

# Work Environment and Worksite Health Promotion in Nine European Countries

Anne C. van der Put, MSc and Tanja van der Lippe, PhD

**Objective:** To study to what extent the work environment influences the use of worksite health promotion (WHP). **Methods:** Data came from the European Sustainable Workforce survey, with data from employees and managers in 259 organizations. We analyze use of three types of WHP (healthy menus, sports facilities, and health checks) using multilevel logistic models. **Results:** Employees are more likely to use each type of WHP when a larger share of their direct colleagues do so. Use of healthy menus is more likely among employees who work more hours, have more autonomy, and work in organizations with less work-oriented culture. Autonomy is also associated with more use of sports facilities, while work-oriented culture is negatively related to use of health checks. **Conclusions:** Our results suggest the work environment should be included when studying WHP use.

**Keywords:** healthy behavior, occupational health, organizational culture, work environment, worksite health promotion

Unhealthy lifestyles are widely spread within Europe, resulting in increased risks of cardiovascular disease, cancer, and diabetes, all among the most important causes of death.<sup>1</sup> Many of these conditions are preventable, and the workplace is a promising place for large-scale prevention activities as adults spend a majority of their time at work so that many employees can be reached.<sup>2</sup> Employers can help employees in targeting their unhealthy lifestyles, by offering worksite health promotion (WHP). WHP consists of the combined effort of employers, employees, and society to improve employee health and prevent disease, and includes initiatives like fitness facilities at work or healthy food in the worksite cafeteria.<sup>3</sup>

Previous research has found that employees benefit from using WHP: they are more physically active, have healthier diets, and better health in general.<sup>2,4</sup> Also employers benefit because WHP is good for the corporate image and employees who use it are more productive, less often absent and less often leave their jobs.<sup>5,6</sup> However, results are modest.

Effectiveness of WHP is contingent on the extent to which employees make use of it.<sup>7</sup> One of the reasons why WHP use is associated with only small benefits for employees and employers could be that there is large variation in the amount of employees that

use WHP. In some organizations 97% of employees are reported to use WHP, while in other organizations this is only 8%.<sup>8,9</sup> If only few employees use WHP, this means gains for both employees and employers may be limited.

As of yet, we do not really know why WHP use differs between organizations. Previous studies have focused on demographic characteristics of employees or piecemeal job or organizational climate factors in explaining WHP use.<sup>4</sup> Although it is increasingly recognized that the work environment plays an important role, it is unclear yet in what way exactly.<sup>10</sup> We argue the work environment consists of both organization characteristics, such as organizational culture,<sup>11</sup> and job characteristics such as time and autonomy,<sup>12</sup> both of which influence whether employees use WHP. The aim of this paper is thus to study to what extent the work environment influences WHP use.

This paper contributes to existing literature in a multitude of ways. Firstly, we pay specific attention to the role of the work environment in employee use of WHP by looking at both job and organization characteristics. Some studies focus on job characteristics (eg,<sup>13</sup>) but disregard the role of the organization and vice versa. To our knowledge, we are among the first to include both in one study.

Secondly, we use unique data coming from the European Sustainable Workforce Survey<sup>14</sup> to test our hypotheses. This dataset contains information on over 11,000 employees in 259 European organizations and allows us to study organizational variation in WHP use because of its multilevel design. Many studies on WHP use focus only on one or a few organizations and thus cannot address differences in organization characteristics.<sup>9</sup> Our data allow for a better test of the relation between job and organization characteristics and WHP use.

Thirdly, we focus on three types of WHP: healthy menus, sports facilities, and health checks. These are among the most prevalent types of WHP implemented in organizations and can be used by all employees, which promotes successful uptake.<sup>15,16</sup> They differ in the frequency with which they take place and the extent to which several aspects of the work environment influence their use. For example, the use of healthy menus in the worksite cafeteria inherently takes place at work and can be done daily, whereas sports facilities and health checks can also be done outside work and may take place less frequently. If we nevertheless find commonalities which affects their use, this will be a strong sign for employers of how they may improve WHP use.

Lastly, our results will have clear societal relevance in demonstrating to employers under which circumstances employees are likely to use WHP. We study policies that are actually implemented in organizations rather than interventions by researchers; they thus better reflect reality.<sup>9</sup> Organizations can use our findings to help ensure the policies they offer will actually be utilized, so that employees and employers can benefit alike.

## THEORY

We distinguish between job and organizational characteristics in our theoretical discussion.

### Job Characteristics

Work pressure is considered a central element in the work environment and may influence whether employees use WHP or not. High work pressure occurs when employees feel they need to work

From the Department of Sociology, Faculty of Social and Behavioural Sciences, Utrecht University, Utrecht, The Netherlands.

**Clinical relevance:** Our results show that the work environment matters for WHP use among employees. When designing and studying the effectiveness of WHP, researchers and organizations should pay attention to this, as well as for encouraging use of already existing WHP offers.

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**Address correspondence to:** Anne C. van der Put, MSc, Department of Sociology, Faculty of Social and Behavioural Sciences, Utrecht University, Padualaan 14, 3584 CH Utrecht, The Netherlands (a.c.vanderput@uu.nl).

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very hard to get all their work done.<sup>17</sup> If this is the case, employees report that they are less likely to use all three types of WHP we study.<sup>7,18,19</sup> When there is a lot of work to be done, the main focus of employees will be on their work tasks and not on additional activities such as WHP.<sup>12</sup> This implies that they are less likely to use WHP. A researcher who has to finish his latest article may forget to plan a health check because meeting the deadline is more important. In addition, having high work pressure may also lead to more stress, and while stressed, people devote less attention to their health and healthy behavior.<sup>20</sup> Even when stressed employees tear themselves from their desks and go to the worksite cafeteria, they may still resort to the unhealthy food options as these give them pleasure in the short term and can thus reduce stress. We hypothesize that employees with high work pressure are less likely to use healthy menus (H1a), sports facilities (H1b), and health checks (H1c).

A second aspect in the work environment that affects the possibility to use WHP is time. This is especially the case for the use of healthy menus and sports facilities as these occur on a regular basis. Employees often mention that they do not use WHP because they do not have the time to do so, especially when it concerns physical activity arrangements.<sup>21</sup> Time is a finite resource and can only be spent once.<sup>7</sup> Spending many hours on work tasks leaves less time available for WHP. This would then come on top of the working day and discourage employees. For example, Lenneis and Pfister<sup>21</sup> report that employees prefer to go home after their working day rather than use on-site fitness facilities. Working many hours thus makes spending time on WHP more difficult.<sup>7</sup> This mostly applies to the use of sports facilities. Using healthy menus may actually be easier for employees who spend much time at work because they need to eat anyways. For them, working many hours may mean they have less time to prepare food at home and thus go to the cafeteria while at work. We expect that employees who work many hours are more likely to use healthy menus (H2a) but less likely to use sports facilities (H2b). Given that health checks do not occur as regularly, we do not formulate a hypothesis about its relation to time.

Not just the amount of time employees spend at work matters for their use of WHP, also how they spend their hours plays a role. Autonomy refers to the extent to which employees can influence how, where, and when they carry out their job.<sup>17</sup> This is also important for WHP use, as has been shown for physical activity<sup>22</sup> and use of worksite cafeterias.<sup>23</sup> Some groups of employees may spend many hours at their workplace but only have little time for breaks or have to stay at their work station, for example, factory line workers or bus drivers. This hinders their use of WHP. On the other hand, autonomous employees could plan their work such that they can visit the gym before work or make sure that they can be away from their desks for some time to visit the company medical officer for a health check. We thus expect that employees with more autonomy are more likely to use healthy menus (H3a), sports facilities (H3b), and health checks (H3c).

### Organizational Characteristics

Employees will be more likely to use WHP when their direct social environment at work is supportive of health.<sup>10</sup> Previous studies mainly turned to the organizational culture as an aspect in employees' work environment that can affect their WHP use. This organizational culture consists of shared assumptions about the beliefs, values, and norms of the organization.<sup>11</sup> It determines the extent to which health behaviors are rewarded and supported within an organization. Employees are more likely to use WHP and maintain healthy behaviors when they perceive their organization to be supportive and care for their welfare.<sup>24</sup> Employees will feel more comfortable to take a prolonged break for a fitness class when they know the organization they work for approves of this. If, on the other hand, the organization is mostly focused on performing and reaching targets, the signal the organization sends is that only work tasks

matter.<sup>25</sup> In such organizations employees may not take the trouble to go to the worksite cafeteria to eat a healthy menu, but would be more likely to stay behind their desk to finish their work. In these cases, employees may want to signal their commitment to work by focusing on work-related tasks only and do not want to be seen by colleagues as slacking.<sup>24</sup> We predict that employees who work in organizations with a more work-oriented organizational cultures are less likely to use healthy menus (H4a), sports facilities (H4b), and health checks (H4c).

Next to the wider organizational culture, also the behavior of direct colleagues influences WHP use. Employees are more likely to use physical activity and weight management programs when their direct colleagues do so too.<sup>26,27</sup> Direct colleagues have similar experiences at work and interact frequently, and so employees are likely to take over cues about what kind of behavior is normal from them.<sup>28</sup> When many colleagues use WHP, this signals that doing so is acceptable. Given human's inherent need to belong, they will conform to the group norm.<sup>29</sup> For example, when coworkers have a healthy lunch in the worksite cafeteria, an employee will be less likely to pick an unhealthy snack but opt for the healthy option too. In addition, colleagues who use WHP may also inform their coworkers about the possibility to do so, which could increase use. We expect that employees are more likely to use healthy menus (H5a), sports facilities (H5b), and health checks (H5c) when their direct colleagues do so too.

## METHOD

### Data

Our hypotheses were tested using cross-sectional data from the European Sustainable Workforce Survey.<sup>14</sup> This survey was carried out in 2015/2016 within organizations and encompasses questionnaires filled out by employees, department managers, and HR managers. The survey was conducted in nine European countries: Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden, and the UK. Organizations were approached using stratified random sampling based on sector (manufacturing, health care, higher education, transports, financial services, and telecommunication) and size (up to 100, 101 to 249, or more than 250 employees). This approach was complemented by a matching strategy to replace organizations that refused to participate with those from the same strata. After an organization joined the study, employees and managers were addressed at work to fill out the questionnaire in their own language. The survey yielded a participation rate of 98% among HR managers, 81% among department manager, and 61% amongst employees, resulting in a total sample of 11,011 employees in 259 organizations.

To test whether employees use WHP, their organization needs to offer it. HR managers are a reliable source for whether organizational policies are in place.<sup>30</sup> Therefore, we only selected employees who work in organizations in which the HR manager reported one of the following WHP to be available: catering or cafeteria menus based specifically on healthy nutrition, sports facilities at work or a financial contribution towards a sports activity, and health checks to evaluate employees' current state of health. Employees in organizations in which HR managers have not reported any WHP to be available were excluded (1666 employees in 41 organizations). After list-wise deletion on the included variables our final sample consisted of 7820 employees in 218 organizations.

### Measures

WHP use was measured using employee reports. Employees first had to indicate whether healthy menus, sports facilities, and health checks were available. Only when employees reported a policy to be available, they could indicate whether they used it during the past 12 months (yes = 1, no = 0). When employees

**TABLE 1. Scale Construction**

Scales and Items	Cronbach $\alpha$
Work pressure	0.760
How often does it happen that your job requires you to work fast?	
How often does it happen that your job requires you to work very hard?	
How often does it happen that you feel that your job requires too much input from you?	
How often does it happen that your job makes conflicting demands on you?	
Autonomy	0.860
How much freedom do you have concerning the tasks you do in your job?	
How much freedom do you have concerning how you do your work?	
How much freedom do you have concerning the order in which you do your work?	
Work-oriented culture	0.661
Employees are often expected to take work home at night or in the weekend	
Employees are regularly expected to put their jobs before their families	
To get ahead in this organization, employees are expected to work overtime	

reported an arrangement to be unavailable or did not know of its existence while it was offered, they were considered as not using it. We constructed separate variables for the use of healthy menus, sports facilities, and health checks.

To assess work pressure, we used a scale of four items which assessed the extent to which employees feel pressured by their job. Employees for example reported how often it happened that their job required them to work fast. Table 1 shows all four items for this scale. Answer categories ranged from 1 (all the time) to 5 (never). Scores were reversed so that higher scores indicate greater work pressure and we calculated one score by taking the mean of the four items ( $\alpha = 0.76$ ).

Working hours were measured by asking employees how many hours they actually work per week. When employees did not answer this question, they were assigned the value of their contracted hours if available ( $N = 213$ ). For employees who reported to be working more than 60 hours, the variable was top-coded at 60 hours ( $N = 77$ ). This did not influence the results.

We measured autonomy using a scale consisting of four items, as shown in Table 1. Employees were asked to rate on a Likert scale ranging from 1 (all the time) to 5 (never) how often they are free to, for example, decide how they do their job. Scores on the items were averaged and reversed so that higher scores indicate greater autonomy ( $\alpha = 0.86$ ).

Work-oriented organizational culture was based on employees' evaluation of the extent to which their organization emphasized work. Three items from Thompson's et al<sup>31</sup> work-family culture scale were used that assessed organizational time demands (see Table 1). Employees for example had to indicate whether they are often expected to work overtime to get ahead in the organization. The answer scale ranged from 1 (strongly agree) to 5 (strongly disagree). Responses to the three statements were averaged and reversed so that higher scores indicate more work-oriented culture ( $\alpha = 0.66$ ).

The role of direct colleagues was assessed by the share of colleagues who use WHP. We calculated how many colleagues who work in the same department as an employee use WHP and divided this by the total number of coworkers within that department. We created measures for each type of WHP.

We included several controls that could relate to WHP use. Job characteristics we controlled for are how often employees work from home (ranging from almost never to 4 to 5 days a week), physical demands of the job, occupational status (as ISEI code), and having a non-permanent contract. Older employees have been found to be less likely to use WHP so we controlled for age.<sup>4</sup> Women are reported to use more WHP,<sup>8</sup> as do higher educated employees,<sup>32</sup> so we accounted for sex and years of education. Debate still exists about whether healthier employees are more likely to use WHP or not,<sup>33</sup> so we also included self-rated health. Furthermore, we included controls for having a partner and children. Time demands outside work may also influence WHP use,<sup>7</sup> so we included time spent commuting to work in hours per day and a sum score for weekly hours spent on household activities (domestic duties, care for (grand)children and informal care). This variable was top-coded at 80 hours ( $N = 240$ ), which did not influence the results. At the

**TABLE 2. Descriptive Statistics**

Variables	M	SD	Range
Use of healthy menus	0.45*		0–1
Use of sport facilities	0.30 <sup>†</sup>		0–1
Use of health checks	0.49 <sup>‡</sup>		0–1
Working hours	39.52	9.01	0–60
Autonomy	3.77	0.81	1–5
Work pressure	3.37	0.66	1–5
Share of colleagues using healthy menus	0.44	0.28	0–1
Share of colleagues using sport facilities	0.30	0.29	0–1
Share of colleagues using health checks	0.47	0.32	0–1
Work-oriented culture	2.64	0.84	1–5
Age	42.25	10.74	18–77
Female	0.56		0–1
Education in years	13.78	3.02	3–21
Occupational status	57.53	18.28	11.56–88.70
Self-rated health	3.88	0.73	1–5
Partner	0.75		0–1
Children	0.51		0–1
Commuting time	1.09	0.74	0–8
Time household activities	21.89	19.41	0–80
Working from home	1.74	1.38	1–7
Job physical demands	2.89	1.48	1–5
Non-permanent contract	0.11		0–1
Size			
Small	0.23		0–1
Medium	0.28		0–1
Large	0.49		0–1
Sector			
Manufacturing	0.23		0–1
Health care	0.24		0–1
Higher education	0.17		0–1
Transport	0.11		0–1
Financial services	0.13		0–1
Telecommunication	0.11		0–1
Country			
United Kingdom	0.04		0–1
Germany	0.06		0–1
Finland	0.09		0–1
Sweden	0.12		0–1
The Netherlands	0.24		0–1
Portugal	0.11		0–1
Spain	0.08		0–1
Hungary	0.13		0–1
Bulgaria	0.13		0–1
N employees	7820		
N organizations	218		

\*Only among employees in organizations with healthy menus available ( $N = 4018$ ).  
<sup>†</sup>Only among employees in organizations with sports facilities available ( $N = 4809$ ).  
<sup>‡</sup>Only among employees in organizations with health checks available ( $N = 5765$ ).

organizational level, we included size (small = up to 100 employees, medium = 101 to 249 employees, large = over 250 employees), sector, and country. Descriptive statistics are shown in Table 2.

**Data Analyses**

Given that employees are nested in organizations, and the outcome variable is dichotomous, we used multilevel logistic models. When not accounting for the clustering of employees within organizations the standard errors of the parameters may be underestimated, leading to biased results.<sup>34</sup> The intraclass correlations are 0.32 for the use of healthy menus, 0.48 for use sports facilities, and 0.53 for use of health checks. This indicates that there is a significant variation between organizations of 32%, 48%, and 53% in the use of healthy menus, sports facilities, and health checks respectively, and shows the necessity to include the organizational level.

To test hypotheses we fitted multilevel models predicting employee use of WHP, one for each type of WHP we study. Models were estimated using maximum likelihood estimation. We used

McKelvey and Zavoina  $R^2$  to indicate how much variance is explained.<sup>34</sup> Results are shown as average marginal effects which express how the average probability of an employee using WHP changes as the independent variable increases one unit, holding the other variables constant. Using average marginal effects allows us to compare how the different variables of interest relate to the use of different types of WHP.<sup>35</sup>

**RESULTS**

Employees use distinct types of WHP differently. Healthy menus are used by 45% of employees, sports facilities by 30%, and health checks by 49%.

Table 3 shows the average marginal effects predicting whether employees use healthy menus, sports facilities, and health checks. Firstly, we expected employees with more work pressure to be less likely to use each type of WHP (H1a-c), but find no support for a relation between work pressure and use of healthy menus, sports facilities, or health checks.

**TABLE 3.** Average Marginal Effects (AME) and Standard Errors (SE) for the Likelihood of Using Healthy Menus, Sports Facilities, and Health Checks

	Healthy Menus		Sports Facilities		Health Checks	
	AME	SE	AME	SE	AME	SE
Working hours	0.00*	0.00	-0.00	0.00	0.00	0.00
Autonomy	0.02*	0.01	0.02*	0.01	0.01	0.01
Work pressure	-0.01	0.01	0.01	0.01	-0.00	0.04
Work-oriented culture	-0.03*	0.01	0.01	0.01	-0.02*	0.01
Colleague share	0.43*	0.06	0.30*	0.06	0.55*	0.08
Job characteristics						
Working from home	-0.00	0.01	0.00	0.00	0.00	0.00
Job physical demands	0.01*	0.01	0.00	0.00	0.01*	0.01
Occupational status	0.00	0.00	0.00	0.00	-0.00	0.00
Non-permanent contract	0.05	0.02	-0.10*	0.02	-0.06*	0.02
Personal characteristics						
Age	-0.00*	0.00	-0.00*	0.00	0.00*	0.00
Female	0.07*	0.02	0.04*	0.01	0.01	0.01
Education in years	0.00	0.00	0.00	0.00	-0.00	0.00
Self-rated health	0.03*	0.01	0.04*	0.01	0.02*	0.01
Partner	0.01	0.02	-0.01	0.01	0.01	0.01
Children	-0.00	0.02	0.02	0.01	0.04*	0.01
Commuting time	-0.03*	0.01	-0.02*	0.01	-0.01	0.01
Time household activities	0.00*	0.00	-0.00*	0.00	-0.00*	0.00
Organization characteristics						
Size (small = ref.)						
Medium	0.05	0.03	-0.01	0.03	0.03	0.02
Large	-0.00	0.03	0.02	0.03	0.03	0.02
Industry (manufacturing = ref.)						
Health care	-0.10*	0.04	-0.02	0.03	-0.05	0.03
Higher education	-0.09*	0.04	-0.01	0.03	-0.04	0.03
Transport	-0.01	0.04	0.04	0.04	0.03	0.03
Financial services	0.01	0.04	0.03	0.04	-0.02	0.03
Telecommunication	0.04	0.05	0.05	0.04	-0.02	0.03
Country (Netherlands = ref.)						
UK	0.00	0.06	0.06	0.04	0.01	0.05
Germany	0.02	0.06	0.13*	0.04	0.15*	0.05
Finland	0.16*	0.05	0.37*	0.06	0.25*	0.07
Sweden	-0.11*	0.05	0.31*	0.05	0.10*	0.04
Portugal	-0.03	0.05	0.06	0.04	0.25*	0.07
Spain	-0.20*	0.05	0.04	0.08	0.27*	0.08
Hungary	-0.03	0.05	0.08*	0.04	0.25*	0.07
Bulgaria	-0.12*	0.05	0.06	0.04	0.21*	0.06
N employees	4018		4809		5765	
N organizations	105		130		172	
$R^2$	0.27		0.36		0.39	

Note: Average marginal effects (dy/dx) were calculated as the discrete change from the base level.

\* $P < 0.05$  (two-tailed).

We find that working hours affect the use of healthy menus as expected but only very little: for every additional working hour, employees are on average 0.3% more likely to use healthy menus. This supports hypothesis H2a. We find no support for the relation between working hours and the use of sports facilities.

Our third hypothesis predicted that employees with more autonomy would be more likely to use WHP (H3a-c). We find that this is the case for healthy menus and sports facilities, but only marginally for health checks ( $P = 0.08$ ). For every point increase in autonomy, employees are about 2 percentage points more likely to use both healthy menus and sports facilities.

Next, we turn to the organizational characteristics. The intraclass correlations already show that considerable variation exists between organizations. Whether employees use WHP is thus influenced by the organization they work in, rather than only by individual characteristics.

We find that work-oriented culture is related to the use of healthy menus and health checks. In line with our hypothesis, employees are 3 percentage points less likely to use healthy menus the more they perceive the organizational culture to be work-oriented. The use of health checks is about 2 percentage points less likely the more employees perceive the organizational culture to be work-oriented, also supporting this hypothesis. We do not find support for a relation between the use of sports facilities and work-oriented culture.

We also assessed whether employees are more likely to use WHP when their colleagues do so too (H5a-c). We find that this is the case for all types of WHP. Employees are 43 percentage points more likely to use healthy menus, 30 percentage points more likely to use sports facilities, and 55 percentage points more likely to use health checks when a larger share of their colleagues also uses these respective types of WHP.

Finally, we take a comparative look at the three types of WHP. Our results show that the use of healthy menus is mostly influenced by the work environment, as working hours, autonomy, work-oriented culture, and colleague behavior all play a role. The effects of autonomy and work-oriented culture are also largest for healthy menus. Health checks appear mostly influenced by the organization, with significant effects found for work-oriented culture and colleague behavior. The use of sports facilities is mainly influenced by colleagues, although autonomy also plays a small role.

### Sensitivity Analyses

We performed several sensitivity analyses to check the robustness of our findings. Firstly, instead of looking at WHP use among direct colleagues, we used the HR manager's appraisal of WHP use within the organization to reflect organizational norms. This does not change our results. Secondly, because of possible reversed causality issues surrounding use of WHP and health,<sup>33</sup> we ran our analyses excluding self-rated health as a control. This does not influence the results for healthy menus and sports facilities, but we do find an effect for autonomy for the use of health checks which was only marginally significant when including health. Third, in some cases organizational policies may be department-driven rather than organization-driven<sup>36</sup> so we included also employees whose department manager reports WHP to be available. Here too autonomy relates to the use of health checks. Fourth, we ran the analyses excluding the employees who do not know WHP exists and were assigned to the group of non-users. When doing this, the significant relation between work-oriented culture and use of health checks disappears. Finally, to assess whether results could be country- or sector-driven we performed jack-knife procedures excluding one country or sector at the time.<sup>37</sup> We find that autonomy mainly plays a significant role in some countries and sectors in WHP use. For example, when excluding Portugal there is no relation between

autonomy and use of healthy menus and sports facilities, while in some cases the relation is only marginally significant. The relation between work-oriented culture and use of health checks is also only marginally significant when excluding Portugal or the financial services sector. Our sensitivity analysis hints that the results for autonomy and work-oriented culture may not be robust, so conclusions with respect to these characteristics should be interpreted with caution.

### DISCUSSION

The aim of this study was to examine to what extent job and organization characteristics contribute to whether employees use WHP. Organizations frequently offer WHP, but only few employees use them.<sup>8</sup> There is no consensus about why utilization rates are low, but in explaining this many studies ignore that the work environment may also play a role.<sup>9</sup> Our study is among the first to explicitly study how the work environment, reflected both in job characteristics and organizational characteristics, influences WHP use. By capitalizing on rich data in many organizations in nine European countries, we study how time, autonomy, work pressure, work-oriented culture, and colleague behavior relate to employee use of healthy menus, sports facilities, and health checks. This provides a better test of the influence of the work environment than previous studies.

Our most important finding is that the organization plays a substantive role in whether employees use WHP or not. Our results show that a large portion of the variation in WHP use can be explained by the organization and that two aspects of the organizational context we highlighted relate to use. Several scholars have called for incorporating the role of the organization in research about WHP use,<sup>27</sup> and our results confirm the need for this. Future research should thus pay attention to the organization when studying WHP use.

In understanding the role of the organization for the use of WHP, both work-oriented culture and colleague behavior appear to play a role. We find work-oriented culture, measured as the extent to which the organization expects work to take priority over other concerns, to be negatively related to use of healthy menus and health checks. When work is emphasized over other aspects of life such as health, employees will refrain from doing other activities at work. In addition, such a work-oriented culture may create more stress among employees which could additionally influence the use of healthy menus, for employees might go to the worksite cafeteria but resort to unhealthy choices to alleviate some of this stress.<sup>20</sup> Organizations that want to increase WHP use among their employees should emphasize that health is important, for example by clearly communicating about this and showing visible support from management.<sup>11,24</sup>

Colleague behavior is the most important predictor in our models for use of all three types of WHP. Previous research has shown that colleagues can be important sources of support for use of WHP,<sup>28</sup> but we show what they do also matters. For some types of WHP, like sports facilities, employees may be told about the existence of these policies and start using them too, whereas for others colleague behavior may be more visible, for example choosing a healthy menu when having lunch together. It is important that employers highlight that WHP use is common within the organization so that employees do not feel the odd one out for using WHP. Use of health champions, which are employees who frequently use WHP and help their colleagues adopt a healthier lifestyle, can aid this.<sup>25</sup>

Our results that autonomy facilitates use of WHP is in line with other studies (eg,<sup>22</sup>). However, these results need to be interpreted with care as suggested by some of our sensitivity analyses. Differences exist between groups of employees concerning the amount of autonomy they have.<sup>38</sup> Our sensitivity analyses also suggest there are differences between countries and sectors in

job characteristics that relate to WHP use. Future research could shed light on this.

Our comparison of healthy menus, sports facilities and health checks shows that although health checks are most often used, healthy menus are mainly influenced by the characteristics we studied. Of these three types of WHP, use of healthy menus inherently takes place within the workplace and could thus be influenced by employers most. It may be important that employees can use WHP while at work,<sup>22</sup> and are thus given the opportunity to do so by their employees to increase use of all WHP.

There are some limitations of our study. Firstly, our measure of WHP use does not fully capture how often employees use health arrangements and what is included in those arrangements. For example, it is unclear whether a health check only includes measuring weight and blood pressure or is a more thorough check of employee health. In addition, we only measured whether employees used WHP during the last 12 months but not how often this happened, so also sporadic WHP use was included. This could underestimate the role of job and organization characteristics. Though other studies also employ this measure (eg,<sup>33</sup>), to fully understand how the work situation affects WHP use a more complete measure of what entails WHP and how often this occurs might be necessary.

Secondly, we find the strongest effect for the share of colleagues that also use WHP. However, given that colleagues work together in a department, this measure might hide the fact that colleagues share certain attributes in their workplace or that in some departments it is obligatory to use for example health checks. Social network studies are needed to fully shed light on how colleagues influence each other. In addition, we could only include the behavior of colleagues who also answered the survey rather than all colleagues, but when we used the HR manager's appraisal of WHP use to reflect organizational norms, our findings remained the same. As there is no evidence that employees who do not use WHP are more reluctant to fill out questionnaires, we do not consider this to be problematic.

Thirdly, our measure for work-oriented culture captures only part of the organizational culture that may be relevant for WHP use. Organizational culture is a broad concept and can be measured in many different ways.<sup>11</sup> Previous literature on WHP use suggests that when employees perceive that the norm in their organization is focused on work over other aspects, they are less likely to use WHP.<sup>24,25</sup> We acknowledge that it is also interesting to study other aspects of the organizational culture, and suggest future studies to pay attention to this.

Fourthly, there might be an issue of reversed causality with respect to the measure for self-rated health that we included as a control. The aim of WHP is to improve employee's health, yet there is also evidence that healthier employees are more likely to use WHP,<sup>33</sup> and with our cross-sectional data we cannot tell which is cause and effect. We show that when excluding health as a predictor for WHP use, the work environment still plays a role. Nevertheless, future research should employ longitudinal data to study the relation between health and WHP use, which is interesting in light of WHP's health-improving potential.

Finally, the use of WHP might be influenced by the health behavior that employees exhibit outside work, but for which we did not have measures. For example, an employee who goes to the gym 3 times a week does not necessarily feel the need to use sports facilities at work. However, we control for self-rated health and family characteristics and by that capture this effect to some degree, though future studies could incorporate health behavior outside work too.

## CONCLUSION

Organizations offer worksite health promotion in order to improve the health and lifestyle of their employees, but also because doing so has been reported to affect the productivity of their

employees. However, utilization rates may be low and differ between organizations. This study shows which job and organization characteristics relate to WHP use. Few studies examined this, while understanding how the workplace influences employee use of WHP is beneficial. We studied use of healthy menus, sports facilities and health checks. Our results show that the work environment matters, in terms of both job and organization characteristics. It is not just important to focus on job characteristics such as autonomy, but to also create a health-promoting culture. By focusing on these aspects, organizations can encourage higher use of the WHP they offer.

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