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Predictors of  
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## TIIVISTELMÄ

Se, sairastaako työntekijä kotona vai työpaikalla, riippuu sekä työntekijän ominaisuuksista että tavasta organisoida työpaikan työt. Aiempaan tutkimukseemme pohjautuen olemme selvittäneet työaikajärjestelyjen ja työpaikan tehokkuusvaatimusten vaikutusta sairauskäyttämiseen koetun työkyvyn mukaan. Tulosten mukaan se, että haluttu viikkotyöaika täsmää tehdyn viikkotyöajan kanssa, vähentää sekä sairauspoissaolojen että sairaana työskentelyn todennäköisyyttä, mutta vain huonon työkyvyn omaavilla. Vastaavasti sellainen tehokkuusnormi, jossa työpaikan johto asettaa tehokkuuden kaiken muun edelle, lisää sairaana työskentelyn todennäköisyyttä, mutta vain hyvän työkyvyn omaavilla.

## ABSTRACT

**Objectives:** We examine the predictors of sickness presenteeism in comparison with sickness absenteeism. The paper focuses on the effects of working-time match and efficiency demands and differentiates the estimates by a respondent's self-assessed health.

**Methods:** We use survey data covering 884 Finnish trade union members in 2009. We estimate logit models. All models include control variables such as the sector of the economy and the type of contract.

**Results:** Working-time match between desired and actual weekly working hours reduces both sickness absence and presenteeism in the whole sample that consists of workers with all health levels. The point estimates reveal that working-time match decreases the prevalence of sickness absence by 7% and presenteeism by 8%. However, the estimates that differentiate by a respondent's health show that this pattern prevails only for those workers who have poor health. Hence, the point estimates for those who have poor health are much larger than the ones for the whole sample. Working-time match reduces the prevalence of sickness absence by 21% and presenteeism by 20% for those workers who have poor health. In contrast, working-time match has no influence whatsoever on the prevalence of work-related sickness for those who have good health. We also find that efficiency demands increase presenteeism

in the whole sample. However, additional results reveal that this pattern prevails only for those workers who have good health.

**Conclusions:** The effects of working-time match and efficiency demands on the prevalence of sickness absence and presenteeism are strongly conditional upon a worker's self-assessed health level. Therefore, the worker's initial health is an important attribute that has to be taken into account when one is designing appropriate policies to reduce sickness absence and presenteeism.

Key words: Absenteeism, Sickness absence, Presenteeism

## INTRODUCTION

Decrease in sickness absenteeism reduces firms' costs. However, it also contains an opportunity for decreasing productivity through presenteeism ("present at work in spite of sickness").<sup>1</sup> Sickness presenteeism may contribute to workers' ill health and firms' costs in the long run,<sup>2,3,4</sup> and even to dysfunctional "competitive presenteeism", which constitutes an extreme example of competitive culture at workplaces.<sup>5</sup>

The question about the right management strategy concerning sickness absenteeism and presenteeism is very important for employers as well as for the healthcare sector as a whole. Productivity loss in absenteeism is 100 per cent, since the person's work contribution during sickness absence is non-existent. The direct and indirect costs caused by presenteeism are much more difficult to estimate.<sup>6,7</sup>

Before the evaluation of costs, deeper knowledge of the determinants of sickness absenteeism and presenteeism is essential. It is reasonable to assume that sickness presenteeism is affected by the same underlying factors as sickness absenteeism, i.e. attributes related to workers and workplaces.<sup>8</sup> Special attention should be paid to working-time arrangements,<sup>9</sup> workers' replacement practices,<sup>10</sup> attendance-pressure factors<sup>11</sup> and personal attitudes,<sup>12</sup> according to the literature.

This article contributes to the existing knowledge by studying the predictors of sickness presenteeism in comparison with sickness absenteeism. We focus on the effects of working-time match between desired and actual weekly working hours and efficiency demands. In particular, we differentiate the estimates by the respondent's self-assessed health, because the literature has largely ignored worker heterogeneity in terms of health. Using survey data of Finnish union members from 2009, we provide fresh evidence of the determinants of both work-related sickness categories. The Finnish case is particularly interesting, because flexible working-time arrangements have gained substantial popularity during the past 10 years. These policies should improve the working-hours match at the workplaces. However, at the same time there has been an increase in the adverse effects of time pressure on wage and salary earners, according to the Quality of Work Life Surveys by Statistics Finland.<sup>13</sup>

## **METHODS**

### **Sample**

Our data set consists of 884 members in SAK-affiliated unions. SAK, the Central Organisation of Finnish Trade Unions, is the largest workers' confederation in Finland, and includes 26 unions. The members of these unions cover all sectors of the Finnish economy. Most of them are blue-collar workers. The survey provides a broad picture of the labour market in Finland, because the union density (i.e. the share of trade union members among wage and salary earners) is 70 per cent. 1,346 individuals were selected for a telephone interview by using random sampling among the SAK-affiliated union members that was conducted by Statistics Finland in January and February 2009. Out of this sample, 1,020 persons or roughly 75 per cent participated in the interviews. However, 136 of them are unemployed or out of the labour force. Therefore, the sample size that is used in the estimations is 884, because we focus on those who are wage and salary earners.

### **Variables**

The outcome variables of the models, absenteeism and presenteeism, are constructed following the literature.<sup>11</sup> Those who have never been or have once been absent (present

while sick) during the last 12 months are marked as zero; those who have been absent (present) several times as one. This gives a prevalence of 30 per cent for absenteeism and 33 per cent for presenteeism (Table 1). Both averages are higher for women than they are for men. The association between absenteeism and presenteeism is also strongly positive. 55 per cent of the workers who have been absent from work several times have also been present at work several times while sick.

The predictor variables include the control variables such as age groups, the sector of the economy, establishment size and workers' replaceability, following the literature,<sup>12, 14</sup> as listed in Table 2. When these factors are controlled for, it is possible to assess the impact of factors that are firms' possible policy variables.

In this study we focus on working-time match and efficiency demands, because there is earlier evidence that they are particularly important predictors of sickness absence and presenteeism.<sup>15</sup> Working-hours match is defined between desired and actual weekly working hours. The working-time match between the desired and the actual working hours is used as an indicator of overall working-time balance. The efficiency demands reflect the relative position of workers compared with employers. The respondents were asked to assess their work by means of the statement: "In tough situations efficiency rules out everything else". If the respondents agreed with the statement, as 26 per cent did, the variable for the efficiency demands was set as one, otherwise as zero. This indicator very strongly correlates with other workplace quality measures that are available in the survey, like continuing rush (i.e. a situation in which the worker is engaged in tasks without appropriate breaks from work) and the opportunities to influence one's work. To avoid multicollinearity problems, we use one overall indicator instead of several.

We differentiate the estimates by the worker's health. One's self-assessed health is an answer to the question: "How is your health in general compared to your lifetime maximum?". This question aims to summarise a person's general state of health at the moment of interview. Self-assessed health is measured on an ordinal 10-point Likert scale with the alternatives from 10 ('very good') to 0 ('very poor'). Hence, a higher value on this scale means that a person currently feels healthier. Figure 1 illustrates the distribution of the variable. There is a concentration of observations towards the higher end of the scale. We categorize those workers

who have answered 8-10 as having ‘good health’, based on the clear cut-off point in Figure 1. Other workers (health level 0-7) are categorized as having ‘poor health’.

## **Statistical methods**

We estimate logit models, because our outcome variables are dichotomous indicators that categorize the data into two groups. We use Stata v10.1 to estimate the models. The predictor variables are entered in a single block. To make it easier to understand the estimates, we report the marginal effects. For binary variables, they are calculated as differences in the predicted probabilities.

## **RESULTS**

Working-time match between desired and actual weekly hours reduces both sickness absence and presenteeism in the whole sample that consists of workers with all health levels (Table 2, Panels A-B, Column 1). These results are in accordance with the earlier research.<sup>15</sup> The point estimates reveal that working-time match decreases the prevalence of sickness absence by 7% and presenteeism by 8%. However, the estimates that differentiate between the respondent’s self-assessed health point out that this pattern prevails only for those workers who have poor health (Table 2, Panels A-B, Columns 2-3). Hence, the point estimates for those who have poor health are much larger than those for the whole sample. Working-time match reduces the prevalence of sickness absence by 21% and presenteeism by 20% for those wage and salary earners who have poor health. In contrast, working-time match has no influence whatsoever on work-related sickness for those who have good health (Table 2, Panels A-B, Column 3). We also find that efficiency demands increase presenteeism in the whole sample, but they do not have any influence on sickness absence. Efficiency demands increase the prevalence of presenteeism by 8%, according to the point estimates (Table 2, Panel B, Column 1). However, additional results reveal that this pattern prevails only for those workers who have good health. The point estimate is also larger for them than it is for the whole sample. Thus, efficiency demands increase the prevalence of sickness presenteeism by 11% for those who have good health (Table 2, Panel B, Column 3).



We have estimated models in which we have divided the variable for working-time match into two separate predictor variables that capture those workers who would like to work more weekly hours and those who would like to work fewer hours than their current actual hours are (not reported). These results show that those with good health who work more than their desired hours have a higher level of sickness absence. Furthermore, those workers with poor health who work more than their desired weekly hours have a higher prevalence of presenteeism.

There is also a variation in absenteeism and presenteeism that is unaccounted for after the effects of the predictor variables have been taken into account, as indicated by McFadden's pseudo  $R^2$ . One reason for this is that we use cross-sectional data. Thus, we cannot control for individual characteristics that are constant over time, such as personality.

## **DISCUSSION**

Workers differ with respect to their health. It is important to take this simple fact into account when one is analysing the predictors of sickness absence and presenteeism. Our results point out that the effect of working-time match between desired and actual weekly working hours and efficiency demands on the prevalence of sickness absence and presenteeism varies a lot according to the respondent's self-assessed health. These results carry important lessons for the design of policies to reduce them.

Working-time match between desired and actual hours decreases sickness absence and presenteeism only for those workers who have poor health. A plausible explanation for this pattern is that working-time balance supports a person's overall well-being. Better self-control that comes with working-time balance could be a particularly important factor for those who have poor health to reduce their work-related sickness behaviour. Instead, improvements in working-time arrangements do not affect work-related sickness among those who have good health. New firms usually hire young workers who have good health. Our findings suggest that measures other than working-time arrangements should be preferred in those firms in order to reduce the prevalence of sickness absence and presenteeism. Furthermore, the estimates demonstrate that efficiency demands increase the

prevalence of sickness presenteeism only for those workers who have good health. One apparent explanation for this pattern is that there are more opportunities for those who are generally in good health to respond by working while ill, as efficiency demands in a firm increase. Hence, if the aim of a firm is to reduce sickness presenteeism among those who have poor health, it would be useful to focus on other measures than the firm's efficiency demands. All in all, our results suggest that the general lessons of the literature regarding the predictors of work-related sickness have to be considered with caution when one is designing policies for particular firms, because the apparent worker heterogeneity in terms of health has been largely ignored in the earlier research. Other aspects of worker heterogeneity such as attitudinal factors also need to be considered in future research.

As we are examining a cross-sectional survey, we cannot explore the direction of causality. This would require an instrumental variables strategy, involving instruments that would predict the presence of working-time match and efficiency demands but not the prevalence of work-related sickness. Hence, it is possible that our estimates are subject to selection bias, at least to some degree, if the unobserved factors that determine whether workers have working-time match or face efficiency demands also influence their work-related sickness behaviour. The use of a worker's self-assessed health should also be complemented with the utilization of objective health information, although subjective measures of health have been proven to have considerable value in predicting objective health outcomes, including morbidity and mortality.<sup>16</sup> Furthermore, the use of panel data would allow us to include a "personal history of sickness" as one of the determinants of absenteeism and presenteeism. Another limitation of our approach is that we took advantage of a survey of Finnish union members. Union members do not constitute a fully representative sample of the total workforce, even in a country with high union density. Finally, we were not in a position to estimate duration models, because our survey data do not record how long the individual spells of absences and presenteeism were.

## WHAT THIS PAPER ADDS

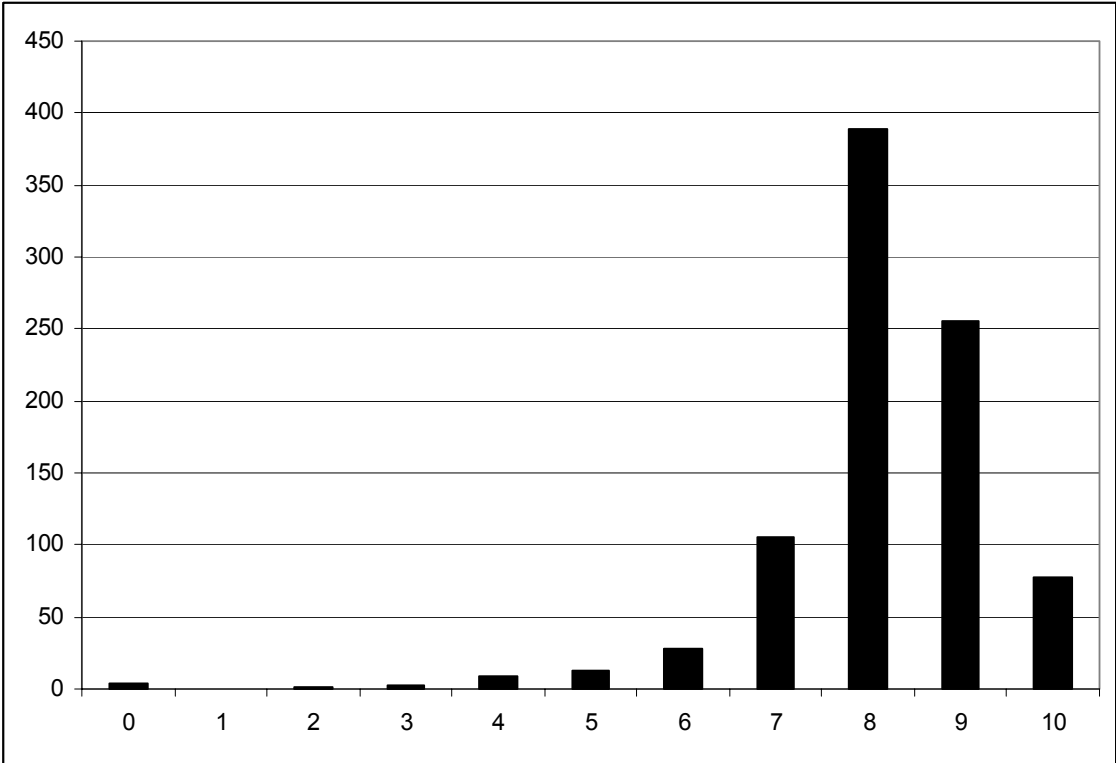
- Sickness presenteeism is a newcomer. The concept emerged in the empirical literature as late as the 1990s. Information about the determinants of sickness presenteeism is still relatively sparse. To our knowledge, the apparent worker heterogeneity in terms of health has been ignored in the literature.
- Using survey data of Finnish trade union members from 2009, we provide fresh evidence of the determinants of sickness absence and presenteeism. We focus on the effects of working-time match and efficiency demands and differentiate the estimates by the respondent's self-assessed health.
- Working-time match between desired and actual weekly hours reduces both sickness absence and presenteeism in the whole sample that consists of workers with all health levels. However, the estimates that differentiate by the respondent's health reveal that this pattern prevails only for those workers who have poor self-assessed health. Thus, working-time match has no influence whatsoever on sickness absence for those who have good health.
- Efficiency demands also increase the prevalence of presenteeism in the whole sample. However, additional results point out that this pattern prevails only for those workers who have good health.
- The effects of working-time match and efficiency demands on the prevalence of sickness absence and presenteeism are strongly conditional upon the worker's self-assessed health level. Therefore, the worker's initial health is an important attribute that has to be taken into account when one is designing appropriate policies to reduce sickness absence and presenteeism.

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**Figure 1. Figure legend: The distribution of self-assessed health level (0-10) among respondents.**



**Table 1. Definitions and averages of the variables as percentages.**

<i>Variable</i>	<i>Definition</i>	<i>All</i>	<i>Men</i>	<i>Women</i>
<b>Outcome variables</b>				
Absenteeism	Person has been absent several times because of illness during the past 12 months = 1, otherwise = 0	30	28	33
Presenteeism	Person has been present several times while sick during the past 12 months = 1, otherwise = 0	33	29	40
<b>Predictor variables</b>				
<i>Policy variables</i>				
Working hours match	Desired and actual weekly working hours match = 1, otherwise = 0	68	69	66
Efficiency demands	In tough situations efficiency rules out everything else in firm, according to the survey respondent = 1, otherwise = 0	26	27	25
<i>Control variables</i>				
Sex	Male = 1, female = 0	58	..	..
Age				
Less than 35 years	Less than 35 years = 1, otherwise = 0 (reference)	12	9	17
35 – 50 years	Age 35–50 = 1, otherwise = 0	42	41	42
> 50 years	Age > 50 years = 1, otherwise = 0	46	49	41
Sector				
The public sector	Employer is state or municipality = 1, otherwise = 0 (reference)	27	15	45
Processing industries	Employer is in the processing industries = 1, otherwise = 0	40	57	17
Private services	Employer is in the private service sector = 1, otherwise = 0	33	28	38
The type of contract				
Temporary worker	Temporary contract = 1, otherwise = 0 (reference)	7	4	12
Part-time worker	Part-time worker = 1, otherwise = 0	8	3	14
Regular overtime	Regular paid and unpaid overtime = 1, occasional or none = 0	8	7	10
Establishment size				

<i>Variable</i>	<i>Definition</i>	<i>All</i>	<i>Men</i>	<i>Women</i>
Less than 20 workers	Size of plant less than 20 workers = 1, otherwise = 0 (reference)	35	29	44
20 - 50 workers	Size of plant 20 - 50 workers = 1, otherwise = 0	28	28	27
> 50 workers	Size of plant over 50 workers = 1, otherwise = 0	37	44	29
<b>Replaceability</b>				
No replacement	Replacement is not possible = 1, otherwise = 0 (reference)	11	11	10
Replacement by substitutes	Replacement is possible by substitutes = 1, otherwise = 0	27	21	35
Replacement by colleagues	Replacement is possible by colleagues = 1, otherwise = 0	62	68	55
<b>Rules</b>				
No absence without a sickness certificate	Not even a single day's absence is possible without a sickness certificate, as defined in the collective labour agreements = 1, otherwise = 0 (reference)	41	43	38
One or two days' rule	One or two days' paid sickness absence possible without a sickness certificate, as defined in the collective labour agreements = 1, otherwise = 0	14	16	11
Three days' rule	Three days' paid sickness absence possible without a sickness certificate, as defined in the collective labour agreements = 1, otherwise = 0	45	41	51
<i>n</i>		884	515	369



**Table 2. The determinants of sickness absenteeism and presenteeism.**

<b>Panel A: Absenteeism</b>			
Sample	All	‘Poor health’	‘Good health’
Working hours match	-0.0705** [0.0370]	-0.2092** [0.0320]	-0.0413 [0.2580]
Efficiency demands	-0.0443 [0.2120]	-0.0874 [0.3780]	-0.0421 [0.2830]
Control variables	Yes	Yes	Yes
McFadden’s pseudo R <sup>2</sup>	0.0408	0.1546	0.0455
<i>n</i>	884	163	721
<b>Panel B: Presenteeism</b>			
Sample	All	‘Poor health’	‘Good health’
Working hours match	-0.0847** [0.0140]	-0.1956** [0.0310]	-0.0549 [0.1490]
Efficiency demands	0.0847** [0.0220]	-0.0311 [0.7380]	0.1074** [0.0110]
Control variables	Yes	Yes	Yes
McFadden’s pseudo R <sup>2</sup>	0.0451	0.1339	0.0474
<i>n</i>	884	163	721

Notes: Reported estimates are marginal effects from the logit models, evaluated at variable means. For binary variables, they are calculated as differences in the predicted probabilities. *p*-values in brackets. Statistical significance: \*\*\* *p*<0.01, \*\* *p*<0.05, \* *p*<0.1. All six models include the (unreported) control variables, as listed in Table 1.