, the dominance of this kind of employer-oriented flexibility may lead to employee stress due to unpredictability and problems in balancing work and private life (Gerstel & Clawson, 2018; Nijp et al., 2012). The employee-driven/individual-oriented flexibility approach, in turn, originates in Germany during the 1960s and spread to other countries because of its positive impacts on employee well-being (Pierce et al., 1989). There are at least three driving factors to understand the importance and popularity of individual-oriented flexibility in working life from organizational perspective: 1) to obtain sustainable healthy work with opportunities for employees to recover from demands at work; 2) to successfully balance work and family life in a changing working life which increases integration between these two; and 3) to fulfill organizations' needs to attain and maintain a committed, skilled and healthy workforce (Nijp, 2016; Vanajan et al., 2020). Applying practices in the workplace that increase employee WTC definitely is one of the ways to increase individual-oriented flexibility.

However, workplace flexibility and WTC are also gender and social class issues. It has been suggested that employees with a high occupational position, more often men than women, are those who typically have more flexibility to balance their work and family life. Gerstel and Clawson (2018) have noted that social role norms may sometimes prevent people from taking advantage of this opportunity. From wider gender, race, and social class perspectives, "doing" rather than "being" is part of the formation of gender, race and class (Gerstel & Clawson, 2018). Thus, in part these identities are constructed by adopting from the culture of what is meant by masculinity and femininity, race, and social class, developed and maintained in social interactions. This research line emphasizes processes in the control of time, making visible the relationships, organizations and institutions that shape time and underlie gender and social class inequalities. Working hours of an individual are interwoven in a wider web of time schedules, and unpredictability of working hours is a characteristic which does not only affect the employee, but also other individuals, institutions, and organizations. Predictability (or control over time), on the other hand, is a privilege of employees with more resources and flexibility in their work (Gerstel & Clawson, 2018).

Several motivational and occupational health psychological theories can explain the benefits of high WTC on employee health and well-being. First, the job strain model emphasizes job control as a crucial characteristic of healthy work (Karasek & Theorell, 1990). The model proposes that job demands, job control, and support from colleagues and supervisors are key characteristics of employees' experiences of both unfavorable strain (a combination of high demands and low control) and favorable active work (a combination of high demands and high control) with the possibility for learning. One aspect of control at work is control over working times. As such, flexibility stemming from high WTC may act as a coping mechanism against high demands at work and therefore support health and well-being and be an incentive to work longer (Beckers et al., 2012). Another important determinant of well-being at work is a balance between effort and recovery in a the effort-recovery theory (Mejman & Mulder, 1998). High WTC may be hypothesized to increase possibilities to recovery by allowing an employee to take breaks and to adjust working hours according to experienced need of recovery. Furthermore, the concept of control is central in the self-determination theory (Cagne & Deci, 2005), which proposes that autonomy, competence, and relatedness (i.e., self-determination) are among the basic psychological needs of human beings and that satisfying these needs have an energizing impact on people's psychological processes and behaviors. Therefore, not only the flexibility in actual working times, but also the opportunity to self-determine working hours and associated energization may be among the main mechanisms that link high WTC to increased work motivation and wellbeing (Nijp et al., 2015). Finally, according to theories on work-home interaction (Geurts & Demerouti, 2003), the beneficial effect of WTC may relate to better work–nonwork balance by offering opportunities to adjust working times to private life needs and obligations.

Measuring long-term trajectories of WTC instead of the level of WTC at a single time point before retirement allows expanding research of WTC toward addressing stress theories, which postulate that long-term stress has more detrimental effect on health and well-being than short-term stress (Kivimaki & Steptoe, 2018), and

life-course models that emphasize the accumulation and trajectories of exposures (Kuh et al., 2013; Madero-Cabib et al., 2016). In these conceptual frameworks, individuals are viewed in the context of extended life history including both working age and the life stage following labor market exit. The working life-course model specifies the life-course approach to individual's working life history and potential accumulation of negative experiences in the labor market throughout working years (Amick et al., 2016). Thus, prolonged adverse working conditions, such as low WTC can be hypothesized to have a particularly strong impact on employees' decisions to exit from work.

This is the first study that describes with a data-driven approach what kind of WTC trajectories can be identified over a long period of time from midlife to retirement age. There are no previous studies on long-term stability of WTC; thus, we do not set hypotheses on the shape of trajectories. However, it could be expected that there is variability in the long-term level of WTC as previous studies in general have found variation in WTC levels among employees. The second aim of this study is to examine the relationship of those trajectories with working beyond pensionable age.

Based on the above described theoretical and empirical background, we have three hypotheses to our study:

Hypothesis 1: Separate latent trajectories with high and low levels of WTC can be identified during a 16-year follow-up.

Hypothesis 2: Trajectories with high levels of WTC are associated with a greater likelihood of working beyond pensionable age than trajectories with low levels of WTC.

There is also evidence that different forms of workplace flexibility are patterned by gender and occupational position. Those with a high occupational position, more often men than women, have a high level of workplace flexibility to balance their work and family life (Gerstel & Clawson, 2018) and previous studies on WTC have shown that the perception of high WTC is more common among men and employees with a high occupational position (Virtanen et al., 2017).

Hypothesis 3: Men and employees with high occupational position are more likely to have more favorable trajectories of WTC.

METHOD

Study context

This study was carried out in the context of Finnish public sector, including municipal and healthcare services. Therefore, the majority of participants were women, having jobs, for example, in schools, kindergartens, hospitals, and nursing homes. In Finland, the Public Sector Pensions Act regulates the retirement ages of public-sector employees. From 2005 onwards, public-sector employees could retire on a statutory basis at the age of 63 years but at the latest before the age of 68 years. Following a pension reform in January 2017, each age group has their own retirement age, which is tied to life expectancy, although the general rule of 63–68 years still applies. The institute for public-sector pensions in Finland (Keva) has calculated an individual pensionable date for each employee accordingly. Postponing retirement from this date will accrue pension income level.

Participants and study design

The Finnish Retirement and Aging (FIREA) study is an ongoing study of older public-sector employees in Finland, established in 2013. The eligible population for the FIREA study cohort included all public-sector employees whose statutory retirement date was between 2014 and 2019 and who were working either in one of the 27 municipalities in Southwest Finland or in one of the selected nine cities or five hospital districts around Finland in 2012 (Leskinen et al., 2018). Participants were first contacted 18 months prior to their stated retirement date, which was obtained from Keva, the public-sector pension provider in Finland, by sending them a questionnaire. The questionnaire was then sent annually, at least four times in total. There are a total of 6,783 participants in the FIREA study. By the end of 2019, a total of 4,013 FIREA participants had responded to the questionnaire at least once before the individual pensionable date and reported their actual retirement date (or whether they were working beyond their pensionable date).

Most of the FIREA participants (91%) had participated in the Finnish Public Sector (FPS) study (Kivimäki et al., 2007) during their work career. FPS is a large ongoing cohort study that has been collecting data on work and health through biennial surveys among public-sector employees in Finland since the 1990s. For the current study, we included those FIREA participants who had given permission to link their data from the FPS surveys to the data from the FIREA surveys and who had responded at least once to the question about WTC while still at work (N = 2,425). For trajectory analysis, we further restricted the study population to those participants who had responded to the question about WTC at least once 10 years or more prior to pensionable age (years −16, −14, −12, −10) and at least once within the last 8 years prior to pensionable age (years −8, −6, −4, −2). The analytic study sample comprised 1,953 participants. The participants provided information on WTC on average at 6.3 (SD 1.3) of the 8 possible measurement points during the 16-year follow-up. The FIREA and the FPS studies were conducted in line with the Declaration of Helsinki. The FIREA study was approved by the Ethics Committee of the Hospital District of Southwest Finland and the FPS by the Ethics Committee of the Hospital District of Helsinki and Uusimaa.

Supplementary Table 1 compares characteristics of the population of the current study and the entire FIREA study population. There were no marked differences in terms of age, gender, marital status, or WTC. Participants in the current study had slightly higher occupational position and better self-rated health than those in the entire FIREA study population. However, these differences were modest and therefore the study sample can be considered representative of the entire FIREA study population.

Measures

Worktime control

Information on WTC was obtained using a standard questionnaire in which the participants were asked to evaluate on a scale from 1 (very little) to 5 (very much) how much they could influence the following seven aspects of their working time: length of a workday, starting and ending times of the workday, breaks during the workday, handling of private matters during the workday, scheduling of work shifts, scheduling of vacations and paid days

off, and the taking of unpaid leave (Ala-Mursula et al., 2004; Vahtera et al., 2010). Cronbach's α for the scale was .88. At each measurement point, the mean score of all items was calculated to indicate overall WTC.

Timing of retirement

For each employee, the Institute for Public Sector Pensions has calculated an individual pensionable date based on their employment history. Postponing retirement from this date will accrue pension income level. In this study, the actual retirement date was self-reported and obtained from repeated surveys. A transition from work to full-time old-age pension was regarded as the retirement event. We calculated the difference between the individual pensionable date and the actual retirement date in days. In the analysis, extended employment was analyzed as a continuous variable (number of days after pensionable date).

Covariates

Information from the last FIREA questionnaire before individual pensionable date was used to measure potential covariates that were associated with WTC trajectories and/or extension of employment. Date of birth, gender and occupational title of the participants were obtained from the pension insurance provider. The occupational titles were coded according to the International Standard Classification of Occupations (ISCO) and categorized into three groups: high (ISCO classes 1–2, e.g., teachers, physicians), intermediate (ISCO classes 3–4, e.g., registered nurses, technicians) and low (ISCO classes 5–9, e.g., cleaners, maintenance workers). Marital status was based on survey and the response alternatives (married/cohabiting, single, divorced, widowed) were categorized into married/cohabiting versus the rest of the options. Self-rated health was assessed by asking participants to rate their overall health status on a 5-point scale, and it was further dichotomized (good: good and quite good; suboptimal: average, quite poor, and poor).

Data analysis

To illustrate changes and heterogeneity in WTC over the 16 years preceding retirement, we used a data-driven approach, that is, group-based latent trajectory analysis, which enables the identification of distinctive groups of individuals from the data who show similar developmental trajectories over time (Nagin, 2005). To estimate latent trajectories, we used PROC TRAJ macro in the statistical software SAS 9.4 (SAS Institute Inc., Cary, NC) and determined the optimal number of trajectories by choosing number and order of regression parameters (Nagin, 2005). We fitted an increasing number of trajectory models with a curvilinear polynomial shape for WTC until no improvement in the model fit was observed. Assessment of model fit was based on Bayesian information criterion values (BIC), Akaike information criterion values, log-likelihood, and posterior probabilities. We also assessed by visually inspecting the trajectory solutions whether the different models including different number of trajectories distinguished distinctive features of the data in a parsimonious way. We also considered the proportion of each trajectory when choosing the trajectory model for further analysis.

Next, we examined descriptive characteristics of participants and whether there were differences between trajectory groups using *t*-test (for age) or χ^2 tests (other variables). Then, we examined the association between the identified trajectory groups and duration of employment beyond pensionable age by using Kaplan–Meier survival function plots and Cox proportional hazard regression models. We calculated person-time for each participant as days from the individual pensionable date to the actual retirement date. If the participant had not retired at the time of the last available survey, the person-time was from the individual pensionable date to the date of the last survey. The "event" in the model was retirement and the time until the event was from the pensionable date to either the actual retirement date, last survey date or the end of the 2-year follow-up, whichever occurred first. Nonretired were right-censored either at the last survey date or at the end of the 2-year follow-up. Proportional hazards assumption was investigated for all Cox models by testing the interactions with time (log transformed), and the assumptions were not violated. The Cox proportional hazard regression models were initially adjusted for age and gender. The following models additionally included occupational status (Model 2), marital status (Model 3), and self-rated health (Model 4). We also examined whether the association between WTC trajectories and duration of employment was dependent on participant's gender or occupational group. This was done by adding interaction terms gender × trajectory groups and occupational status × trajectory groups to the Cox regression models.

All analyses were performed using statistical software SAS version 9.4 (SAS Institute Inc., Cary, NC).

RESULTS

Latent trajectories

Latent trajectory analysis showed improving model fit statistics with increasing number of trajectory groups (Table 1). The eight-class and nine-class models had lower BIC values, but one or more classes in the models had low posterior probabilities and were marginally representative in terms of size and the proportion of end samples (the smallest groups 2.3% and 1.8%, respectively). In addition, there was a sparse difference in BIC values of seven- and eight-class models. Therefore, we favored the seven-class model that had a higher average posterior probability and a greater number of participants in the smallest group. However, we further merged groups from 7 to 5 for analytical purposes because with five classes we had a sufficient number of participants for analyses. Figure 1 shows the original seven latent class trajectories for WTC over 16 years with a maximum of eight measurement points. Five of the trajectories represented stable level of WTC over time: "Stable very low" (7%), "Stable low" (21%), "Stable mid-low" (28%), "Stable high" (16%), and "Stable very high" (5%). In addition, one trajectory showed improvement in WTC, that is, "Improved" (10%), and another one a decrease in WTC, that is, "Declined" (12%).

Characteristics of participants and their associations with WTC trajectories

Descriptive statistics of the participants (mean age, numbers, and proportions by covariate groups and WTC categories) are presented in Table 2. There were proportionally more men in the "Stable high" and "Stable very high" WTC trajectory groups and there was a strong association of higher occupational position and good self-rated health with a more advantageous WTC trajectories. Being married/cohabiting was more common in "Declined,"

Table 1. Model fit statistics of the latent trajectory analysis from polynomial models with one to nine trajectories of worktime control.

Number of trajectories	Shape	BIC	AIC	Log-likelihood	Average posterior probabilities	Smallest group (%)
1	4	−16,004.2	−15,987.5	−15,981.5	1	100
2	44	−12,951.4	−12,917.9	−12,905.9	.974/.964	40.9
3	444	−11,978.5	−11,928.3	−11,910.3	.932/.926/.946	25.6
4	4444	−11,626.5	−11,559.6	−11,535.6	.928/.904/.900/.909	12.7
5	44444	−11,454.9	−11,371.2	−11,341.2	.898/.868/.871/.898/.921	6.6
6	444444	−11,397.3	−11,296.9	−11,260.9	.864/.821/.834/.829/.885/.887	7.3
7	**4444444**	**−11,327.4**	**−11,210.3**	**−11,168.3**	**.863/.838/.741/.821/.737/.882/.900**	**5.2**
8	44444444	−11,290.4	−11,156.6	−11,108.6	.870/.838/.752/.813/.772/.859/.862/.915	2.3
9	444444444	−11,273.5	−11,122.9	−11,068.9	.865/.833/.768/.801/.788/.764/.854/.828/.913	1.8

Note. AIC = Akaike information criterion; BIC = Bayes information criterion. The chosen trajectory model (7-trajectory solution) is shown in bold. Polynomial function 4 refers to curvilinear linear shape of trajectory.

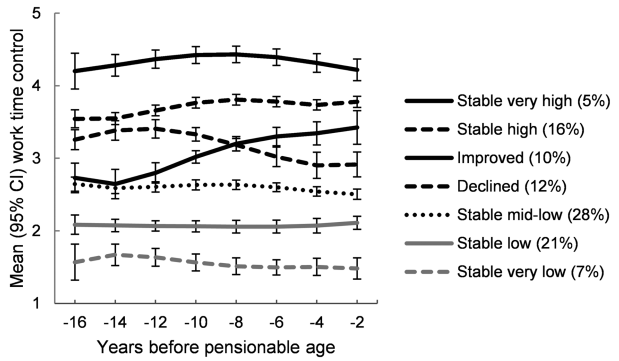


Figure 1. Trajectories of the mean level of worktime control over 16 years prior to pensionable age.

"Improved," "Stable high," and "Stable very high" than in the other trajectory groups.

Trajectories of WTC and duration of employment after retirement

Kaplan–Meier curves in Figure 2 shows the duration of employment after retirement by WTC trajectory groups. One year after pensionable date, the proportion of people who continued working was 15% in the "Stable very low," 13% in the "Stable low," 16% in the "Stable mid-low," 16% in the "Declined," 21% in the "Stable high," 23% in the "Stable very high," and 28% in the "Improved" WTC trajectory groups. Of the participants with stable high/very high WTC trajectories, 11% were employed after 2 years of their pensionable date, whereas among those with stable low/very low trajectories, the proportion employed was 6%.

Table 3 shows the results from the seven-trajectory solution with Cox regression analysis using the lowest WTC trajectory group "Stable very low" as the reference group. Due to the small number of participants in the "Stable very low" group (n = 136), only "Improved" WTC trajectory group showed statistically significant hazards for working longer (HR = 1.31, 95% confidence interval [CI] 1.03–1.66; fully adjusted model). To secure sufficient statistical power for group comparisons, we combined the two lowest ("Stable very low" and "Stable low") and highest ("Stable very high" and "Stable high") trajectory groups because the trajectories were stable over time and differed only by 0.5 points in the mean WTC level. These two trajectory groups also resembled each other in the duration of employment (Figure 2).

In this trajectory solution reduced to five trajectories (Table 4), when other WTC trajectories were compared with "Stable low/very low", in the age- and gender-adjusted model, "Improved" (HR = 1.49, 95% CI 1.25–1.78) and "Stable high/very high" trajectories (HR = 1.34, 95% CI 1.17–1.54) were associated with longer duration of employment, whereas "Stable mid-low" and "Declined" were not. In the subsequent models, the greatest attenuation of HRs was observed after adjustment for occupational position (HRs = 1.37, 95% CI 1.14–1.64 and 1.17, 95% CI 1.01–1.36, for "Improved" and "Stable high/very high," respectively). Adjustment for marital status and self-rated health did not markedly change the estimates for "Improved" trajectory (HR = 1.35, 95% CI 1.13–1.62). Instead, "Stable high/very high" trajectory was no longer statistically significantly different from "Stable low/very low" trajectory (HR = 1.14, 95% CI 0.98–1.33). There was no gender × trajectory group interaction (p = .942) or occupational position × trajectory group interaction (p = .279) working longer beyond pensionable age.

DISCUSSION

In the present study, we used repeat data from public-sector employees up to 16 years before retirement age, which enabled us to identify latent trajectories of WTC from midlife to retirement. Identification of latent trajectories gives support to our hypothesis on the existing developmental trajectories of WTC over the adult working life course and the trajectories were relatively stable. However, we recognized two developmental trajectories with a change: one with a declining trajectory and one with an improving trajectory. We are not aware of previous studies examining long-term trajectories of WTC and their associations with extended employment beyond pensionable age. When compared to a persistently low WTC trajectories, a "Stable high/very high" and an "Improved" WTC trajectories were associated with a 1.34 and 1.49 times likelihood, respectively, of extending employment.

Our hypothesis of the association between high-level WTC trajectories was supported. Serial adjustments revealed that differences in occupational position and gender in relation to WTC explained a large part, but not all of the association between "Stable high/very high" and

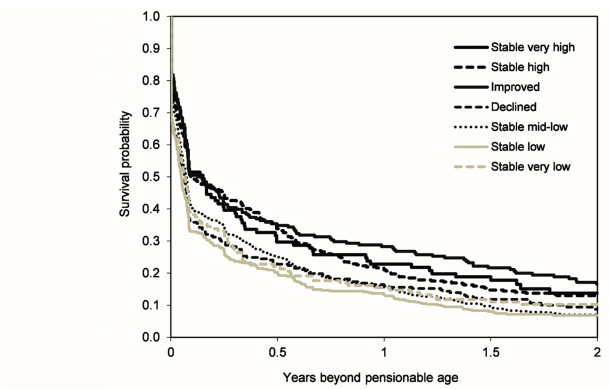
Table 2. Descriptive characteristics of study population by worktime control trajectory groups.

			Worktime control trajectory groups														
	All		Stable very low		Stable low		Declined		Stable mid–low		Improved		Stable high		Stable very high		
N (%)	1,953		136 (7)		410 (21)		237 (12)		552 (28)		198 (10)		319 (16)		101 (5)		
Variables	Mean	SD	Mean	SD	Mean	SD	SD	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	P-value
Age, years	63.2	1.1	63.2	1.4	63.1	1.2	63.1	1.0	63.2	1.1	63.4	1.0	63.2	0.9	63.4	0.9	0.027
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Gender																	<.0001
Women	1,592	81.5	118	86.8	344	83.9	186	78.5	471	85.3	163	82.3	238	74.6	72	71.3	
Men	361	18.5	18	13.2	66	16.1	51	21.5	81	14.7	35	17.7	81	25.4	29	28.7	
Occupational status																	<.0001
High	736	37.7	57	41.9	83	20.2	111	46.8	137	24.9	90	45.5	187	58.6	71	71.0	
Intermediate	499	25.6	16	11.8	72	17.6	71	30.0	143	26.0	62	31.3	111	34.8	24	24.0	
Low	715	36.7	63	46.3	255	62.2	55	23.2	270	49.1	46	23.2	21	6.6	5	5.0	
Married or cohabiting																	0.031
Yes	1387	73.0	95	70.9	278	70.2	178	77.7	371	69.1	152	77.2	233	76.1	80	79.2	
No	513	27.0	39	29.1	118	29.8	51	22.3	166	30.9	45	22.8	73	23.9	21	20.8	
Self-rated health																	<.0001
Good	1463	75.1	103	75.4	280	68.3	162	68.6	418	75.9	156	79.2	257	80.8	87	86.1	
Suboptimal	486	24.9	33	24.3	130	31.7	74	31.4	133	24.1	41	20.8	61	19.2	14	13.9	

Note. *P*-values indicate the difference between trajectory groups in *t*-test (age) or χ^2 tests (other variables).

"Improved" WTC trajectories and extended employment although both associations remained statistically significant. However, the association with "Stable high/very high" attenuated to nonsignificant after final adjustment for self-rated health. Our results are in agreement with a previous prospective study, which showed that high WTC, measured at a single time point, predicted working beyond pensionable age (Virtanen et al., 2014), but in the present study, we had the possibility to examine how WTC developed over long time.

Our findings suggest that perceived WTC from midlife to older age may be an important predictor of the duration of working life. Another novel finding is that a favorable change, that is, an increasing trend in WTC over time is associated with extended working lives. The positive aspects of WTC include possibilities to counteract the adverse effects arising from demanding working conditions and domestic work, and these improved coping opportunities may further increase health, well-being, and motivation to work longer (Ala-Mursula et al., 2006; Gerstel & Clawson, 2018; Nijp, 2016; Nijp et al., 2012). Our findings are consistent with the general life-course model in which accumulation of disadvantage is a central concept (Kuh et al., 2013; Madero-Cabib et al., 2016), and with the working life-course model, which emphasizes working life histories and accumulation of negative experiences in the labor market throughout the adult life course (Amick et al., 2016). Theories of occupational health psychology, the job strain model (Karasek & Theorell, 1990), the effort-recovery theory (Mejman & Mulder, 1998), self-determination theory (Cagne & Deci, 2005), and the theories on work–home interaction (Geurts & Demerouti, 2003) were also indirectly supported, as WTC captures different aspects of psychological well-being, such as recovery possibilities, fulfillment of the basic need for autonomy, and the possibility for adjusting working hours according to domestic demands. The findings of our study are also in line with the idea that high WTC is an important aspect of the individual-oriented flexibility approach (Nijp, 2016; Pierce et al., 1989).



Trajectory	Number of participants still employed				
Stable very high	101	30	23	18	10
Stable high	319	108	67	47	35
Improved	198	69	56	42	29
Declined	237	54	38	26	13
Stable mid-low	552	139	86	49	32
Stable low	410	83	54	29	21
Stable very low	136	30	21	16	13

Figure 2. Kaplan–Meier curves showing the probability of extending employment beyond pensionable age by worktime control trajectory groups.

Our findings also support the hypothesis that there is a discrepancy in WTC between genders and occupational classes, as suggested by Gerstel and Clawson (2018). Gender discrepancy is an issue that has incorporated a number of different viewpoints in retirement research (Bordia et al., 2020). In a recent study, for example, high WTC was found to partially explain the higher likelihood of employees with a high occupational position to extend their employment beyond retirement age compared to those with a low occupational position (Virtanen et al., 2017). This suggests that employees in high occupational positions may have a stronger incentive to continue working because of high individual flexibility. Supporting this hypothesis, we found that employees with high occupational position were overrepresented in the high WTC trajectories. These findings are consistent with the notion that control over working times is one of the factors that shapes socioeconomic inequalities in working life. Clawson and Gerstel (2014) have proposed that WTC may be source of widening inequalities in the future if growing demands of flexibility in working life and a lack of control over working hours affect disproportionally women and those in low occupational positions.

This study was carried out in the context of public-sector organizations in Finland, focusing on older employees of whom the majority

Table 3. Cox regression analysis for the associations of the seven worktime control trajectories with working longer after retirement age.

	Model 1[a]		Model 2[b]		Model 3[c]		Model 4[d]	
WTC trajectories	HR	(95% CI)	HR	(95% CI)	HR	(95% CI)	HR	(95% CI)
Stable very low (reference)	1.00		1.00		1.00		1.00	
Stable low	0.88	(0.72–1.08)	0.92	(0.75–1.13)	0.94	(0.77–1.16)	0.95	(0.78–1.17)
Stable mid-low	0.97	(0.78–1.21)	0.91	(0.73–1.14)	0.93	(0.74–1.16)	0.94	(0.75–1.18)
Declined	1.00	(0.82–1.22)	1.02	(0.84–1.24)	1.03	(0.84–1.26)	1.03	(0.85–1.26)
Improved	1.36	(1.08–1.72)	1.29	(1.02–1.63)	1.32	(1.04–1.67)	1.31	(1.03–1.66)
Stable high	1.22	(0.99–1.51)	1.10	(0.89–1.38)	1.11	(0.89–1.38)	1.10	(0.89–1.38)
Stable very high	1.22	(0.93–1.61)	1.10	(0.83–1.46)	1.12	(0.84–1.48)	1.10	(0.83–1.47)

Note. CI, confidence interval; HR, hazard ratio.
[a]Model 1: Adjusted for age and gender.
[b]Model 2: As Model 1 + additionally adjusted for occupational status.
[c]Model 3: As Model 2 + additionally adjusted for marital status.
[d]Model 4: As Model 3 + additionally adjusted for self-rated health.

Table 4. Cox regression analysis for the associations of the five worktime control trajectories with working longer after retirement age.

	Model 1[a]		Model 2[b]		Model 3[c]		Model 4[d]	
WTC trajectories	HR	(95% CI)	HR	(95% CI)	HR	(95% CI)	HR	(95% CI)
Stable low/very low[e] (reference)	1.00		1.00		1.00		1.00	
Stable mid-low	1.06	(0.91–1.25)	0.96	(0.82–1.14)	0.97	(0.82–1.15)	0.97	(0.82–1.15)
Declined	1.09	(0.97–1.24)	1.08	(0.96–1.22)	1.08	(0.95–1.22)	1.07	(0.94–1.22)
Improved	1.49	(1.25–1.78)	1.37	(1.14–1.64)	1.38	(1.15–1.65)	1.35	(1.13–1.62)
Stable high/very high[f]	1.34	(1.17–1.54)	1.17	(1.01–1.36)	1.16	(1.00–1.35)	1.14	(0.98–1.33)

Note. CI, confidence interval; HR, hazard ratio.
[a]Model 1: Adjusted for age and gender.
[b]Model 2: As Model 1 + additionally adjusted for occupational status.
[c]Model 3: As Model 2 + additionally adjusted for marital status.
[d]Model 4: As Model 3 + additionally adjusted for self-rated health.
[e]"Stable very low" and "Stable low" groups are combined (n = 546).
[f]"Stable very high" and "Stable high" groups are combined (n = 420).

were women. The findings are therefore not necessarily directly applicable to other settings, such as the private sector. Public-sector accounts about a third of the workforce in Finland, the vast majority of the labor force being women working in education and social and healthcare sector; thus, the findings of this study represent a large part of the Finnish workforce. These occupations are characterized by relatively low wages although the educational level of teachers and healthcare personnel is high in Finland. Work is often organized in teams and teamwork is more prevalent in the public sector than in the private sector in Finland (Peutere et al., 2018). In this context, high WTC may be seen as one of the psychosocial compensations to restricted material rewards at work. Most of the job contracts are permanent and the employees may work for the same employer for several decades. Therefore, it is possible that the stable WTC trajectories found in our study reflect in part the stable job arrangements in the Finnish public sector. One of the major advantages of our study context is that we had a detailed follow-up information of actual extenders, which is unique in itself; individual pensionable dates were obtained from the institute for public-sector pensions in Finland. Moreover, Finland is one of the first countries with a definitive statutory retirement age, which encouraged employees to extend the employment beyond the statutory retirement age through the pension reforms in two occasions (2005 and 2017) that have resulted in increasing number of aging workforce to postpone their retirement (Eläketurvakeskus [Finnish Centre for Pensions], 2017). The other strengths of this study include repeated measurements of WTC with identical questions across a maximum of 16 years and the use of data-driven trajectory modeling to identify latent trajectories of WTC in the data. Future research could benefit from intervention studies in which WTC is improved to see whether a change in WTC results in a change of motivation to work longer.

As in all observational studies, we cannot fully eliminate bias due to imprecisely measured or unmeasured confounding factors and thus cannot make conclusions about causality. However, practical implications regarding the findings of this study include increased attention to be paid to improve WTC early in the working career to extend working lives. This is especially the case among women and employees in low occupational positions. WTC may be one of the assets at the organizational level to promote sustainable careers, both directly by creating opportunities for flexibility and indirectly by supporting employees' capabilities to manage their careers (De Vos et al., 2020).

In conclusion, our findings suggest that for most of the public-sector employees participating in this study, WTC remained unchanged from their mid-career until retirement age. More than half had a trajectory that is characterized by relatively low levels of WTC. Of the participants with stable high/very high WTC trajectories, 11% were employed after 2 years of their pensionable date, whereas the corresponding proportion among those with stable low/very low trajectories was 6%. In terms of longer working lives, this difference can be considered meaningful in magnitude. Having an improving or a stable high opportunity to control working times from midlife to retirement age was associated with an increased likelihood of extending employment beyond pensionable age. Our findings suggest that WTC may be one of the important psychosocial factors for longer working lives.

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CONFLICT OF INTEREST

None declared.

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