Predictors of Sickness Absence and Presenteeism: Does the Pattern Differ by a Respondent's Health?

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Objective: To examine the predictors of sickness presenteeism in comparison with sickness absenteeism. The article 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 logistic regression 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 for those workers who have poor health. We also find that efficiency demands increase presenteeism 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 on a worker's self-assessed health level.

Decline in the prevalence of sickness absenteeism decreases firms' costs. However, it also contains a possibility for deteriorating subsequent job performance through presenteeism (present at work despite sickness).[1] Sickness presenteeism contributes to workers' ill health and firms' costs, especially in the long run.[2–5] Dysfunctional "competitive presenteeism" constitutes an extreme example of harmful competitive culture at workplaces.[6]

The right management strategy concerning sickness absenteeism and presenteeism is important for the employers and for the health care sector as a whole. It is particularly important to search for potential policy variables that can be used to decrease work-related sickness behavior. Productivity loss in absenteeism is 100%, because the person's work contribution during the period of sickness absence is nonexistent. The direct and indirect costs caused by presenteeism are much more difficult to evaluate.[7,8] One reason for this is that attendance management policies that aim at decreasing observed sickness absenteeism can easily trigger an increase in presenteeism that is difficult to observe, especially among those workers who suffer from chronic illnesses.[9]

Sickness presenteeism is influenced by the same determinants as sickness absenteeism, ie, characteristics related to workers and workplaces.[10] The earlier evidence points to the fact that special attention should be paid to working time arrangements,[11] workers' replacement practices,[12] attendance pressure factors,[13] and personal attitudes.[14] Furthermore, the previous literature on presenteeism has elaborated its relationship with a substantial number of different health risks and health conditions.[8] In particular, sickness presenteeism has been found to heighten the risk of fair/poor health.[15] On the other hand, health is also an important determinant of absenteeism.[16]

This article contributes to the body of existing knowledge by examining 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, because it has been shown that these effects are particularly important predictors of sickness absence and presenteeism.[17] In contrast to the earlier evidence, we use the latest wave of the survey that covers a sample of Finnish trade union members. The main contribution of this article is that the models for both sickness absenteeism and presenteeism are estimated separately for those who have poor and good health. This information was not available in the earlier wave of the survey. We differentiate the estimates by the respondent's self-assessed health, because the literature has largely ignored worker heterogeneity in terms of health.

By using survey data of Finnish union members from 2009, we provide new evidence of the determinants of both work-related sickness categories. The Finnish context is particularly interesting, because flexible working time arrangements have gained substantial popularity during the past decade. These policies should improve the working time match at the workplaces. Nevertheless, 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.[18]

MATERIALS AND METHODS

Sample

The data set consists of 884 members in Suomen Ammattiliittojen Keskusjärjestö (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 SAK-affiliated unions cover all sectors of the Finnish economy, but most of them are hourly paid blue-collar workers. The survey is able to provide a broad picture of the labor market in Finland, because the union density (ie, the share of trade union members among wage and salary earners) is roughly 70%. One thousand three hundred forty-six individuals were selected for a telephone interview by using random sampling among the SAK-affiliated union members, which was conducted by Statistics Finland in January and February 2009. The interviewers were specially trained by Statistics Finland, which guarantees the high quality of the interviews. In this study, we focus only on information that can be used to predict the prevalence of sickness absenteeism and presenteeism. Of the sample, 1020 persons or roughly 75% participated in the interviews. However, 136 of them were unemployed or out of the labor 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, absenteeism and presenteeism, are constructed exactly following the existing literature.[13] Those who have never been or once absent (present while sick) during the last 12 months are marked as zero and those who have been absent (present) two or more times as one. This gives a prevalence of 30% for absenteeism and 33% for presenteeism (Table 1). Both averages are higher for women than for men. The association between absenteeism and presenteeism is also strongly positive. Fifty-five percent of the workers who have been absent from work two or

TABLE 1. Definitions and Averages of the Variables as Percentages

Variable	Definition	All	Men	Women
Outcome variables				
Absenteeism	Person has been absent two or more times because of illness during the past 12 mo = 1, otherwise = 0	30	28	33
Presenteeism	Person has been present two or more times while sick during the past 12 mo = 1, otherwise = 0	33	29	40
Predictor variables				
Policy variables				
Working hr match	Desired and actual weekly working hr match exactly = 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
Control variables				
Sex	Male = 1, female = 0	58	—	—
Age (yr)				
<35	<35 = 1, otherwise = 0 (reference)	12	9	17
35–50	35–50 = 1, otherwise = 0	42	41	42
50	>50 = 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 (workers)				
<20 workers	Size of plant <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
Replaceability				
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
Rules				
No absence without a sickness certificate	Not even a single days' absence is possible without a sickness certificate, as defined in the collective labor agreements = 1, otherwise = 0 (reference)	41	43	38
1 or 2 days' rule	1 or 2 days' paid sickness absence possible without a sickness certificate, as defined in the collective labor agreements = 1, otherwise = 0	14	16	11
3 days' rule	3 days' paid sickness absence possible without a sickness certificate, as defined in the collective labor agreements = 1, otherwise = 0	45	41	51
n		884	515	369

more times have also been present at work two or more times while sick. Both sickness absenteeism and presenteeism are self-reported in the survey, but there is no particular reason to believe that workers gave systematically biased answers, because the telephone interviews were conducted by Statistics Finland, and the respondents' identity was not revealed to their employers after the survey.

The predictor variables include the control variables such as age groups, sector of the economy, establishment size, and workers' replaceability, following the literature.[14,19] The response format for each variable and their exact definitions are described in Table 1. When these factors are controlled for, it is possible to evaluate the impact of the factors that are firms' potential policy variables.

In this study, we focus on the effects of working time match and efficiency demands. Working time match is defined between desired and actual weekly working hours, as assessed by the respondent. Most of the respondents in the survey are hourly paid blue-collar workers. For this reason, they should be fully competent to evaluate whether their actual weekly working hours match their preferences. 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 evaluate their work by means of the statement: "In tough situations efficiency rules out everything else." If the respondents agreed with the statement, as 26% did, the variable for the efficiency demands was set as one, otherwise as zero. The indicator very strongly correlates with other workplace quality measures, like continuing rush (ie, a situation in which the worker is engaged in tasks without appropriate breaks from work) and opportunities to influence one's work. To avoid multicollinearity problems, we use one overall indicator in the models instead of several.

We differentiated the estimates by the worker's initial health. We used the standard question for self-assessed health. Subjective measures of health have been proven to have substantial value in predicting several objective health outcomes, including morbidity

FIG. 1. The distribution of self-assessed health level (0 to 10) among respondents.
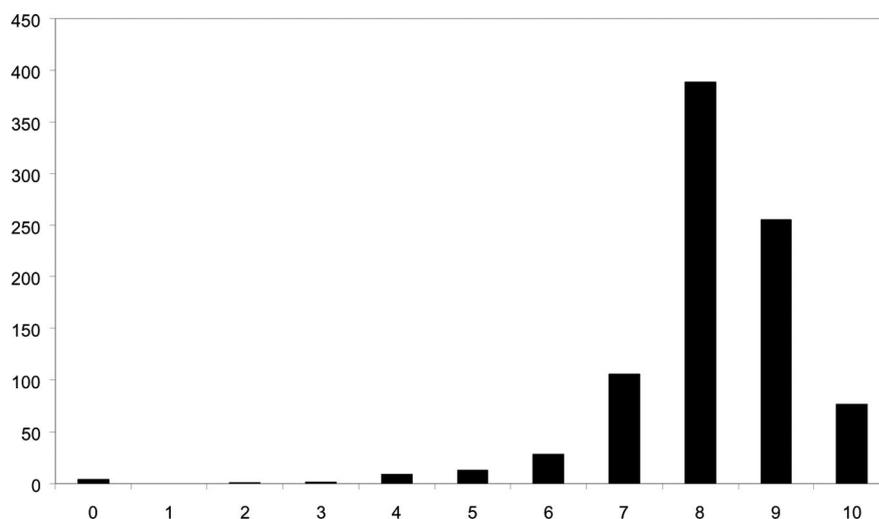
TABLE 2. Predictors of Sickness Absenteeism and Presenteeism

Sample	All	Poor Health	Good Health
n	884	163	721
Panel A: absenteeism			
Working hr 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^2	0.0408	0.1546	0.0455
Panel B: presenteeism			
Working hr 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^2	0.0451	0.1339	0.0474

Reported estimates are marginal effects from the logistic regression models, evaluated at variable means. For binary variables, these are calculated as differences in the predicted probabilities. *P*-values are in parentheses. All six models include the (unreported) control variables, as listed in Table 1.

*$P < 0.05$.

and mortality.[20] 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 summarize 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). Therefore, 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 toward the higher end of the scale. We categorized those workers who have health level 8 to 10 as having "good health," based on the clear cutoff point in Fig. 1. Other workers (health level 0 to 7) are categorized as having "poor health."

Statistical Techniques

We estimated using logistic regression models, because our outcome variables are dichotomous indicators that categorize the data into two groups. We used Stata version 10.1 (Stata Corp, College Station, TX) to estimate the models. The predictor variables that are listed in Table 1 are entered in the models in a single block. We have also estimated the models without including the control variables. The overall conclusions remain the same, but the quantitative magnitude of the effects for the policy variables is significantly affected. To make it easier to understand the estimates,

we report the marginal effects. For binary variables, these are calculated as differences in the predicted probabilities.

RESULTS

Working time match between desired and actual weekly hours reduces both sickness absence and presence 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 evidence.[17] The point estimates reveal that working time match decreases the prevalence of sickness absence by 7% and presence 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, column 2). 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 absenteeism 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).

There is also some 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 we used cross-sectional data. Therefore, we cannot control individual-level characteristics that are constant over time, such as personality.

DISCUSSION

Workers differ with respect to their health. It is important to take this fact into account when one is analyzing the predictors of sickness absenteeism 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 some important lessons for the design of policies to reduce them.

We find that working time match between desired and actual hours decreases sickness absenteeism and presenteeism only for those workers who have poor self-assessed 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 behavior. In contrast, improvements in working time arrangements do not affect work-related sickness behavior among those who have good health. New firms usually hire young workers who have good initial health. These findings suggest that measures other than working time arrangements should be preferred in those firms to reduce the prevalence of sickness absence and presenteeism.

The estimates also show that efficiency demands increase the prevalence of sickness presenteeism only for those workers who have good health. One apparent explanation for this result 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. However, it is important to note that this may eventually have negative health and productivity consequences on them. In contrast, those who have poor health have no capacity to respond to efficiency demands in a firm. 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 measures other than the firm's efficiency demands.

In summary, the general lessons of the literature regarding the predictors of work-related sickness behavior have to be considered with caution when one is designing and adopting policies for particular firms, because the apparent worker heterogeneity in terms of health has been largely ignored in the earlier research. In particular, our results show that the effects of working time match and efficiency demands on the prevalence of sickness absence and presenteeism are strongly conditional on a worker's initial self-assessed health level. Other aspects of worker heterogeneity such as attitudinal factors also need to be considered in future research.

Our approach has some limitations. We used a cross-sectional survey. Thus, we cannot explore the direction of causality. For this reason, 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 behavior. The use of a worker's self-assessed health should also be complemented with the utilization of objective health information. Furthermore, the use of panel data would allow us to incorporate 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 trade union members. This limits the generalizability of our findings. Trade union members do not constitute a fully representative sample of the total workforce, even in a country with a high union density such as Finland. That being said, the overall patterns should be relevant at least in the Nordic context. Finally, we were not in a position to estimate duration models, because the survey data that we used do not record how long the individual spells of absenteeism and presenteeism are.

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