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Actions Speak Louder Than Words

Workplace Social Relations and Worksite Health Promotion Use

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Objective: To study whether workplace social relations explain use of worksite health promotion (WHP), by examining colleagues' and team managers' WHP encouragement of a healthy lifestyle, and colleague WHP uptake. **Methods:** Multilevel data came from the second wave of the European Sustainable Workforce Survey (4345 employees of 402 team in 9 countries). Linear probability models were used to test use of two types of WHP: healthy menus and sport facilities. **Results:** Employees are more likely to use healthy menus and sport facilities when more colleagues do so too and when colleagues encourage a healthy lifestyle. Surprisingly, encouragement by one's manager plays no role. **Conclusions:** Social contact among colleagues can facilitate WHP use, and WHP initiatives should pay attention to the influential role of colleagues.

Keywords: colleagues, Europe, manager, organizational culture, worksite health promotion

Many organizations offer worksite health promotion (WHP), which consists of combined efforts of employers, employees and society to improve employee health and prevent disease.[1] Examples include healthy food in the worksite cafeteria and on-site fitness facilities, which facilitates employees in adopting a healthy lifestyle. The workplace is a promising place for preventive health activities because adults spend a majority of their waking day at work and social structures are in place that can encourage and support employees to make use of WHP.[2] WHP reportedly improves both employee health and productivity.[3–5] The average uptake of WHP is however low (around 33% on average) and there is large variation between organizations in the proportion of employees that use WHP.[3,6,7] This means both employers and employees miss out on the benefits of WHP.

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Clinical significance: Our results show that especially colleagues are important for WHP use among employees. Organizations should pay special attention to the social context in the workplace, by highlighting WHP use is common and employees value a healthy lifestyle.

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This article contributes to better understanding why relatively few employees make use of WHP, despite the benefits to their health and well-being. We argue that workplace social relations hold the key to this paradox. Research has shown that social ties such as family members, friends, and neighbors contribute to the adoption of healthy behavior.[8] The existence of social relations among employees and managers is often put forward as a reason why WHP could be successful, yet so far research on what motivates employees to use WHP has paid little attention to the fact that the workplace is a social arena where employees influence each other's attitudes and behavior.[9–11] Most of the workday is spent in the same location surrounded by the same colleagues and manager, and what they do may be an important facilitator or inhibitor for WHP use.[9]

The present study adds to existing literature in several ways. First, it is important to understand distinct ways in which workplace social relations may influence WHP use, so we examine both colleagues' and managers' encouragement of a healthy lifestyle and WHP uptake among colleagues. This reflects the health-promoting climate in the workplace and may induce employees to use WHP.[12] We focus on specific encouragement and behavior related to a healthy lifestyle rather than generic social support like other studies (eg, [13]). From research on work-related safety behavior and organizational helping behavior, we know that social norms and support specific to a behavior play an important role in employee behavior, and this may also apply to WHP use.[14,15]

Secondly, we look at the role of both colleagues and team managers. The workplace social environment consists of several actors, who may take on different roles in enabling employees to use WHP. To the best of our knowledge, no previous research on what induces employees to use WHP included both colleagues and managers, but focused on either colleagues (eg, [16]) or managers (eg, [17]). Departing from previous studies which mostly focused on upper management,[18,19] we furthermore focus specifically on team managers, who are the daily supervisors of employees. These are more closely connected to day-to-day working practices and may thus be more important for WHP use.[20] We acknowledge that colleagues and managers play different roles. Both colleagues and managers may influence the health climate in their team by encouraging employees to live a healthy lifestyle.[11] Colleagues may also be important role models, while managers are not, given differences in the type of relation, frequency of interaction, and closeness.[12,21] We thus study colleague and managers encouragement of a healthy lifestyle and WHP uptake among colleagues.

Thirdly, we use unique multilevel data from the European Sustainable Workforce Survey to study employees in many teams and organizations.[22] Most studies on WHP use are limited to one or a few organizations,[6] which makes it difficult to assess the influence of the organizational context, such as workplace social relations. Our sample includes over 400 teams and hence allows studying differences between these. Furthermore, the multilevel design of this study means we have data available from both employees and their team manager. Using information from several sources makes the findings less vulnerable to common method bias which occurs when the same respondent reports on numerous variables.[23]

Fourthly, we also examine if the WHP use of employees who more often work from home is associated with colleagues' and managers' encouragement and behavior. Employees who more often work from home may have less interactions with their colleagues and managers, and could thus likely be less exposed to the encouragement and behavior of their colleagues and manager.[24] Even though WHP is mainly linked to the workplace, as a result of the COVID-19 pandemic, employees expect working from home will become more prevalent.[25] Additionally, employees in several occupations spend hours in their job away from the central workplace (eg, truck drivers and salesmen). Our findings aim to shed light on how the workplace social environment can be used to motivate these employees to use WHP.

We study two types of WHP, namely healthy menus and sport facilities. These are among the most prevalent types of WHP implemented in organizations.[26,27] They share common characteristics and together have great potential to improve health.[2] Additionally, eating and exercise behavior may be most open to social influence because of the social component inherent in having lunch or working out together. The reason for focusing on two types of WHP is that they also differ, especially in the extent in which they are incorporated into the workday. The use of healthy menus in the worksite cafeteria inherently takes place at work and can be done daily, whereas sport facilities can also be used outside work and may be used less frequently. Additionally, eating behavior may be more visible to colleagues than exercise behavior.[28] If we nevertheless find common factors which affect their use, this will be important information for employers and health promotors on how to increase use of various types of WHP.

THEORY

Workplaces that value and are conducive to employee health and well-being help in creating a supportive social environment in which healthy behavior is normative.[29,30] Colleagues and team managers can be important for setting this norm, for it is through their encouragement and behavior that employees learn that healthy choices matter and are valued at work.[12,30] In such work environments, employees are more likely to participate in WHP.[17] We discuss how colleague and manager encouragement and behavior induce employees to use WHP in turn.

Encouragement

Both colleagues and managers can encourage employees to behave healthily, which shows that health is important in the workplace.[20] When employees feel their colleagues and manager value a healthy lifestyle, they may view this as implied permission for using WHP during work hours.[21,31] This reflects a shared, generally implicit notion that if we engage in behavior that others approve of, they will approve of us too.[32] For example, employees may refrain from using WHP because they feel guilty towards their colleagues for prioritizing their own health and lifestyle over work tasks.[33,34] When employees experience their colleagues to encourage them to behave healthily, they may be more likely to devote time during work to their personal health as they view this behavior as acceptable. This can promote WHP use.[35] Employees report experiencing colleague encouragement for healthy dietary choices or physical activity to be an important facilitator of WHP use.[36–38] We thus predict that employees whose colleagues encourage healthy behavior are more likely to use healthy menus and sport facilities (H1).

Similarly, managers can also influence the health climate in a team by encouraging healthy behaviors which could signal permission to use WHP.[12] This may make employees who have a health-encouraging manager feel their manager approves of them being away from work tasks for a while to use WHP.[30,31] Manager encouragement may be particularly relevant to the use of sport facilities, as this may take up more time away from work while done during the work day than eating healthily in the worksite cafeteria. Results of previous studies suggest that manager encouragement for healthy behavior is associated with use of WHP with respect to both healthy eating and physical activity.[17,37,38] We thus hypothesize that employees whose manager encourages healthy behavior are more likely to use healthy menus, and even more so, sport facilities (H2).

Behavior

Colleagues can also be role models when it comes to WHP use.[21] Given that colleagues take up a similar position and engage in similar work activities, they constitute the most salient role models in the workplace.[12,39] Modelling the behavior of others can help in establishing new behaviors and increase the frequency of already learned behaviors.[2] Other people, in this case colleagues, provide a guide as to what behavior is appropriate in a given situation.[40] If colleagues use WHP, this implies that doing so is an appropriate or effective way to behave and thus forms a socially approved type of behavior. By using WHP together, colleagues also motivate each other, for example by simultaneously attending an exercise class.[41] Furthermore, using WHP with colleagues can also increase affiliation with them.[42] Having lunch together with colleagues or exercising together may be important drivers of WHP use because it provides opportunities for social interaction.[31] Several studies have found that employees are more likely to use WHP promoting healthy eating behaviors and physical activity when more of their colleagues do so.[28,33,38] We thus predict that employees are more likely to use healthy menus and sport facilities if more colleagues do so (H3).

WHP and Working from Home

Employees who more often work from home may have less interactions with their colleagues and managers, suggesting less exposure to the encouragement and behavior of their colleagues and manager.[24] Less contact with colleagues and managers may mean their encouragement and behavior is less salient and hence less important for WHP use.[12,42] For example, employees who work from home a few days a week will not join their colleagues for lunch on those days and will hence not notice whether these colleagues choose healthy options or not.

Having less face-to-face contact with one's colleagues and manager may, furthermore, imply that when interaction occurs, this is mostly focused on work tasks, leaving less time to be devoted to other issues, such as encouragement of healthy behavior.[43] Managers already face difficulties addressing health issues in face-to-face meetings with their subordinates, and even more so when they see their subordinates less often.[17] Employees who are less aware that their colleagues and manager encourage a healthy lifestyle, may be less affected by this in their decision to use WHP. This reduced influence of colleagues' and manager encouragement and behavior may in particular affect use of healthy menus, as this is likely more integrated into the workday than the use of sport facilities, which could also be used outside work.[28] We thus expect that the encouragement and behavior of colleagues and managers will be less influential the more employees work from home, and more so for use of healthy menus than sport facilities (H4).

METHODS

Data

We tested our hypotheses using data from the second wave of the European Sustainable Workforce Survey.[22] We used the second wave because this included information on colleague and manager encouragement of healthy behavior. The survey was conducted in nine European countries: Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. Organizations that participated in the first wave of data collection in 2015/2016 were invited to participate again; besides, 13 new

organizations joined in the second wave. When an organization decided to participate, HR managers, team managers and employees were contacted at work and asked to fill out the questionnaire in their country language. The response rate was 89% among HR managers, 68% among team managers, and 54% among employees, resulting in a sample of 4345 employees and 205 managers in 402 work teams in 113 organizations.

We excluded 36 organizations (1272 employees in 135 teams) that did not offer WHP, as employees cannot use WHP when it is not available. We based this selection on the HR manager reports, as this is the most reliable source of information for whether WHP is available.[44] Note that the sample size differs between analyses of healthy menus ($N = 2161$ in 196 teams) and sport facilities ($N = 2234$ in 199 teams) as not all organizations offer both types of WHP.

Measures

Our dependent variable, WHP use, was based on self-reports. Employees were first asked whether catering or cafeteria menus offering healthy nutrition and sport facilities at work or a financial contribution toward a sport activity outside the workplace were available in their organization. When they answered affirmatively, they were asked whether they made use of this in the past 12 months. When employees reported a type of WHP to be unavailable or did not know of its existence they were considered as not using it. We created separate variables for the use of healthy menus and sport facilities.

Colleague encouragement for healthy behaviors was measured by asking employees whether their colleagues encourage them to eat healthy food and exercise, indicated on a 5-point Likert scale (1 = always to 5 = never). Responses were reversed so that higher scores indicate more encouragement. We averaged responses per team to reflect the wider health-promoting culture in the team. We created two variables, one for healthy eating encouragement and physical activity encouragement in line with the correspondence principle which holds that specific encouragement is likely more influential than generic encouragement.[45]

Manager encouragement for healthy behaviors was assessed by asking managers whether they encourage their employees to eat healthy food and exercise, rated on a 5-point Likert scale (1 = always to 5 = never). Again we reversed responses so that higher scores indicate more encouragement and created separate measures for healthy eating encouragement and physical activity encouragement.

Colleague WHP use was measured by asking the team manager about the share of employees in their team that uses healthy menus or sport facilities respectively, on an approximately linear 7-point item ranging from none to all. We recoded these answers into percentages. As not all employees in each team completed the survey, relying on the manager's report is a more robust measure of colleague WHP use because using incomplete colleague reports may lead to erroneous estimates. Also, using the manager as source of information on employee behavior may reduce possible common-method bias.[23] Using average usage within teams as reported by employees did not change the results. We created separate variables for healthy menus and sport facilities.

Working from home was measured by asking employees how often they worked from home during normal working hours in the past 12 months, ranging from (1) never or almost never, (2) <1 day a month, (3) <1 day a week, (4) 1 day a week, (5) 2 days a week, (6) 3 days a week and (7) 4 or 5 days a week.

We controlled our analyses for gender (female = 1), age and education. Female, younger, and higher educated employees are reported to be more likely to use WHP.[3,7,46] The number of hours employees work may impact the extent to which they can use WHP at work, so we also controlled for whether employees work part-time.[28] Furthermore, as there is ongoing debate about whether healthier employees are more likely to use WHP,[13] we also included self-rated health as control variable. At the team level, we controlled for team size. We also controlled for organizational sector and country. Descriptive statistics are shown in Tables 1 and 2.

Data Analyses

As Tables 1 and 2 show, our data contain a number of missing values, especially from managers. We used multiple imputation to replace these missing values. This procedure replaces each missing value with plausible values based on existing information in the dataset while adjusting for prediction errors.[47] We first imputed the missing variables at the team level, followed by imputing missing values at the employee level. We created 25 multiply imputed datasets (using a higher number of imputations gave similar results), and analyzed these using linear probability models with clustered standard errors at the team level. Such models make use of a regular OLS regression to explain a dichotomous variable, which is an acceptable, easier to interpret alternative to logistic regression if the values of the dependent variable are not too skewed.[48] We clustered standard errors at the team level to account for employees being nested in teams. Multilevel logistic models yielded similar results.

We fitted separate models regarding use of healthy menus and sport facilities. We also explored the option to take use of these two types together into one model, but given they were not highly correlated ($r = 0.20$) we only present results of the separate analyses. To test our hypotheses with respect to the role of colleagues and managers (H1 to H3), we first fitted models that included

TABLE 1. Descriptive Statistics and Correlations for Healthy Menus

		N	*M*	SD	1	2	3	4	5	6	7	8	9
1	WHP use	2161	0.36										
2	Colleague encouragement	2158	2.26	0.52	−0.05[a]								
3	Manager encouragement	1563	2.71	1.37	−0.01	0.26[c]							
4	Colleague use	1577	0.33	0.36	0.35[c]	−0.03	0.21[c]						
5	Working from home	2040	1.83	1.46	0.11[c]	0.10[c]	−0.03	−0.10[c]					
6	Part-time	2161	0.39		−0.03	−0.08[b]	−0.13[c]	−0.12[c]	0.01				
7	Female	2057	0.62		−0.07[b]	0.24[c]	0.10[c]	−0.18[c]	−0.11[c]	0.15[c]			
8	Age	2029	43.58	11.50	−0.10[c]	−0.06[a]	−0.05	−0.11[c]	−0.01	0.08[c]	0.01		
9	Years of education	2040	14.17	3.46	0.02	0.03	0.02	−0.02	0.31[c]	−0.01	0.02	−0.08[c]	
10	Self-rated health	1908	3.89	0.70	0.04	0.02	0.01	0.04	0.04	0.01	−0.07[b]	−0.14[c]	0.12[c]

SD, standard deviation; WHP, worksite health promotion.
[a]$P < 0.05$.
[b]$P < 0.01$.
[c]$P < 0.001$.

TABLE 2. Descriptive Statistics and Correlations for Sport Facilities

		N	*M*	SD	1	2	3	4	5	6	7	8	9
1	WHP use	2234	0.22										
2	Colleague encouragement	2230	2.11	0.51	0.09[c]								
3	Manager encouragement	1610	2.37	1.56	0.03	0.35[c]							
4	Colleague use	1617	0.21	0.24	0.31[c]	0.17[c]	0.12[c]						
5	Working from home	2083	1.91	1.47	0.03	−0.08[c]	−0.03	0.20[c]					
6	Part-time	2234	0.36		−0.08[c]	−0.09[c]	−0.11[c]	−0.07[c]	0.02				
7	Female	2105	0.59		−0.02	0.12[c]	0.12[c]	−0.01	−0.07[c]	0.17[c]			
8	Age	2081	42.99	11.33	−0.07[c]	−0.12[c]	−0.09[c]	−0.07[b]	−0.01	0.06[b]	−0.00		
9	Years of education	2099	14.07	3.38	0.07[c]	0.03	0.06[b]	0.22[c]	0.36[c]	0.03	0.06[b]	−0.08[c]	
10	Self-rated health	1957	3.86	0.71	0.10[c]	0.06[a]	0.04[a]	0.05[a]	0.04	0.02	−0.05[a]	−0.15[c]	0.15[c]

SD, standard deviation; WHP, worksite health promotion.
[a]$P < 0.05$.
[b]$P < 0.01$.
[c]$P < 0.001$.

colleague and manager encouragement and colleague use (model 1). To test H4, we used a Wald test to assess whether adding interaction effects improves these models by testing if these joint coefficients are equal to zero, following procedures described by Li and colleagues.[49] Model 2 included the interaction between working from home and colleague and manager encouragement and behavior. Additionally, we used Wald tests to see if effects differ between use of healthy menus and use of sports facilities and to see whether encouragement or behavior is more influential.[49] Likewise, R-2 was calculated accounting for Rubin's rules.[50]

RESULTS

In organizations that offered WHP, 36% of employees used healthy menus and 22% used sport facilities. Tables 3 and 4 show

TABLE 3. Linear Probability Models Predicting the Likelihood of Using Healthy Menus

	M1		M2	
	B	SE	*B*	SE
Colleague encouragement	0.11[c]	(0.03)	0.13[b]	(0.04)
Manager encouragement	0.01	(0.01)	0.00	(0.02)
Colleague use	0.18[b]	(0.05)	0.29[c]	(0.07)
Colleague encouragement × Working from home			−0.01	(0.01)
Manager encouragement × Working from home			0.00	(0.01)
Colleague use × Working from home			−0.06[a]	(0.02)
Working from home	−0.01	(0.01)	0.04	(0.04)
Part-time	−0.04	(0.02)	−0.04	(0.02)
Female	0.06[a]	(0.03)	0.06[a]	(0.03)
Age	−0.00	(0.00)	−0.00	(0.00)
Years of education	0.01	(0.00)	0.01[a]	(0.00)
Self-rated health	0.01	(0.01)	0.01	(0.01)
Department size	0.00	(0.00)	0.00	(0.00)
Sector (Manufacturing = ref.)				
Healthcare	−0.09[a]	(0.04)	−0.09[a]	(0.04)
Higher education	−0.04	(0.05)	−0.04	(0.05)
Transport	0.08	(0.07)	0.07	(0.07)
Financial services	0.10	(0.07)	0.14[a]	(0.07)
Telecom	0.15[a]	(0.06)	0.15[a]	(0.06)
Country (Netherlands = ref.)				
United Kingdom	−0.37[c]	(0.06)	−0.36[c]	(0.06)
Germany	−0.00	(0.06)	0.00	(0.06)
Finland	0.14[a]	(0.07)	0.16[a]	(0.07)
Sweden	−0.24	(0.14)	−0.27	(0.14)
Portugal	−0.35[c]	(0.06)	−0.35[c]	(0.06)
Spain	−0.10	(0.07)	−0.12	(0.06)
Hungary	−0.14[a]	(0.06)	−0.14[a]	(0.05)
Bulgaria	−0.38[c]	(0.04)	−0.38[c]	(0.04)
Constant	0.15	(0.10)	0.08	(0.12)
Adjusted R^2	0.20		0.21	
Employees	2161		2161	
Departments	196		196	

Standard errors in parentheses.
SE, standard error.
[a]$P < 0.05$.
[b]$P < 0.01$.
[c]$P < 0.001$.

TABLE 4. Linear Probability Models Predicting the Likelihood of Using Sport Facilities

	M1		M2	
	B	**SE**	***B***	**SE**
Colleague encouragement	0.08[b]	(0.02)	0.09[a]	(0.04)
Manager encouragement	0.01	(0.01)	0.01	(0.02)
Colleagues using sport facilities	0.23[c]	(0.05)	0.26[b]	(0.08)
Colleague encouragement × Working from home			−0.01	(0.01)
Manager encouragement × Working from home			−0.00	(0.01)
Colleague use × Working from home			−0.01	(0.03)
Working from home	−0.01	(0.01)	0.01	(0.02)
Part-time	−0.04	(0.02)	−0.04	(0.02)
Female	0.03	(0.02)	0.03	(0.02)
Age	−0.00[a]	(0.00)	−0.00[a]	(0.00)
Years of education	0.00	(0.00)	0.00	(0.00)
Self-rated health	0.04[b]	(0.01)	0.04[b]	(0.01)
Department size	0.00	(0.00)	0.00	(0.00)
Sector (Manufacturing = ref.)				
Healthcare	−0.03	(0.03)	−0.03	(0.03)
Higher education	−0.03	(0.03)	−0.03	(0.04)
Transport	0.27[c]	(0.06)	0.27[c]	(0.07)
Financial services	−0.06	(0.04)	−0.06	(0.04)
Telecom	0.17[b]	(0.05)	0.17[b]	(0.05)
Country (Netherlands = ref.)				
United Kingdom	−0.06	(0.04)	−0.05[a]	(0.04)
Germany	0.03	(0.04)	0.03	(0.04)
Finland	0.29[c]	(0.06)	0.29[c]	(0.06)
Sweden	0.36[c]	(0.05)	0.36[c]	(0.05)
Portugal	−0.09	(0.05)	−0.09	(0.05)
Spain	−0.06	(0.07)	−0.05	(0.07)
Hungary	−0.07[a]	(0.03)	−0.07[a]	(0.03)
Bulgaria	−0.02	(0.04)	−0.01	(0.04)
Constant	−0.11	(0.09)	−0.15	(0.10)
Adjusted R^2	0.24		0.24	
Employees	2234		2234	
Departments	199		199	

Standard errors in parentheses.
SE, standard error.
[a]$P < 0.05$.
[b]$P < 0.01$.
[c]$P < 0.001$.

analyses of the role colleagues and team managers play in the use of healthy menus and sport facilities, respectively.

First, we expected that employees whose colleagues encourage healthy behavior are more likely to use healthy menus and sport facilities (H1). Based on models 1 in Tables 3 and 4, we found that for both use of healthy menus ($B = 0.11$, $P < 0.001$) and use of sport facilities ($B = 0.08$, $P = 0.002$), employee encouragement contributes to employee's WHP use. Employees are 11 percentage points more likely to use healthy menus the more their colleagues encourage them to eat healthily, and 8 percentage points more likely to use sport facilities the more their colleagues encouraged them to be physically active. This supports our first hypothesis.

Secondly, we expected that employees whose manager encourages healthy behavior are more likely to use healthy menus and sport facilities, and more so for use of sport facilities (H2). However, we found no association between manager encouragement and use of either healthy menus ($B = 0.01$, $P = 0.41$) or sport facilities ($B = 0.01$, $P = 0.31$), and thus no support for our hypothesis. In models without the effects for colleague encouragement and behavior (not shown), we did find that manager encouragement was associated with use of both healthy menus ($B = 0.03$, $P = 0.02$) and sport facilities ($B = 0.03$, $P = 0.002$). Manager encouragement is also correlated with both colleague encouragement ($r = 0.26$, $P < 0.001$ for healthy menus and $r = 0.35$, $P < 0.001$ for sport facilities) and colleague use ($r = 0.21$, $P < 0.001$ for healthy menus and $r = 0.12$, $P < 0.001$ for sport facilities), see Tables 1 and 2. These findings suggest manager encouragement may set the conditions under which colleagues can be influential.

Thirdly, we expected that employees are more likely to use healthy menus and sport facilities if more colleagues do so (H3). Our results supported this hypothesis: both for use of healthy menus ($B = 0.18$, $P = 0.001$) and use of sport facilities ($B = 0.23$, $P < 0.001$), colleague use contributes to WHP use.

We also hypothesized that WHP use of employees who work from home more often would be less associated with the behavior and encouragement of their colleagues and managers. Wald tests showed that adding the interaction terms did not significantly improve the models for use of healthy menus ($F(3184.4) = 2.15$, $P = 0.10$) or sport facilities ($F(3185.7) = 0.36$, $P = 0.78$). We also mainly found non-significant results for the interaction terms. Only the association between colleague behavior and use of healthy menus is smaller the more employees work from home ($B = -0.06$, $P = 0.016$), but the associations with colleague and manager encouragement were not affected by the extent to which employees work from home. For use of sport facilities, none of the associations with colleague and manager encouragement and behavior were moderated by the extent to which employees work from home. We thus found partial support for our fourth hypothesis.

To gain more insight in the differences between use of healthy menus and use of sport facilities, we plotted the coefficients

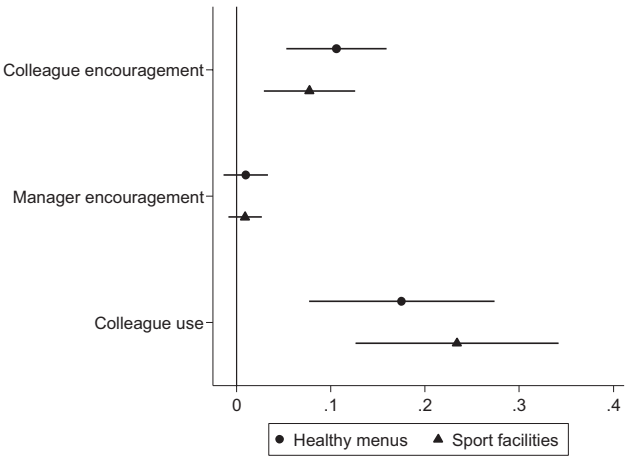

FIGURE 1. Coefficients and confidence intervals for work environment variables for use of healthy menus and sport facilities.

and confidence intervals for colleague encouragement, manager encouragement and colleague use in Figure 1. Figure 1 shows that the effects for colleague use were largest, followed by effects for colleague encouragement and manager encouragement (which was not significant). We assessed if the effects of colleague encouragement and colleague use were significantly different, which was not the case for use of healthy menus ($F(1159.7) = 1.35$, $P = 0.25$), but for use of sport facilities we found that colleague use was more important than colleague encouragement ($F(1179.1) = 5.86$, $P = 0.017$). We also tested whether effects differ between use of healthy menus and use of sport facilities, but this was not the case for either colleague encouragement ($F(150,128.8) = 0.73$, $P = 0.39$), manager encouragement ($F(11,085.9) = 0.01$, $P = 0.92$) or colleague use ($F(13,946.5) = 0.71$, $P = 0.40$).

Sensitivity Analyses

We performed several analyses to assess the robustness of our findings. First, we ran our analyses using listwise deletion ($N = 1353$ for healthy menus and $N = 1399$ for sport facilities) rather than multiple imputation, which did not influence the results. Secondly, to assess whether the manager's appraisal of WHP use in their team affected our results we used average use in a team for each employee as an alternative measure. When doing so, the interaction between colleague use and working from home no longer was significant ($P = 0.34$) while the other findings did not change. Thirdly, in some cases organizational policies may be team-driven rather than organization-driven,[51] so we included employees whose team manager reported WHP to be available rather than the HR manager. In these models the interaction between colleague use of healthy menus and working from home was insignificant ($P = 0.08$), but all other results remained the same. Fourthly, we ran the analyses excluding the employees who did not know if WHP was available and were subsequently categorized as non-users. In this analyses, the interaction between colleague use of healthy menus and working from home was insignificant ($P = 0.10$). Lastly, to assess whether results could be country- or sector-specific we performed jack-knife procedures excluding one country or sector at a time.[52] Findings remained largely unchanged, but we did not find an interaction between colleague WHP use and working from home when excluding the Netherlands ($P = 0.27$), or the financial sector ($P = 0.05$). These robustness checks suggest that the findings with respect to the moderating role working from home may play in the association between colleague and employee use of healthy menus should be interpreted with caution.

DISCUSSION

The aim of this study was to examine to what extent workplace social relations influence whether employees use WHP. Organizations frequently offer WHP to their employees but average uptake rates are low, suggesting that both employees and organizations miss out on the alleged benefits WHP can bring.[5,7] There is no consensus yet about why WHP uptake remains limited, and we argue that one of the reasons involves workplace social relations. Encouragement and the behavior of colleagues and team managers may be important facilitators of employees' WHP use, as this reflects to what extent healthy behavior is considered important and valued in the workplace.[30] Using unique multilevel data from over 3000 employees and their managers in a large number of teams, we assessed associations between colleague WHP use and colleague and manager encouragement of a healthy lifestyle, and employees use of healthy menus and sport facilities. Additionally, we examined whether working from home affected the influence of colleagues and managers.

Our main findings are that both colleague encouragement and behavior are associated with whether employees used healthy menus and sport facilities. Previous studies have shown that colleague general social support may play a role in employees' WHP use,[13] and we extend this by showing that employees whose colleagues support specific behaviors, notably eating healthily and being physically active, are more likely to use WHP. Likewise, employees are also more likely to use WHP when colleague uptake is higher. This is in line with results from previous studies.[28,37,38] Colleagues can thus be important role models with respect to employees' use of WHP, as well as shape the idea that using WHP is acceptable.[31,40] Comparing the relative importance of colleague encouragement and behavior with respect to employees' use of healthy menus and sport facilities, our findings suggest that colleague behavior matters more than encouragement, but only significantly for use of sport facilities. Colleagues are likely more important as role models than in providing (implicit) permission for WHP use of sport facilities.

Contrary to our expectation and findings of previous studies,[37–38] we found that managers appear to play no additional role to colleagues in promoting the use of healthy menus and sport facilities. Our results showed that manager encouragement of a healthy lifestyle is associated with WHP use among employees, but only when not accounting for the role colleagues play. Partly this could be due to our measure: this reflected manager encouragement as perceived by managers, not employees. Research on safety culture has shown that there may be a disconnection between managers and employees concerning health and safety at work.[53] It could be the case that managers think they are very encouraging, but employees perceive this differently. However, our finding that manager encouragement does play a role when not including the colleague effects, could also indicate that managers contribute to a healthy culture in the workplace that allows *all* employees to behave healthily and stimulate healthy behavior. In this way, managers may help in creating the conditions under which colleagues can come to be the main source of influence at work. Several other studies also note managers may be important in creating a healthy workplace,[17,20] but how this takes form warrants further research. Given that managers were expected to be important in providing (implicit) permission for WHP use[12] and we found this not to be the case, this also supports our main findings that the actions of social relations are important.

We further examined whether the encouragement and behavior of colleagues and managers is less important for the WHP use of employees who more often work from home and thus have less face-to-face contact with their colleagues and managers, but found this generally not to be the case. For employees who more often work from home, their colleagues' behavior was less important with respect to the use of healthy menus, but not sport facilities. The

reason for this could be that use of healthy menus inherently takes place at work, and is visible to colleagues, while sport activities can also be done outside work and may thus be less visible. Because of this lower visibility, colleague behavior may be less salient for employees' own behavior.[42] The role of colleague encouragement in WHP use was not associated with the extent to which employees work from home. Our findings hence show that, despite having less contact with colleagues and managers when working from home,[24] the social context at the workplace also matters for employees who are less frequently at work.

We want to note several limitations of our study. First, our measure of WHP may not fully capture what WHP entails. For example, we do not know if use of sport facilities took place at the workplace or elsewhere, which may affect the extent to which colleagues and managers could be influential. In addition, we only know whether employees made use of WHP in the last 12 months but not how frequently, which implies that WHP use may encompass occasional or irregular use as well as frequent or regular use. This may result in an underestimation of the influence of colleagues and managers. While other studies have also employed this measure,[13] a more detailed assessment of what WHP entails and how it is used is recommended.

Secondly, our finding that colleague encouragement and behavior play a role in WHP use may obscure that colleagues in the workplace share other attributes that could influence their common encouragement and use of WHP. By clustering at the team level we have tried to capture this shared variation to some extent. Social network studies can shed more light on the processes related to how colleagues influence each other.

Thirdly, we assessed colleague and manager encouragement of a healthy lifestyle and WHP uptake by colleagues, while there may be other ways in which workplace social relations may influence WHP use.[10] Future studies could examine these.

Fourthly, we used only a single item to assess manager encouragement and this was reported by the manager, not the employee. We recommend future studies include employees' perception of manager encouragement, as other studies suggest that employees who perceived their manager to be encouraging were more likely to use WHP.[37,38]

A strength of our study is that it addresses the role of both colleagues and managers, while earlier studies only looked colleagues[16] or managers.[17] Furthermore, we moved beyond commonly studied aspects such as colleague generic social support[13] or upper management endorsement of WHP,[18,19] as we specifically focused on encouragement of a healthy lifestyle and WHP use among colleagues. Also, our unique multilevel data[22] allowed us to study differences between many teams, while previous studies only focused on WHP use among employees in one or a few organizations and thus could not make use of this variation.[6] Additionally, by using measurements reported by colleagues and the team manager we limited common method bias.[23] Lastly, we examined two types of WHP, namely healthy menus and sport facilities. Given that we found that colleague encouragement and behavior matter for both, this is a strong sign to organizations that to increase WHP use among their employees, it is important to leverage the role of these social relations.

This study holds several implications on how to increase WHP use among employees. Although we want to note that this is not an easy thing for employers to do, we still see several means they can employ. We recommend organizations to pay special attention to the social context in the workplace when motivating employees to use WHP, and especially the role of colleagues. It is important to highlight that WHP use is common in the organization and that its employees find a healthy lifestyle important. In this way, employees may know using WHP is acceptable. Managers can also play a role here, by allowing their employees to use WHP during the workday, so that colleagues are enabled to motivate each other. Organizations in which few employees currently use WHP could make use of health champions, which are employees who frequently use WHP and help their colleagues adopt a healthier lifestyle, to increase WHP use.[54]

Furthermore, social influence processes at work can also be leveraged to stimulate healthy behavior when employees are not (always) physically present at work, which is important in work settings in which not all employees work from one location, and in the context of responses to the COVID-19 pandemic that required many employees to work from home.[25] Even from a distance, it is necessary to draw attention to the fact healthy behavior is important and encouraged, so that employees who are not at work can make healthy choices too.

CONCLUSION

Many organizations offer WHP to their employees, but typically relatively few employees make use of available options despite the positive influence it could have on their health. Especially colleagues were found to be play a role in WHP use among employees. WHP initiatives should leverage to the role colleagues can have in increasing its use by showing that healthy choices at work are common and encouraged.

REFERENCES

1. Luxembourg Declaration on Workplace Health Promotion in the European Union; 2007. Available at: https://www.enwhp.org/resources/toolip/doc/2018/05/04/luxembourg_declaration.pdf. Accessed October 25, 2019.
2. Ranby KW, MacKinnon DP, Fairchild AJ, Elliot DL, Kuehl KS, Goldberg L. The PHLAME (Promoting Healthy Lifestyles: Alternative Models' Effects) firefighter study: testing mediating mechanisms. *J Occup Health Psychol*. 2011;16:501–513.
3. Rongen A, Robroek SJ, van Lenthe FJ, Burdorf A. Workplace health promotion: a meta-analysis of effectiveness. *Am J Prev Med*. 2013;44:406–415.
4. Parks KM, Steelman LA. Organizational wellness programs: a meta-analysis. *J Occup Health Psychol*. 2008;13:58–68.
5. Ott-Holland CJ, Shepherd WJ, Ryan AM. Examining wellness programs over time: predicting participation and workplace outcomes. *J Occup Health Psychol*. 2019;24:163–179.
6. Bull SS, Gillette C, Glasgow RE, Estabrooks P. Work site health promotion research: to what extent can we generalize the results and what is needed to translate research to practice? *Heal Educ Behav*. 2003;30:537–549.
7. Robroek SJW, van Lenthe FJ, van Empelen P, Burdorf A. Determinants of participation in worksite health promotion programmes: a systematic review. *Int J Behav Nutr Phys Act*. 2009;6. doi:10.1186/1479-5868-6-26.
8. Smith KP, Christakis NA. Social networks and health. *Annu Rev Sociol*. 2008;34:405–429.
9. Clohessy S, Walasek L, Meyer C. Factors influencing employees' eating behaviours in the office-based workplace: a systematic review. *Obes Rev*. 2019;20:1771–1780.
10. Quist HG, Christensen U, Carneiro IG, Hansen JV, Bjorner JB. Do colleagues influence our lifestyle: the matter of smoking, body mass index and leisure-time physical activity? *Prev Med (Baltim)*. 2014;67:166–170.
11. Robbins R, Wansink B. The 10% solution: tying managerial salary increases to workplace wellness actions (and not results). *J Occup Health Psychol*. 2016;21:494–503.
12. Zweber ZM, Henning RA, Magley VJ. A Practical scale for multi-faceted organizational health climate assessment. *J Occup Health Psychol*. 2016;21:250–259.
13. Jørgensen MB, Villadsen E, Burr H, Punnett L, Holtermann A. Does employee participation in workplace health promotion depend on the working environment? A cross-sectional study of Danish workers. *BMJ Open*. 2016;6:e010516.
14. Fugas CS, Meliá JL, Silva SA. The ''Is'' and the ''Ought'': how do perceived social norms influence safety behaviors at work? *J Occup Health Psychol*. 2011;16:67–79.
15. Gonzalez-Mulé E, DeGeest DS, McCormick BW, Seong JY, Brown KG. Can we get some cooperation around here? The mediating role of group norms on the relationship between team personality and individual helping behaviors. *J Appl Psychol*. 2014;99:988–999.

16. Rongen A, Robroek SJ, van Ginkel W, Lindeboom D, Altink B, Burdorf A. Barriers and facilitators for participation in health promotion programs among employees: a six-month follow-up study. *BMC Public Health*. 2014;14:573–582.
17. Passey DG, Hammerback K, Huff A, Harris JR, Hannon PA. The role of managers in employee wellness programs: a mixed-methods study. *Am J Heal Promot*. 2018;32:1697–1705.
18. Hoert J, Herd AM, Hambrick M. The role of leadership support for health promotion in employee wellness program participation, perceived job stress, and health behaviors. *Am J Heal Promot*. 2018;32:1054–1061.
19. Hämmig O. Health and well-being at work: the key role of supervisor support. *SSM Popul Heal*. 2017;3:393–402.
20. Justesen JB, Eskerod P, Christensen JR, Sjøgaard G. Implementing workplace health promotion—role of middle managers. *Int J Work Heal Manag*. 2017;10:164–178.
21. Jenkins KR, Fakhoury N, Marzec ML, Harlow-Rosentraub KS. Perceptions of a culture of health: implications for communications and programming. *Health Promot Pract*. 2015;16:796–804.
22. van der Lippe T, Lössbroek J, van der Put A, Vergeldt N, Slabbekoorn J, Martens T. European sustainable workforce [ESWS]. *Second Wave*. 2018.
23. Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J Appl Psychol*. 2003;88:879–903.
24. van der Lippe T, Lippényi Z. Co-workers working from home and individual and team performance. *New Technol Work Employ*. 2019;1–20.
25. Baert S, Lippens L, Moens E, Sterkens P, Weytjens J. The COVID-19 crisis and telework: a research survey on experiences, expectations and hopes. *IZA Discuss Pap*. 2020;532:1–37.
26. Goetzel RZ, Shechter D, Ozminkowski RJ, Tabrizi MJ, Roemer EC. Promising practices in employer health and productivity management efforts: findings from a benchmarking study. *J Occup Environ Med*. 2007;49:111–130.
27. Sparling PB. Worksite health promotion: principles, resources, and challenges. *Prev Chronic Dis*. 2010;7:A25.
28. van der Put AC, van der Lippe T. Work environment and worksite health promotion in nine european countries. *J Occup Environ Med*. 2020;62:272–278.
29. Aldana SG, Anderson DR, Adams TB, et al. A review of the knowledge base on healthy worksite culture. *J Occup Environ Med*. 2012;54:414–419.
30. Kent K, Goetzel RZ, Roemer EC, Prasad A, Freundlich N. Promoting healthy workplaces by building cultures of health and applying strategic communications. *J Occup Environ Med*. 2016;58:114–122.
31. Seward MW, Goldman RE, Linakis SK, Werth P, Roberto CA, Block JP. Showers, culture, and conflict resolution: a qualitative study of employees' perceptions of workplace wellness opportunities. *J Occup Environ Med*. 2019;61:829–835.
32. Cialdini RB, Goldstein NJ. Social influence: compliance and conformity. *Annu Rev Psychol*. 2004;55:591–621.
33. Bredahl TVG, Særvoll CA, Kirkelund L, Sjøgaard G, Andersen LL. When intervention meets organisation, a qualitative study of motivation and barriers to physical exercise at the workplace. *Sci World J*. 2015. doi:10.1155/2015/518561.
34. Krick A, Felfe J, Klug K. Turning intention into participation in OHP courses? The moderating role of organizational, intrapersonal and interpersonal factors. *J Occup Environ Med*. 2019;61:779–799.
35. Kilpatrick M, Blizzard L, Sanderson K, Teale B, Venn A. Factors associated with availability of, and employee participation in, comprehensive workplace health promotion in a large and diverse australian public sector setting. *J Occup Environ Med*. 2015;57:1197–1206.
36. Lenneis V, Pfister G. Playing after work? Opportunities and challenges of a physical activity programme for female cleaners. *Int Sport Stud*. 2016;38:5–23.
37. Bruton CM, Vurnakes C, Martin K, Perry W, Henderson KA. A case study of a workplace recreation-based physical activity program. *Leisure*. 2012;36:1–16.
38. Clancy SM, Stroo M, Schoenfisch A, Dabrera T, Østbye T. Barriers to engagement in a workplace weight management program: a qualitative study. *Am J Heal Promot*. 2018;32:763–770.
39. Heaney CA. Social relationships: harnessing their potential to promote health. In: O'Donnell MP, editor. *Health Promotion in the Workplace*. Troy, MI: Art & Science of Health Promotion Institute; 2017. p. 613–631.
40. Stok FM, Verkooijen KT, de Ridder DTD, de Wit JBF, de Vet E. How norms work: self-identification, attitude, and self-efficacy mediate the relation between descriptive social norms and vegetable intake. *Appl Psychol Heal Well-Being*. 2014;6:230–250.
41. Mazzola JJ, Jackson AT, Thiele A. Obesity in the workplace: a systematic review of barriers and facilitators to healthy lifestyles. *Occup Heal Sci*. 2019;3:239–264.
42. Thomas JM, Ursell A, Robinson EL, et al. Using a descriptive social norm to increase vegetable selection in workplace restaurant settings. *Heal Psychol*. 2017;36:1026–1033.
43. Hinds PJ, Mortensen M. Understanding conflict in geographically distributed teams: the moderating effects of shared identity, shared context, and spontaneous communication. *Organ Sci*. 2005;16:290–307.
44. Kalleberg AL. Studying employers and their employees: comparative approaches. *Acta Sociol*. 1994;37:223–229.
45. Ajzen I, Fishbein M. Attitude-behavior relations: a theoretical analysis and review of empirical research. *Psychol Bull*. 1977;84:888–918.
46. van der Put AC, Mandemakers JJ, de Wit JBF, van der Lippe T. Worksite health promotion and social inequalities in health. *SSM Popul Heal*. 2020;10:100543.
47. Little RJA, Rubin DB. *Statistical Analysis with Missing Data.* Hoboken, NJ: Wiley; 2020, doi:10.1002/9780470317044.oth1.
48. Hellevik O. Linear versus logistic regression when the dependent variable is a dichotomy. *Qual Quant*. 2009;43:59–74.
49. Li K-H, Meng H-L, Raghunathan TE, Rubin DB. Significance levels from repeated p-values with multiply-imputed data. *Stat Sin*. 1991;1:65–92.
50. Harel O. The estimation of R2 and adjusted R2 in incomplete data sets using multiple imputation. *J Appl Stat*. 2009;36:1109–1118.
51. Wright PM,Nishii LH. *Strategic HRM and organizational behavior: integrating multiple levels of analysis*. (CAHRS Working Paper #07-03). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies; 2007. doi:10.1016/j.micron.2010.05.016
52. Neumayer E, Plümper T. *Robustness tests for quantitative research.* Cambridge, UK: Cambridge University Press; 2017.
53. Gittleman JL, Gardner PC, Haile E, et al. [Case Study] CityCenter and Cosmopolitan Construction Projects, Las Vegas, Nevada: Lessons learned from the use of multiple sources and mixed methods in a safety needs assessment. *J Safety Res*. 2010;41:263–281.
54. Edmunds S, Clow A. The role of peer physical activity champions in the workplace: a qualitative study. *Perspect Public Health*. 2016;136:161–170.

