

# Healthy at work

The role of the work environment  
in worksite health promotion



Anne van der Put

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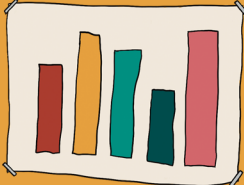
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# Introduction





## Background

I recently attended a family birthday and told my relatives that my dissertation was almost done. My great-aunt asked me what topic I was studying, saying that she would probably not understand the things we do in university. Upon telling her that I studied in what ways organisations promote the health of their employees she enthusiastically mentioned that the hospice she works in provides a healthy lunch for the employees. The whole family chipped in. My cousin, who is a bus driver, said that in his workplace they had recently started a health promotion programme, allowing the drivers (among others) to play darts during their work breaks. My father who works in a laboratory mentioned how he frequently goes for a walk with his colleagues. My partner added that in his consultancy firm, fruit is freely available for employees to eat during their working day, and I told them how, while working from home during the Covid-19 pandemic, I rolled out my yoga mat in our bedroom every week to participate in the online yoga class the university offered.

The stories of my family members about how the organisations they work for promotes their health are not unique. Many organisations offer their employees some type of worksite health promotion (WHP), which is defined as the combined efforts of employers, employees and society to improve employee health and prevent disease (*Luxembourg Declaration on Workplace Health Promotion in the European Union*, 2007). WHP can take many forms, such as providing healthy menus in the workplace cafeteria and healthy snacks in the office, paying for employees to participate in a local sports event and accommodating trainings to prepare them, setting up an on-site gym or offering online strength training classes. Workplaces are considered promising places for promoting health for a variety of reasons. For example, as many adults work and spend a considerable amount of time at in the workplace, large groups can be reached (Merrill et al., 2011). Adults consume about a third of their daily calories at work and many working adults spend a large part of their day being sedentary at work, meaning lifestyle changes in the workplace can help employees to live a healthier life overall (Clohessy et al., 2019; Mazzola et al., 2019). In addition, social structures are in place that can encourage and support employees to make and maintain healthy choices (Quist et al., 2014; Ranby et al., 2011).

Previous research suggests WHP has positive effects for employees, their employers as well as society as a whole. Many studies have noted that employees that make use of WHP improve their health: they eat healthier diets, more often

engage in physical activity and report better health overall as a result (Anderson et al., 2009; Conn et al., 2009; Maes et al., 2012; Merrill et al., 2011; Rongen et al., 2013). In addition, they report being more satisfied with their job (Andersen et al., 2017; Parks & Steelman, 2008), having more energy and being in better mood (Cho & Kim, 2022; Jensen, 2011; Sianoja et al., 2018). Organisations profit from employees' increased work ability and performance which is associated with WHP use, as well as lower absenteeism and presenteeism (Jensen, 2011; Kuoppala et al., 2008; Lutz et al., 2019). Providing employees with WHP is also reportedly good for the organisation's reputation, which is seen to engage in good employment practices when doing so (Sonnentag & Pundt, 2016). In light of the aging workforce and increasing health care costs, a healthier workforce also benefits society: healthy employees will be able to perform their work for longer, meaning they can contribute to welfare provisions for a longer amount of time and may need less health care (Poscia et al., 2016). Moreover, the healthy habits that employees pick up at work may translate into health behaviours at home, leading to possible spill-over effects on family members (Carmichael et al., 2016).

Many of the positive effects WHP reportedly has are contingent on the extent to which employees use it (Krick et al., 2019; Ott-Holland et al., 2019). However, on average only a subsection of the workforce does so. It is estimated that about 33% of employees that have WHP available make use of it, and furthermore, that this differs a lot between organisations: in some only 2% of all employees participate, while in others this is as high as 97% (Bull et al., 2003; Rongen et al., 2013).

In explaining why employees (do not) make use of WHP, previous studies have mainly turned to individual characteristics of employees, such as their age or intention to live healthier. This may be the result of WHP having been mostly studied from a behavioural perspective, where researchers develop a WHP programme, implement this in an organisation for a certain amount of time, and study its effects by comparing measures before and after the programme. While this approach certainly has its merits and offers rigorous tests of causality, it is also limited due to the strong focus on characteristics of the individual employee. Health promotion does not only require a change in behaviour, but also a supportive environment to maintain this change (Jørgensen et al., 2016). When it comes to WHP, the social structure of the work environment may play a key role in explaining why employees make use of WHP and the effects this has. The work context is often theorised to be the foundation on which successful WHP is built, but it is rarely included in research designs (Grawitch et al., 2006). Without

understanding how the environment in which behaviour takes place plays a role, interventions to promote health may not be successful (Chandola et al., 2014).

In this dissertation, I therefore turn to the work environment in which employees make healthy choices, like participating in WHP. WHP is not just a health activity, it is also an organisational activity, in the sense that it takes place in the context in which employees perform their work (Sloan & Gruman, 1988). Previous studies advocated to incorporate variation between work environments that exist in diverse organisations into research on WHP (Clancy et al., 2018), which is what I do here. I draw upon a unique dataset which offers ample variation in work environments, and extend the literature by answering the following overarching research question:

*What is the role of the work environment in explaining WHP use and its outcomes?*

## **The work environment**

Participating in health behaviours does not occur in splendid isolation, but is affected by the environment that individuals demonstrate this behaviour in. Several theoretical frameworks on which WHP interventions are based recognise that the surroundings in which these interventions take place are of key importance (Linnan et al., 2001; Tabak et al., 2015). Even though my family members all have very different jobs, their work environment affects whether they are willing and able to participate in WHP available in their organisation. To date, it is not yet clear how the work environment may facilitate or hinder employees in their attempts to use WHP (Goetzel & Ozminkowski, 2008). Most studies that explain WHP use focus on demographic characteristics of individual employees or focus on one job or organisational feature (Rongen et al., 2013). When I refer to the work environment, I take this to mean the broader context in which employees work. This includes both the conditions under which employees perform their work, as well as the larger organisational culture. The extent to which employees can make decisions about how they spend their time at work may be one of those important conditions. For example, in the lab my father frequently needs to perform tests which cannot be left unattended. He can however plan to start these early in the morning, so that they are done by lunch time and he has time to go for a walk with his colleagues.

In addition, also the organisational culture as part of the work environment has been suggested as an important element in explaining whether employees make use of WHP (Goetzel & Ozminkowski, 2008). The organisational

culture consists of shared assumptions about the beliefs, values and norms of the organisation and determines which behaviours are acceptable within an organisation and which ones are frowned upon (Aldana et al., 2012). Ideal to participation in WHP is a culture of health, in which the organisation is supportive of the health and well-being of employees (Kent et al., 2016; Zweber et al., 2016). For example, in my partner's consultancy firm, employees are expected to have lunch together each day at noon and are discouraged from scheduling meetings at this time. The organisation ensures that, among others, vegetables and whole wheat bread is available, so that they eat a healthy lunch together. In other organisations, the ideal worker norm prevails. In these organisations, it is expected that employees make their job their top priority by working long hours and arranging other responsibilities around work (Van der Lippe & Lippényi, 2020a). In such organisations, where work goes above and beyond everything, employees would not dream of participating in a sports class during working hours while all their colleagues focus on work (Mazzola et al., 2019).

Employees internalise the culture that exists in their organisations and which may affect their WHP use, yet this has remained understudied. One of the most often mentioned reasons why employees do not participate in WHP is a lack of time. Employees report feeling guilty when spending time on their personal health while their colleagues engage in work (Krick et al., 2019; Seward et al., 2019). Role theory suggests that employees regard this as a barrier to participate in WHP due to their perceived role as workers (Schwetschenau et al., 2008). Even though their organisation is accommodating by offering them the possibility to participate in WHP, these employees may still feel that they need to prioritise work. Also when working from home employees may feel they need to show that they are committed workers whose job is their main priority (Van der Lippe & Lippényi, 2020a). If, however, organisations make explicit that it is no problem for employees to use work time to participate in WHP, this may take away some of their perceived lack of time.

It is important to note that the work environment does not only encompass the physical workplace, but includes all employees wherever they are located (Wilson et al., 2017). My bus-driving cousin spends most of his time on the road, yet still faces certain constraints and facilitators in his job that allow him to make use of the WHP programme in his organisation. Similarly, many employees with an office job worked from home during the Covid-19 lockdowns and expectedly continue to do so in the future (Guler et al., 2021; Oude Hengel et al., 2021). Despite that the W in WHP refers to worksite, this does not necessarily

mean WHP needs to take place in the workplace, though current studies on WHP have rarely addressed WHP offerings that happen elsewhere. For example, our university offered online yoga and kickboxing lessons, which I happily made use of in 2020 as the gym was closed during the lockdown. At home it is difficult to use onsite facilities in the workplace, but employees can resort to WHP specifically for employees working from home instead. In their decision to participate, these employees are however still influenced by their work environment, even though they are not physically located “at work”.

In the first part of this dissertation, I therefore study to what extent the work environment affects WHP use both in the workplace and when working from home.

## **The role of workplace social relations**

An important part of the work environment consists of workplace social relations, namely the manager and colleagues. The existence of supporting social relations is often put forward as a reason why WHP may be successful, yet is rarely studied (Jenkins et al., 2015; Passey et al., 2018). In this light, the workplace is not just a place where work is done, but also a social arena where employees can influence each other’s attitudes and behaviours (Quist et al., 2014). Many employees spend most of their working hours in the same place surrounded by the same colleagues, with whom they frequently interact and share experiences. It is therefore not unlikely that they may be influenced by the (un)healthy behaviour of those colleagues (Burke et al., 2017; Clohessy et al., 2019). The attitudes and behaviours of colleagues and managers are an important part of the work environment (Kent et al., 2016; Seward et al., 2019), and thus need closer inspection.

Previous research has devoted attention to the social work environment and examined social support and social capital as possible contextual correlates of health behaviours at work (Hämmig, 2017; Mazzola et al., 2019; Tamers et al., 2015; Väänänen et al., 2009). Studies chiefly assessed whether trust between colleagues and solidarity relate to better health, and most found no significant associations. This is not surprising, given that it may not be so self-evident how trust between colleagues could lead to making healthier choices. Research on safety behaviours at work and the role of the work environment suggests it may be more important that the support employees receive is specific to the behaviour at hand (Fugas et al., 2011; Gonzalez-Mulé et al., 2014). This could also

be the case regarding a healthy lifestyle, but has received little attention in the current literature so far.

Another important element of the social work environment is social norms, which are the standards against which the appropriateness of certain behaviours are assessed (Ball et al., 2010). Many theoretical perspectives that have been used to examine the role the social context plays in explaining health behaviours include social norms to some extent. For example, the theory of planned behaviour sees attitudes toward the behaviour, perceived behavioural control and social norms as explanations for why individuals act the way they do (Ajzen, 1991). Another example, social learning theory, considers behaviour to be learned through modelling others (Bandura & Walters, 1977). Colleagues work in close proximity so they may function as the models whose behaviours can be observed and copied (Quist et al., 2014). When colleagues can execute a certain behaviour, this could imply to employees that they may be capable of behaving likewise (Rowland et al., 2018). Additionally, by looking at what others are doing, employees get an idea which kind of behaviour is expected. This follows the social proof principle, which holds that if most people behave in a certain way, this must be the appropriate way to behave (Cialdini & Goldstein, 2004). When during lunch one colleague always opts for an unhealthy option while the rest of the group eats a salad, this colleague is bound to receive comments at some point regarding the nutritiousness of their choice. Norms can be a form of social control indicates which people can be liked and approved of, and so conforming may be experienced as rewarding (Higgs & Thomas, 2016; Park et al., 2017). Note that the norm can also discourage healthy behaviour: when no one in a team participates in the sports class during lunch, the one colleague that does may be considered overenthusiastic and be frowned upon for not joining the rest for lunch. In addition, colleagues must behave in a way that is deemed achievable (Edmunds et al., 2020): employees are probably not very likely to model the active commuting behaviour of that one particular colleague that cycles 30 kilometres to work and 30 kilometres back home again. Few studies have addressed the actual behaviours of colleagues, while doing so may provide more insights into the norms that develop in the workplace and how these may promote health behaviours.

In addition to influencing health behaviours at work, such as participating in WHP, colleagues may also affect behaviours that take place outside work. The culture of health that exists in an organisation, and which is largely shaped by the behaviours employees exhibit, supports the entire workforce, not just those

participating in WHP (Kwon & Marzec, 2019). Additionally, the norms that develop in the workplace may become habits which are translated into behaviour outside (Lake et al., 2016; Quist et al., 2014; Rowland et al., 2018). A wide range of studies has shown that significant others affect health behaviours outside work, such as partners, family, friends and neighbours (Dailey et al., 2018; McNeill et al., 2006; Powell et al., 2015; Smith & Christakis, 2008; M. L. Wang et al., 2014). If colleagues are so important for healthy choices at the workplace, they may affect what happens outside too. Colleagues have however remained understudied in the lifestyle habits people exhibit. This is surprising given that employees may spend more waking hours with their colleagues than with their partner (Burke et al., 2017), and so warrants closer investigation.

Next to colleagues, also managers are an important social relation in the work environment. Existing research has rarely included the role of managers next to that of colleagues. The focus has mainly been on upper management's support for WHP within the organisation, as well as whether it is appropriate for managers to attend to the health of the employees they supervise (Pescud et al., 2015; Wieneke et al., 2019). Little is yet known about direct managers. These may be more influential, as they are concerned with the daily execution of work and can thus create the conditions under which employees use WHP (Justesen et al., 2017; Kent et al., 2016; Passey et al., 2018). One of my supervisors told me that while working from home at the heights of the Covid pandemic, he frequently went for a walk around the park with his partner, through that showing to me that it would be no issue if I also took an extended lunch break to get some exercise. By demonstrating that they value a healthy lifestyle, managers may demonstrate to employees that making healthy choices at work is approved of (Krick et al., 2019).

In the second part of this dissertation, I therefore study to what extent workplace social relations affect the healthy choices employees make, both at work by participating in WHP and in their lifestyles more generally.

## **Outcomes of WHP**

Organisations offer WHP out of concern for the health and well-being of their employees, but also because they hope to benefit from it themselves (Goetzel & Ozminkowski, 2008; Grawitch et al., 2007; Ungureanu et al., 2019). Previous studies have shown that using WHP is related to both health-related outcomes such as healthier diets (Maes et al., 2012), physical activity (Conn et al., 2009),

lower weight (Anderson et al., 2009), and better health in general (Rongen et al., 2013) as well as work-related outcomes, for example absenteeism (Jensen, 2011; Kuoppala et al., 2008; Lutz et al., 2019; Parks & Steelman, 2008; Tarro et al., 2020), presenteeism (Cancelliere et al., 2011; Jensen, 2011; Lutz et al., 2019), job satisfaction (Andersen et al., 2017; Parks & Steelman, 2008) and work ability (Grimani et al., 2019; Kuoppala et al., 2008). Despite convincing evidence that WHP benefits both employers and employees, there are still some open ends regarding which employees are affected by WHP.

For example, it is currently unknown whether WHP indeed promotes the health of *all* employees, or whether it may unintentionally contribute to health inequalities. When it comes to WHP's health-promoting potential, it is important that relevant target groups are reached (Jørgensen et al., 2015). On average, lower educated employees have worse health than higher educated employees (Dieker et al., 2019; Hämmig et al., 2014), and if the former make less use of WHP, then WHP may contribute to increasing health inequalities. While WHP should be a means to promote health among *all* employees, lower educated employees less often work in organisations where WHP is offered (Hammerback et al., 2015; Harris et al., 2011). Once available, their work environment may hinder lower educated employees from using it (Bukman et al., 2014; Ranby et al., 2011). Although some studies specifically addressed lower educated employees (e.g. Lassen et al., 2007), this does not allow for contrasting higher and lower educated employees and, through that, means we lack knowledge about WHP and health inequalities.

A second important question is whether also employees that do not make use of WHP could still be affected by it. When it comes to the relationship between WHP and work-related outcomes, it is often assumed that only those that make use of WHP benefit, which has implications for WHP's effectiveness given that not all employees do so (Glasgow et al., 2019). Employees that use WHP are reportedly healthier which helps them to do better in their job (Cho & Kim, 2022; Jensen, 2011). However, especially when it comes to work-related outcomes, WHP may also elicit a response among those not using it. Previous studies on other organisational policies, such as supplemental parental leave and flexible work schedules, have shown that simply knowing that these policies are available already makes employees perform better (Begall et al., 2022; Casper & Harris, 2008). This could also apply to WHP, when employees may view the fact that their organisation offers WHP as a sign that their employer is concerned with employee well-being. In turn, employees reciprocate by doing well and performing additional



tasks, as posited by organisational support theory and social exchange theory (Kurtessis et al., 2017). However, no studies have explored whether this is indeed the case for WHP.

In the third part of this dissertation, I therefore study health- and work-related outcomes of WHP, and ask who is affected by its use and being aware of its availability.

## **Multilevel data to account for variation in work environments**

To study the role of the work environment in the use and outcomes of WHP, it is important to make use of large-scale data which contains information from many organisations in order to have variation in employees' work environments. The European Sustainable Workforce Survey (ESWS) is such a dataset which contains unique multilevel data (Van der Lippe et al., 2016, 2018), and which I make use of in this dissertation. In addition, I rely on data from a vignette experiment which I specifically designed for this dissertation.

### **European Sustainable Workforce Survey**

The ESWS is a multi-actor, multi-level survey which was conducted in many organisations in nine European countries (Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden and the United Kingdom). This dataset contains information on employees, which are nested in teams, their team managers and the organisations they work for.

The first wave of the ESWS was collected in 2015-2016. Organisations were selected using stratified random sampling by country, sector (manufacturing, health care, higher education, transport, financial services and telecommunication) and size (up to 100 employees, 101-249 employees and 250 or more employees). When an organisation did not want to participate in the survey, it was replaced using a matching strategy so that a new organisation within the same sector and of the same size was approached.

After an organisation agreed to participate in the survey, at least three teams were selected in consultation with the HR manager. Within these teams, all employees and the team manager received a questionnaire to be filled in at work. This could be done either online or on paper. In addition, the HR manager filled in a questionnaire about the organisation as a whole. In the questionnaires

for all three actors (HR manager, team manager and employee), questions were included about the availability and use of different WHP arrangements. In total, the response rate for the first wave was 98% among HR managers, 81% among team managers and 61% among employees. This resulted in a dataset with information on 11011 employees and 924 managers in 869 teams working for 259 organisations.

To examine the role of workplace social relations, I make use of data from the second wave of the ESWS, which we collected in 2018-2019. For this wave, we re-invited organisations that had participated in the first wave to join the study again. In addition, 13 new organisations joined the study. In the second wave, we tried to include the same teams in the study that had participated in the first wave. This means that some employees appear in both waves, but due to changes, e.g. because some people retired, found a new job or are employed elsewhere after reorganisations, the majority of the participants was new.

Again, we contacted employees, their team managers and the HR manager to fill in questionnaires at work, either online or on paper. The same questions about the availability and use of WHP were included. In addition, the second wave specifically included items for this dissertation which were absent from the first wave, for example about the encouragement of a healthy lifestyle by colleagues and managers, as well as detailed information about the lifestyles of employees. For the second wave, the response rate was 89% among HR managers, 68% among team managers and 54% among employees, leading to data on 4345 employees and 205 managers working in 402 teams in 113 organisations.

The greatest strength of the ESWS is that it includes a large number of organisations and teams, and through that, work environments. Previous studies on WHP have mostly focussed on one or a few organisations (Bull et al., 2003; Rongen et al., 2013), making it difficult to account for variation in organisational contexts, as I do in this dissertation. Other studies have sampled many organisations (e.g. Lier et al., 2019), but do not have information on employees and teams. Another strength of the ESWS is its multilevel design. It is the first dataset which includes information from three different actors: employees, their team managers and the organisation they work for. This allows me to use reports from the different actors in the empirical chapters, which helps in preventing common method bias (Podsakoff et al., 2003). In addition, through the way the data were collected, it is possible to construct which employees work together in the same team. This is especially relevant to see how colleagues may influence health behaviours both at work and outside.

Another unique feature of the ESWS is that data are gathered in nine European countries and six sectors. Most studies on WHP are conducted in the US, which is different from the European context. For example, in the US employers pay for health insurance, while in Europe this must be covered by employees themselves (Goetzel et al., 2014; Ni Mhurchu et al., 2010). In this dissertation, I do not utilise the national contexts in which organisations are situated. This is mainly due to the fact that within countries, WHP practice is fragmented, and that the organisational context appears more important (Verra et al., 2019). In addition, although the dataset contains responses from employees across six sectors, meaning that there are differences in the type of jobs employees hold which may affect WHP use and its outcomes, I do not specifically focus on sectoral differences. Currently, there is little research on sectors (with some exceptions, for example see Ranby et al., 2011 on firefighters), and there is no reason to expect different mechanisms explaining WHP use in different sectors. Moreover, the main focus of this dissertation – the work environment – may differ within sectors. I do however use generic measures of WHP that are applicable to the different countries and sectors of the ESWS. In each chapter I perform analyses to assess whether outlier countries or sectors play a role. Additionally, the inclusion of different countries and sectors enhances the external validity of my findings.

## **Vignette experiment**

I began working on my dissertation in 2018, when no one had yet heard of Covid-19. However, in March 2020, Covid-19 also reached the Netherlands, and the Dutch government installed many measures to prevent the spread of the virus, including asking employees to work from home as much as possible (RIVM, 2021). This offered an interesting new context to study the use of WHP, namely in the home office. Even though the ESWS contains questions on working from home, few employees reported to frequently do so in both waves (Van der Lippe & Lippényi, 2020a). Additionally, as it does not contain information on WHP for employees working from home, I designed a vignette experiment to examine whether employees are willing to participate in this.

In a vignette experiment, respondents are presented with descriptions of hypothetical situations (called vignettes), after which they are asked to make a decision (Auspurg & Hinz, 2015). As few employers offered WHP for employees working from home, making it difficult for employees to imagine if they will

participate and under which conditions, we thought a hypothetical design would be most suitable. People's responses to vignettes matches their real-life behaviour well (Hainmueller et al., 2015), and the fact that many employees worked from home helped them to make realistic decisions.

I approached organisations that had previously participated in another study (Van der Put, Hummels & Martens, 2021) and whose contact details we had from the Dutch chamber of commerce. Within each organisation, one contact person was approached to explain the aim of the study and asking whether the organisation wanted to participate. When this was the case, this contact person distributed an anonymous link to employees within the organisation, for example through email or the intranet. In total, 1105 employees from 33 organisations joined the study, of which 873 fully completed the vignette experiment. These employees rated six vignettes in which they were asked whether they wanted to participate in three types of WHP when working from home under various conditions.

## Causality

Ideally, when doing research, I like to claim that my outcomes are attributable to the explanatory variables (for example, that employees use WHP because their colleagues encourage them to live healthily). This means I can be more certain about the associations and am better able to, for example, tell employers how they can increase WHP use, as I know employees use WHP due to a certain aspect in the work environment and not because of alternative explanations. In this dissertation, I mainly employ cross-sectional data, where all variables are measured at the same point in time, rather than repeatedly. This means I study association rather than causation and therefore cannot always be certain about what comes first. Even though there are two waves in the ESWS, many of the items that I use in this dissertation are only included in one wave. Moreover, the dataset has not been set up as a longitudinal study. While collecting data for the second wave, we focussed on including the same teams as in the first wave, not the same employees. Although some employees participated in both, many did not, either because they retired, found a different job or because of reorganisations. This means for most participants, there is only one data point.

Because I measure the associations at one point in time, I cannot fully distinguish cause and effect. However, from a theoretical perspective, I do not expect reversed causality, where the outcome explains the explanatory variable

rather than vice versa. For example, using WHP is unlikely to influence employees' acquired level of education. It also seems improbable that employees decide to work for an organisation based on the health behaviours of the other people that are employed there. In addition, the relationships that I find are in line with other studies that do employ methods which allow for making causal claims. Even though a longitudinal approach would be preferred, this gives me confidence that my findings hold merit.

One of the chapters relies on data from a vignette experiment. This type of research lends itself better for making inferences regarding causality, because variations in the explanatory variables (in this case, aspects of the work environment), can be exogenously determined (Auspurg & Hinz, 2015). Here, I can be more confident that aspects in their work environment make employees use WHP while working from home.

## Types of WHP

In this dissertation, I examine different types of WHP. In the ESWS, information is available on three types: healthy menus (catering or cafeteria menus based specifically on healthy nutrition), sports facilities (sports facilities at work or a financial contribution towards a sports activity) and health checks (the option of undergoing health checks to evaluate one's current state of health). These were chosen because they are among the most prevalent types of WHP and can potentially be used by all employees (European Agency for Safety and Health at Work, 2020; Goetzel et al., 2007; Sparling, 2010). Together, they have great potential to improve health (Mazzola et al., 2019; Ranby et al., 2011). Especially eating healthily and engaging in sufficient physical activity are often paired in recommendations for a healthy lifestyle (Rowland et al., 2018). The work environment may affect use of each of these three types of WHP. In addition, especially eating and physical activity share a social component, making them suitable to assess the role of social relations in the workplace.

However, there are also differences between these types of WHP. Health checks are focussed more on prevention, in the sense that they alert employees when there is something wrong with their health status, whereas healthy menus and sports facilities tend to be more health-promoting (Hammer et al., 2015). Not all types of WHP may be used equally frequently (Lemon et al., 2009): for example, employees need to eat daily, whereas most people do not perform a sports activity every day. Health checks may be used only once or twice per

year, and moreover be compulsory for some employees (Walters et al., 2013). In addition, the three types of WHP also differ in the extent to which they are inherent in a working day. The use of healthy menus provided by the organisation almost inherently takes place at work, while health checks and sports facilities may also be used outside work, for example when the organisation finances the subscription to a gym that an employee visits after work. In this sense, the eating behaviour of colleagues may be more visible than their physical activity behaviour, affecting the extent to which these behaviours are prone to influence by colleagues (Park et al., 2017).

Not all organisations offer all types of WHP due to the available resources within the organisation or the composition of the workforce. For example, it may not make sense to have a cafeteria stacked with healthy food when employees are always on the road (Ranby et al., 2011). Even when available, not all employees may be aware about the existence of WHP. They may only know of those arrangements that are beneficial for them, or do not perceive something as WHP but rather as something that is just there, such as having fruit readily available in their office (Wright & Nishii, 2007). Additionally, not all employees may use each type of WHP. For example, employees that are already very active in their free time may feel no need to make use of the fitness facilities at their workplace, or some might find the healthy options in the cafeteria too expensive and choose to bring their own lunch instead (Raulio et al., 2012).

**Table 1.1** Availability, awareness and use of WHP recorded in the ESWS

	Wave 1	Wave 2
<b>Healthy menus</b>		
Availability	42.1%	52.9%
Awareness	36.6%	33.6%
Use	28.1%	24.3%
<b>Sports facilities</b>		
Availability	52.2%	57.7%
Awareness	38.9%	33.7%
Use	16.3%	13.0%
<b>Health checks</b>		
Availability	68.5%	79.8%
Awareness	52.9%	58.2%
Use	33.9%	34.6%
$N_{employees}$	11011	4345
$N_{organisations}$	259	113

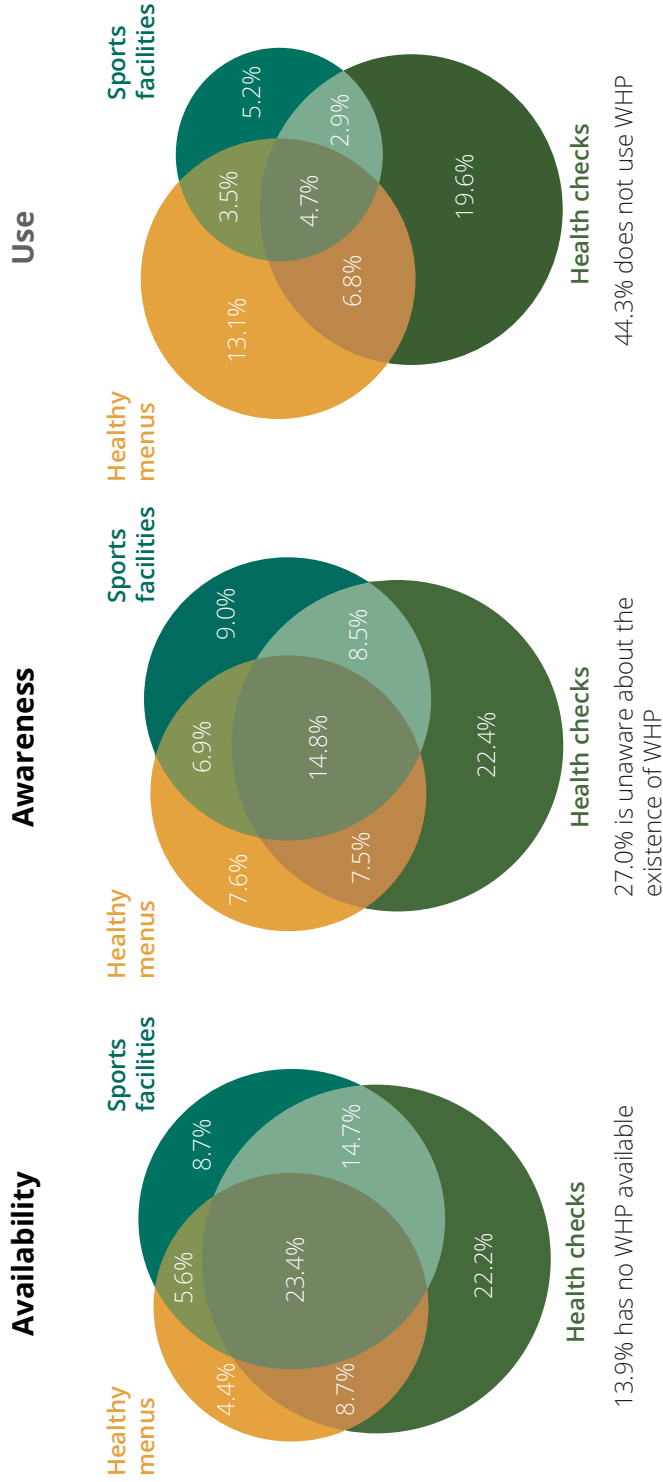
Note: calculations based on data from Van der Lippe et al., 2016, 2018

Table 1.1 shows the availability (as reported by the HR manager) and employees' awareness and use of healthy menus, sports facilities and health checks for both waves of the ESWS. For each type of WHP in all waves, HR managers more frequently report WHP to be available than employees are aware of the existence. Health checks are most often available, employees are most often aware of these, and they are also most often used. Though sports facilities are more often available and perceived as such by employees than healthy menus, the latter are used more often.

In most chapters that include WHP in the workplace, I only include employees in organisations in which the HR manager has reported that WHP is available, as employees cannot make use of a policy if it is not available. I assume that the HR manager is the most reliable source in this respect (Kalleberg, 1994). However, sometimes employees report WHP to be available while the HR managers says this is not the case. For example, in the first wave, this applies to 12% of employees in the case of healthy menus, 5% for sports facilities and 8% for health checks. When I study the relation between awareness of WHP and work performance, I include employees in *all* organisations, regardless of whether the HR manager reports WHP to be available. Theoretically, the support employees' sense when they perceive their organisation to offer WHP is what makes them reciprocate, not whether the organisation actually does this, and so it is less necessary to only include organisations in which WHP is available. Since I also link WHP use to performance, I do include availability as a control, as well as perform a robustness test among only those employees in organisations with WHP available as reported by the HR manager.

Figure .11 shows to what extent employees have each of the different types of WHP available, are aware about each and make use of each of them as measured in the ESWS. These figures are based on data from the first wave, but look similar for the data from the second. For example, 13.9% of employees works in an organisation without any WHP, while 23.4% works for an employer that offers all three types of WHP. Almost half of employees (44.3%) does not use any WHP, while only 4.7% uses all three types.

I do not examine all three types of WHP in all chapters. This is partly due to the available data. When I study whether WHP use is affected by the encouragement of a healthy lifestyle from colleagues and managers I only examine healthy menus and sports facilities, as this encouragement is only measured regarding healthy eating and physical activity. When linking WHP to performance, I focus only on healthy menus and sports facilities as these types of



**Figure 1.1** Availability, awareness and use of three types of WHP



WHP are directed more at promoting health, and thus theoretically more likely to be linked to performance than preventatively evaluating ones' health. Moreover, when studying WHP for employees that work from home, I include three different health-promoting activities: walking during work, taking regular short breaks and an online sports class. The WHP in the other chapters are mostly tied to the workplace, but the activities examined in that chapter can be done from home without the need of additional equipment. Moreover, other studies have examined them within the workplace (Adams et al., 2017; Sianoja et al., 2018).

## **This dissertation**

This dissertation contains six empirical chapters, which I briefly outline below.

The first two chapters focus on the role of the work environment in WHP use, both in the workplace and when working from home. In chapter 2, I start by examining the role of the work environment in explaining whether employees make use of healthy menus, sports facilities and health checks. In doing so, I examine both job conditions as well as the organisational culture. Few studies have combined both into one study. The job conditions I examine are workload, working hours and autonomy. For organisational culture, I study to what extent the work-oriented culture and behaviour of colleagues is related to WHP use. Knowing how these factors relate to WHP use may help in better understanding why not all employees make use of WHP.

In chapter 3, I focus specifically on working from home, which is expected to become more common but also has implications for the health of employees (Oakman et al., 2020). I do so by asking whether employees are willing to participate in WHP when they are working from home. Furthermore, I examine whether conditions from the work environment that play a role for WHP in the workplace – WHP not interfering with work tasks, organisational support and colleague WHP use – also relate to using WHP when working from home. This chapter provides insights into how employers can initiate a healthy workforce when their employees are not physically present in the workplace.

The next two chapters examine the role of workplace social relations in the healthy choices employees make, both by participating in WHP and in their lifestyles more generally. In chapter 4, I zoom in on the role of workplace social relations in WHP use and argue that this aspect of the work environment may be one of the main reasons why WHP utilisation rates differ between organisations. I study whether colleagues' and managers' encouragement of a

healthy lifestyle makes employees more likely to use healthy menus and sports facilities. Furthermore, I examine if colleagues are role models whose behaviour may be copied. As social connections such as one's partner, family and friends are important in making healthy choices, this chapter adds to the literature by studying if workplace social relations also play a role.

Chapter 5 dives deeper into the influence colleague encouragement and behaviour may have on a healthy lifestyle more generally. In this chapter, I study whether employees are more likely to eat healthily and engage in physical activity when their colleagues encourage them to do so. Additionally, by using a network autocorrelation model, I examine whether the eating and physical activity behaviours of colleagues are related. Though not all colleagues may use WHP, the encouragement and behaviour of their colleagues are important aspects of the organisational culture of health, and in this chapter I study whether this also affects their lifestyle choices outside work.

The final two chapters of this dissertation focus on the outcomes of WHP and ask who is affected by its use and being aware of its availability. In chapter 6, I examine whether healthy menus, sports facilities and health checks are related to social inequalities in health. WHP could potentially improve the health of all employees, but this may not be the case if WHP is used more by higher educated employees or if the effect WHP has on health differs between lower and higher educated employees. Previous work on social inequalities in health has shown that workplace characteristics have a part in these, and I extend that literature by looking at WHP as part of the work environment.

Finally, in chapter 7 I study in which ways healthy menus and sports facilities are related to task and contextual performance. Drawing on organisational support theory and social exchange theory, I argue that employees that are aware of the existence of WHP in their organisation perceive this as a signal that their organisation is concerned with their health and well-being, which strengthens their commitment and makes them reciprocate by performing better. Additionally, I study whether employees that use WHP – and who as a result may enjoy better health – also perform better than employees that do not participate in WHP. By studying both awareness and use, I provide more insight into the relation between WHP and performance, which may show employers how to ensure they benefit from their investments in WHP.

## Contributions

Together, these six chapters make several contributions to the literature. Firstly, the use and outcomes of WHP have mainly been studied from a behavioural sciences perspective looking at individual characteristics such as age or intention to behave healthily, whereas I focus on the social structure by looking at the interplay between individual employees and their work environment. Even though using WHP takes place in the context of work, this context is not always drawn on when explaining why employees do (not) make use of WHP. As the participation rates in WHP are low on average, and furthermore differ substantially between organisations (Bull et al., 2003; Rongen et al., 2013), by focussing on the work environment, my dissertation may provide insights in how to increase the use. In doing so, I devote special attention to the role of workplace social relations. It is often acknowledged that social relations play a role in adopting and maintaining health behaviours, yet the role of colleagues has remained understudied when it comes to WHP use (Dailey et al., 2018; McNeill et al., 2006; Powell et al., 2015; Smith & Christakis, 2008; M. L. Wang et al., 2014). Norms however also develop in the work environment, where employees spend the majority of their time. This may not only relate to WHP use, but also to the overall culture of health, which could affect employees that do not participate in WHP too. This dissertation thus provides insights into how social relations can be leveraged to create a healthy workforce.

The second contribution of this dissertation is the use of a unique dataset, the European Sustainable Workforce Survey (ESWS: Van der Lippe et al., 2016, 2018), complemented by a vignette experiment. The richness of the ESWS allows me to answer some questions that others have not been able to, for example because it includes measures on both awareness and use of WHP (chapter 7), information from managers and employees (used in chapter 4) as well as allows me to construct networks of colleagues, which I utilise in chapter 5. Another great strength of this dataset is that it includes so many different organisations (259 in wave 1 and 113 in wave 2) of different sizes and in different sectors and, through that, so many different work environments. Most other studies on WHP used small sample sizes or relied on a limited number of organisations, which makes it hard to make generalisations and hampers external validity (Bull et al., 2003; Grawitch et al., 2006). It is the ESWS that facilitates me in the main aim of this dissertation, namely, to examine the role of the work environment in WHP use and its outcomes, precisely because there is so much variation in the work environments of employees in different organisations.

Thirdly, in this dissertation I examine WHP that have actually been implemented in organisations, rather than randomised controlled trials which many other studies rely on. In these trials, all employees in a team or organisation participate in a WHP programme, which is often specifically designed for the purpose of the study. Once it is shown that these programmes are effective, it is concluded that they should also be implemented in other organisations. However, there may be a gap between research and implementation (Glasgow & Emmons, 2007). Research designs that work well in one organisation may not easily be replicated in a different organisation. For example, a manager of a certain team may not see the benefit of allowing his employees to participate in WHP, or the programme involves high intensity sports classes, while the majority of the workforce consists of older employees who would prefer less strenuous activities. While randomised controlled trials are well able to demonstrate the effects of WHP – usually because outcomes are measured before and after the implementation – they are still mainly developed in a research context. Studying policies that are actually implemented in organisations may better reflect the real-life benefits of WHP and provide results that have higher external validity (Glasgow et al., 2019).

The final contribution is that throughout the different chapters, I examine different types of WHP. Not all organisations are able to offer all types of WHP to their employees. In addition, there are differences into the extent to which different health behaviours are inherent in a working day, how often they take place and how prone they are to be influenced by workplace social relations. By studying different types of WHP, I provide deeper insights into the use and outcomes of WHP. In this way, I hope to enable employers and employees to succeed in being healthy at work.

2

# Work environment and worksite health promotion in nine European countries



## Abstract<sup>1</sup>

Many European organisations offer worksite health promotion (WHP) to increase healthy behaviour among their employees. However, only few employees use these, reducing the health-improving potential WHP might have. Research into what determines use of WHP pays limited attention to the work environment. We argue this work environment consists of both job and organisational characteristics. These job characteristics should provide employees the possibility to use WHP, while organisational culture and colleague behaviour help in creating the norm that using WHP is common and accepted. We examined three types of WHP: healthy menus, sports facilities and health checks. We tested our hypotheses using the European Sustainable Workforce Survey, with data from employees in 259 organisations in nine European countries. Multilevel analyses showed that employees were more likely to use each type of WHP when a larger share of their direct colleagues did so. Furthermore, employees were more likely to use healthy menus when they worked more hours, had more autonomy and worked in organisations with a less work-oriented culture. Autonomy was also associated with use of sports facilities, while work-oriented culture was negatively related to use of health checks. Our results suggest the role of the organisation should be included when studying whether employees use WHP.

**Keywords:** health behaviour, occupational health, organisational culture, work environment, worksite health promotion

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<sup>1</sup> A slightly different version of this chapter has been published as Van der Put, A. C., & Van der Lippe, T. (2020). Work environment and worksite health promotion in nine European countries. *Journal of Occupational and Environmental Medicine*, 62(4), 272-278. Doi: 10.1097/JOM.0000000000001803.

The authors jointly developed the main ideas in this chapter. Van der Put mainly wrote the manuscript and performed the data analyses. Van der Lippe was Principal Investigator for the data collection and gave extensive feedback on earlier versions. The authors are thankful for the useful comments on earlier drafts of this paper made by Ineke Maas, Anne-Rigt Poortman and Jaap van Slageren.

## Introduction

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 (Mladovsky et al., 2009). Many of these conditions are preventable. 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 (Merrill et al., 2011). Employers can help employees in targeting their unhealthy lifestyles, by offering worksite health promotion (WHP). WHP consists of the combined efforts 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 (*Luxembourg Declaration on Workplace Health Promotion in the European Union, 2007*)

Previous research has found that employees benefit from using WHP: they are more physically active, have healthier diets, and report better health in general (Merrill et al., 2011; Rongen et al., 2013). 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 (Hendriksen et al., 2016; Parks & Steelman, 2008). However, results are modest.

Effectiveness of WHP is contingent on the extent to which employees make use of it (Sargent et al., 2016). 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 number of employees that use WHP. In some organisations 97% of employees are reported to use WHP, while in other organisations this is only 8% (Bull et al., 2003; Robroek et al., 2009). 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 organisations. Previous studies have focused on demographic characteristics of employees or piecemeal job or organisational climate factors in explaining WHP use (Rongen et al., 2013). Although it is increasingly recognised that the work environment plays an important role, it is unclear yet in what way exactly (Goetzel & Ozminkowski, 2008). We argue the work environment consists of both organisational characteristics, such as organisational culture (Aldana et al., 2012), and job characteristics such as time and autonomy (Krick et al., 2019), both of which influence whether employees use WHP. The aim of this chapter is thus to study to what extent the work environment influences WHP use.



This chapter 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 organisational characteristics. Some studies focus on job characteristics (e.g. Jørgensen et al., 2016) but disregard the role of the organisation and vice versa. To our knowledge, we are among the first to include both in one study.

Secondly, we use unique data from the European Sustainable Workforce Survey (Van der Lippe et al., 2016) to test our hypotheses. This dataset contains information on over 11000 employees in 259 European organisations and allows us to study organisational variation in WHP use because of its multilevel design. Many studies on WHP use focus only on one or a few organisations and thus cannot address differences in organisational characteristics (Bull et al., 2003). Our data allow for a better test of the relation between job and organisational 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 organisations and can be used by all employees, which promotes successful uptake (Goetzal et al., 2007; Sparling, 2010). 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 to 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 organisations rather than interventions created by researchers; they thus better reflect reality (Bull et al., 2003). Organisations can use our findings to help ensure the policies they offer will actually be utilised, so that employees and employers can benefit alike.

## Theory

We distinguish between job and organisational 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 very hard to get all their work done (Siegrist et al., 2006). If this is the case, employees report that they are less likely to use all three types of WHP we study (Niessen et al., 2013; Sargent et al., 2016; Tavares & Plotnikoff, 2008). 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 (Krick et al., 2019). 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 health behaviours (Ng & Jeffery, 2003). 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 hypothesise 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 (Lenneis & Pfister, 2016). Time is a finite resource and can only be spent once (Sargent et al., 2016). 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 (2016) 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 (Sargent et al., 2016). 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 resort 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 working hours.

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 (Siegrist et al., 2006). This is also important for WHP use, as has been shown for physical activity (Bale et al., 2015) and use of worksite cafeterias (Raulio et al., 2007). Some groups of employees may spend many hours at their workplace but only have little time for breaks or have to stay at their workstation, such as 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).

### **Organisational characteristics**

Employees will be more likely to use WHP when their direct social environment at work is supportive of health (Goetzel & Ozminkowski, 2008). Previous studies mainly turned to the organisational culture as an aspect in employees' work environment that can affect their WHP use. This organisational culture consists of shared assumptions about the beliefs, values, and norms of the organisation (Aldana et al., 2012). It determines the extent to which health behaviours are rewarded and supported within an organisation. Employees are more likely to use WHP and maintain health behaviours when they perceive their organisation to be supportive and care for their welfare (Kent et al., 2016). Employees will feel more comfortable to take a prolonged break for a fitness class when they know the organisation they work for approves of this. If, on the other hand, the organisation is mostly focused on performing and reaching targets, the signal the organisation sends is that only work tasks matter (Brakenridge et al., 2018). In such organisations 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 (Kent et al., 2016). We predict that employees who work in organisations with a more work-oriented organisational culture are less likely to use healthy menus (H4a), sports facilities (H4b), and health checks (H4c).

Next to the wider organisational culture, also the behaviour of direct colleagues influences WHP use. Employees are more likely to use physical

activity and weight management programmes when their direct colleagues do so too (Bredahl et al., 2015; Clancy et al., 2018). Direct colleagues have similar experiences at work and interact frequently, and so employees are likely to take over cues about what kind of behaviour is normal from them (Heaney, 2017). 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 (Borek & Abraham, 2018). 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 (Van der Lippe et al., 2016). This survey was carried out in 2015-2016 within organisations and encompasses questionnaires filled in by employees, team managers, and HR managers. The survey was conducted in nine European countries: Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden, and the UK. Organisations were approached using stratified random sampling based on sector (manufacturing, health care, higher education, transport, financial services, and telecommunication) and size (up to 100, 101-249, and 250 or more employees). This approach was complemented by a matching strategy to replace organisations that refused to participate with those from the same strata. After an organisation joined the study, employees and managers were addressed at work to fill in the questionnaire in their own language. The survey yielded a participation rate of 98% among HR managers, 81% among team managers, and 61% among employees, resulting in a total sample of 11011 employees in 259 organisations.

To test whether employees use WHP, their organisation needs to offer it. HR managers are a reliable source for whether organisational policies are in place (Kalleberg, 1994). Therefore, we only selected employees who work in organisations 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 organisations in which HR managers did not report any WHP to be available were excluded (1666 employees in 41 organisations). After list-wise deletion on the included variables, our final sample consisted of 7907 employees in 218 organisations.

## Measures

WHP use was measured using employee reports. Employees first had to indicate whether healthy menus, sports facilities, and health checks were available in their organisation. 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 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 felt pressured by their job. Employees for example reported how often it happened that their job required them to work fast. Table 2.1 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 worked 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 2.1. Employees were asked to rate how often they were free to, for example, decide how they do their job on a Likert scale ranging from 1 (all the time) to 5 (never). Scores on the items were averaged and reversed so that higher scores indicate greater autonomy ( $\alpha = 0.86$ ).

Work-oriented organisational culture was based on employees' evaluation of the extent to which their organisation emphasised work. Three items from Thompson et al.'s (1999) work-family culture scale were used that assessed

organisational time demands (see Table 2.1). Employees for example had to indicate whether they are often expected to work overtime to get ahead in the organisation. 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 ( $\alpha = 0.66$ ).

**Table 2.1** Scale construction

<b>Scales and items</b>	<b><math>\alpha</math></b>
<b><i>Work pressure</i></b>	0.76
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 you job requires too much input from you?	
How often does it happen that your job makes conflicting demands on you?	
<b><i>Autonomy</i></b>	0.86
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?	
<b><i>Work-oriented culture</i></b>	0.66
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 organisation, employees are expected to work overtime	

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

We included several controls that could relate to WHP use. Job characteristics we controlled for were how often employees worked 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 (Rongen et al., 2013). Women are reported to use more WHP (Robroek et al., 2009), as do higher educated employees (Cairns et al., 2014), so we accounted for gender and years of education. Debate still exists about whether healthier employees are more likely to use WHP or not (Jørgensen et al., 2016), 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 (Sargent

**Table 2.2** Descriptive statistics

<b>Variables</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>
Use of healthy menus	0.46 <sup>a</sup>		0-1
Use of sports facilities	0.30 <sup>a</sup>		0-1
Use of health checks	0.48 <sup>a</sup>		0-1
Working hours	39.45	9.07	0-60
Autonomy	3.77	0.81	1-5
Work pressure	3.36	0.67	1-5
Share of colleagues using healthy menus	0.44	0.28	0-1
Share of colleagues using sports 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
Working from home	1.74	1.38	1-7
Job physical demands	2.89	1.48	1-5
Occupational status	57.64	18.28	11.56-88.70
Non-permanent contract	0.11		0-1
Age	42.25	10.74	18-77
Female	0.56		0-1
Education in years	13.80	3.02	3-21
Self-rated health	3.87	0.73	1-5
Partner	0.75		0-1
Children	0.51		0-1
Commuting time	1.09	0.74	0-8
Time spent on household activities	21.89	19.42	0-80
Size			
Small	0.23		0-1
Medium	0.28		0-1
Large	0.48		0-1
Sector			
Manufacturing	0.23		0-1
Health care	0.24		0-1
Higher education	0.18		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	0.07		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
<i>N</i> <sub>employees</sub>	7907		
<i>N</i> <sub>organisations</sub>	218		

<sup>a</sup> Only among employees in organisations with the specific WHP available ( $N_{healthy\ menus} = 4059$ ,  $N_{sports\ facilities} = 4873$  and  $N_{health\ checks} = 5822$ ).

et al., 2016), 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 organisational level, we included size (small = up to 100 employees, medium = 101 to 249 employees, large = 250 or more employees), sector, and country. Descriptive statistics are shown in Table 2.2.

## Data analyses

Given that employees are nested in organisations, and the outcome variable is dichotomous, we used multilevel logistic models. When not accounting for the clustering of employees within organisations the standard errors of the parameters may be underestimated, leading to biased results (Hox, 2010). The intraclass correlations were 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 was significant variation between organisations of 32%, 48%, and 53% in the use of healthy menus, sports facilities, and health checks respectively, and shows the necessity to include the organisational level.

To test the hypotheses, we fitted multilevel models predicting employee use of WHP, one for each type of WHP we studied. Models were estimated using maximum likelihood estimation. We used McKelvey and Zavoina  $R^2$  to indicate how much variance was explained (Hox, 2010). 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. Average marginal effects allow us to compare how the different variables of interest relate to the use of different types of WHP (Mood, 2010).

## Results

Employees used distinct types of WHP differently. Healthy menus were used by 46% of employees, sports facilities by 30%, and health checks by 48%.

Table 2.3 shows the average marginal effects predicting whether employees used 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 found no support for a relation between work pressure and use of healthy menus, sports facilities, or health checks.



We found that working hours affected the use of healthy menus as expected but only very little: for every additional working hour, employees were on average 0.2% more likely to use healthy menus. This supports hypothesis H2a. We found 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 found that this was the case for healthy menus and sports facilities, but only marginally for health checks ( $p = 0.088$ ). For every point increase in autonomy, employees were about 2 percentage points more likely to use both healthy menus and sports facilities.

Next, we turned to the organisational characteristics. The intraclass correlations already showed that considerable variation existed between organisations. Whether employees used WHP was thus influenced by the organisation they worked in, rather than only by individual characteristics.

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

We also assessed whether employees were more likely to use WHP when their colleagues did so too (H5a-c). We found that this was the case for all types of WHP. Employees were 44 percentage points more likely to use healthy menus, 28 percentage points more likely to use sports facilities, and 54 percentage points more likely to use health checks when a larger share of their colleagues also used these respective types of WHP.

Finally, we took a comparative look at the three types of WHP. Our results show that the use of healthy menus was mostly influenced by the work environment, as working hours, autonomy, work-oriented culture, and colleague behaviour all played a role. The effects of autonomy and work-oriented culture were also largest for healthy menus. Health checks appeared mostly influenced by the organisation, with significant effects found for work-oriented culture and colleague behaviour. The use of sports facilities was mainly influenced by colleagues, although autonomy also played a small role.

**Table 2.3** Multilevel logistic regression models predicting 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	0.002**	0.001	-0.000	0.001	0.000	0.001
Autonomy	0.024*	0.010	0.017*	0.008	0.013	0.007
Work pressure	-0.009	0.012	0.011	0.010	-0.000	0.009
Work-oriented culture	-0.031**	0.001	0.007	0.008	-0.018*	0.007
Colleague share	0.436***	0.063	0.283***	0.060	0.541***	0.074
Working from home	-0.004	0.006	0.004	0.005	0.005	0.005
Job physical demands	0.014*	0.006	0.001	0.005	0.013*	0.005
Occupational status	0.001	0.001	0.000	0.000	-0.000	0.000
Non-permanent contract	0.047	0.024	-0.099***	0.019	-0.065**	0.021
Age	-0.001*	0.001	-0.002**	0.001	0.004***	0.001
Female	0.066***	0.016	0.039**	0.013	0.006	0.013
Education in years	0.004	0.003	0.001	0.003	-0.001	0.003
Self-rated health	0.034**	0.010	0.040***	0.008	0.018*	0.008
Partner	0.007	0.017	-0.009	0.014	0.011	0.014
Children	0.003	0.017	0.020	0.013	0.034*	0.013
Commuting time	-0.030**	0.010	-0.028**	0.009	-0.011	0.008
Time household activities	0.001*	0.000	-0.001**	0.000	-0.001*	0.000
Size (Small = ref.)						
Medium	0.049	0.034	-0.013	0.027	0.029	0.022
Large	-0.003	0.028	0.014	0.026	0.032	0.021
Sector (Manufacturing = ref.)						
Health care	-0.094*	0.040	-0.018	0.035	-0.052	0.030
Higher education	-0.095*	0.039	-0.009	0.034	-0.034	0.031
Transport	-0.014	0.044	0.041	0.041	0.032	0.029
Financial services	0.009	0.041	0.031	0.037	-0.016	0.030
Telecommunication	0.034	0.051	0.056	0.038	-0.017	0.033
Country (Netherlands = ref.)						
UK	0.004	0.057	0.060	0.044	0.011	0.054
Germany	0.050	0.055	0.147**	0.044	0.126**	0.046
Finland	0.161**	0.047	0.377***	0.059	0.255***	0.069
Sweden	-0.103	0.054	0.318***	0.050	0.104*	0.044
Portugal	-0.035	0.047	0.061	0.044	0.260***	0.069
Spain	-0.194***	0.054	0.040	0.078	0.279***	0.076
Hungary	-0.030	0.051	0.084*	0.038	0.251***	0.067
Bulgaria	-0.117*	0.045	0.067	0.038	0.218***	0.062
R <sup>2</sup>	0.27		0.35		0.39	
N <sub>employees</sub>	4059		4873		5822	
N <sub>organisations</sub>	105		130		172	

Note: Average marginal effects (dy/dx) were calculated as the discrete change from the base level. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 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 organisation to reflect organisational norms. This did not change our results.

Secondly, because of possible reversed causality issues surrounding use of WHP and health (Jørgensen et al., 2016), we ran our analyses excluding self-rated health as a control. This did not influence the results for healthy menus and sports facilities, but we found an effect for autonomy ( $p = 0.038$ ) for the use of health checks which was only marginally significant when including health.

Thirdly, in some cases organisational policies may be team-driven rather than organisation-driven (Wright & Nishii, 2007), so we included also employees whose team manager reported WHP to be available. Here too autonomy related to the use of health checks ( $p = 0.047$ ).

Fourthly, we ran the analyses excluding the employees who did not know WHP existed and were assigned to the group of non-users. When doing this, the significant relation between work-oriented culture and use of health checks became marginally significant ( $p = 0.085$ ).

Finally, to assess whether results could be country- or sector-driven we performed jack-knife procedures excluding one country or sector at the time (Neumayer & Plümpner, 2017). We found that autonomy mainly played a significant role in some countries and sectors in WHP use. For example, the relation was only marginally significant when excluding some countries or sectors for both healthy menus and sports facilities. The relation between work-oriented culture and use of health checks was also only marginally significant when excluding Portugal, Hungary or the financial services sector. Our sensitivity analysis hinted 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 organisational characteristics contribute to whether employees use WHP. Organisations frequently offer WHP, but only few employees use it (Robroek et al., 2009). There is no consensus about why utilisation rates are low, but in explaining this many

studies ignore that the work environment may play a role (Bull et al., 2003). Our study is among the first to explicitly study how the work environment, reflected both in job characteristics and organisational characteristics, influences WHP use. By capitalising on rich data in many organisations in nine European countries, we study how work pressure, working hours, autonomy, work-oriented culture, and colleague behaviour 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 organisation 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 organisation and that two aspects of the organisational context we highlighted relate to use. Several scholars have called for incorporating the role of the organisation in research about WHP use (Clancy et al., 2018), and our results confirm the need for this. Future research should thus pay attention to the organisation when studying WHP use.

In understanding the role of the organisation for the use of WHP, both work-oriented culture and colleague behaviour appeared to play a role. We found work-oriented culture, measured as the extent to which the organisation expects work to take priority over other concerns, to be negatively related to use of healthy menus and health checks. When work is emphasised 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 affect the use of healthy menus, for employees might go to the worksite cafeteria but resort to unhealthy choices to alleviate some of this stress (Ng & Jeffery, 2003). Organisations that want to increase WHP use among their employees should emphasise that health is important, for example by clearly communicating about this and showing visible support from management (Aldana et al., 2012; Kent et al., 2016).

Colleague behaviour was 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 (Heaney, 2017), 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 behaviour 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 organisation 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 (Brakenridge et al., 2018).

Our result that autonomy facilitates use of WHP is in line with other studies (e.g. Bale et al., 2015). However, these findings 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 (Kristenson et al., 2004). 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 (Bale et al., 2015), and are thus given the opportunity to do so by their employers 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 used WHP and what is included. For example, it is unclear whether a health check only included measuring weight and blood pressure or was 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 organisational characteristics. Though other studies also employ this measure (e.g. Jørgensen et al., 2016), to fully understand how the work environment affects WHP use, a more complete measure of what entails WHP and how often this occurs might be necessary.

Secondly, we found the strongest effect for the share of colleagues that also used WHP. However, given that colleagues work together in a team, this measure might hide the fact that colleagues share certain attributes in their workplace or that in some teams 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 behaviour 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 organisational norms, our findings remained the same. There is no evidence that employees who do not use WHP are more reluctant to fill in questionnaires, so we do not consider this a problem.

Thirdly, our measure for work-oriented culture captured only part of the organisational culture that may be relevant for WHP use. Organisational culture is a broad concept and can be measured in many different ways (Aldana et al., 2012). Previous literature on WHP use suggests that when employees perceive that the norm in their organisation is focused on work over other aspects, they are less likely to use WHP (Brakenridge et al., 2018; Kent et al., 2016). We acknowledge that it is also interesting to study other aspects of the organisational 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 (Jørgensen et al., 2016), and with our cross-sectional data we cannot tell which is cause and which is effect. We showed 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 considering WHP's health-improving potential.

Finally, the use of WHP might be influenced by the health behaviour 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 behaviour outside work too.

## Conclusion

Organisations 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, utilisation rates may be low and differ between organisations. This study shows which job and organisation characteristics relate to WHP use. Few studies examined this, while understanding how the workplace influences employees' WHP use 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 organisational 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, organisations can encourage higher use of the WHP they offer.

3

# Worksite health promotion for employees working from home: A vignette experiment examining intentions to participate





## Abstract<sup>2</sup>

This chapter explores which factors affect employees' intention to participate in worksite health promotion (WHP) when they work from home. Employees increasingly work from home, yet existing WHP is mainly tied to the workplace. We lack knowledge on what might stimulate employees to make use of WHP specifically when they work from home. We therefore studied whether employees intend to walk, take breaks, and participate in an online sports class when working from home. Furthermore, we explored whether duration of WHP, if WHP takes place during work time, time spent working from home and colleague participation play a role in these intentions. To do so, we employed a vignette experiment. Results showed that employees' intentions were higher for walking and taking breaks than for the online sports class. Moreover, intentions were higher for shorter activities and when participating in WHP can be done during work time. The more colleagues participate, the higher intentions of employees to do so too. By offering WHP for employees at home, employers can promote employees' health even when these are not present in the workplace. Our study provides leads into how employers may create conditions under which employees use WHP when working from home.

**Keywords:** worksite health promotion, working from home, employees, health, intention, survey experiment

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<sup>2</sup> A slightly different version of this chapter has been published as Van der Put, A. C., Mandemakers, J. J., de Wit, J. B. F., & van Der Lippe, T. (2022). Worksite health promotion for employees working from home: A vignette experiment examining intentions to participate. *Applied Psychology: Health and Well-Being*. Doi: 10.1111/aphw.12427

The authors jointly developed the main ideas of the chapter. Van der Put collected the data, mainly wrote the manuscript and performed the analyses. Mandemakers, De Wit and Van der Lippe contributed substantially by providing extensive feedback on earlier versions. The authors are also thankful to Vincent Buskens in his help with the design of the study, and Thomas Martens and Linde Bekkers for their help in data collection.

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## Introduction

Many organisations invest in the health and well-being of their employees by providing worksite health promotion (WHP) initiatives. Around 42% of European organisations offer healthy catering facilities in the workplace and 27% promotes physical exercise at work (Irastorza, 2019; Van der Put & Mandemakers, 2019). WHP contributes to employee health and well-being (Rongen et al., 2013) as well as increased productivity and reduced absenteeism (Ott-Holland et al., 2019; Parks & Steelman, 2008), benefitting both employee and employer.

Many WHP initiatives are tied to the workplace; however, employees increasingly work from home. In many countries, this was one of the measures to prevent the spread of Covid-19, but prior to March 2020, the number of employees that worked from home was already rising (Guler et al., 2021). It is expected that working from home is to become even more prevalent in the future (Loef et al., 2022; Oakman et al., 2020). When employees work from home, they can no longer make use of WHP available in the workplace. A main reason for employers to offer WHP is because they feel responsible for the health and well-being of employees (Pescud et al., 2015), and this does not change when employees work from home (Oude Hengel et al., 2021). Few organisations currently offer WHP for employees working from home. As a result, little is known about what employers can do for employees working from home and whether employees intend to participate in WHP in the home context. This chapter therefore explores whether employees intend to participate in WHP at home.

Previous research shows that not all employees make use of WHP in the workplace: the average uptake is about 33% and there are large differences between organisations (Robroek et al., 2009; Schwetschenau et al., 2008). Main reasons for employees to participate in WHP at work include having time, it not interfering with work tasks, colleague behaviour and organisational support (Ott-Holland et al., 2019; Seward et al., 2019; Van der Put et al., 2021). We explore whether these factors also play a role in WHP use when employees work from home. Working from home can save commuting time that employees can spend on WHP, though many employees that work from home tend to work overtime (Xiao et al., 2021). At home employees typically have more flexibility and autonomy over their working hours, which could make it easier for employees to prevent WHP interfering with work tasks (Peters & Van der Lippe, 2007). In the workplace colleagues' participation is one of the main facilitators for WHP use among employees, and it is unclear if this also applies to WHP in the home office, when

employees may have less contact with their colleagues (Van der Put et al., 2021). Also the amount of time employees work from home may play a role. Employees could be more detached from the workplace at home yet still want to show they are committed workers, preventing them from using WHP (Van der Lippe & Lippényi, 2020a). We study WHP in the context of working from home and examine if factors known to play a role regarding WHP use in the workplace are also applicable to WHP use in this different context. To do so, we draw upon the theory of reasoned action which posits that intention to behave can be explained by attitudes towards that behaviour and social norms (Ajzen & Fishbein, 1980). We argue the type of WHP, its duration, whether it takes place during work and how often employees work from home give rise to employees' attitudes. The behaviour of their colleagues shapes the social norm.

In this chapter we make use of a vignette experiment. In such an experiment, respondents are presented with various descriptions of a hypothetical situation called vignettes, after which they are asked to make a decision, in our case whether they intend to participate in WHP when working from home (Auspurg & Hinz, 2015). WHP at home may become more prevalent when more employees work from home (Oakman et al., 2020; Van den Heuvel et al., 2021), but as currently few employers offer WHP for employees working from home, this may make it difficult for employees to imagine which factors will affect potential participation. The vignette experiment, with its hypothetical setup, overcomes this. Research suggests that people's response to vignette experiments matches their real-life behaviour well (Hainmueller et al., 2015). Additionally, although the situation we are describing is hypothetical, many employees worked from home during the Covid-19 pandemic and were still (partly) doing so when the data were collected in spring 2021 (RIVM, 2021). This helps the respondents to make realistic decisions. The vignettes differ systematically in the different factors that we hypothesise to play a role, which makes it possible to disentangle different considerations employees have for using WHP when working from home and lowers the risk of social desirability bias (Auspurg & Hinz, 2015). These strengths make a vignette approach well-suited for our study.

We focus on three different activities: walking, taking short breaks, and an online sports class. It is important to find out which WHP employees like to do as enjoyable activities are related to better job performance and satisfaction (Sianoja et al., 2018). Walking, taking short breaks and participating in an online sports class are activities that can be done from the home without the need of additional

equipment, but have also been implemented as WHP in the workplace (Adams et al., 2017; Edmunds et al., 2013; Sianoja et al., 2018). Additionally, they can prevent the sedentary lifestyle many employees who work from home have (Loef et al., 2022; McDowell et al., 2020). The activities can aid recovery in stimulating detachment from work (Bennett et al., 2019; Oude Hengel et al., 2021; Sianoja et al., 2018). However, these activities also differ. Taking breaks could be an activity that may already be inherent in the working day for some employees (Mackenzie et al., 2019). Walking is an easy activity that can be done by most employees, while an online sports class may be too vigorous for some participants or require too many skills (Pollard & Wagnild, 2017). By studying these different activities, we gain insights into how to successfully promote the health and well-being of employees that work from home.

## Theory

Working from home has implications for the health and well-being of employees (Oakman et al., 2020; Tavares, 2017). Employees that more often work from home spend more time sedentary, less often engage in physical activity, and are less likely to take breaks during work compared to employees that work in the office (Guler et al., 2021; McDowell et al., 2020; Xiao et al., 2021). WHP for employees working from home can fill a gap here, and there are different factors that explain whether employees decide to make use of WHP encouraged by their employer when they work from home. These factors have been shown to play a role regarding WHP use in the workplace, and we assess if they are also related to WHP use in the context of working from home. In doing so, we draw upon the theory of reasoned action (Ajzen & Fishbein, 1980). This theory posits that intention to a behaviour can be explained by attitudes (how one feels about the behaviour) and social norms (what others are doing). Though we do not test attitudes directly, we argue that WHP characteristics and how often employees work from home shape their attitudes towards WHP when working from home. Moreover, we study colleague participation as reflecting social norms.

## WHP Characteristics

There are several characteristics of WHP that may shape employees' attitude towards participating in WHP when working from home and thereby affect whether employees do so. The type of WHP offered is one of those. In this study we focus on three types of WHP employees can engage in when working from

home: walking, short breaks, and an online sports class. These activities can all act as recovery moments during work, help reduce sedentary behaviour and relieve stress (McDowell et al., 2020; Oude Hengel et al., 2021; Sianoja et al., 2018). However, the activities also differ, which may affect employees' attitudes towards participating in them. The sports class and walking could create more of a physical break from the work environment, whereas breaks may also take place behind the screen, for example, through checking social media (Sianoja et al., 2018). Walking and taking breaks could be activities that employees typically do, such that employees already have a favourable attitude towards those and also want to do them at home. These activities could be done at any moment during the working day and require less planning, which may make it easier to fit them into the work schedule. The online sports class is likely more vigorous than walking, and participants may want to shower afterwards, which could create a barrier to participate (Seward et al., 2019). Additionally, less physical skills may be needed for breaks and walking, than for the online sports class, making the former activities more suitable for some employees (Adams et al., 2017; Pollard & Wagnild, 2017). We expect intention to participate in WHP when working from home is higher for walking and taking breaks than for an online sports class (H1).

Employees' attitude towards participating in WHP when working from home may also be affected by the activity's duration. The main reason employees give for not engaging in physical activity and WHP is lack of time, which results from both work and personal life demands (Adams et al., 2017; Edmunds et al., 2013; Hunter et al., 2018). Although spending more time on an activity may provide more room for recovery (Bennett et al., 2019), WHP with a shorter duration could be more appealing to employees, as this takes up less time (Schwetschenau et al., 2008). Employees may save time when working from home, for example because they no longer need to commute to work (Loef et al., 2022), yet there is also evidence that working from home costs more time, as employees tend to work overtime more and spend more time on other duties, such as doing the dishes or cleaning the house (Guler et al., 2021; Peters & Van der Lippe, 2007). Some employees mention WHP adds to their working day because they still need to finish all their work (Tavares & Plotnikoff, 2008), so shorter activities may be viewed more favourably. Additionally, by being away from work for a longer amount of time, employees may put more strain on their colleagues to handle urgent tasks, leading to feelings of guilt and an unfavourable attitude (Bennett et al., 2019). We hypothesise that intention to participate in WHP when working from home is higher for activities with a shorter duration (H2).

Whether participating in WHP when working from home takes place during work time may also affect employees' attitudes. When employees can use WHP during work time, it may be easier to integrate WHP into time demands resulting from work and personal life. Although employees that work from home may have more flexibility to plan their different tasks efficiently (Mackenzie et al., 2019), when working from home the boundary between work and private life dissipates (Oakman et al., 2020). This may lead to increased conflict between various demands, as employees may have to perform multiple, sometimes conflicting roles as employee, caregiver, voluntary worker and partner. A result of this role conflict may be spending more time on both work tasks and other duties, leaving less time available for WHP (Ott-Holland et al., 2019; Peters & Van der Lippe, 2007; Van der Lippe & Lippényi, 2020a). When participating in WHP takes place during work time, this may take away some of the pressure of engaging in healthy behaviour next to work and other tasks. Many employees report that if they can use work time for WHP, this is an important facilitator (Adams et al., 2017; Bale et al., 2015; Jørgensen et al., 2016; Sargent et al., 2016).

Furthermore, by allowing employees to participate in WHP during working hours, employers give a strong signal that it is important for employees to take time for their well-being (Mackenzie et al., 2019; Ott-Holland et al., 2019). This may make employees feel less guilty about focussing on themselves rather than taking care of work or family duties (Krick et al., 2019; Ryde et al., 2020), and also help them to form a more positive attitude. We predict that intention to participate in WHP when working from home is higher when WHP takes place during work time (H3).

### **Time Spent Working From Home**

Employees differ in how often they want to and can work from home, which could affect their attitude towards WHP when working from home, and through that, their intention to participate. On the one hand, employees may spend more time at home and thus have more opportunity to use WHP that is offered for employees working from home. On the other hand, employees could also be more detached from what happens in the workplace when working from home (Van der Lippe & Lippényi, 2020a). They may view WHP for working from home less favourable, either because they consider what happens at home a private affair and see their employer stimulating a healthy lifestyle as unwanted, or they already engage in physical activity or have implemented a healthy working day

on their own (Gates & Brehm, 2010; Oakman et al., 2020). This may be more so the more employees work from home, when employees find themselves in their private domain more and are therefore more detached from the workplace compared to employees that work from home less (Van den Heuvel et al., 2021).

Additionally, when working from home, employees tend to be less visible compared to working in the office, which could lead to increased effort to demonstrate commitment (Van der Lippe & Lippényi, 2020). Employees may fear that their manager considers them as not committed and competent when they work from home a lot (Mackenzie et al., 2019). To demonstrate their commitment, employees focus completely on their job when they work from home, and thus do not take time for walking, taking breaks or participating in an online sports class (Ryde et al., 2020). For some employees, this is already a reason not to participate in WHP in the workplace (Krick et al., 2019) and may be even more of a concern when working from home. This may cause them to form an unfavourable attitude towards WHP. We expect that the more employees work from home, the lower their intention to participate in WHP (H4).

## **Colleague Participation**

Whether colleagues participate in WHP in the workplace stimulates employees to do so, too (Seward et al., 2019; Van der Put et al., 2021). This may also be the case when it comes to WHP when working from home. Colleagues are important role models whose behaviour shapes the social norm in the workplace and reflects what behaviour is expected and deemed appropriate (Van der Put et al., 2021). If many colleagues walk during working hours, this may signal to employees that doing so could be a sensible thing to do. However, it may be easier to discern norms in the workplace, when the behaviour of colleagues is more visible, compared to working from home when employees may not know what their colleagues are up to. Colleagues can also aid participation in WHP in other ways when employees work from home. For example, they can provide information by telling each other about the benefits of taking breaks, convincing each other that this may help them in working productively (Vrazel et al., 2008). The more colleagues do this, the more convincing that information becomes. Next, colleagues can do the activities together—by participating in an online sports class together or taking a short break to catch up with each other like they would do in the workplace (Tavares & Plotnikoff, 2008). In this way, participating in WHP can also be a way of social interaction (Seward et al., 2019), which tends to be lower

when employees work from home (Oakman et al., 2020; Van der Put et al., 2021). We hypothesise that the intention to participate in WHP when working from home is higher the more colleagues participate (H5).

## Methods

### Data

To study whether employees intend to participate in WHP when working from home, and which factors affect their intentions, we designed a vignette experiment which was integrated in a survey on working from home and health behaviours (Van der Put, 2022). Data were collected in March-June 2021, when the Netherlands was still in partial lockdown. Employees were asked to work from home as much as possible, although they no longer had to provide home-schooling if they had children (RIVM, 2021). Responses to the survey were collected by approaching organisations that had previously participated in another study and whose contact details we had from the Dutch chamber of commerce. We sent email messages to one contact person within each organisation, explaining the study and asking whether their organisation wanted to participate. As an incentive, we offered a custom-made benchmark report providing organisations with insights on how their employees experienced working from home. In total, 33 organisations agreed to participate from diverse sectors, such as financial services, ICT and business services. As our study focussed on working from home, mainly organisations that employ knowledge workers whose job enabled them to work from home were included. Once an organisation joined the study, we sent an anonymous link to the survey to our contact person, who shared this link with the employees, for example through an email or intranet. In this way, we guaranteed the privacy of the participating employees. The study protocol was approved by the Faculty Ethics Review Board.

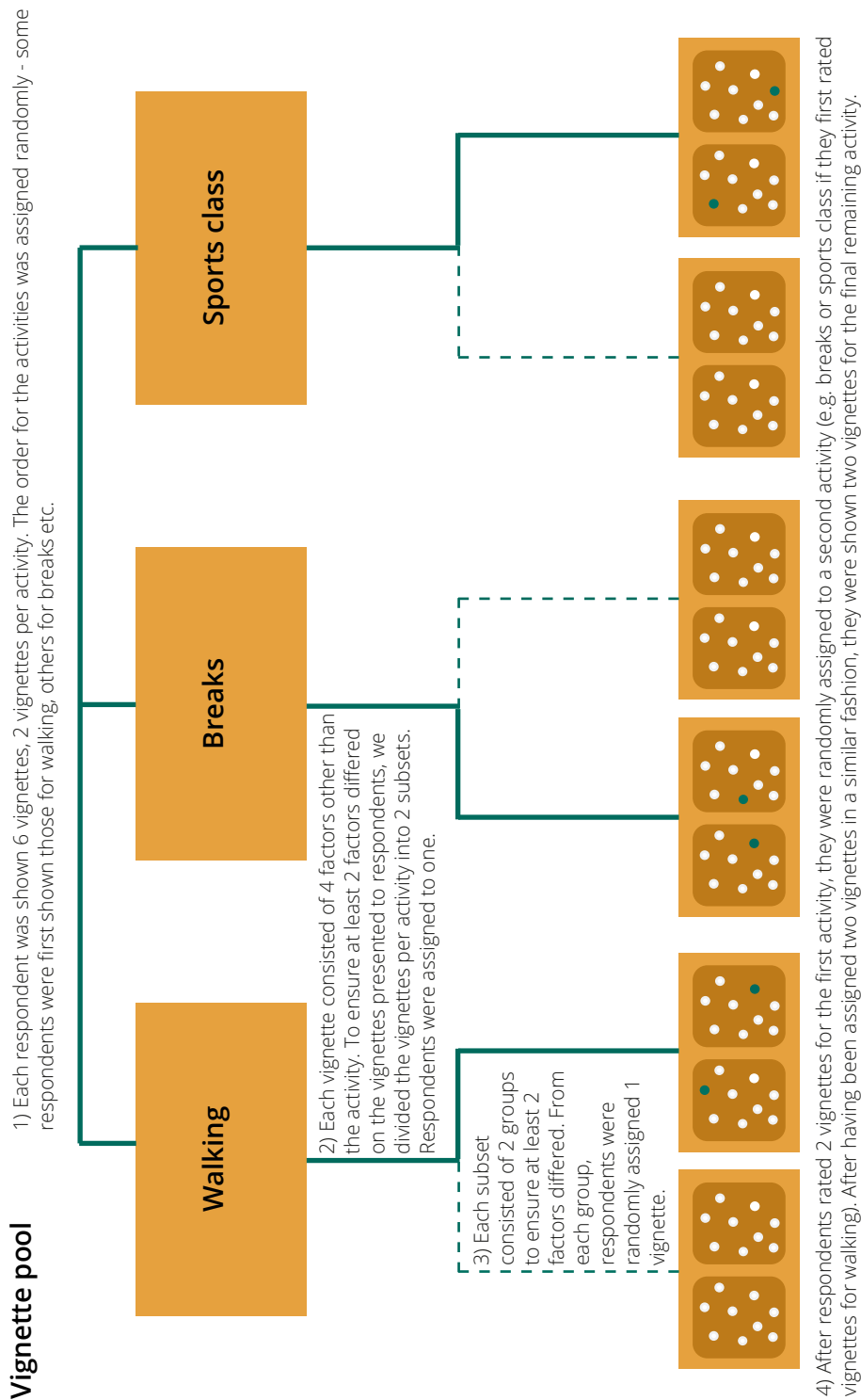
In total, 1105 employees responded to our survey. All participants provided written informed consent. We excluded 205 employees (and through that 1 organisation) who did not complete the vignette experiment to allow for analysing the within-subject variation resulting from the vignette factors. We furthermore excluded 58 employees who had missing values on any of the other variables (mostly missing on self-rated health). In analysing a vignette experiment, the vignette is the unit of analysis rather than the employee (Auspurg & Hinz, 2015). Each employee rated six vignettes, so our analytical sample consisted of 5070 vignettes rated by 845 employees working for 31 organisations.



## Procedure

In a vignette experiment, participants are presented with short stories, vignettes, that describe hypothetical situations which differ on several theoretically relevant factors. After reading each situation, they were asked to make a decision, in our case whether they intended to participate in WHP when working from home (Auspurg & Hinz, 2015). A vignette experiment is appropriate for this study because it allows employees to make decisions in hypothetical situations, which for many employees is the case concerning WHP when working from home.

Each participant was shown six different vignettes. We chose to present six because this strikes a good balance between overburdening respondents and ensuring enough variation (Auspurg & Hinz, 2015). These six were selected from the entire vignette pool that consisted of all possible combinations of the factors which we considered influencing the intentions to participate in WHP when working from home: the type of WHP (0 = walk, 1 = take short breaks, 2 = online sports class), duration (0 = 30 minutes, 1 = 45 minutes, 2 = 60 minutes), whether WHP took place during work time (0 = no, 1 = yes), how often employees worked from home (0 = limited amount of time, 1 = most of the time), and how many colleagues participated in the intervention (0 = none, 1 = some, 2 = most). In order to ensure enough within-person variation for each type of WHP, we used a stratified sampling approach: out of the six vignettes, each respondent was shown two vignettes for walking, two for taking breaks, and two for the online sports class. To prevent vignettes being too similar, leading to possible boredom, inconsistent answers and dropout, we also made sure that for each vignette per type of activity, at least two factors differed from each other. For example, for the two vignettes a respondent was shown for walking, in one it was stated the activity took place during work time and they worked from home most of their time, while in the other the situation was that the activity took place outside working hours and they worked from home a limited amount of time. The other factors could then be different or similar depending on the specific vignettes that were assigned. A visual overview of this procedure is shown in Figure 3.1. All vignettes were equally likely to occur in the subset provided to employees and were presented randomly: for example, some respondents first rated the vignettes for walking, others were first presented with the vignettes for breaks. The vignettes were designed and presented in Dutch as this was the native language of most participants. As some organisations mentioned they also had non-Dutch employees, participants could also decide to rate the vignettes in English instead.



**Figure 3.1** Procedure of allocating vignettes to respondents

The vignette experiment followed the survey. We first introduced the experiment. We explained to participants that they were shown six hypothetical situations that took place after the Covid-19 pandemic was over. We told them that they would work from home part of their time, and that their employer offered several activities to promote a healthy lifestyle. Furthermore, respondents were told that everyone could participate in these activities and that they did not need specific equipment to do so. Respondents were asked to imagine this to them in their current job. For an example of a vignette, see Figure 3.2.

Imagine that after the corona pandemic you will work from home most of the time.

Your employer stimulates you to, next to your lunch break, take regular short breaks of in total 60 minutes on days you work from home. Most of your colleagues take regular short breaks on days they work from home.

The time you spend on this does not count as working time

Are you planning to take regular short breaks on days you work from home?

Definitely not	1	2	3	4	5	6	7	8	9	Definitely
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**Figure 3.2** Vignette example

## Measures

The dependent variable, intention to participate in WHP, was measured using an 11-point Likert scale ranging from definitely not (0) to definitely (10).

The independent variables were constructed as categorical variables and relate to the vignette factors as presented in Table 3.1.

In addition to the manipulated factors in the vignettes, we included several characteristics of the respondents as control variables. These were based on questions coming from the survey. We controlled for gender (female = 1), age and education (higher educated = 1) as men, younger, and higher educated employees have been shown to be more likely to participate in WHP (Rongen et al., 2013; Van der Put et al., 2020). Employees were considered as being higher educated when they had completed higher vocational education or university education, as is common in the Netherlands. We also controlled for occupation based on ISCO codes: manager (ISCO 1), professional (ISCO 2 or 3) and clerical (ISCO 4-9), following for example Adams et al. (2017). We did so to account for the fact that we mainly had knowledge workers in our sample, whose jobs allow for

**Table 3.1** Factors and levels used in the vignettes

<b>Factor</b>	<b>Level</b>	<b>Text</b>
<b>Type of WHP</b>	0	Walk during work
	1	Take regular short breaks
	2	Online sports class with a teacher via a video connection
<b>Duration</b>	0	30 minutes
	1	45 minutes
	2	60 minutes
<b>WHP takes place during work time</b>	0	The time you spend on this does not count as work time
	1	The time you spend on this counts as work time
<b>Time spent working from home</b>	0	You will work from home a limited amount of time
	1	You will work from home most of the time
<b>Colleague participation</b>	0	None of your colleagues does the activity <sup>a</sup> on days they work from home
	1	Some of your colleagues do the activity on days they work from home
	2	Most of your colleagues do the activity on days they work from home

<sup>a</sup> Instead of the activity, in the vignette the specific activity was mentioned, so for example "None of your colleagues walk during working hours on days they work from home" when walking was the activity.

working from home. Given that the number of hours employees work may affect how much discretionary time they have, we controlled for working hours per week. We also controlled for whether employees had a good workplace at home (rated on a 5-point Likert scale from (1) fully disagree to (5) fully agree) as this may enable participation. We furthermore included self-rated health as a control variable given there is on-going debate on whether healthier employees are more likely to participate in WHP or not (Jørgensen et al., 2016). We also controlled for having a partner and children, which has been shown to relate to health-promoting behaviours (Smith & Christakis, 2008). In addition, we controlled for the time employees spent on household activities (chores and, if they had children, time spent caring for these), as this may reflect whether employees have time to participate in WHP. For each activity, we controlled for the current behaviour of employees, as it could be expected that employees who already walk during work, for example in their lunch break, will still do so once their employer actively encourages this. For walking, we asked respondents on how many working days they walk during working hours. For short breaks, we asked respondents how often they take (short) breaks on a working day excluding their lunch break. Answer options ranged from (1) never to (5) often. For the online sports class,

we considered several types of WHP that relate to physical activity. We created a dummy variable, scoring 1 if an employee makes use of sports facilities in the workplace, a financial contribution towards a sports activity, or participates in an online sports class. Finally, we added a control for the order in which the vignettes were presented to account for possible fatigue after rating several vignettes (Auspurg & Hinz, 2015).

## Data analyses

To analyse which factors explain employees' intentions to participate in WHP at home, we used multilevel linear regression models. One of the distinguishing characteristics of a vignette experiment is that the vignette is the unit of analysis, not the respondent (Auspurg & Hinz, 2015). Each respondent was asked to rate six vignettes, hence the vignette is nested within the respondent. The respondents in turn are nested within the organisation they work for. The appropriate way to analyse such nested data is by using multilevel regression models (Hox, 2010). We used three-level random-intercept fixed effects models. We first ran an empty model to calculate the intraclass correlation, to assess how much variation in the intention to participate in WHP can be attributed to the vignette factors, respondent characteristics, and the organisation. We then estimated models including the independent variables as well as the control variables. The analyses were carried out in Stata version 16. Results are reported as standardised betas to show which factors explain intentions most.

## Results

Table 3.2 shows that employees scored on average 5.92 for intention to participate in WHP when working from home. This is averaged over all vignettes and hence includes all three activities. Table 3.2 also indicates that the different vignette factors were equally divided over the vignettes – for variables with two levels as indicated in Table 3.1 the mean was 0.5, and for variables with three levels the mean was close to 0.33. Additionally, the correlations (not shown) between the vignette variables were weak and insignificant. This indicates that randomisation of the vignettes among employees has been successful and that each vignette has been rated by the same number of employees (Auspurg & Hinz, 2015).

An empty model (not shown) was used to calculate the intraclass correlation. About 74% of the variation in intention to participate was explained

by the vignette factors, respondent characteristics explained 25% of the variation, and the organisation level accounted for only 1%. This indicates that the organisation that employees work for had little influence on their intentions to participate in WHP when working from home.

**Table 3.2** Descriptive statistics

<b>Variables</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>
Intention to participate	5.92	3.39	0-10
Type of WHP			
Walking	0.33		0-1
Breaks	0.33		0-1
Online sports class	0.33		0-1
Duration			
30 minutes	0.33		0-1
45 minutes	0.34		0-1
60 minutes	0.33		0-1
WHP takes place during work time	0.50		0-1
Working from home most of the time	0.50		0-1
Colleague participation			
No colleagues do the activity	0.33		0-1
Some colleagues do the activity	0.34		0-1
Most colleagues do the activity	0.33		0-1
Female	0.49		0-1
Age	44.49	11.27	19-68
Higher educated	0.73		0-1
Occupation			
Manager	0.15		0-1
Professional	0.68		0-1
Clerical	0.17		0-1
Working hours per week	35.48	8.43	3-68
Suitable workplace at home	3.85	1.26	1-5
Self-rated health	3.79	0.68	1-5
Partner	0.79		0-1
Children	0.51		0-1
Time household activities per week	15.41	19.01	0-80
Current walking	2.30	1.90	0-7
Current breaks	2.93	1.05	0-5
Current physical activity WHP	0.13		0-1
Vignette order of presentation	3.50	1.71	1-6
<i>N</i> <sub>vignettes</sub>	5070		
<i>N</i> <sub>employees</sub>	845		
<i>N</i> <sub>organisations</sub>	31		

Table 3.3 presents the multilevel model estimated to test hypotheses regarding employees' intention to participate in WHP when working from home.

We expected that employees would be more willing to participate in walking and taking breaks than the online sports class, which was confirmed by our results. Employees were significantly more likely to intend to walk ( $\beta = 0.362, p < 0.001$ ) and take breaks ( $\beta = 0.336, p < 0.001$ ) than to participate in the online sports class. Secondly, we hypothesised that shorter activities would be more appealing to employees, which was partially supported. Employees were significantly less likely to participate in activities lasting 60 minutes than activities lasting 30 minutes ( $\beta = -0.053, p < 0.001$ ), but we found no difference comparing activities lasting 45 minutes to activities lasting 30 minutes ( $\beta = -0.010, p = 0.420$ ). Thirdly, we expected that when an activity takes place during work time, intentions to participate would be higher, which was also supported by our results ( $\beta = 0.144, p < 0.001$ ). How much employees work from home was not related to intention to participate. We found a small positive effect between intention to participate and working from home most days as expected, but it was not statistically significant ( $\beta = 0.003, p = 0.746$ ). Finally, we found that colleague WHP participation mattered as anticipated. When most colleagues did the activity, employees' intention to participate was higher ( $\beta = 0.035, p = 0.006$ ) compared to when no colleagues participated, which supported the hypothesis. The case is which only some colleagues participated compared to none was not significant ( $\beta = 0.018, p = 0.165$ ). The effect sizes showed that the type of WHP has the largest effect size, followed by whether the activity takes place during work time.

The results for the control variables showed that females and those that worked more hours were less likely to intend to participate. Intentions were higher for employees with children. Also employees' current behaviour played a role in their intention to participate in WHP when working from home after the pandemic: if they were already doing these activities, they were more likely to continue to do so.

## **Sensitivity Analyses**

We performed several sensitivity analyses to examine if our results were robust. Firstly, we ran our models without the control variables to see if they affected the relation between the vignette characteristics and the extent to which employees intended to participate in WHP when working from home. This appeared not to be the case.

Secondly, there may be unmeasured respondent or organisational characteristics that affected intentions for participating in WHP, so we used

**Table 3.3** Multilevel linear regression results predicting intention to participate in WHP when working from home

	$\beta$	SE
Type of WHP (Online sports class = ref.)		
Walking	0.362***	0.088
Breaks	0.336***	0.088
Duration (30 minutes = ref.)		
45 minutes	-0.011	0.093
60 minutes	-0.053***	0.094
WHP takes place during work time	0.144***	0.072
Working from home most of the time	0.003	0.072
Colleague participation (No colleagues = ref.)		
Some colleagues	0.018	0.093
Most colleagues	0.035**	0.093
Female	-0.085***	0.145
Age	-0.021	0.006
Higher educated	0.025	0.169
Occupation (manager = ref.)		
Professional	0.030	0.191
Clerical	0.018	0.264
Working hours per week	-0.058*	0.009
Suitable workplace at home	0.001	0.053
Self-rated health	-0.009	0.097
Partner	-0.025	0.172
Children	0.059*	0.162
Time household activities per week	-0.030	0.004
Current walking	0.178***	0.037
Current breaks	0.081***	0.066
Current physical activity WHP	0.064**	0.201
Vignette order of presentation	-0.067***	0.021
Constant	6.742***	0.688
$\sigma^2$ vignette level	6.555	0.143
$\sigma^2$ employee level	2.406	0.175
$\sigma^2$ organisational level	0.032	0.044
$N_{vignettes}$	5070	
$N_{employees}$	845	
$N_{organisations}$	31	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

fixed-effects models accounting for the clustering in organisations. Results were similar to multilevel models, which was not surprising given that little variation was explained by the organisational level.

To assess whether employees' responses were affected by the way in which we measured the dependent variable, we also ran our models using the frequency with which employees intended to participate in WHP when working



from home. This ranged from 1 (never) to 5 (all days I work from home). Results remained the same.

Finally, we considered differences between the three activities. The results (see Appendix A) showed that for taking breaks ( $\beta = -0.046$ ,  $p = 0.042$ ) also activities lasting 45 minutes were preferred less than activities lasting 30 minutes, in addition to activities lasting 60 minutes. We also found colleague participation to affect intentions to participate in the activities differently. Colleagues did not affect whether employees intended to walk when working from home. For taking breaks ( $\beta = 0.067$ ,  $p = 0.003$ ) and participating in the online sports class ( $\beta = 0.049$ ,  $p = 0.006$ ), both the situation in which some colleagues participate appeared enough to stimulate employees to also participate. This is in contrast to the main analyses, when only when most colleagues participated acted as an inducement.

## Discussion

The aim of this chapter was to examine whether employees intend to participate in worksite health promotion (WHP) when working from home, and which factors affect their intentions. It is expected that working from home will be part of the new working reality for many employees, which has implications for their health (Oakman et al., 2020; Tavares, 2017). While in the workplace many employers offer WHP to encourage employees to live a healthy life, little is known about how this can take shape in the new context of the home office. Few employers currently offer WHP for employees working from home, so we used a vignette experiment filled in by 845 employees to study whether employees intend to walk during work, take short breaks, and participate in an online sports class encouraged by their employer. Furthermore, we studied if the duration of the activity, whether WHP takes place during work time, how often an employee works from home, and colleague participation affected these intentions. Previous literature (Seward et al., 2019; Van der Put et al., 2021) has shown these are important considerations for whether employees make use of WHP in the workplace, and they may also play a role when employees work from home. In doing so, we drew upon the theory of reasoned action (Ajzen & Fishbein, 1980) and argued that WHP characteristics and how often employees work from home shape their attitudes towards WHP when working from home, whereas colleague participation reflects social norms.

We found that intentions to participate in WHP were higher for walking and taking breaks than for the online sports class. This could be because walking and taking breaks are less vigorous or may be activities that employees

incorporate in their working day regardless of what their employer does and therefore have a more favourable attitude towards these (Mackenzie et al., 2019; Pollard & Wagnild, 2017). Also in the workplace, employees more often engage in less strenuous activities, such as healthy eating in the worksite cafeteria or doing a health check (Van der Put & Van der Lippe, 2020). Walking and breaks can easily be implemented in a working day (Sianoja et al., 2018). Though small, these activities may have positive health implications for employees, both mentally and physically (Tavares, 2017; Van den Heuvel et al., 2021). They aid employees in keeping focus and working effectively, also benefiting the employer who encourages this behaviour (Ott-Holland et al., 2019; Parks & Steelman, 2008).

We also examined whether different factors impact employees' intention to participate in WHP when working from home. We expected that time would be an important factor for WHP use at home, as it is in the workplace, where employees mentioned that lack of time as a main reason why they do not use WHP (Edmunds et al., 2013; Hunter et al., 2018). We find this is indeed the case: results showed that shorter activities are preferred. Respondents may have had more favourable attitudes towards shorter activities. Many were knowledge workers who still need to finish their tasks and meet their billable hours, and though they are open to WHP when working from home, shorter activities help them to also meet their work goals

Results also showed that when WHP takes place during work time, intentions to participate are higher. Similar to in the workplace, participating in WHP during work facilitates employees to fit all their different activities in the (working) day (Sargent et al., 2016). Moreover, by allowing employees to participate in WHP during work, organisations also send a strong signal that they are concerned with the health and well-being of employees. This may make employees evaluate these activities more favourably. When employees feel only work matters, they refrain from using WHP, as they want to show they are committed workers (Krick et al., 2019; Van der Put & Van der Lippe, 2020).

Contrary to our expectation, we found that how often employees work from home was not related to intentions to participate in WHP. It does not matter whether employees work from home most of their working days or only a limited number – they are equally likely to intend to participate. As employees likely differ in how much they work from home also after the pandemic, this means potentially all employees could benefit from the advantages WHP has for their health and productivity (Parks & Steelman, 2008; Rongen et al., 2013).

As in the workplace, social norms arising from colleague participation appear an important motivator for employees to use WHP (Seward et al., 2019; Van der Put et al., 2021). Even though meetings between employees that work from home tend to focus on work tasks, meaning it may be more difficult to know what behaviour colleagues demonstrate (Kwon & Seo, 2021), employees still consider what their colleagues do as a reason for them to act likewise. Additionally, participating together can also be a means of social interaction which is often limited when working from home (Seward et al., 2019; Van der Put et al., 2021).

Our findings have several practical implications for how employers could increase WHP use for employees working from home. Whether WHP takes place during work time was one of the strongest predictors for intentions, so it is of paramount importance that organisations that implement WHP for employees working from home stress this support. Although there may be less room for recovery, employees could be pointed out that they can have telephone meetings with their colleagues while walking, which also benefits their physical health. Additionally, colleague participation was shown to matter. When offering WHP for employees working from home, organisations can highlight that WHP can also be a channel for social interaction. For example, colleagues that live nearby can walk together, or use a video tool to catch up during a break.

Our study also has theoretical implications. We drew upon the theory of reasoned action (Ajzen & Fishbein, 1980). Even though we did not test attitudes which are one of the explanatory mechanisms in the theory directly, we argued that WHP characteristics may shape employees' attitudes towards WHP when working from home, and have shown that these characteristics indeed matter. Furthermore, we also showed that social norms, the other explanatory mechanism, relate to intentions to participate in WHP when working from home. We focussed on norms arising from colleagues as these are the most relevant reference group for healthy behaviours at work (Van der Put et al., 2021). There thus seems merit in using the theory of reasoned action to explain WHP use when working from home. Further theoretical work can focus on demonstrating how attitudes towards WHP when working from home form and whether intentions indeed translate into actual use.

The current study is to our knowledge among the first to examine whether employees intend to participate in WHP when working from home, and which assess the factors that affect these intentions. Other strengths include the large sample size, especially for a vignette experiment (Auspurg & Hinz, 2015) and

the focus on three types of WHP. There are, however, also some limitations that should be noted.

Firstly, the nature of the vignette experiment requires the included factors to be pre-defined (Auspurg & Hinz, 2015). We based our decisions on which factors to include on the literature on WHP use in the workplace, but when working from home employees may have different considerations. However, as there is no research yet on WHP use at home, we believe this is a good starting point and leave it to future research to explore other factors that may play a role, for example, how supportive the home environment is, or an employee's workload. Furthermore, we focussed mainly on physical activity related health behaviours as these seem easiest to implement when working from home, yet also other activities could be offered such as online meditation classes to help employees detach from work, or workshops on how to prepare a healthy lunch. It would be interesting if future research also explores employees' intentions to use these.

Secondly, an often-heard limitation of vignette experiments is reduced external validity because of their hypothetical nature (Hainmueller et al., 2015). We tried to make the hypothetical situations as realistic as possible and sampled employees who experienced working from home during the Covid-19 pandemic. It may be easier for these to identify with the situation and thereby provide realistic answers. Although we measured intended behaviour rather than actual behaviour, which could lead to social desirability bias, this bias is often smaller in vignette experiments than in surveys, because the relevant factors are hidden in the vignettes (Auspurg & Hinz, 2015). People's responses to vignettes have been found to match their actual behaviour well (Hainmueller et al., 2015), and intentions to participate in WHP relate to really doing this (Röttger et al., 2017). As a result of using a vignette experiment, we also made use of categorical variables that may bias findings for some factors (e.g. duration). This is one of the key aspects of vignette experiments: using continuous variables would be too complex (Auspurg & Hinz, 2015). However, it would be good that when WHP is more widespread for employees working from home, research would inquire in employees' actual use of these activities and use different indicators.

Lastly, the sample of organisations that participated in our study was not based on random sampling strategies. However, for vignette experiments, this may not be problematic if the mechanisms are universal (Auspurg & Hinz, 2015). We have no reason to believe this not to be the case, but added the organisation as an additional level to our models to account for possible variation. Additionally,

sampling within organisations was random. This also ensured that we mainly had highly educated knowledge workers in our sample, which might create biased results. This will, however, be the group of employees that is also expected to remain working from home post-pandemic, to whom these types of WHP will mainly be targeted.

## **Conclusion**

Employees intend to participate in WHP when they work from home, which is expected to become more prevalent in the future. Walking and taking breaks appeared most popular, as were shorter activities. In encouraging employees to use WHP when working from home, organisations should ensure that employees know they can do so during work time and that colleagues also participate. In these ways, employers can help promoting the health and well-being of their employees even when these are not present in the workplace.



4

# Actions speak louder than words: Workplace social relations and worksite health promotion use





## Abstract<sup>3</sup>

Many organisations offer worksite health promotion (WHP – activities aimed at improving employee health) to their employees, such as healthy menus in the cafeteria or fitness facilities. WHP aims to improve both employee health and productivity, yet the average uptake is low (about 33%). This chapter contributes to better understanding why employees do not use WHP, even though it may benefit their health and well-being. We propose that workplace social relations hold the key to this paradox. Previous research paid little attention to the fact that the workplace is a social arena where employees influence each other's beliefs and behaviour, while other people such as partners and friends are acknowledged as affecting our healthy choices. We tested if WHP use is associated with colleagues' and team managers' encouragement of a healthy lifestyle, and colleague WHP uptake. We used unique multilevel data from the second wave of the European Sustainable Workforce Survey (4345 employees of 402 teams in nine countries) and focussed on two types of WHP: healthy menus and sports facilities. Results showed employees were more likely to use healthy menus and sports facilities when more colleagues did so too and when colleagues encouraged a healthy lifestyle. Surprisingly, encouragement by one's manager played no role. Social contact among colleagues can thus facilitate WHP use, and WHP initiatives should pay attention to the influential role of colleagues.

**Keywords:** colleagues, Europe, manager, organisational culture, worksite health promotion

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<sup>3</sup>A slightly different version of this chapter has been published as Van der Put, A. C., Mandemakers, J. J., de Wit, J. B., & van der Lippe, T. (2021). Actions speak louder than words: workplace social relations and worksite health promotion use. *Journal of Occupational and Environmental Medicine*, 63(7), 614-621. Doi: 10.1097/JOM.0000000000002196.

The authors jointly developed the main ideas of this chapter. Van der Put contributed to data collection, mainly wrote the manuscript and performed the data analyses. Mandemakers, De Wit and Van der Lippe contributed substantially by providing extensive feedback on earlier versions. Mandemakers also contributed to the data analyses. Van der Lippe was Principal Investigator for the data collection.

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## Introduction

Many organisations offer worksite health promotion (WHP), which consists of combined efforts of employers, employees and society to improve employee health and prevent disease (*Luxembourg Declaration on Workplace Health Promotion in the European Union*, 2007). Examples include healthy food in the worksite cafeteria and onsite 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 (Ranby et al., 2011). WHP reportedly improves both employee health and productivity (Ott-Holland et al., 2019; Parks & Steelman, 2008; Rongen et al., 2013). The average uptake of WHP is however low (around 33% on average) and there is large variation between organisations in the proportion of employees that use WHP (Bull et al., 2003; Robroek et al., 2009; Rongen et al., 2013). This means both employers and employees miss out on the benefits of WHP.

This chapter 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 neighbours contribute to the adoption of health behaviour (Smith & Christakis, 2008). 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 behaviour (Clohessy et al., 2019; Quist et al., 2014; Robbins & Wansink, 2016). Most of the working day 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 (Clohessy et al., 2019).

The present study adds to existing literature in several ways. Firstly, 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 (Zweber et al., 2016). We focus on specific encouragement and behaviour related to a healthy lifestyle rather than generic social support, which is what other studies did (e.g. Jørgensen et al., 2016). From research on work-related

safety and helping behaviour, we know that social norms and support specific to a behaviour play an important role in employee behaviour, and this may also apply to WHP use (Fugas et al., 2011; Gonzalez-Mulé et al., 2014).

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 (e.g. Rongen et al., 2014) or managers (e.g. Passey et al., 2018). Departing from previous studies which mostly focused on upper management (Hämmig, 2017; Hoert et al., 2018), 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 (Justesen et al., 2017). 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 (Robbins & Wansink, 2016). Colleagues may also be important role models, while managers are not, given differences in the type of relation, frequency of interaction, and closeness (Jenkins et al., 2015; Zweber et al., 2016). 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 organisations (Van der Lippe et al., 2018). Most studies on WHP use are limited to one or a few organisations (Bull et al., 2003), which makes it difficult to assess the influence of the organisational 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 (Podsakoff et al., 2003).

Fourthly, we also examine if the WHP use of employees who more often work from home is associated with colleagues' and managers' encouragement and behaviour. 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 behaviour of their colleagues and manager (Van der Lippe & Lippényi, 2020b). Even though WHP is mainly linked to the

workplace, as a result of the Covid-19 pandemic, working from home is expected to become more prevalent (Moens et al., 2022). Additionally, employees in several occupations spend hours in their job away from the central workplace (e.g. 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 sports facilities. These are among the most prevalent types of WHP implemented in organisations (Goetzel et al., 2007; Sparling, 2010). They share common characteristics and together have great potential to improve health (Ranby et al., 2011). Additionally, eating and exercise behaviour 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 to which they are incorporated into the working day. The use of healthy menus in the worksite cafeteria inherently takes place at work and can be done daily, whereas sports facilities can also be used outside work and may be used less frequently. Additionally, eating behaviour may be more visible to colleagues than exercise behaviour (Van der Put & Van der Lippe, 2020). If we nevertheless find common factors which affect their use, this will be important information for employers and health promoters on how to increase use of various types of WHP.

## Theory

Organisations that value and are conducive to employee health and well-being help in creating a supportive social environment in which healthy behaviour is normative (Aldana et al., 2012; Kent et al., 2016). Colleagues and team managers can be important for setting this norm, for it is through their encouragement and behaviour that employees learn that healthy choices matter and are valued at work (Kent et al., 2016; Zweber et al., 2016). In such work environments, employees are more likely to participate in WHP (Passey et al., 2018). We discuss how colleague and manager encouragement and behaviour 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 (Justesen et al., 2017). When employees feel their colleagues and manager value a healthy lifestyle, they may view this as implied permission for using WHP during working hours (Jenkins

et al., 2015; Seward et al., 2019). This reflects a shared, generally implicit notion that if we engage in behaviour that others approve of, they will approve of us too (Cialdini & Goldstein, 2004). For example, employees may refrain from using WHP because they feel guilty towards their colleagues for prioritising their own health and lifestyle over work tasks (Bredahl et al., 2015; Krick et al., 2019). 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 behaviour as acceptable. This can promote WHP use (Kilpatrick et al., 2015). Employees report experiencing colleague encouragement for healthy dietary choices or physical activity to be an important facilitator of WHP use (Bruton et al., 2012; Clancy et al., 2018; Lenneis & Pfister, 2016). We thus predict that employees whose colleagues encourage health behaviours are more likely to use healthy menus and sports facilities (H1).

Similarly, managers can also influence the health climate in a team by encouraging health behaviours, which could signal permission to use WHP (Zweber et al., 2016). 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 (Kent et al., 2016; Seward et al., 2019). Manager encouragement may be particularly relevant to the use of sports facilities, as this may take up more time away from work while done during the working day than eating healthily in the worksite cafeteria. Results of previous studies suggest that manager encouragement for health behaviours is associated with use of WHP with respect to both healthy eating and physical activity (Bruton et al., 2012; Clancy et al., 2018; Passey et al., 2018). We thus hypothesise that employees whose manager encourages health behaviours are more likely to use healthy menus, and even more so, sports facilities (H2).

## **Behaviour**

Colleagues can also be role models when it comes to WHP use (Jenkins et al., 2015). Given that colleagues take up a similar position and engage in similar work activities, they constitute the most salient role models in the workplace (Heaney, 2017; Zweber et al., 2016). Modelling the behaviour of others can help in establishing new behaviours and increase the frequency of already learned behaviours (Ranby et al., 2011). Other people, in this case colleagues, provide a guide as to what behaviour is appropriate in a given situation (Stok et al., 2014). 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 behaviour. By using WHP together, colleagues also motivate each other, for example by simultaneously attending an exercise class (Mazzola et al., 2019). Furthermore, using WHP with colleagues can also increase affiliation with them (Thomas et al., 2017). Having lunch together with colleagues or exercising together may be important drivers of WHP use because it provides opportunities for social interaction (Seward et al., 2019). Several studies have found that employees are more likely to use WHP promoting healthy eating behaviours and physical activity when more of their colleagues do so (Bredahl et al., 2015; Clancy et al., 2018; Van der Put & Van der Lippe, 2020). We thus predict that employees are more likely to use healthy menus and sports 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 behaviour of their colleagues and manager (Van der Lippe & Lippényi, 2020b). Less contact with colleagues and managers may mean their encouragement and behaviour is less salient and hence less important for WHP use (Thomas et al., 2017; Zweber et al., 2016). 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 health behaviours (Hinds & Mortensen, 2005). 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 (Passey et al., 2018). 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 behaviour may in particular affect use of healthy menus, as this is likely more integrated into the working day than the use of sports facilities, which could also be used outside work (Van der Put & Van der Lippe, 2020). We thus expect that the encouragement and behaviour of colleagues and managers will be less influential the more employees work from home, and more so for use of healthy menus than sports facilities (H4).

## Methods

### Data

We tested our hypotheses using data from the second wave of the European Sustainable Workforce Survey (Van der Lippe et al., 2018). We used the second wave because this included information on colleague and manager encouragement of health behaviours, which was not available in the first wave. The survey was conducted in nine European countries: Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. Organisations that participated in the first wave of data collection in 2015-2016 were invited to participate again; besides, 13 new organisations joined in the second wave. When an organisation decided to participate, HR managers, team managers and employees were contacted at work and asked to fill in 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 206 managers in 402 work teams in 113 organisations.

We excluded 35 organisations (1155 employees in 131 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 (Kalleberg, 1994). Note that the sample size differed between analyses of healthy menus ( $N = 2278$  in 200 teams) and sports facilities ( $N = 2234$  in 199 teams) as not all organisations offered 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 sports facilities at work or a financial contribution toward a sports activity outside the workplace were available in their organisation. When they answered affirmatively, they were asked whether they made use of these 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 sports facilities.

Colleague encouragement for health behaviours was measured by asking employees whether their colleagues encouraged them to eat healthy food and

exercise, indicated on a 5-point Likert scale ranging from (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 one for physical activity encouragement, in line with the correspondence principle, which holds that specific encouragement is likely more influential than generic encouragement (Ajzen & Fishbein, 1977).

Manager encouragement for health behaviours was assessed by asking managers whether they encouraged their employees to eat healthy food and exercise, rated on a 5-point Likert scale ranging from (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 used healthy menus or sports 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 behaviour may reduce possible common-method bias (Podsakoff et al., 2003). Using average usage within teams as reported by employees did not change the results. We created separate variables for healthy menus and sports 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) less than one day a month, (3) less than one day a week, (4) one day a week, (5) two days a week, (6) three days a week and (7) four or five 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 (Robroek et al., 2009; Rongen et al., 2013; Van der Put et al., 2020). 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 (Van der Put & Van der Lippe, 2020). Furthermore, as there is ongoing debate about whether healthier employees are more likely to use WHP (Jørgensen et al.,



2016), we also included self-rated health as a control variable. At the team level, we controlled for team size. We finally controlled for organisational sector and country. Descriptive statistics are shown in Tables 4.1 and 4.2.

## Data analyses

As Tables 4.1 and 4.2 show, our data contained a number of missing values, especially from managers. We used multiple imputation to replace these missing values. This procedure replaced each missing value with plausible values based on existing information in the dataset while adjusting for prediction errors (Little & Rubin, 2019). 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 analysed 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 (Hellevik, 2009). 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 sports facilities. We also explored the option to integrate use of these two types together into one model, but given they were not highly correlated ( $r_{\text{healthy menus, sports facilities}} = 0.20$ ) 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 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 (1991). Model 2 included the interaction between working from home and colleague and manager encouragement and behaviour. Additionally, we used Wald tests to see if effects differed between use of healthy menus and use of sports facilities and to see whether encouragement or behaviour is more influential (Li et al., 1991).  $R^2$  was calculated accounting for Rubin's rules (Harel, 2009).

**Table 4.1** Descriptive statistics and correlations for healthy menus

Variables	N	M	SD	1	2	3	4	5	6	7	8	9
1 WHP use	2278	0.36										
2 Colleague encouragement	2275	2.25	0.51	-0.05*								
3 Manager encouragement	1628	2.66	1.37	-0.02	0.28**							
4 Colleague use	1672	0.32	0.36	0.35***	-0.02	0.20***						
5 Working from home	2154	1.80	1.44	0.11***	0.09**	-0.01	-0.18***					
6 Part-time	2278	0.28	0.28	-0.08**	-0.08**	-0.13***	-0.02	0.03				
7 Female	2172	0.63	0.63	-0.08**	0.24***	0.10***	-0.18***	-0.12***	0.10***			
8 Age	2142	43.73	11.60	-0.08***	-0.06**	-0.06*	-0.10***	-0.01	0.08***	0.01		
9 Years of education	2152	14.05	3.49	0.02	0.04	0.04	-0.01	0.31***	-0.01	0.01	-0.08***	
10 Self-rated health	2019	3.88	0.70	0.04*	0.03	0.02	0.05	0.04	0.00	-0.08**	-0.14***	0.12***

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 4.2** Descriptive statistics and correlations for sports facilities

Variables	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***								
3 Manager encouragement	1620	2.37	1.24	0.04	0.37***							
4 Colleague use	1627	0.21	0.24	0.32**	0.19***	0.13***						
5 Working from home	2083	1.91	1.47	0.04*	-0.07***	-0.02	0.21***					
6 Part-time	2234	0.28	0.28	-0.04***	-0.08**	-0.10***	-0.04*	0.03				
7 Female	2105	0.59	0.59	-0.03	0.11***	0.11***	-0.02	-0.07***	0.13***			
8 Age	2081	42.99	11.33	-0.07***	-0.13***	-0.09**	-0.07***	-0.01	0.06***	-0.00		
9 Years of education	2099	14.07	3.38	0.08***	0.04*	0.08***	0.23***	0.36***	0.04*	0.05*	-0.08***	
10 Self-rated health	1957	3.86	0.71	0.10***	0.06**	0.05*	0.05*	0.04*	0.02	-0.05**	-0.15***	0.15***

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Results

In organisations that offered WHP, 36% of employees used healthy menus and 22% used sports facilities. Tables 4.3 and 4.4 show the results for the analyses of the role colleagues and team managers played in the use of healthy menus and sports facilities, respectively.

Firstly, we expected that employees whose colleagues encouraged health behaviours were more likely to use healthy menus and sports facilities (H1). Based on Models 1 in Tables 4.3 and 4.4, we found that for both use of healthy menus ( $B = 0.105, p < 0.001$ ) and use of sports facilities ( $B = 0.079, p = 0.002$ ), colleague encouragement contributed to employee's WHP use. Employees were 11 percentage points more likely to use healthy menus the more their colleagues encouraged them to eat healthily, and 8 percentage points more likely to use sports facilities the more their colleagues encouraged them to be physically active. This supports our first hypothesis.

Secondly, we expected that employees whose manager encouraged health behaviour were more likely to use healthy menus and sports facilities, and more so for use of sports facilities (H2). However, we found no association between manager encouragement and use of either healthy menus ( $B = 0.006, p = 0.613$ ) or sports facilities ( $B = 0.006, p = 0.457$ ), and thus no support for our hypothesis. In models without the effects for colleague encouragement and behaviour (not shown), we did find that manager encouragement was associated with use of both healthy menus ( $B = 0.028, p = 0.021$ ) and sports facilities ( $B = 0.028, p = 0.004$ ). Manager encouragement was also correlated with both colleague encouragement ( $r_{\text{manager encouragement, colleague encouragement}} = 0.28, p < 0.001$  for healthy menus and  $r_{\text{manager encouragement, colleague encouragement}} = 0.37, p < 0.001$  for sports facilities) and colleague use ( $r_{\text{manager encouragement, colleague use}} = 0.20, p < 0.001$  for healthy menus and  $r_{\text{manager encouragement, colleague use}} = 0.13, p < 0.001$  for sports facilities), see Tables 4.1 and 4.2. These findings suggest manager encouragement may set the conditions under which colleagues can be influential.

Thirdly, we expected that employees were more likely to use healthy menus and sports facilities if more colleagues did so (H3). Our results supported this hypothesis: both for use of healthy menus ( $B = 0.200, p < 0.001$ ) and use of sports facilities ( $B = 0.234, p < 0.001$ ), colleague use contributed to WHP use.

**Table 4.3** Linear probability models predicting the likelihood of using healthy menus

	M1		M2	
	B	SE	B	SE
Colleague encouragement	0.105***	0.027	0.122**	0.042
Manager encouragement	0.006	0.012	0.001	0.016
Colleague use	0.200***	0.049	0.326***	0.065
Colleague encouragement <b>X</b> Working from home			-0.010	0.017
Manager encouragement <b>X</b> Working from home			0.002	0.007
Colleague use <b>X</b> Working from home			-0.067**	0.025
Working from home	-0.006	0.008	0.034	0.039
Part-time	-0.060*	0.025	-0.061*	0.025
Female	0.030	0.029	0.031	0.029
Age	-0.001	0.001	-0.001	0.001
Years of education	0.007*	0.003	0.007*	0.003
Self-rated health	0.015	0.013	0.013	0.013
Team size	0.000	0.000	0.000	0.000
Sector (Manufacturing = ref.)				
Health care	-0.120**	0.044	-0.112*	0.043
Higher education	-0.059	0.046	-0.054	0.046
Transport	0.077	0.067	0.071	0.066
Financial services	0.075	0.071	0.121	0.069
Telecommunication	0.134*	0.061	0.142*	0.060
Country (Netherlands = ref.)				
United Kingdom	-0.376***	0.063	-0.366***	0.063
Germany	0.005	0.061	0.010	0.062
Finland	0.151*	0.072	0.175*	0.075
Sweden	-0.195	0.144	-0.228	0.147
Portugal	-0.333***	0.060	-0.342***	0.059
Spain	-0.075	0.066	-0.093	0.065
Hungary	-0.070	0.068	-0.074	0.065
Bulgaria	-0.338***	0.043	-0.335***	0.043
Constant	0.067	0.100	0.001	0.118
Adjusted R <sup>2</sup>	0.19		0.20	
<i>N</i> <sub>employees</sub>	2278		2278	
<i>N</i> <sub>teams</sub>	200		200	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

We also hypothesised that WHP use of employees who worked from home more often would be less associated with the behaviour 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 ( $F(3, 187.9) = 2.43, p = 0.066$ ) or sports facilities ( $F(3, 192.1) = 0.65, p = 0.583$ ). We also mainly found non-significant results for the interaction terms. Only the association between colleague behaviour and use of healthy menus was smaller the more employees worked from home ( $B = -0.067, p = 0.008$ ), but the

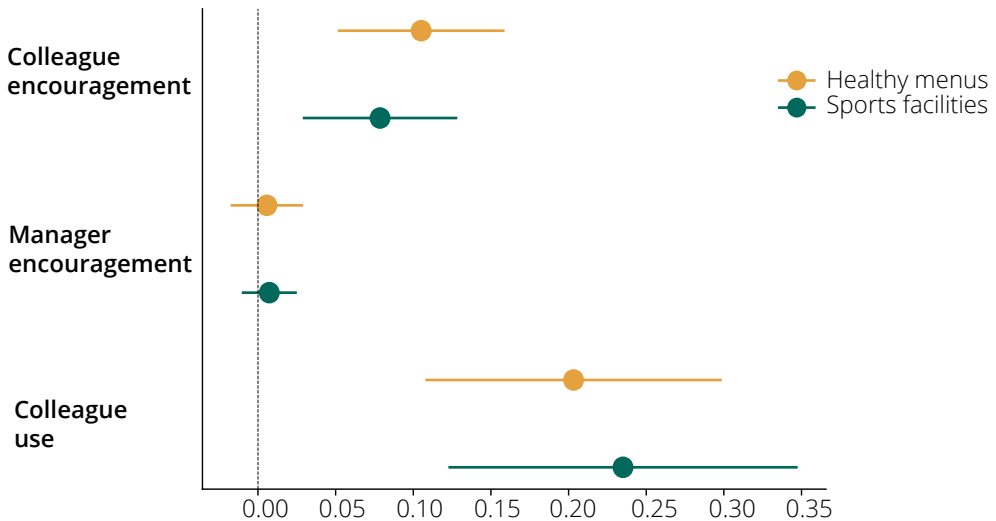
associations with colleague and manager encouragement were not affected by the extent to which employees worked from home. For use of sports facilities, none of the associations with colleague and manager encouragement and behaviour were moderated by the extent to which employees worked from home. We thus found partial support for our fourth hypothesis.

**Table 4.4** Linear probability models predicting the likelihood of using sports facilities

	M1		M2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Colleague encouragement	0.079**	0.025	0.102**	0.036
Manager encouragement	0.007	0.009	0.006	0.015
Colleagues using sports facilities	0.234***	0.057	0.261**	0.085
Colleague encouragement <b>X</b> Working from home			-0.013	0.013
Manager encouragement <b>X</b> Working from home			-0.001	0.006
Colleague use <b>X</b> Working from home			-0.013	0.029
Working from home	-0.010	0.006	0.018	0.023
Part-time	-0.006	0.020	-0.006	0.020
Female	0.026	0.020	0.027	0.020
Age	-0.002*	0.001	-0.002*	0.001
Years of education	0.000	0.004	0.000	0.004
Self-rated health	0.035**	0.012	0.035**	0.012
Team size	-0.000	0.000	0.000	0.000
Sector (Manufacturing = ref.)				
Health care	-0.030	0.037	-0.030	0.037
Higher education	-0.028	0.035	-0.032	0.035
Transport	0.273***	0.067	0.269***	0.068
Financial services	-0.058	0.039	-0.062	0.041
Telecommunication	0.172**	0.056	0.170**	0.055
Country (Netherlands = ref.)				
United Kingdom	-0.053	0.044	-0.048*	0.043
Germany	0.020	0.042	0.025	0.042
Finland	0.293***	0.055	0.297***	0.056
Sweden	0.372***	0.051	0.374***	0.051
Portugal	-0.095	0.051	-0.093	0.052
Spain	-0.072	0.072	-0.072	0.066
Hungary	-0.051	0.031	-0.049	0.031
Bulgaria	-0.004	0.039	0.001	0.040
Constant	-0.111	0.090	-0.167	0.103
Adjusted R <sup>2</sup>	0.23		0.23	
<i>N</i> <sub>employees</sub>	2234		2234	
<i>N</i> <sub>teams</sub>	199		199	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

To gain more insight in the differences between use of healthy menus and use of sports facilities, we plotted the coefficients and confidence intervals for colleague encouragement, manager encouragement and colleague use in Figure 4.1. Figure 4.1 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 ( $F(1, 175.0) = 2.52, p = 0.114$ ), but for use of sports facilities we found that colleague use was more important than colleague encouragement ( $F(1, 180.4) = 5.18, p = 0.024$ ). We also tested whether effects differed between use of healthy menus and use of sports facilities, but this was not the case for either colleague encouragement ( $F(1, 147543.7) = 0.58, p = 0.446$ ), manager encouragement ( $F(1, 6450.0) = 0.00, p = 0.985$ ) or colleague use ( $F(1, 5288.5) = 0.22, p = 0.636$ ).



**Figure 4.1** Coefficients and confidence intervals for work environment variables for use of healthy menus and sports facilities

### Sensitivity analyses

We performed several analyses to assess the robustness of our findings. Firstly, we ran our analyses using listwise deletion ( $N_{healthy\ menus} = 1410$  and  $N_{sports\ facilities} = 1378$ ) 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 was no longer significant ( $B = -0.030$ ,  $p = 0.238$ ) while the other findings did not change.

Thirdly, in some cases organisational policies may be team-driven rather than organisation-driven (Wright & Nishii, 2007), so we also included employees whose team manager reported WHP to be available in addition to the HR manager. In these models the interaction between colleague use of healthy menus and working from home was insignificant ( $B = -0.044$ ,  $p = 0.071$ ), 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 categorised as non-users. Results remained intact.

Lastly, to assess whether results could be country- or sector-specific we performed jack-knife procedures excluding one country or sector at a time (Neumayer & Plümer, 2017). Findings remained largely unchanged, but we did not find an interaction between colleague WHP use and working from home when excluding the Netherlands ( $B = -0.041$ ,  $p = 0.144$ ). 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. Organisations frequently offer WHP to their employees, but average uptake rates are low, suggesting that both employees and organisations miss out on the alleged benefits WHP can bring (Ott-Holland et al., 2019; Robroek et al., 2009). 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 behaviour of colleagues and team managers may be important facilitators of employees' WHP use, as this reflects to what extent health behaviours are considered important and valued in the workplace (Kent et al., 2016). 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 sports facilities. Additionally, we examined whether working from home affected

the influence of colleagues and managers.

Our main findings are that both colleague encouragement and behaviour are associated with whether employees used healthy menus and sports facilities. Previous studies have shown that colleague general social support may play a role in employees' WHP use (Jørgensen et al., 2016), and we extend this by showing that employees whose colleagues support specific behaviours, 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 (Bruton et al., 2012; Clancy et al., 2018; Van der Put & Van der Lippe, 2020). 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 (Seward et al., 2019; Stok et al., 2014). Comparing the relative importance of colleague encouragement and behaviour with respect to employees' use of healthy menus and sports facilities, our findings suggest that colleague behaviour matters more than encouragement, but only significantly for use of sports facilities. Colleagues are likely more important as role models than in providing (implicit) permission for WHP use of sports facilities.

Contrary to our expectation and findings of previous studies (Bruton et al., 2012; Clancy et al., 2018), we found that managers appear to play no additional role to colleagues in promoting the use of healthy menus and sports 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 (Gittleman et al., 2010). 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 health behaviours. 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 (Justesen et al., 2017; Passey et al., 2018), but how this takes form warrants further research. Given that managers were expected to be important in providing (implicit) permission for WHP use (Zweber et al., 2016) 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 behaviour 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' behaviour was less important with respect to the use of healthy menus, but not sports facilities. The reason for this could be that use of healthy menus inherently takes place at work, and is visible to colleagues, while sports activities can also be done outside work and may thus be less visible. Because of this lower visibility, colleague behaviour may be less salient for employees' own behaviour (Thomas et al., 2017). 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 (Van der Lippe & Lippényi, 2020b), 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. Firstly, our measure of WHP may not fully capture what WHP entails. For example, we do not know if use of sports 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 (Jørgensen et al., 2016), a more detailed assessment of what WHP entails and how often it is used is recommended.

Secondly, our finding that colleague encouragement and behaviour 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 (Quist et al., 2014). 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 others suggest that employees who perceived their manager to be encouraging were more likely to use WHP (Bruton et al., 2012; Clancy et al., 2018).

A strength of our study is that it addresses the role of both colleagues and managers, while earlier studies only looked at colleagues (Rongen, Robroek, Van Ginkel, et al., 2014a) or managers (Passey et al., 2018). Furthermore, we moved beyond commonly studied aspects such as colleague generic social support (Jørgensen et al., 2016) or upper management endorsement of WHP (Hämmig, 2017; Hoert et al., 2018), as we specifically focused on encouragement of a healthy lifestyle and WHP use among colleagues. Also, our unique multilevel data (Van der Lippe et al., 2018) allowed us to study differences between many teams, while previous studies only focused on WHP use among employees in one or a few organisations and thus could not make use of this variation (Bull et al., 2003). Additionally, by using measurements reported by colleagues and the team manager we limited common method bias (Podsakoff et al., 2003). Lastly, we examined two types of WHP, namely healthy menus and sports facilities. Given that we found that colleague encouragement and behaviour matter for both, this is a strong sign to organisations 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 organisations 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 organisation 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 working day, so that colleagues are enabled to motivate each other. Organisations in which few employees currently use WHP could make use of health champions, which are employees who frequently do make use of WHP and help their colleagues adopt a healthier lifestyle, to increase WHP use (Edmunds & Clow, 2016).

Furthermore, social influence processes at work can also be leveraged to stimulate health behaviours 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 (Moens et al., 2022). Even from a distance, it is necessary to draw attention to the fact that healthy behaviour is important and encouraged, so that employees who are not at work can make healthy choices too.

## **Conclusion**

Many organisations 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 play a role in WHP use among employees. WHP initiatives should leverage the role colleagues can have in increasing its use by showing that healthy choices at work are common and encouraged.



**5**

# Employees' healthy eating and physical activity: The role of colleague encouragement and behaviour



## Abstract<sup>4</sup>

Exercising and eating healthy are not just an individual choice, but influenced by family members, friends, or neighbours. Little is known, however, about colleagues, who are another important interpersonal influence. Many people spend many hours at work, surrounded by mostly the same colleagues, who could therefore significantly shape employees' (un)healthy choices. We studied to what extent colleagues may play a part in one another's eating and exercise behaviours by focusing on two pathways: colleagues can encourage a healthy lifestyle or act as role models whose behaviours can be observed and copied. We used the European Sustainable Workforce Survey, with data on 4345 employees in 402 teams in 113 organisations. We used network autocorrelation models, which resemble regression models, to study to what extent employee encouragement was related to fruit and vegetable consumption, and physical activity. Specific to this type of model is the inclusion of a network correlation parameter which allows for the outcome of an employee to be directly associated with the outcomes of their colleagues. In this way we tested whether colleagues' behaviours were related to one another. We found that employees were more likely to eat fruit and vegetables as well as engage in physical activity when their colleagues encouraged a healthy lifestyle. Employees' healthy eating behaviours were positively related to their colleagues' fruit and vegetable consumption, while we found a negative correlation concerning physical activity. Overall, colleagues' encouragement and own health behaviours have the potential to contribute to creating a culture of health in the workplace and support all employees in making healthy choices.

**Keywords:** healthy eating, physical activity, social influence, social networks, colleagues

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## Introduction

People's lifestyle choices are shaped by their social environment. Partners, family members, friends, and neighbours have been shown to influence the extent to which people eat healthily and engage in physical activity (Barclay et al., 2013; Bot et al., 2016; Burke et al., 2017; Dailey et al., 2018; Keegan et al., 2016; Powell et al., 2015; Serrano Fuentes et al., 2019; Smith & Christakis, 2008). As a result, researchers have increasingly looked beyond the individual level and also examined the social environment to understand how people make (un)healthy choices (Sorensen et al., 2007; Tabak et al., 2016; Tamers et al., 2011). However, one relevant set of influential actors has received less attention: colleagues. This is surprising given that many adults spend the majority of their waking hours in the workplace, where they repeatedly encounter the same colleagues (Clohessy et al., 2019; Oksanen et al., 2008). The workplace is a social arena in which people interact often and on a daily basis (Quist et al., 2014), so that their shared time may surpass that spent with family and romantic partners (Burke et al., 2017). In other words, colleagues should be included in an inquiry into the influence of social environments on (un)healthy behaviours. The present study examines to what extent colleagues may have a part in one another's lifestyle choices, specifically healthy diets and physical activity.

Similarity between people's lifestyle behaviours has been attributed to various mechanisms: homophily, shared environments, or more direct forms of influence (Barclay et al., 2013). In this article, we focus on the latter and argue for two potential ways in which colleagues can affect one another's health behaviours: through encouraging each other to make healthy choices and by acting as role models. Firstly, via encouragement, colleagues can enhance each other's motivation, increase their self-care and create a sense of shared responsibility for healthy choices (Dailey et al., 2018; Edmunds et al., 2020; Powell et al., 2015). Previous studies examined generic social support and social capital at the workplace, focussing more on trust between colleagues and solidarity (Oksanen et al., 2008; Tamers et al., 2011; Tsuboya et al., 2016; Väänänen et al., 2009). It is hard to see how this may enhance motivation for healthy choices, so unsurprisingly these studies found no association with health behaviours. By contrast, support specific to a behaviour has been suggested to be more predictive (Ajzen & Fishbein, 1977), also when it concerns employees' health behaviours (Van der Put et al., 2021). We therefore focus on encouragement from colleagues specific to health behaviours.



In serving as salient role models via their own lifestyle habits, colleagues can set norms and increase self-efficacy (Keegan et al., 2016; Lake et al., 2016; Quist et al., 2014; Rowland et al., 2018). Norms are powerful drivers of behaviour while self-efficacy determines the extent to which people enact a given behaviour. Hence, we additionally examine the role of colleagues' own health behaviours. Previous studies tended to focus on employee reports of what their colleagues do, rather than what these colleagues actually do. Additionally, the focus has largely been on health behaviours in the workplace (Lake et al., 2016; Lemon et al., 2009; Sorensen et al., 2007; Tabak et al., 2016) while we employ measures of eating and physical activity that also take place outside work. Both mechanisms, encouragement and role modelling, are expected to contribute to making workplaces conducive to employee health and well-being, thereby creating a supportive environment for health behaviours (Aldana et al., 2012; Kwon & Marzec, 2019).

Previous studies involving colleagues' roles in shaping lifestyle choices tended to (a) solely model formal membership in organisations rather than measure close proximity and the chance to meet (Christakis & Fowler, 2007), (b) incorporate group sizes too small to be conclusive (Bot et al., 2016) or (c) aggregate individual-level measures to group-level variables (Oksanen et al., 2008; Quist et al., 2014), underestimating social influence from direct colleagues (W. Wang et al., 2014). To overcome this research gap, we use unique multilevel data from the European Sustainable Workforce Survey (ESWS: Van der Lippe et al., 2018). The ESWS comprise 4345 employees nested in 402 teams in 113 organisations in European countries. Importantly, the data structure permits modelling which employees work together and thus have the potential to affect one another's behaviours. We employ network autocorrelation models (Leenders, 2002) to account for the interdependence of employees' health behaviours within a team. Network autocorrelation models enable the direct association of employees' outcomes with those of their colleagues, offering a better test for finding out how colleagues' health behaviours are related.

We examine two different behaviours: healthy eating and physical activity. Together, they have great potential to improve health, and are often paired in lifestyle-related recommendations (Ranby et al., 2011; Rowland et al., 2018). Adults consume about a third of their daily calorie intake in the workplace and work impacts the extent to which employees engage in physical activity (Clohessy et al., 2019; Danquah et al., 2020). For example, many office workers spend most of their working day sedentary. Eating and physical activity behaviours share a

social component, for example, lunch is often eaten together in the workplace (Park et al., 2017; Tsuboya et al., 2016), while differing substantially in exposure and ease of implementation. Since eating is typically more visible and occurs more frequently in the workplace than exercising, eating tends to be more prone to social influence (Van der Put et al., 2021). Studying the two comparable yet different activities of eating and physical activity is meant to provide nuanced insights into the role of the social environment at work for healthy choices.

## Theory

### Encouragement

Encouragement is the first way dealt with here in which colleagues can affect one another's lifestyle behaviours (Kwon & Marzec, 2019; Sarkar et al., 2016). By talking about exercise and diets, both common topics of conversation in the workplace, employees can learn that their colleagues value a healthy lifestyle (Lake et al., 2016; Zimmerman & Connor, 1989). This may translate into making healthy choices in three ways.

Firstly, encouragement can be considered positive reinforcement of desirable behaviour, which may enhance motivation (Dailey et al., 2018). If employees perceive their colleagues as endorsing a healthy lifestyle, they may deduce that it is important and be more likely to adopt such behaviours. This reflects a shared, generally implicit notion that if a person engages in behaviour that others approve of, the person will be approved by those others too (Cialdini & Goldstein, 2004).

Secondly, perceived encouragement could lead to a sense of responsibility towards those offering it. Not only does encouragement reflect what others find important, it could also create a sense of shared effort; employees could get the feeling that they do not want to let their well-meaning colleagues down by making unhealthy choices (Dailey et al., 2018; Edmunds et al., 2020). In this way, colleagues keep one another accountable, for example by motivating the other to go for a lunch walk even when it is raining (Keegan et al., 2016).

Thirdly, through encouraging healthy choices, colleagues demonstrate that they care about one another, as such choices are seen as something good (Keegan et al., 2016; Powell et al., 2015). The sense of belonging that may result from this could increase self-care, such as eating better and engaging in sufficient physical activity (Dailey et al., 2018; Deci & Ryan, 2012; Väänänen et al., 2009).

Several studies have confirmed the notion that when employees perceive their colleagues as endorsing health behaviours, they are more likely to adopt such behaviours themselves. For example, in case colleagues encouraged healthy food choices, employees were more likely to participate in worksite health promotion programmes aimed at healthy diets. Similar results were found for physical activity programmes (Van der Put et al., 2021). Colleague support has also been associated with exercise and diet, including increased fruit intake and physical activity (Burke et al., 2017; Hutchinson et al., 2013; Ranby et al., 2011; Sarkar et al., 2016). We thus hypothesise that the more an employee perceives colleagues as encouraging healthy eating, the more this employee will consume fruits (H1a) and vegetables (H1b). Similarly, the more an employee perceives colleagues as encouraging physical activity, the more this employee will engage in physical activity (H1c).

## **Behaviour**

The second way in which colleagues can affect one another's lifestyle choices is through their own actions. Colleagues have the potential to serve as important role models, whose behaviours can be observed, copied and influenced (Lake et al., 2016; Quist et al., 2014). At least three mechanisms may be at play here.

Firstly, colleagues' choices to eat healthily and exercise, and how much, form a norm, which is considered a guide to appropriate behaviour (Stok et al., 2014). Employees thus pay attention and learn what sorts of behaviours seem normal and expected, and, as proposed by social learning theory, follow this because they want to fit in with their coworkers (Bandura & Walters, 1977; Higgs, 2015; Park et al., 2017). Belonging to a group is considered one of the inherent human needs (Deci & Ryan, 2012). Commitment to group norms signals solidarity and earns approval. For example, employees reported feeling guilty if they ate unhealthy snacks while their colleagues chose healthy options (Lake et al., 2016). Because adhering to norms may shape self-identity, behaviours at work can extend to other life spheres (Higgs, 2015). It should be noted, however, that norms can both support as well as undermine healthy choices. People may copy one another's unhealthy choices in the same vein (Clohessy et al., 2019; Keegan et al., 2016; Serrano Fuentes et al., 2019), for instance by regularly sharing chocolate cookies with their coworkers.

Secondly, colleagues' actions may also enhance self-efficacy, that is people's belief that they are able to behave in certain ways (Rowland et al., 2018;

Stok et al., 2014). Colleagues who work together may find themselves in the same situation: they take up similar positions in the organisation and engage in similar work tasks (Quist et al., 2014). If employees notice that their coworkers manage to make healthy choices, this may signal to them that they are also capable of doing so. Similarly, self-determination theory (Deci & Ryan, 2012) has argued that through this, the social environment nurtures employees' intrinsic motivation to change their health behaviour. For example, seeing many colleagues bike rather than drive their two-mile to work may lead employees to ponder whether this is also something they could try. For self-efficacy, the comparison with similar others is key: frenetic colleagues (e.g., biking 10 miles per journey) may seem out of range and trigger feelings of demotivation (Danquah et al., 2020; Edmunds et al., 2020).

Thirdly, colleagues can engage in health behaviours in the workplace together. For example, employees can motivate each other to engage in physical exercise by participating in a sports class together (Van der Put et al., 2021). Additionally, colleagues often have lunch together (Seward et al., 2019). The behaviours that employees display together with their coworkers contribute to their overall healthy eating and physical activity, and may also extend to life outside work.

Both for healthy eating and exercising, previous studies have established that colleagues' behaviours tend to relate to one another. Several authors demonstrated that employees who reported seeing their colleagues eat fruits and vegetables increased their intake of the same (Lake et al., 2016; Lemon et al., 2009; Sorensen et al., 2007; Tabak et al., 2016). Similarly, employees who reported their co-workers to engage more often in physical activity, for example by actively commuting to work, also engaged in more physical activity (Campbell & Bopp, 2013; Emmons et al., 2007; Lemon et al., 2009; Tabak et al., 2016). Hence, we hypothesise that the more an employee's colleagues eat fruits and vegetables, the more employees will consume fruits (H2a) and vegetables (H2b). Likewise, we expect employees to engage more in physical activity the more their colleagues exercise (H2c).

## Methods

### Data

To test our hypotheses, we used unique multilevel data from the European Sustainable Workforce Survey (ESWS: Van der Lippe et al., 2018) This survey, first conducted in 2015-16, contains data on employees, their teams, and the

organisations they worked for in nine European countries (Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden, and the UK). Organisations were approached using stratified random sampling based on sector (manufacturing, health care, higher education, transport, financial services, and telecommunications) and size (up to 100 employees, 100-249 employees, and 250 or more employees). When the random sample did not yield enough participants in a stratum, referrals and personal connections were used to complement the selection. Within each organisation, a contact person (usually the HR manager) decided on whether the organisation wanted to join the study. Upon a positive response, at least three teams were selected in consultation with the HR manager. All employees, and the manager, of those teams were addressed at work to fill in the survey in their own language. The HR manager provided information about the organisation as a whole. This data structure enabled us to construct the networks of employees who worked together in the same teams, which was necessary for our purposes.

Our study incorporated data from the second wave of the ESWS, due to its detailed information on employees' lifestyle choices, which was not included in the first. Data for the second wave were collected in 2018-19. Organisations from the first wave were invited to participate once again, and 13 new organisations also joined the study under the same selection and survey completion procedures as the first wave. All participants provided written informed consent prior to filling in the survey. The response rate in the second wave was 89% among HR managers, 68% among team managers, and 54% among employees, resulting in a sample of 4345 employees working as part of 402 teams in 113 organisations.

Because our study addressed three different behaviours, we created three analytical samples: one for fruit consumption, one for vegetable consumption, and one for physical activity. For each analytical sample, we first excluded employees who had missing values on any of the variables included ( $n_{\text{fruit consumption}} = 1197$ ,  $n_{\text{vegetable consumption}} = 1162$  and  $n_{\text{physical activity}} = 1314$ ). Most of these missing values were for the dependent variables.<sup>5</sup> Since we were interested in employees' networks we excluded employees who had no colleagues ( $n_{\text{fruit consumption}} = 37$ ,  $n_{\text{vegetable consumption}} = 38$  and  $n_{\text{physical activity}} = 39$ ). Our final analytical samples were  $N$

<sup>5</sup>We checked whether certain employees were more likely to have incomplete information for the dependent variables by regressing whether the dependent variable was missing on all explanatory variables. Higher educated and employees who worked more hours were less likely to have missing information for fruit consumption. Those with a partner were less likely to have missing information for vegetable consumption. Higher educated, younger and employees who used WHP were less likely to have missing information for physical activity.

= 3111,  $N = 3145$  and  $N = 2992$  for fruit consumption, vegetable consumption and physical activity, respectively.

## Measures

The measurement of our dependent variables was similar to questions in the European Social Survey (Huijts et al., 2017). Fruit and vegetable consumption were measured by asking respondents how often they ate fruits, including frozen fruits but excluding juice, and how often they ate vegetables or salads, including frozen vegetables but excluding potatoes. For both fruit and vegetable consumption, response categories were (1) three times a day or more, (2) twice a day, (3) once a day, (4) less than once a day, but at least four times a week, (5) less than four times a week, but at least once a week, (6) less than once a week and (7) never. Answers were recoded so that a higher score indicated higher fruit or vegetable consumption. Physical activity was measured by asking participants on how many of the last 7 days they walked quickly, did sports or other physical activity for 30 minutes or longer. This was in line with European recommendations for sufficient physical activity (Oja et al., 2010). A higher score indicates engaging in physical activity on more days.

The independent variable, perceived encouragement of health behaviours by colleagues, was measured separately for healthy eating and exercise. For healthy eating, the item was "My colleagues encourage me to eat healthy food" and for exercise the item was "My colleagues encourage me to exercise frequently". We created two variables, one for healthy eating encouragement and one for that of physical activity, as the correspondence principle holds that specific encouragement is likely more influential than generic encouragement (Ajzen & Fishbein, 1977). Answer options ranged from (1) always to (5) never, and were reversed so that a higher score indicated more perceived encouragement.

We added several control variables to our analysis. Female, younger, and higher educated people reportedly eat healthier (Stea et al., 2020), while men, younger and higher educated tend to engage in physical activity more (Azevedo et al., 2007). Therefore, our models controlled for gender (female = 1), age and years of education. We further controlled for self-rated health, as health and health behaviours are interlinked (Huijts et al., 2017). According to previous research, people with a partner tend to behave healthier than those without, so we added a control for having a partner (Smith & Christakis, 2008).

Moreover, we included several variables related to the work context. Since

employees who work more hours tend to have more contact with their colleagues, we included working hours. Employees who have been part of the same team for longer have had more opportunities to be influenced by their colleagues there, so we added tenure in years in the team. Physical activity in the workplace may also contribute towards total physical activity (Holtermann et al., 2018). We therefore controlled for physical work demands, measured by how often employees' duties involved standing, walking, or other physical activities. Additionally, how often employees worked from home – ranging from (1) (almost) never to (7) four or five days a week was included, as employees tend to have less contact with their colleagues when working from the home office often (Van der Put et al., 2021). Whether the employer had worksite health promotion policies (WHP), and if employees used them, was also added as a control, as this has been related to healthier behaviour (Conn et al., 2009; Maes et al., 2012), and colleagues may affect one another's lifestyle choices by participating in WHP together (Van der Put et al., 2021). For fruit and vegetable consumption, this relates to catering or cafeteria menus offering healthy nutrition, and for physical activity, to sports facilities at work or a financial contribution towards a sports activity outside the workplace. Finally, we controlled for team size, sector, and country.

## Data analyses

The pairwise correlations between the three outcome variables were low to moderate:  $r_{\text{vegetable consumption, physical activity}} = 0.12$ ,  $r_{\text{fruit consumption, physical activity}} = 0.17$  and  $r_{\text{fruit consumption, vegetable consumption}} = 0.49$ . We therefore fitted separate models for each outcome.

Because we expected employees' health behaviours to be related, ordinary least squares regression models were not suitable: these models require observations to be independent – meaning that employees' behaviours within a team may not correlate (W. Wang et al., 2014). Indeed, a test using Moran's I found autocorrelation for all the dependent variables: fruit consumption ( $\chi^2 = 129.39$  (1),  $p < 0.001$ ), vegetable consumption ( $\chi^2 = 150.36$  (1),  $p < 0.001$ ) and physical activity ( $\chi^2 = 21.22$  (1),  $p < 0.001$ ). We thus used network autocorrelation models (also known as spatial lag models or network effects models), which account for the interdependency of observations, and are therefore commonly used in social network analysis (Leenders, 2002; W. Wang et al., 2014). The model builds upon standard linear regression models and takes the form of  $Y = \rho WY + \beta X + \epsilon$ , where  $Y$  is the vector of the outcome variable,  $W$  the adjacency matrix denoting which

observations are part of the network,  $X$  a matrix of independent variables,  $\beta$  the vector of associated coefficients and  $\epsilon$  a vector with error terms. As can be seen from the equation, the network autocorrelation model allows for the outcome of an employee ( $Y$ ) to be directly associated with the outcomes of their colleagues ( $\rho WY$ ). Due to the nested data structure, we know which employees worked together in the same team, and these are the colleagues whose outcomes we consider.

A relevant feature of the network autocorrelation model is that it includes a parameter  $\rho$ , which estimates the strength of the network effect. The network effect tests whether employees' behaviours are related to that of their colleagues. The parameter  $\rho$  is a measure of the degree to which an employee behaves similarly to their colleagues, and ranges between -1 and +1 (Leenders, 2002). For example, in the analysis for physical activity,  $\rho$  can be interpreted as the expected change in the number of days an employee engages in physical activity if their colleagues increase their physical activity by an average of one day.

Central to a network autocorrelation model is the weight matrix  $W$ , which represents the influence mechanism in the network (Leenders, 2002). In our study, we constructed  $W$  in such a way that only employees who worked in the same team were seen as influencing one another's behaviours, as these were direct colleagues. Hence, the resulting adjacency matrix recorded a link between observations if employees worked within the same team, but no link if they worked in different teams or organisations. To account for differences in team sizes, we employed row normalisation, a common practice when using network autocorrelation models (Leenders, 2002). In this procedure, each colleague has the same amount of influence, irrespective of team size. We created three separate weight matrices, to account for the different numbers of missing variables for our three outcomes.

We used a GS2SLS estimator for fitting the models because the alternative ML estimator reportedly produces biased estimates (Arraiz et al., 2010). For the hypotheses on encouragement, we examined direct and spill-over effects. The direct effect estimated the association between encouragement and a dependent variable. However, spill-over effects may be present due to interdependency: if one employee changed her fruit consumption because her colleagues encouraged her to do so, this also affects the fruit consumption of other colleagues based on the network effect. As explained earlier, we examined the network effect for the hypotheses on employee behaviour.



**Table 5.1** Descriptive statistics

Variables	Fruit consumption		Vegetable consumption		Physical activity		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Fruit consumption	4.73	1.40					1-7
Vegetable consumption			4.95	1.12			1-7
Physical activity					2.92	2.22	0-7
Encouragement eating	2.22	1.22	2.22	1.22			1-5
Encouragement physical activity					2.11	1.18	1-5
Female	0.58		0.58		0.57		0-1
Age	43.97	11.40	44.00	11.38	43.64	11.37	19-77
Education in years	13.72	3.52	13.70	3.53	13.79	3.48	3-21
Health	3.86	0.72	3.86	0.72	3.86	0.72	1-5
Partner	0.74		0.74		0.74		0-1
Children	0.50		0.50		0.50		0-1
Working hours per week	39.63	9.77	39.60	9.80	39.65	9.74	0-60
Physical work demands	3.17	1.45	3.17	1.45	3.15	1.45	1-5
Tenure in years	8.81	8.67	8.84	8.70	8.63	8.63	0-49
Working from home	1.73	1.37	1.73	1.38	1.74	1.38	1-7
WHP							
Not available	0.46		0.46		0.44		0-1
Available but not used	0.33		0.33		0.42		0-1
Available and used	0.21		0.21		0.14		0-1
Team size							
10 employees or less	0.39		0.38		0.39		0-1
11-20 employees	0.23		0.25		0.25		0-1
21 employees or more	0.38		0.37		0.35		0-1
Sector							
Manufacturing	0.32		0.32		0.32		0-1
Health care	0.26		0.26		0.25		0-1
Higher education	0.22		0.22		0.23		0-1
Transport	0.09		0.09		0.09		0-1
Financial services	0.06		0.06		0.06		0-1
Telecommunication	0.05		0.06		0.06		0-1
Country							
UK	0.05		0.05		0.05		0-1
Germany	0.06		0.06		0.06		0-1
Finland	0.03		0.03		0.03		0-1
Sweden	0.09		0.09		0.09		0-1
The Netherlands	0.21		0.21		0.22		0-1
Portugal	0.05		0.05		0.05		0-1
Spain	0.04		0.04		0.04		0-1
Hungary	0.18		0.18		0.18		0-1
Bulgaria	0.29		0.29		0.27		0-1
<i>N</i> <sub>employees</sub>	3111		3145		2992		
<i>N</i> <sub>teams</sub>	327		328		323		

## Results

The descriptive results in Table 5.1 show that on average, employees scored 4.73 on fruit consumption and 4.95 on vegetable consumption. This translates into eating fruit and vegetables about once per day. On average, employees engaged in physical activity three days per week.

We first examined hypotheses 1a, 1b, and 1c, which associated more perceived encouragement by colleagues with increased fruit and vegetable consumption and physical activity. We found support for all three of these hypotheses as seen in Table 5.2. Perceived encouragement was positively correlated to fruit consumption ( $B = 0.071, p < 0.001$ ), vegetable consumption ( $B = 0.052, p = 0.001$ ), and physical activity ( $B = 0.086, p = 0.016$ ).

We furthermore found no significant spill-over for any of the three outcomes (fruit consumption:  $B = 0.034, p = 0.058$ , vegetable consumption:  $B = 0.016, p = 0.110$  and physical activity:  $B = -0.029, p = 0.055$ ). This means that behavioural changes due to higher perceived encouragement did not spill-over to other colleagues. These findings support our first set of hypotheses, associating perceived encouragement of healthy habits by colleagues with greater fruit and vegetable consumption and physical activity.

For our second set of hypotheses, we expected that the more an employee's colleagues showed health behaviours, the more this employee would behave in healthy ways. We tested this using the network effect  $\rho$ , which related employees' behaviours to that of their colleagues. The results on the network effects  $\rho$  in Table 2 suggested an association between colleagues' fruit consumption ( $\rho = 0.329, p = 0.002$ ) and vegetable consumption ( $\rho = 0.238, p = 0.024$ ). If all colleagues raised their food consumption by one unit on average, this would lead to an increase of 0.329 in the employee's fruit consumption and 0.238 in the employee's vegetable consumption. Against our expectations, we found a significant negative network effect for physical activity ( $\rho = -0.449, p = 0.009$ ). If colleagues were more physically active by one day on average, employees would decrease their own activity by about half a day.

Some of the results for the control variables are worth noting. Physical work demands were positively related to total physical activity ( $B = 0.074, p = 0.016$ ). Additionally, WHP appeared to play no role in the extent to which employees eat fruits and vegetables, but was related to physical activity. Employees that had WHP aimed at physical activity (either sports facilities at work or a financial contribution towards a sports activity outside) available and used

this, reported higher total physical activity ( $B = 0.327$ ,  $p = 0.038$ ).

**Table 5.2** Network autocorrelation models predicting fruit consumption, vegetable consumption and physical activity

	Fruit consumption		Vegetable consumption		Physical activity	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Colleague encouragement	0.071***	0.020	0.052**	0.016	0.086*	0.036
Network effect $\rho$	0.329**	0.108	0.238*	0.106	-0.449**	0.172
Female	0.237***	0.054	0.299***	0.043	-0.155	0.091
Age	0.010***	0.003	-0.000	0.002	0.013**	0.004
Education in years	0.015	0.009	0.037***	0.007	-0.023	0.015
Self-rated health	0.251***	0.034	0.173***	0.027	0.498***	0.058
Partner	0.159**	0.057	0.151**	0.045	-0.130	0.098
Children	0.019	0.050	-0.042	0.039	-0.238**	0.086
Working hours per week	-0.001	0.003	-0.004*	0.002	-0.008	0.004
Physical job demands	-0.008	0.018	-0.004	0.014	0.074*	0.031
Tenure in years	0.004	0.003	0.002	0.003	0.001	0.006
Working from home	-0.000	0.020	-0.002	0.015	0.052	0.033
WHP (Not available = ref.)						
Available, not used	-0.078	0.061	-0.045	0.048	-0.064	0.107
Available, used	0.064	0.072	0.057	0.057	0.327*	0.158
Team size (10 employees or more = ref.)						
11-20 employees	0.067	0.065	0.037	0.050	-0.060	0.108
21 employees or more	-0.011	0.059	0.016	0.046	-0.128	0.102
Sector (Manufacturing = ref.)						
Health care	0.018	0.078	-0.032	0.061	0.575***	0.143
Higher education	0.039	0.088	-0.048	0.068	0.427**	0.154
Transport	-0.117	0.104	-0.054	0.082	-0.070	0.173
Financial services	-0.094	0.113	-0.124	0.089	0.503*	0.206
Telecommunication	-0.033	0.119	-0.041	0.093	-0.351	0.205
Country (Netherlands = ref.)						
UK	0.043	0.131	0.155	0.108	0.913***	0.235
Germany	-0.229	0.128	-0.077	0.097	0.205	0.208
Finland	-0.111	0.160	0.479**	0.141	1.206***	0.318
Sweden	-0.459***	0.124	0.082	0.083	0.531**	0.194
Portugal	0.307*	0.129	0.046	0.095	-0.598**	0.222
Spain	-0.008	0.135	-0.319**	0.117	1.445***	0.281
Hungary	-0.487***	0.119	-0.415***	0.093	0.324*	0.143
Bulgaria	-0.500***	0.106	-0.102	0.062	0.734***	0.161
Constant	1.403**	0.547	2.513***	0.527	1.522*	0.618
Pseudo R <sup>2</sup>	0.12		0.14		0.07	
$N_{employees}$	3111		3145		2992	
$N_{teams}$	327		328		323	

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## Sensitivity analyses

We performed several sensitivity analyses to gauge the robustness of our findings. This is especially relevant for the network effect, which is dependent on the construction of the weight matrix (Leenders, 2002). Firstly, instead of creating separate samples and weight matrices for each of the three dependent variables, we re-ran our analysis using a single sample and an identical weight matrix across all three models. The single sample was reduced to  $N = 2922$ , as it excluded employees whose information was incomplete on any of the three dependent variables. The results turned out highly robust for all hypothesised associations.

Secondly, we re-ran our analysis without using row normalisation, which assumed that every colleague had the same influence on an employee's behaviour. Arguably, small teams offer fewer interaction partners than large teams, allowing for more frequent contact with every colleague. The results without row normalisation remained the same for perceived encouragement (H1a-1c) and network effect for vegetable consumption (H2b). We found a marginally significant network effect for fruit consumption (H2a:  $p = 0.086$ ,  $p = 0.071$ ) and a significant positive network effect for physical activity (H2c:  $p = 0.233$ ,  $p = 0.049$ ).

Thirdly, to further assess whether some colleagues affected one another more than others, we reconstructed the network using nomination data. In the survey, each employee had named up to three colleagues whom they meet outside work, and up to 3 colleagues with whom they enjoy working. Employees likely had more contact with these colleagues and could thus have been more influenced by them. The results for perceived encouragement remained stable (H1a-1c), while all three of the network effects became insignificant (H2a-2c). However, this null effect was likely caused by poor statistical power, as those networks were extremely sparse (W. Wang et al., 2014).

Fourthly, to assess whether WHP may play a role in the extent to which colleagues affected each other's behaviours, we re-ran our analyses without the control variable for availability and use of WHP. For fruit consumption and physical activity our results remained robust, but in the case of vegetable consumption we found a marginally significant network effect ( $p = 0.059$ ).

Lastly, to assess whether results could be country- or sector-specific, we performed jack-knife procedures excluding either one country or one sector at a time (Neumayer & Plümper, 2017). The findings stayed the same concerning perceived encouragement for fruit consumption, vegetable consumption and

physical activity (H1a-1c). The findings also turned out similar for the network effects on fruit consumption (H2a). By contrast, the network effects remained weaker for both vegetable consumption and physical activity (H2b-2c): the effects remained unaltered in terms of direction but failed to reach statistical significance in some of the subsamples. This suggests the impact of colleagues' behaviours may differ per sector and country.

## Discussion

The aim of this study was to gauge colleagues' effects, if any, on one another's health behaviours. While previous studies demonstrated that partners, family members, friends and neighbours influence the extent of people's healthy eating and exercising, the role of colleagues has remained understudied (Barclay et al., 2013; Bot et al., 2016; Burke et al., 2017; Dailey et al., 2018; Keegan et al., 2016; Powell et al., 2015; Serrano Fuentes et al., 2019; Smith & Christakis, 2008). This is surprising, considering the amount of time many adults spend at work, frequently interacting with the same colleagues (Clohessy et al., 2019; Quist et al., 2014). We studied whether colleague encouragement and behaviour could be associated with the extent to which employees eat fruit and vegetables and engage in physical activity (Aldana et al., 2012; Kwon & Marzec, 2019). We used the European Sustainable Workforce Survey (Van der Lippe et al., 2018), with data on employees nested in teams, to allow us to reconstruct which colleagues worked together and could thus directly affect one another.

We found that, as expected, the more employees perceived their colleagues to encourage them to behave in healthy ways, the higher these employees' fruit and vegetable intake, and the more these employees were physically active. This result is in line with previous studies (Burke et al., 2017; Hutchinson et al., 2013; Ranby et al., 2011; Sarkar et al., 2016). Perceived encouragement may relate to health behaviours in several ways – e.g. through positive reinforcement (Dailey et al., 2018), instilling a sense of responsibility (Edmunds et al., 2020), and creating a sense of belonging (Väänänen et al., 2009) – all of which may increase self-care and enhance motivation. Some studies looked at generic social support or social capital and found no effect (Oksanen et al., 2008; Tamers et al., 2011; Tsuboya et al., 2016; Väänänen et al., 2009) while our findings suggest that support specific to the behaviour does matter.

Our network models also showed that employees' healthy eating may follow from colleagues' fruit and vegetable consumption, as colleagues may

represent salient role models whose behaviour sets the norm about what could be expected based on social learning theory (Bandura & Walters, 1977). Moreover, observing behaviour from colleagues may increase the employee's self-efficacy, for example when these demonstrate the ability to bring a healthy snack to work rather than buying from the vending machine (Lake et al., 2016; Rowland et al., 2018). Since employees consume about a third of their daily calories in the workplace, this is an important setting to promote healthy eating (Clohessy et al., 2019). Previous studies mainly gauged healthy eating in the workplace and found similar results (Lake et al., 2016; Lemon et al., 2009; Sorensen et al., 2007; Tabak et al., 2016). Our measure of healthy eating comprised fruit and vegetable intake in general, thus also outside the workplace. Our results suggest that colleagues' influence extends to private and leisure settings.

As opposed to our expectations, we found a negative correlation between employees' and colleagues' physical activity. This result is not yet conclusive, since the sensitivity analysis indicated a positive trend when allowing for the influence of colleagues to vary with team size. Previous studies did find an association between employees' and colleagues' physical activity (Lemon et al., 2009; Tabak et al., 2016), but they focused mainly on employees' perceptions of colleagues' behaviour instead of their actual behaviours, which may arguably matter more. One explanation for our negative result may be that physical activity typically takes place outside work, where it is hardly visible to colleagues. Eating at work takes place daily and usually happens together with colleagues, whereas physical activity behaviours occurs less frequently, making it less prone to social influence (Van der Put et al., 2021). Some employees may participate in group sports classes at the workplace together with their colleagues, but this is arguably a small group. Additionally, in our sample WHP initiatives aimed at healthy eating were more often used than programmes promoting physical activity, which may also mean eating behaviour of colleagues is more visible. To be effective, norms should be specific to the situation (Linnan et al., 2005; Thomas et al., 2017; M. L. Wang et al., 2014), hence norms on dieting can be supported more easily via observation of others in the workplace, a setting which often includes eating meals (Van der Put et al., 2021). Moreover, extremely athletic colleagues could demotivate others by giving them the impression that this level of physical activity is out of reach for them (Danquah et al., 2020; Edmunds et al., 2020).

Of further interest is to note that employees with more physical work demands reported higher physical activity, which could be shared by colleagues who work in a similar job. These employees may already feel that they are active

enough during the working day, although previous research has shown that occupational physical activity is no substitute for leisure-time physical activity in terms of health benefits (Holtermann et al., 2018). Finally, even though employees often engage in WHP together with their colleagues (Van der Put et al., 2021), which could be one of the mechanisms through which colleagues' lifestyle choices relate to each other, results showed the influence of colleagues extends beyond shared WHP use. The exception here concerned vegetable consumption, which we no longer found statistically significant when removing WHP from our analyses, suggesting that the impact of colleagues eating vegetables could take place during shared lunch in the healthy worksite cafeteria. Nevertheless, these findings show that colleagues also matter for employees that do not participate in WHP.

Several limitations of our study are worth noting. Firstly, the cross-sectional research design was unable to separate selection from influence processes (Powell et al., 2015). However, it seems unlikely that employees choose to work in a formal work team based on the health behaviours of colleagues. Although the extent to which health behaviours are the norm may differ among occupations, we addressed this variation by including control variables for education and sector. Future research would benefit from using longitudinal data to examine influence processes over time. As argued by self-determination theory (Deci & Ryan, 2012), individuals internalise cues from their environment to shape their intrinsic motivation. It would thus be interesting to study how long it takes a new employee to adapt to current workplace health norms.

Secondly, as noted in the robustness analyses, the network effect is dependent on the construction of the weight matrix (Leenders, 2002). We based the weight matrix on colleagues working in the same team. Not all employees within each team filled in the questionnaire and some employees were more likely to lack information on the eating and physical activity variables as we have shown. Especially in large teams, employees may not have had contact with all their colleagues. Data on complete networks would have been desirable. We addressed this potential shortcoming by examining several alternative specifications of the weight matrix, which provided mostly consistent results.

Thirdly, the measure of physical activity was very general and addressed any type of physical activity in the past week. This could range from moderate activities such as walking the dog or cycling to work to more extreme sports such as mountain biking or running half marathons. The fact that these activities may be very different could further explain why we did not find a network effect. Similarly, our measures for fruit and vegetable consumption could have

been more informative, for example by highlighting how large a portion is or by following the WHO guideline to eat at least 400 grams of fruit and vegetables per day (Tennant et al., 2014). However, other studies, such as the European Social Survey (Huijts et al., 2017), used the same measures, making our findings comparable.

Fourthly, in focussing on the role of perceived encouragement and colleague behaviour, we left out other mechanisms that may explain how workplace social relations affect healthy eating and physical activity behaviours. For example, we have tended to focus on positive influences, but also processes of peer pressure, social control and stigmatisation (e.g. fat shaming) could impact the healthy choices employees make (Giel et al., 2012; Tabak et al., 2016). In addition, our measure for perceived encouragement was very general. A more detailed measure may provide richer insights. In order to paint a complete picture of the role colleagues may have in each other's healthy habits, future studies should address this too.

Finally, some more information on the context and environment in which employees work together with their colleagues would have provided more insights. For example, it may be easier for colleagues to exercise together at work when there are showers present, or when the office is close to a park where they can go for a lunch walk together. We addressed this with the data we had available by including a control variable for WHP, but it would be good if future studies pay more attention to the environment. This may also provide insights in whether colleagues are more or less influential depending on the other options present for making healthy choices in the workplace.

Among our study's strengths were the focus on both colleagues' encouragement and actual behaviours, addressing encouragement specific to the behaviour rather than generic social support and examining behaviours that also take place outside the workplace. Furthermore, our study is one of the first to address the role of coworkers' behaviours using a network approach incorporating direct colleagues. This allowed for a finer grained analysis than the aggregation of individual-level measures or relating employees who may not work in close proximity. This study thus represents an important first step, showing that it is promising for managers and public health policy makers to incorporate workplace social relations to promote health behaviours.

The implications of our study relate to the realisation that when designing health interventions, it is important to incorporate the social work environment



alongside other social actors such as partners, family members, and friends. We showed that colleagues are relevant sources of social support when it comes to health behaviours and may act as role models. In stimulating employees to make healthy choices, organisations can make use of mentors or health champions, which are employees who have adopted a healthy lifestyle themselves and help their colleagues to do so too (Edmunds & Clow, 2016). For worksite health promotion activities, it is also important to draw on the positive influence colleagues could have in helping one another make healthy choices. Crucially, not only do colleague encouragement and behaviours contribute to creating a culture of health in the workplace (Kwon & Marzec, 2019), they also indirectly support the entire work population, including those not using dedicated programmes in the workplace.

## Conclusion

Our study showed that employees are more likely to eat fruit and vegetables as well as engage in physical activity when their colleagues encourage a healthy lifestyle. Employees' healthy eating behaviours were positively related to their colleagues' fruit and vegetable consumption, while we found a negative correlation concerning physical activity. Overall, colleagues' encouragement and own health behaviours have the potential to contribute to creating a culture of health in the workplace and support all employees in making healthy choices. These results show that companies seeking to promote healthy lifestyles may supplement their corporate policies with a socially supportive infrastructure in the workplace.



6

# Worksite health promotion and social inequalities in health



## Abstract<sup>6</sup>

It is well-documented that higher educated employees have better health than the lower educated. The workplace has been put forward as a contributor to this inequality. We extend previous work on workplace characteristics that could influence employee health by asking to what extent workplace health promotion (WHP) can account for the relation between education and health. Two ways in which WHP may relate to health inequalities are addressed: higher educated employees may be more likely to use WHP than lower educated employees and the effect of WHP on health may be stronger for higher educated than for lower educated employees. Using data from the European Sustainable Workforce Survey, which contains information on over 11000 employees in 259 organisations, we tested whether three types of WHP mediate or moderate the relation between education and health: healthy menus, sports facilities and health checks. We found that higher educated employees were in better health and that use of WHP positively related to health. Use of healthy menus and sports facilities in the workplace can contribute to increasing health inequalities, as lower educated employees were less likely to make use of these. Health checks could contribute to diminishing health inequalities, as lower educated employees were more likely to use them compared to higher educated employees. The effect of WHP was not contingent on education. We advise stimulating lower educated employees to make use of WHP more, which can contribute to decreasing health inequalities.

**Keywords:** Europe, worksite health promotion, health inequalities, education, self-rated health, multilevel structural equation modelling, mediation, moderation

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<sup>6</sup> A slightly different version of this chapter has been published as Van der Put, A. C., Mandemakers, J. J., de Wit, J. B. F., & Van Der Lippe, T. (2020). Worksite health promotion and social inequalities in health. *SSM-population health*, 10, 100543. Doi: 10.1016/j.ssmph.2020.100543.

The authors jointly developed the main ideas of this chapter. Van der Put mainly wrote the manuscript and performed the data-analyses. Mandemakers, De Wit & Van der Lippe contributed substantially to the manuscript with detailed feedback on several earlier versions. Van der Lippe was Principal Investigator for the data collection.

An earlier version of this chapter has been presented at the ECSR conference in Lausanne, Switzerland (12-09-2019).

## Introduction

It has been well-documented that higher educated people have better health than those who are lower educated (Thrane, 2006; Von dem Knesebeck et al., 2006; Vonneilich et al., 2019). There are three main explanations for why this is the case: lower educated people are said to live in less favourable material conditions, engage in less healthy behaviours and find themselves in less favourable psychosocial environments compared to the higher educated (Mackenbach et al., 2015). Within the workplace, these explanations come together. Previous research has shown that among many other health-aversive working conditions, lower educated employees are more often exposed to toxic chemicals, more often engage in heavy lifting, and have less autonomy than higher educated employees, which contributes to worse health (Dieker et al., 2019; Hämmig et al., 2014; Meneton et al., 2018).

Although aspects of the organisations in which employees work may also have an effect on health, these have received less attention in the literature (Marklund et al., 2008). One such aspect is worksite health promotion (WHP), interventions targeting health and health behaviours among employees. Workplaces are considered promising places for health promotion as adults spend a majority of their waking hours at work, and WHP has been widely adopted to improve public health, in particular in the post-industrial societies of the global North (Jørgensen et al., 2015). There is no systematic overview of the extent to which WHP is offered in Europe, but previous studies found that about 30-40% of European organisations provide healthy menus in the workplace cafeteria, 30-50% promote physical activity, and 65-75% offer health checks (Van der Put & Mandemakers, 2019; Verra et al., 2019). These are among the most prevalent types of WHP (Goetzel et al., 2007), and the focus of this paper.

Previous research has assessed whether WHP affects the health of all employees, and shown that healthy menus, sports facilities and health checks at work can have beneficial but modest effects on employee health (e.g. Conn et al., 2009; Maes et al., 2012; Rongen et al., 2013). However, it is not yet known how WHP relates to health inequalities (Bull et al., 2003). Firstly, WHP could potentially increase health inequalities if higher educated employees are more likely to use it and as a result have better health. Secondly, research on health promotion interventions shows that higher educated people may benefit more from such interventions than lower educated people (Adams et al., 2016). This may also apply to WHP if it affects the health of higher educated employees more strongly

than that of lower educated employees. This paper therefore asks whether WHP accounts for the relation between education and health and whether WHP is more effective for higher than lower educated employees.

Our study contributes to previous research in several ways. Firstly, many work factors have been studied in relation to health inequalities. We extend the current literature by looking at WHP. While some other work factors that are related to health, such as work demands and autonomy, may be inherently linked to specific jobs, this is not the case for WHP, which could potentially be used by all employees regardless of their level of education. Interventions that are available to all are more effective in diminishing health inequalities than interventions targeted at specific subgroups of employees, such as smokers (Adams et al., 2016). Given that healthy menus, sports facilities and health checks can be used by all employees, they may be effective ways of mitigating health inequalities compared to job characteristics previously studied.

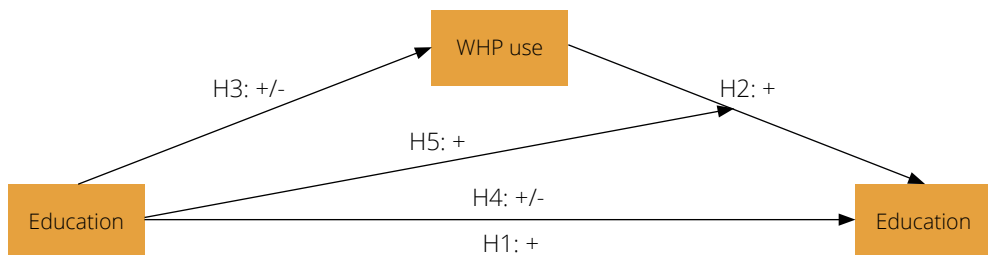
Secondly, one of the reasons why it is unknown whether WHP contributes to the relation between education and health is because most studies on WHP rely on data from only one or a few organisations in one sector and, as a result, cannot incorporate educational differences in workforce compositions (Bull et al., 2003). Socio-demographic characteristics are seldom addressed, and studies that do mostly include higher educated employees (Anderson et al., 2009). An exception is the work by Sorensen et al. (2005), but their sample was too small to detect differences. Some research focused specifically on WHP targeted at lower educated employees (e.g. Lassen et al., 2007), but this cannot provide insight in whether lower educated employees use and benefit more from WHP than higher educated employees. We use unique cross-sectional multilevel data from the European Sustainable Workforce Survey (Van der Lippe et al., 2016) which contains over 11000 employees nested in 259 organisations in nine European countries. This allows us to examine variation in WHP among organisations, while addressing the role of socio-demographic characteristics, notably education. We believe our study makes a valuable contribution to clarifying the role of WHP in health inequalities among employees.

Thirdly, our study has clear social relevance for employers. Health inequalities affect organisations in terms of the health of their workforce, absenteeism rates and productivity (Ardito et al., 2012). We study policies that are actually implemented in organisations rather than test interventions newly designed by researchers; they thus better reflect reality (Bull et al., 2003). When we know how WHP relates to health inequalities, this can inform action on how

to tackle health differences. For example, should employers encourage lower educated employees to make use of WHP that is available to all or target WHP specifically towards lower educated employees? By shedding light on how WHP relates to health inequalities we hope that our results can inform policy makers and employers on effective ways to reduce those inequalities.

## Theory

Given the well-documented relation between education and health (see for example Dieker et al., 2019; Hämmig et al., 2014; Thrane, 2006), we expect that higher educated employees have better health than lower educated employees (H1). The main aim of our study is to examine whether WHP can explain (part of) this relation. There are two ways in which WHP may relate to health inequalities: (1) higher educated employees may be more likely to use WHP than lower educated employees, and (2) the effect of WHP on health may be stronger for higher educated than lower educated employees. We explain these pathways in more detail after elaborating why WHP may increase health. A schematic overview of our expected hypotheses can be seen in Figure 6.1.



**Figure 6.1** The conceptual model for the expected relations between education, WHP and health. Next to the direct relation between education and health, WHP is also expected to mediate this relationship (H4). In addition, education is expected to moderate the relation between WHP and health

## WHP and health

There are several ways in which WHP can contribute to employee health. Firstly, WHP may make employees more aware of their health, so they pay more attention to it (Hendriksen et al., 2016). If employees eat healthily at work, they may also extend this behaviour to their private lives. Secondly, WHP can increase knowledge of the advantages of a healthy lifestyle, resulting in more employees making healthy choices (Anderson et al., 2009). Thirdly, by offering



more opportunities for health behaviour, WHP can contribute to decreasing the cost of healthy choices (Engbers et al., 2005). For example, financial contributions by employers towards a gym membership will make being physically active less costly for employees. Fourthly, environmental cues, such as visibly placing salads in the workplace cafeteria, can influence unconscious behaviour and support the development of more healthy habits (Kahn-Marshall & Gallant, 2012). Previous studies have shown that WHP can have beneficial but modest effects on employee health. Employees who make use of WHP have been found to have healthier diets (Maes et al., 2012), be more physically active (Conn et al., 2009), reduce weight (Anderson et al., 2009), and report better health in general (Rongen et al., 2013). We thus expect that use of WHP contributes to better health (H2).

### **Education and access to WHP**

Educational health inequalities between employees may be partly attributable to differential access to WHP. On the one hand, organisations may be more likely to make WHP available to lower educated employees as these are in higher need of such organisational policies, given their generally higher work-related health risks and overall worse health (Bagwell & Bush, 1999). Providing WHP to employees who have much or more to gain from it is likely beneficial for organisations in terms of productivity and absenteeism (Goetzel & Ozminkowski, 2008). On the other hand, higher educated employees may work more often in larger organisations, which have more resources for WHP implementation (Goetzel & Ozminkowski, 2008; Stiehl et al., 2018). Additionally, WHP may be more often targeted towards higher educated employees because these are seen as more valuable for the organisation (Hammerback et al., 2015). With the exception of Emmons et al. (2000), who found that organisations with a larger share of lower educated employees more often offer smoking cessation programmes, most studies suggest lower educated employees have less access to WHP (Brack, 2008; Harris et al., 2011; Parrish et al., 2018).

### **Education and use of WHP**

Even when lower educated employees have access to WHP, there are several reasons why they may be less likely to use it. Firstly, lower educated employees usually have less human capital, which can make them less successful in dealing with information, and less familiar with benefits of eating healthily and being physically active (Burton et al., 2003). Lower educated employees are not less

likely to know that WHP exists in their organisation (Van der Put & Mandemakers, 2019) but they may be unaware that using WHP can help them become healthier (Rongen, Robroek, & Burdorf, 2014). In addition, they may not attribute illness to personal health behaviour and think they do not need WHP (Burton et al., 2003).

Secondly, lower educated employees may have less opportunity at work to use WHP. For instance, bringing one's own lunch may be cheaper than buying a healthy lunch in the worksite cafeteria (Raulio et al., 2012), and lower educated employees with fewer financial resources may refrain from using healthy menus. Engaging in physical activity at work, or making use of a sponsored subscription, requires time and effort, while these barriers are likely especially relevant for the lower educated (Bukman et al., 2014). In addition, the working conditions of lower educated employees may also hinder them in using WHP. Lower educated employees tend to be overrepresented in jobs with little autonomy, while this enables WHP use (Jørgensen et al., 2016). They are also more likely to work in shifts or away from the organisation, such as fire fighters, which hampers WHP use (Ranby et al., 2011).

Thirdly, social norms arising from colleagues, peers and family members indicate what (healthy) behaviour is appropriate, and if favourable may induce employees to use WHP (Smith & Christakis, 2008). Lower educated employees are more likely to find themselves in an unhealthy social environment, both at work and outside, and more often come into contact with unhealthy behaviours (Bukman et al., 2014; Pampel et al., 2010). This may make them less likely to engage in health behaviours and to use WHP. Higher educated employees, in contrast, more often find themselves in social situations in which healthy behaviour is the norm. This may, however, apply less to health checks, as lower educated employees may be more likely to work in sectors where having one's health checked occasionally is the norm (Walters et al., 2013), if not required.

Earlier research has shown that lower educated employees are less likely to make use of a variety of WHP (Dobbins et al., 1998; Kilpatrick et al., 2015; Raulio et al., 2007; Rongen et al., 2013). We hence expect that lower educated employees are less likely to use healthy menus (H3a) and sports facilities (H3b). This is not necessarily the case for health checks at work, which may be easier to do when offered at work and in some cases may be compulsory for professions and in sectors in which mainly lower educated employees work (Walters et al., 2013). We hence expect lower educated employees to be more likely to use health checks (H3c). In view of the expected differential WHP use by employees of different educational levels, we furthermore hypothesise that the use of healthy menus

(H4a) and sports facilities (H4b) will contribute to increased health inequalities, while health checks (H4c) contribute to diminishing them.

### **Education and effect of WHP**

The second way in which WHP may relate to health inequalities is that the effect of using WHP could be different for higher educated and lower educated employees. Previous studies have shown that the health of both lower (Lassen et al., 2007) and higher educated (Gretebeck et al., 2017) employees can benefit from WHP, but it is unknown whether benefits differ according to educational level.

Research on health promotion shows that interventions that target whole populations rather than specific individuals and rely on people engaging with information and voluntary behaviour change, are more likely to benefit the higher educated (Adams et al., 2016). This may also be the case for WHP. Notably, healthy menus, sports facilities and health checks in the workplace are examples of such population interventions, as they are available to all in a particular setting. However, employees need to know about these interventions and their benefits, as well as use them consistently.

Furthermore, self-interest utility theory poses that interventions are likely to be successful when employees find them personally useful and have experienced the benefits (Casper & Harris, 2008). Higher educated employees may find WHP more useful (Van Lenthe et al., 2015), and be more open to interventions that support behaviour change (Backholer et al., 2014). On the other hand, WHP may be more relevant for lower educated employees because of their generally worse health (Bagwell & Bush, 1999). For example, Sorensen et al. (2005) found that lower educated employees experienced bigger improvements in healthy eating and physical activity after participating in WHP than higher educated employees, who were already behaving more healthily beforehand. However, WHP may be better tailored to the needs of higher educated employees because of the health behaviours they focus on (Rongen, Robroek, Van Ginkel, et al., 2014b). Supporting this possibility, Magnée al. (2013) report some evidence that higher educated employees benefit more from WHP. We hence expect that the effect of using WHP to be larger for higher educated employees (H5).

## Methods

### Data

We used cross-sectional data from the European Sustainable Workforce Survey (ESWS), undertaken in 2015-2016 in nine European countries: Bulgaria, Finland, Germany, Hungary, the Netherlands, Portugal, Spain, Sweden and the United Kingdom (Van der Lippe et al., 2016). The ESWS is a multilevel survey which includes reports from employees, team managers and HR managers. Organisations were selected using stratified random sampling by country, sector (manufacturing, health care, higher education, transport, financial services and telecommunication) and size (up to 100 employees, 101-249 employees and 250 or more employees). When an organisation did not want to participate, a similar organisation based on these characteristics was approached. Employees and managers were contacted at work to complete the self-report questionnaire. The study has been declared to be in line with all ethical requirements. In participating organisations, response rates were 61% for employees, 81% for team managers and 98% for HR managers. In total, 11011 employees in 259 organisations participated in the survey.

We excluded employees for which we had no response from the HR manager, given that we lacked information on organisational characteristics ( $n = 301$  employees in 8 organisations). We used listwise deletion of respondents with missing data on any of the included variables ( $n = 647$ , mainly missing on self-rated health). Our total sample consisted of 10063 employees in 251 organisations. As availability differs by WHP type, sample sizes differed between the analyses related to different types of WHP.

### Measures

Employees were asked to self-report their perceived health on a scale ranging from (1) very good to (5) very bad. Although self-rated health may not give a complete view of someone's health, this measure has been found to be a good predictor of morbidity and mortality in Europe (Dieker et al., 2019; Hämmig et al., 2014). Scores were reversed so that higher scores indicated better health.

To measure level of education, we used years of education. Education is the key to one's position in the social stratification system and precedes occupational status and income, two other often-used indicators of socioeconomic status (Von dem Knesebeck et al., 2006). Employees were

asked for their highest completed level of education, based on the International Standard Classification of Education. Levels of education per country were matched to formal years of education (OECD, 2012).

WHP use was measured by employee self-reports. Employees first had to indicate whether they thought the three types of WHP were available in their organisation: catering or cafeteria menus offering healthy nutrition, sports facilities at work or a financial contribution towards a sports activity outside the workplace, and health checks to assess employees' current state of health. Only when employees reported a policy to be available, they could indicate whether they used it (yes = 1, no = 0). When employees reported a policy to be unavailable or did not know of its existence, they were considered as not using it. We created three variables, one for each type of WHP.

## Data analyses

To examine the relationship between education, health and WHP, we controlled our analyses for gender (female = 1) and a curvilinear effect of age, as these both have been found to be related to self-rated health (Marmot et al., 2012). Age was divided by 10 for ease of interpretation. There may be differences in WHP availability between countries (Van der Put & Mandemakers, 2019) which could impact the extent to which employees can make use of WHP. We therefore controlled for WHP availability as reported by the HR manager and country. Descriptive statistics of all variables are shown in Table 6.1.

Because employees who work in organisations may share certain attributes, we applied a multilevel structure to allow for this nesting of the data (Hox, 2010). Specifically, we fitted multilevel generalised structural equation models (Preacher et al., 2010). We first fitted empty two-level models for use of each type of WHP and health as outcomes. These models show how much variation can be explained by differences between organisations. We then fitted mediation models, one for each type of WHP, including the control variables. We disentangled the direct effect (education on health) from the indirect effect (education on health through WHP use), and tested if the indirect effect could explain part of the relation between education and health. Indirect effects were calculated using the product-of-coefficients approach and consisted of a multiplication of the effect of education on WHP use and of WHP use on health. Total effects were the sum of direct and indirect effects. We used logistic regression equations for the analyses examining the relation between education

and WHP use, given that WHP use is dichotomous, and used linear regression equations for the other analyses. In addition to assessing WHP as a mediator, we also examined whether the effect of WHP on health is different for lower and higher educated employees accounting for possible differences in WHP use. We therefore added interaction terms between education and WHP use to estimate conditional indirect effects (Preacher et al., 2007).

**Table 6.1** Descriptive statistics

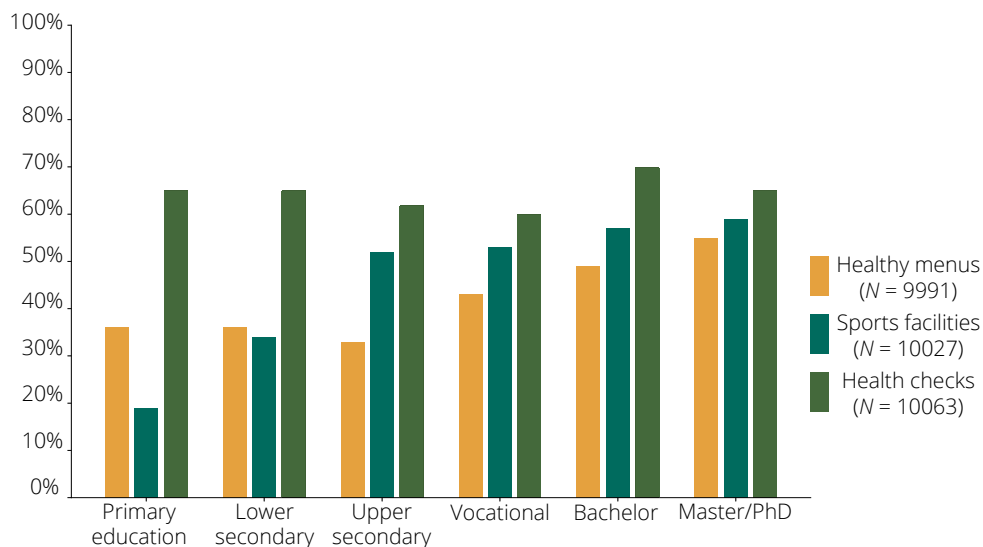
<b>Variables</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Range</b>
Self-rated health	3.88	0.74	1-5
Education	13.65	3.14	3-21
Healthy menus use	0.29		0-1
Sports facilities use	0.17		0-1
Health checks use	0.35		0-1
Age	42.14	11.03	14-77
Female	0.56		0-1
Healthy menus availability	0.45		0-1
Sports facilities availability	0.53		0-1
Health checks availability	0.65		0-1
Country			
United Kingdom	0.07		0-1
Germany	0.09		0-1
Finland	0.07		0-1
Sweden	0.10		0-1
The Netherlands	0.22		0-1
Portugal	0.11		0-1
Spain	0.07		0-1
Hungary	0.12		0-1
Bulgaria	0.14		0-1
<i>N</i> <sub>employees</sub>	10063		
<i>N</i> <sub>organisations</sub>	251		

## Results

On average, 45% of employees had healthy menus available in their workplace, 53% had access to sports facilities and 65% had the possibility to have a health check. As Figure 6.2 shows, higher educated employees tended to have more access to healthy menus and sports facilities, but not to health checks.

When it comes to WHP use, we found that healthy menus were used by 29% of employees, sports facilities by 17%, and health checks by 35%. Empty models showed that 54%, 67% and 63% of the variation in use of healthy menus, sports facilities and health checks, respectively, was explained by differences

between organisations. The variation between organisations for self-rated health was 4%.



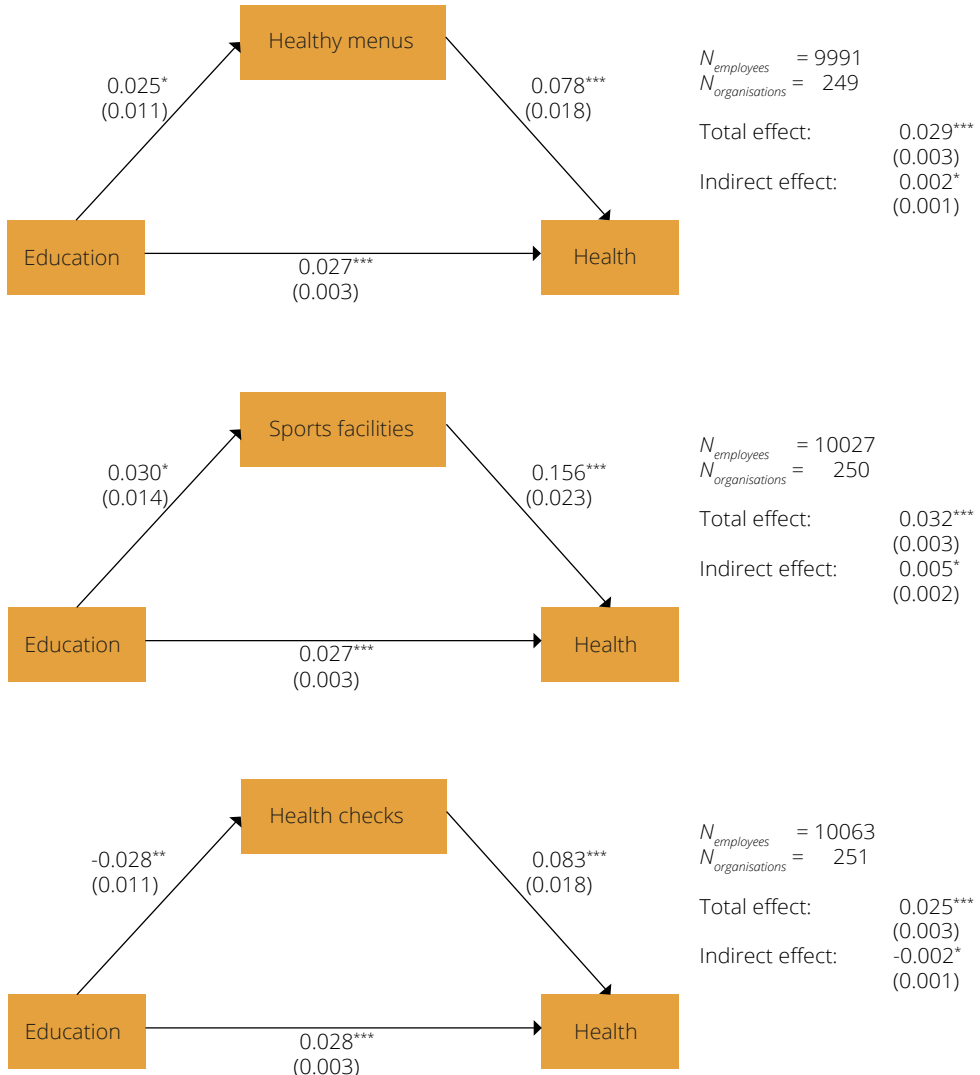
**Figure 6.2** Availability for healthy menus, sports facilities and health checks by highest completed level of education

Figure 6.3 shows the results of the analyses of the relations between education, WHP and health. In support of our first hypothesis, in all models we found that higher educated employees rated their health as better than lower educated employees. For every additional year of education, employees scored about 0.03 point higher on the 5-point self-rated health scale. Results also showed that for each type of WHP, employees who used WHP rated their health as better than employees who did not use WHP. In support of hypothesis 2, employees who used healthy menus, sports facilities or health checks on average rated their health 0.08, 0.16 and 0.08 points higher, respectively.

Figure 6.3 shows that our expectations that, compared to higher educated employees, lower educated employees were less likely to make use of healthy menus (H3a) and sports facilities (H3b), but more likely to use health checks (H3c), were supported.

Figure 6.3 also presents the total effect of education on health, broken down into the direct effect and indirect effect, that is, through WHP use. We found support for our fourth hypothesis: use of healthy menus, sports facilities and health checks were significant partial mediators of the association between

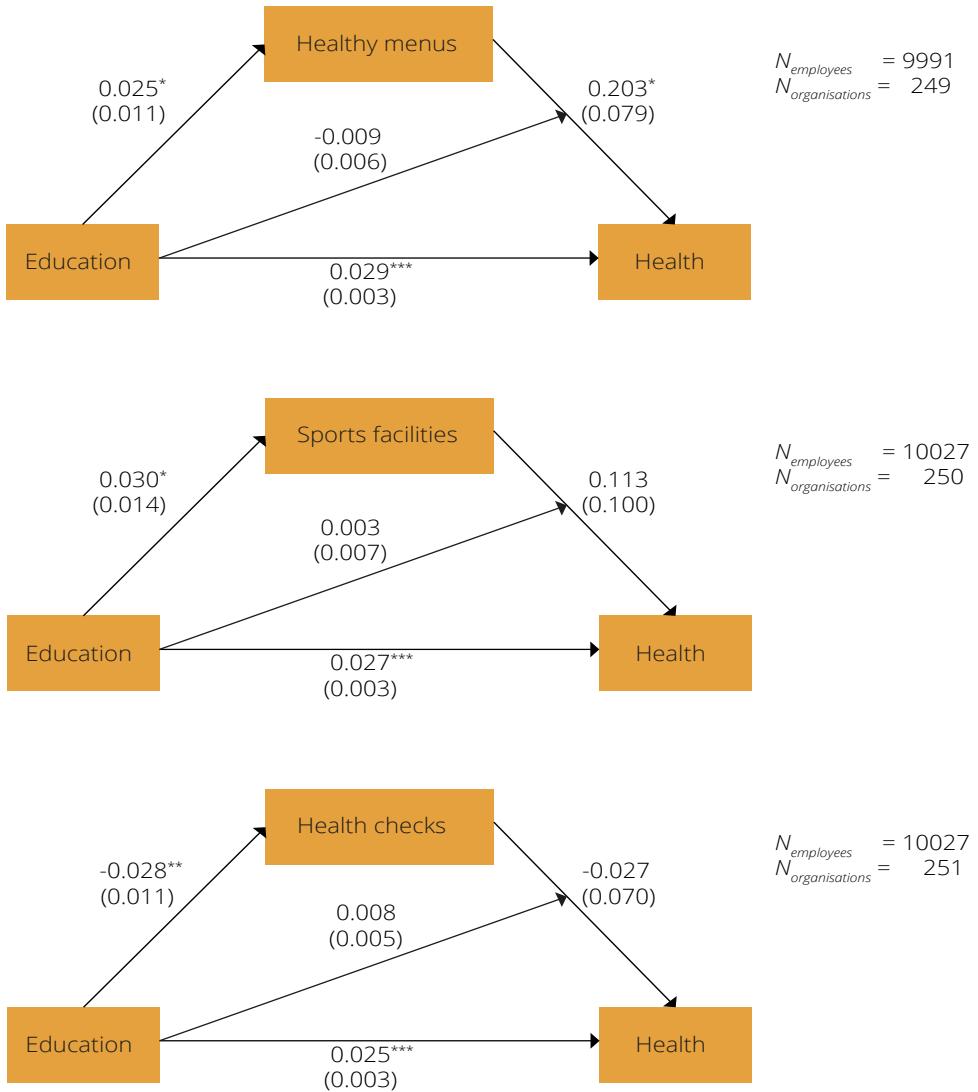
education and health. As higher educated employees were more likely to use healthy menus and sports facilities, this contributes to increasing health inequalities, while lower educated employees were more likely to use health checks, which contributes to diminishing health inequalities. These mediation effects were however small: healthy menus explained 1.4% of education-related inequalities, sports facilities 1.2% and health checks 0.6%.



**Figure 6.3** Structural equation models with mediation of WHP in the relation between education and health. Control variables (gender, age, age<sup>2</sup>, WHP availability and country) are not shown (see Appendix B). Standard errors are shown in parentheses. Total and indirect effects of WHP are summarised with standard errors for each model. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < .001$



Furthermore, we expected that the effect of WHP on health would be larger for higher-educated employees. The results of the analyses including the interaction between education and WHP use are shown in Figure 6.4. The figure indicates that the hypothesised moderation effects were not significant: the effect of WHP on health was not contingent on education and findings did not support hypothesis 5.



**Figure 6.4** Structural equation models with moderated mediation of WHP in the relation between education and health. Control variables (gender, age, age<sup>2</sup>, WHP availability and country) are not shown (see Appendix B). Standard errors are shown in parentheses. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < .001$

## Sensitivity analyses

In addition to education, occupational status and income also reflect an individual's position in the social hierarchy (Dieker et al., 2019), so we ran our analyses using these variables instead of education to assess the robustness of findings as a reflection of social status-related health inequalities. Results remained the same when using occupation as an indication of social status. We found no relation between WHP use and income, and hence no possible mediation.

There are many organisational characteristics that could be related to both WHP use and health (Jørgensen et al., 2016), and we therefore re-ran our analyses while controlling for flexible working arrangements, financial situation of the organisation, competitive work culture, size and organisational sector. Results remained the same for healthy menus and health checks. However, the relation between education and use of sports facilities became marginally significant ( $p = 0.066$ ), as did the mediation ( $p = 0.076$ ).

Employees who used one type of WHP may be more likely to also use other types of WHP, so we re-ran our analyses for the number of WHP used (0-3). We found no relation between education and number of WHP used, underscoring the importance of examining each type of WHP separately.

## Discussion

The aim of this study was to assess to what extent WHP can account for the relation between education and health, and whether WHP may be more effective for higher than lower educated employees. Health inequalities among employees have been well-documented (Dieker et al., 2019). Many different work factors have been studied as explanations for why higher educated employees may have better health than lower educated employees, and we extend this by studying WHP. WHP has been widely adopted as a means to improve public health and can be used by all employees, regardless of their educational background (Adams et al., 2016; Jørgensen et al., 2015). While previous research has addressed whether WHP can affect the health of all employees, it has not addressed differences in effects between higher and lower educated employees. Using data from over 10000 employees in 251 organisations in nine countries, we assessed whether the use of healthy menus, sports facilities and health checks mediates the relation between education and health, and if the association between WHP and health differs by level of education. Our findings provide insight into if and how WHP can

diminish health inequalities.

We found that, as expected, higher educated employees rated their health as better than lower educated employees. This is in line with many prior studies (Dieker et al., 2019; Hämmig et al., 2014; Thrane, 2006; Von dem Knesebeck et al., 2006; Vonneilich et al., 2019), and the main contribution of our study is its assessment of the role of WHP in this association. We also conclude that as WHP use related to better health, this could potentially help in diminishing health inequalities. However, higher educated employees appeared to have more access to WHP (especially healthy menus and sports facilities) than lower educated employees, and one way to reduce education-related health inequalities would be to increase access of lower educated employees to WHP. In addition, higher and lower educated employees differed in the extent to which they use WHP when controlling for availability, and so only making WHP available to employees is not enough to reduce health inequalities.

Lower educated employees were less likely to make use of healthy menus, and because of this, healthy menus in the workplace can compound existing health inequalities. Raulio et al. (2012) suggested that lower educated employees may less often use healthy menus because these are more expensive, but our additional analyses showed that income is not related to use of healthy menus in the workplace. Alternatively, lower educated employees may have less opportunities to attend the worksite cafeteria because of shift work, not working at the organisation's main venue (e.g. truck drivers) or a belief that because their jobs are more often physically demanding, they need more energy-rich but unhealthier food (Backman et al., 2011; Hulsegge et al., 2016; Passey et al., 2014). Providing lower educated employees with the possibility to visit a workplace cafeteria during working hours and stimulating them to choose healthy food options may help increase use of healthy menus and, through that, reduce health inequalities.

We found that the use of sports facilities also mediated the relation between education and health, as lower educated employees were less likely to use sports facilities. Reasons for this could be similar to why lower educated employees are less likely to use healthy menus, that is, fewer opportunities to use sports facilities during working hours or having a physically demanding job which may discourage them from additional physical activity. To reduce health inequalities, the use of sports facilities among lower educated employees may need to be promoted.

We found that lower educated employees were more likely to make use of health checks, which may reduce health inequalities. Part of the reason why use among them was higher may be that lower educated employees may work more often in sectors where such checks are obligatory (Walters et al., 2013). Additionally, compared to higher educated, lower educated employees may be more likely to have their health checked when they already experience health issues rather than preventively (Bukman et al., 2014). Health checks could help lower educated employees in finding out they have health issues and help them address these to protect or promote their health.

We found the relationship between WHP and health is not moderated by education, meaning that WHP works equally well for lower and higher educated employees when used. Given that we found that lower educated employees are less likely to use healthy menus and sports facilities while these do contribute to better health, the main challenge to reducing health inequalities through WHP is to encourage lower educated employees to make use of available WHP. Merely offering WHP is likely insufficient to promote health and reduce health inequalities, as it relies on individual agency, and work on other types of health interventions has shown that this increases health inequalities (Adams et al., 2016). It is important for employers to actively stimulate and enable lower educated employees to make use of WHP. As lower educated employees are not less likely to know about the existence of WHP (Van der Put & Mandemakers, 2019), a main challenge may relate to providing these employees with the opportunities to fit WHP into their work schedule and to motivate them to make healthy choices during their working day. Creating healthy norms within an organisation can contribute to achieving this, for example by offering healthy snacks at events during office hours and installing sit/stand desks in offices.

We note that the effects of WHP we found are only small. Previous studies also found small health effects of WHP (e.g. Rongen et al., 2013). Additionally, there are many factors that contribute to education-related health inequalities, and the aim of our study was to examine whether WHP could be one of those. We therefore do not claim that if lower educated employees use WHP, health inequalities will disappear, but we do believe that WHP is part of the solution. In line with Rose's theorem, we posit that small effects for individuals can potentially have substantial relevance for public health (Adams et al., 2016).

We want to note several limitations to our study. Firstly, as our data are cross-sectional, we cannot assess potential reversed causality. Notably, organisations with more higher educated employees could be more likely to

implement WHP because these employees are more likely to request WHP and are more actively engaged with organisational policy to provide WHP (Goetzel et al., 2007). Furthermore, higher educated employees tend to be healthier and healthier employees may be more likely to use WHP (e.g. Rongen et al., 2013). Randomised controlled trials have however shown that WHP use precedes health-related outcomes (Maes et al., 2012), but these studies did not address health inequalities. We regard our study as making an important contribution to understanding the role of employees' socio-demographic characteristics in the potential health benefits of WHP, and recommend future studies to further examine whether WHP affects health inequalities as our findings suggest.

Secondly, our measure of self-rated health may not optimally capture the diverse aspects of employees' experienced health. Also, we did not include any objective health indicators, nor did we assess health behaviours related to diet, physical activity and alcohol consumption. Health behaviours are proximal determinants of health, and relations between education and self-rated health may likely run through these behaviours (Toch et al., 2014). However, previous studies have shown that self-rated health is a good indicator of mortality and morbidity (Dieker et al., 2019) Future research should nevertheless assess whether WHP is also associated with social inequalities in health behaviours as well as objective indicators.

Lastly, our measures of WHP do not fully capture what WHP entails. For example, health checks may include a thorough examination of several health aspects or only consist of measuring blood pressure and BMI. In addition, we only know whether employees made use of WHP in the last 12 months but not how often, which implies that WHP use may reflect occasional or irregular use as well as frequent or regular use. While other studies have also employed this measure (e.g. Jørgensen et al., 2015), a more detailed assessment of what WHP entails and how it is used is recommended.

A strength of our study is that it is among the first to explicitly address how WHP might be related to health inequalities by studying the role of education in the use and effect of WHP. We made use of rich data allowing us to take into consideration that organisations differ in their workforce composition, which is an improvement to other studies that only focus on one or a few organisations in one sector (Bull et al., 2003). In addition, we studied three types of WHP rather than just one and find specific results per type of WHP, suggesting it is important to account for the variety in WHP on offer. Future research could assess how other types of WHP may relate to health inequalities. Furthermore, the inclusion

of a large number of organisations enabled us to account for differences in availability of WHP. Some have argued that WHP may affect employees differently as not all employees have equal access to WHP (Parrish et al., 2018), but by controlling for differential availability, we found differences remain in WHP use by education level.

## Conclusion

Education-related health inequalities are ubiquitous, and work-related differences are an important explanation for why higher educated employees may have better health than lower educated employees. We examined to what extent WHP can account for the association between education and health, and whether WHP may be more effective for higher than lower educated employees. This study is among the first to assess how employees' socio-demographic characteristics affect the use of WHP. We conclude that the use of healthy menus and sports facilities in the workplace can contribute to increasing health inequalities, as lower educated employees are less likely to make use of these. Health checks could contribute to diminishing health inequalities, as lower educated employees are more likely to use them compared to higher educated employees. Importantly, we found that the association between WHP and health was similar for all employees. Given this general health-promoting potential of WHP, we recommend organisations and workplace health promoters to encourage lower educated employees to make use of WHP, to contribute to mitigating health inequalities.

7

# Worksite health promotion and employee performance: Awareness or use?





## Abstract<sup>7</sup>

Many organisations help employees in improving and maintaining a healthy lifestyle by offering worksite health promotion (WHP), for example healthy food in the worksite cafeteria and on-site fitness facilities. Research shows that this has positive effects on employee health and is also associated with work-related outcomes such as performance and commitment, which is another reason for employers to offer it. Yet, it is unclear how WHP relates to these work-related outcomes. We assessed whether being aware of WHP, using it, or both, affects employees' task performance and contextual performance. We draw on organisational support and social exchange theory and propose that employees who are aware of WHP consider their organisation to care about their health and well-being. Employees reciprocate this concern by performing better. WHP use may increase health and well-being, which leads to better physical and cognitive work capacity, better mood and better ability to manage work stress, all contributing to higher performance. We used unique multilevel data with information on over 11000 employees in 259 organisations. Results showed that awareness of healthy menus and sports facilities was positively associated with task and contextual performance. Use of healthy menus was related to both higher task and contextual performance, and using sports facilities was associated with increased contextual performance. The relation of WHP use was stronger for contextual than for task performance. Organisations should ensure employees are aware of the availability of WHP as well as stimulate employees to make use of it so that both employees and employers benefit.

**Keywords:** worksite health promotion, task performance, contextual performance, organisational support theory, social exchange theory

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<sup>7</sup> A slightly different version of this chapter is currently submitted to an international scientific journal.

This chapter is co-authored by Jornt Mandemakers, John de Wit and Tanja van der Lippe. The authors jointly developed the core ideas of the chapter. Van der Put mainly wrote the manuscript and performed the analyses. Mandemakers, De Wit and Van der Lippe contributed substantially by providing extensive feedback on earlier versions. Van der Lippe was Principal Investigator in the data collection.

An earlier version of this paper has been presented at the Work and Family Research Network conference in New York (26-06-2022).

## Introduction

The workplace is a promising environment for preventive health activities because many adults spend the majority of their waking day at work. Worksite health promotion (WHP), such as healthy food in the worksite cafeteria or on-site fitness facilities, have the potential to reach many employees and has repeatedly been found to improve health when employees make use of the WHP their organisation offers (Conn et al., 2009; Maes et al., 2012; Rongen et al., 2013; Van der Put et al., 2020). Not all organisations, however, offer WHP and some employers see employee health mainly as something for the private domain (Caperchione et al., 2016; Goetzel & Ozminkowski, 2008; Pescud et al., 2015). However, WHP is also positively associated to work-related outcomes, such as absenteeism (Jensen, 2011; Kuoppala et al., 2008; Lutz et al., 2019; Parks & Steelman, 2008; Tarro et al., 2020), presenteeism (Cancelliere et al., 2011; Jensen, 2011; Lutz et al., 2019), job satisfaction (Andersen et al., 2017; Parks & Steelman, 2008), work ability (Grimani et al., 2019; Kuoppala et al., 2008) and job performance (Coffeng et al., 2014; Hendriksen et al., 2016). The effects of WHP on performance outcomes may even be larger than those on health-related outcomes (Lutz et al., 2019), showing the importance of studying performance in relation to WHP.

Most studies on WHP and work-related outcomes, such as performance, focus on use of WHP. However, not all employees use WHP, even though they may know their organisation offers it. On average only 33% of employees who have access to WHP make use of it and may thus – possibly – benefit from improved performance (Bull et al., 2003; Robroek et al., 2009; Rongen et al., 2013). However, research on other employee benefits, such as supplemental family leave provision and flexible work schedules, found that awareness alone is also positively related to employee performance (Begall et al., 2022; Casper & Harris, 2008). This could also be the case for WHP.

Most studies investigating WHP for work-related outcomes are of experimental nature. In these studies all employees in a work unit or organisation participate in WHP, making it very difficult to separate awareness from use. However, the ways in which awareness and use affect performance may differ (Begall et al., 2022; Smith et al., 2020). Employees who are aware of the availability of WHP in their organisation may perceive this to signal that their organisation is concerned with their health and well-being, which can strengthen employees' organisational commitment and make them reciprocate this concern by performing better (Kurtessis et al., 2017). This may be especially the case for

employees who use WHP, as they directly benefit from their employers' concern for their well-being, but also because using WHP may improve health, which allows employees to do better in their jobs (Gubler et al., 2018). In this chapter, we therefore examine whether WHP awareness, use, or both, relate to performance.

One of the alleged benefits of WHP is increased performance, yet previous studies mostly examined other outcomes that are focused on WHP use, such as absenteeism (but see Coffeng et al., 2014 and Hendriksen et al., 2016 for exceptions). We focus on employee performance. Specifically, we examine task and contextual performance which together measure relevant aspects of performance and can be used across sectors and occupations (Koopmans et al., 2014). Task performance can be defined as the proficiency with which employees perform the tasks central to their job, while contextual performance (also known as extra-role performance or organisational citizenship behaviour) can be defined as behaviour that supports the organisational, social and psychological environment in which the technical core must function, and thus consists of behaviour that goes beyond what is normally expected of employees (Koopmans et al., 2012). It could be the case that these different aspects of performance relate differently to WHP use and awareness. Studying both may provide more insight into the relation between WHP and performance.

We use unique multilevel data from the European Sustainable Workforce Survey (Van der Lippe et al., 2016) which contains information on over 11000 employees in 259 organisations in nine European countries. Existing studies on WHP rely on data from one or a few organisations (Bull et al., 2003), making it difficult to study differences in WHP awareness and use. Our multilevel data warrants us to look at both: in some organisations employees may know that there are healthy menus in the cafeteria but their job does not allow them to use these, while in others all employees eat together during lunch. The data also allow us to study associations of performance with policies that are actually implemented in organisations rather than interventions in a research context. While such studies provide important insights regarding causal relationships, ours may offer increased external validity by better reflecting the real-life benefits of WHP (Glasgow et al., 2019).

Furthermore, we examine two types of WHP: healthy menus and sports facilities. Healthy menus take the form of cafeteria food which is high in nutrients and low in sugar, salt and fats, while sports facilities can be both onsite, such as a gym, as well as financial contributions towards a sports activity. These are among the most prevalent types of WHP implemented in organisations (Goetzel et al.,

2007; Sparling, 2010). Both these types of WHP can be used by all employees, meaning they have the potential to improve performance for all (Goetzel & Ozminkowski, 2008). However, not all organisations offer their employees access to healthy menus and sports facilities, and there is also variation in the extent to which employees are aware of their existence (Van der Put & Mandemakers, 2019). Additionally, both types of WHP differ in the extent to which they are visible to employees as being benefits put in place for them and the demand they make on the working day, affecting how often they will be used. Studying both may provide more insight in how employee and employers can benefit from investments in WHP.

In order to improve the business case for WHP, it is important for organisations to know how their investments in WHP benefits employees, so they can direct organisational resources to where these are most effective. Several studies on WHP highlight communication as a key prerequisite to ensure employees are aware of the existence of WHP in their organisation (Kent et al., 2016; Ott-Holland et al., 2019; Seward et al., 2019). If our results indicate awareness relates to performance, employers should communicate WHP is available. Increased awareness through communication also precedes use, and if the results show use matters, then organisations need to consider how to stimulate their employees to make use of WHP on offer. Our study provides this insight, which helps building a business case for WHP and increase investments (Verbeek et al., 2009).

## Theory

Not all employees know that their organisation offers WHP, and among those who do, not all make use of it (Robroek et al., 2009; Van der Put & Mandemakers, 2019). In this study we focus on both awareness and use of WHP, and the relation to performance.

### WHP awareness

To explain how WHP awareness relates to performance, we draw on organisational support and signalling theories. Organisational support theory assumes employees form general beliefs concerning how much the organisation values their contributions and cares about their well-being (Eisenberger et al., 2001). Organisational support for employees' health and well-being is not directly observable, meaning employees have less information about this than

their employer. Signalling theory (Spence, 1973) posits that in such a situation employees look for observable actions to derive this information from. WHP may be such a sign, as implementing programs to promote employee health and well-being are costly. By providing WHP, organisations signal to employees that they are concerned with employee health and well-being (Gubler et al., 2018). Previous studies found that employees who knew about the existence of WHP in the organisation they worked for, perceived this as a sign that the organisation cared about their health (McCleary et al., 2017; Seward et al., 2019).

Past research suggests that perceived organisational support for employees contributes to positive employee attitudes and behaviours towards the organisation (Kurtessis et al., 2017; Parks & Steelman, 2008). Offering WHP can be seen as being part of a social exchange relationship: the employer shows they care about employees' health, and to appreciate this gesture employees reciprocate by helping the organisation do well (Cropanzano & Mitchell, 2005; Gouldner, 1960). Though to date no studies have directly linked WHP awareness to employee performance, some evidence suggests that knowing that WHP is provided by one's organisation may elicit positive employee behaviours. For example, employees who knew WHP was offered were less often absent (Smith et al., 2020), and when perceived workplace support for a healthy lifestyle was higher presenteeism was lower (Chen et al., 2015). Additionally, employees may feel more committed to their organisation when they know they are offered WHP (Milner et al., 2015). As a result of this increased organisational commitment, employees may want their organisation to do well, and may perform better to achieve this (Begall et al., 2022; Riketta, 2002).

Whether knowing that WHP is available is associated with employees' performance may depend on the way in which employees perceive the signal of WHP by the organisation. Employees differ in the way in which they perceive organisational policies and practices (Wright & Nishii, 2007). Some employees may see their organisation's offer of WHP as a way to curtail business costs by reducing absenteeism, or as an interference in their personal lives (Rongen, Robroek, Van Ginkel, et al., 2014a). In these cases, WHP does not signal that the organisation cares about employee health and well-being and is unlikely to elicit positive responses in employees. However, WHP is typically a discretionary practice, meaning that its availability implies an organisations' voluntary investment rather than a response to legal requirements (Gavino et al., 2012; Ott-Holland et al., 2019). Most employees are found to support this positive view of WHP availability and feel it is offered out of concern with their well-being (McCleary et al., 2017).

Additionally, in organisations with more WHP policies and programs, which denotes a higher investment by the organisation, employees are more likely to view their employer as committed to their health (Milner et al., 2015). Based on these arguments, we expect that employees who are aware about the existence of WHP, score higher on job performance (H1).

## **WHP use**

Organisations do not only make WHP available to employees to signal care for their well-being; they also want employees to use it so these can improve their health. When employees use WHP this implies they are aware of its existence, but in addition to that WHP use may also relate to performance via two other ways. Firstly, WHP use may affect how employees perceive the signal WHP allegedly sends (Begall et al., 2022). In line with self-interest theory, WHP is found to enhance commitment to the organisation when employees find it personally useful (Casper & Harris, 2008). Employees who use WHP may have more positive beliefs about the value of WHP in their attempts to live a healthy lifestyle, see it as more important and have a higher sense that the organisation supports their health and well-being (Ott-Holland et al., 2019). The signal WHP sends is thus stronger for them. WHP use has been found to increase organisational commitment and positive beliefs about the value WHP brings (Kilpatrick et al., 2016; McCleary et al., 2017; Ott-Holland et al., 2019). Given that users personally gain benefits from WHP, these employees may feel more gratitude towards their employer and have a stronger obligation to reciprocate, and could thus be expected to perform better (Gubler et al., 2018; Kurtessis et al., 2017).

Secondly, WHP use can lead to better health and well-being, which is associated with better performance. A plethora of studies has shown that WHP can improve employee health and healthy lifestyle such as eating and physical activity behaviours (Conn et al., 2009; Maes et al., 2012; Rongen et al., 2013; Van der Put et al., 2020). Consuming healthy menus in the worksite cafeteria may enhance performance as having a healthy diet is related to better cognitive functioning, less energy fluctuations and better mood which may make employees more motivated (Cho & Kim, 2022; Houghton et al., 2009; Jensen, 2011). Using sports facilities at or outside work may increase performance through lower stress, improved concentration resulting from mental detachment from work demands and increased self-efficacy (Merrill et al., 2013; Sianoja et al., 2018). In a qualitative study employees reported viewing WHP as a mental break which

helps them to regain focus and have a clearer mind, and thus actually perform better (Coulson et al., 2008). Employees who ate healthier, were more physically active and reported better health have been found to perform better at work (Koopmans et al., 2014; Merrill et al., 2013; Shi et al., 2013; Stepanek et al., 2019).

Some studies note that healthy employees are most likely to make use of WHP (Gretebeck et al., 2017; Jørgensen et al., 2015), and also perform better at work. Maybe these employees are attracted to organisations that offer WHP because this helps them to integrate their healthy lifestyle more easily into their working day, for example by being allowed to go to the gym during their lunch break. For many employers, the possibility that making WHP available will attract and retain highly valuable employees is an important reason to do so in the first place (Goetzel & Ozminkowski, 2008; Grawitch et al., 2007; Ungureanu et al., 2019). If this is indeed the case, employees with valuable knowledge and skills who perform well may self-select into organisations that provide WHP because they value this offer. However, also employees with suboptimal health are attracted to using WHP, and the possibility to improve health and through that performance, is potentially bigger among this group (Lassen et al., 2007; Sorensen et al., 2005; Van der Put et al., 2020). Additionally, several studies found WHP use to increase employee performance, regardless of the health status of those employees (Coffeng et al., 2014; Hendriksen et al., 2016; Mills et al., 2007; Ott-Holland et al., 2019; Rongen et al., 2013). We thus hypothesise that employees who use WHP score higher on job performance (H2).

## **Contextual and task performance**

This study examines two complementary aspects of job performance, namely task and contextual performance. Task performance is the ability with which employees perform the tasks central to their job, while contextual performance (also known as extra-role performance or organisational citizenship behaviour) consists of behaviour that goes beyond what is normally expected of employees (Koopmans et al., 2012). Though we expect WHP awareness and use to relate to both, we argue the relation may be stronger for contextual performance. As being aware of WHP is expected to elicit reciprocal behaviour on the employees' part, this may be particularly relevant in the case of doing additional tasks (Koopmans et al., 2014). When using WHP, employees may feel this even more. WHP use may help employees feel more energetic, which could be translated into higher task performance, but it could also be that this additional energy is fuelled into doing

additional tasks, as the main tasks of the job need to be done regardless of the effects WHP use may have (Cho & Kim, 2022). Furthermore, task performance may be affected more by experience and skills, which is not necessarily improved by WHP awareness or use (Motowidlo & Van Scotter, 1994). Meta-analytic evidence shows organisational support is more strongly related to contextual performance (Kurtessis et al., 2017; Riketta, 2002). We thus expect that WHP awareness (H3a) and WHP use (H3b) relate stronger to contextual performance than to task performance.

## Different types of WHP

In this study, we focus on two types of WHP: healthy menus and sports facilities. These are among the most often available types of WHP in the workplace (Goetzel et al., 2007; Sparling, 2010). Both can potentially be used by all employees and may thus affect the performance of all employees. However, there are also differences, for example in the extent to which these WHP are visible to employees as benefits put in place for them. Having fruit freely and abundantly available in the office could be seen as being part of the work environment rather than a special concern from the employer, which may be more likely the case for sports facilities. Additionally, not all WHP may be used equally often. An employee needs to eat daily and may rely on the healthy worksite cafeteria for that, while using sports facilities may only happen once or several times a week. In this respect the health- and performance-enhancing effects of healthy menus may be larger. Little research examined differences before. We therefore take an explorative approach to see whether there are differences in the associations between awareness and use and performance for healthy menus and sports facilities.

## Methods

### Data

To test our hypotheses, we used data from the European Sustainable Workforce Survey collected in 2015-2016 (Van der Lippe et al., 2016). This data was collected among HR managers, team managers and employees of many organisations in nine European countries (UK, Germany, Finland, Sweden, the Netherlands, Portugal, Spain, Hungary and Bulgaria). Organisations were contacted using a stratified random sampling approach based on sector (manufacturing, health care, higher education, transport, financial services and telecommunication)



and size (up to 100, 101-249 or 250 or more employees). When an organisation agreed to join the study, HR managers, team managers and employees were contacted at work to fill in a questionnaire in their own language. The study protocol was approved by the Faculty Ethics Review Board. The response rate was 98% among HR managers, 81% among team managers and 61% among employees, resulting in a total sample of 11011 employees and 256 HR managers in 869 teams in 259 organisations.

In our analyses, we made use of the responses provided by the HR manager and the employees, as these reported on the variables necessary for our study. We excluded employees who worked in organisations for which the HR manager did not complete the survey, which differed by type of WHP: for healthy menus 375 employees in 10 organisations were excluded and for sports facilities 338 employees in 9 organisations were excluded. We used listwise deletion of missing values on any of the other included variables. The final sample sizes differed by type of WHP and consisted of 9278 employees in 249 organisations for healthy menus and 9322 employees in 250 organisations for sports facilities.

## Measures

Our dependent variables, task and contextual performance, were measured with an abbreviated version of the Individual Work Performance Questionnaire (IWPQ: Koopmans et al., 2012). The IWPQ can be used by employees in all types of occupations and sectors and has been shown to have good construct validity (Koopmans et al., 2014). Both task and contextual performance were measured using five items (see Table 7.1) and respondents could indicate how often these situations occurred in their job on a five-point Likert scale ranging from (1) always to (5) seldom. Scores were reversed so that higher scores indicated better performance. We conducted a confirmatory factor analysis to assess if the items measured distinct concepts as intended and found this to be the case. The factor loadings shown in Table 7.1 confirm that task and contextual performance could be distinguished. For each dependent variable, we averaged the scores on the five items. Internal consistency was good (task performance: Cronbach's  $\alpha=0.85$ , contextual performance: Cronbach's  $\alpha=0.80$ ).

**Table 7.1** Rotated factor loadings and unique variances of items assessing task and contextual performance

Component	Item	Factor 1	Factor 2	Uniqueness
<b>Task performance</b>	I was able to plan my work so that I finished on time	0.69	-0.09	0.55
	I kept in mind the work results I needed to achieve	0.63	0.13	0.53
	I was able to set priorities	0.71	0.10	0.44
	I was able to do my work efficiently	0.80	-0.03	0.37
	I managed my time well	0.78	-0.03	0.41
<b>Contextual performance</b>	Without being told, I started new tasks after finishing up my work	0.04	0.63	0.59
	I took on challenging new tasks when they were available	-0.01	0.82	0.33
	I worked on keeping my work skills up-to-date	0.17	0.53	0.63
	I took on extra responsibilities	-0.04	0.74	0.47
	I actively participated in meetings and/or consultations	-0.02	0.56	0.70
Eigenvalue		3.01	2.64	
Cronbach's $\alpha$		0.85	0.80	

Note:  $N = 10267$ . Oblique rotation with oblimin criterion. Items in bold denote to which factor they belong.



WHP awareness was measured by asking employees for each of two types of WHP whether these were available in their organisation: catering or cafeteria menus based specifically on healthy nutrition, and sports facilities at work or a financial contribution towards a sports activity. Employees could indicate that these WHP provisions were available, not available or that they did not know. We grouped the employees who answered 'not available' and 'do not know' together, reflecting that these employees were not aware of the existence of such WHP programs. We created separate measures for awareness of healthy menus and sports facilities.

WHP use was assessed asking employees to indicate whether they had used each type during the past 12 months (no = 0, yes = 1), if they were aware it was available in their organisation. Employees were considered as not using a type of WHP if they indicated it to be unavailable or did not know if it was available. We again created separate measures for healthy menus and sports facilities.

We controlled for several sociodemographic characteristics, namely gender (female = 1), years of education, occupational status and age, as these may relate to knowing about the existence of WHP and using it (Rongen et al., 2013; Van der Put et al., 2020; Van der Put & Mandemakers, 2019). We also added

work-related controls. Employees who worked more hours and more often at their workplace may have more exposure to organisational information through official and informal channels, meaning they would be more likely to know about WHP (Baird & Reynolds, 2004). As they spent more time at work, they may also be more likely to use it. We thus controlled for working hours (top-coded at 80 hours) and extent of working from home. Employees who worked for an organisation longer and who had a permanent contract may be more likely to know about the existence of organisational policies (Van der Put & Mandemakers, 2019), which may also apply to WHP. We thus added tenure in years and whether an employee had a permanent contract as controls. We also controlled for physical work demands, which was measured by how often employees' duties involved standing, walking, or other physical activities. At the organisational level, we controlled for actual availability of WHP, as reported by the HR manager. We furthermore controlled for organisational size (small = up to 100 employees, medium = 101-249 employees, large = 250 or more employees), sector and country.

## Data analyses

As employees who work in the same organisation may share certain attributes and are thus not independent, we applied a multilevel structure to allow for this nesting of the data. When not accounting for the clustering of employees within organisations, the standard errors of the parameters may be underestimated, leading to biased results (Hox, 2010). The intraclass correlations are 0.07 for task performance and 0.10 for contextual performance. This indicates that there is a significant variation of 7% and 10% between organisations for task and contextual performance respectively, and warrants the use of multilevel models.

Specifically, we fitted multilevel generalised structural equation models (Preacher et al., 2010). We simultaneously modelled both outcomes of task performance and contextual performance as these were moderately correlated ( $r = 0.33$ ). By simultaneously modelling both outcomes, we could also test whether the relation between each outcome and awareness and use of WHP differs, to examine hypotheses 3a and 3b. For this we used Wald tests. As a sensitivity check we ran regular multilevel regression analyses, so without simultaneously predicting both outcomes, which yielded similar results.

We ran separate models for each type of WHP. Additionally, we ran separate models for awareness and use of both healthy menus and sports facilities because of the way the questions were asked (a respondent was not

shown the use question if they reported it to be unavailable). Because of this, awareness and use were highly correlated ( $r = 0.84$  for healthy menus and  $r = 0.56$  for sports facilities). Because we ran our models separately for healthy menus and sports facilities it was not possible to perform a formal test to assess if awareness (and use) of healthy menus and sports facilities relate to task and contextual performance differently. We therefore plotted the coefficients and confidence intervals and visually inspected whether there were any differences.

## Results

The descriptive statistics are shown in Table 7.2. Because we ran our analyses separately for each type of WHP, we also displayed the descriptive statistics separately for each subsample of participants for whom data on the specific type of WHP were available. We found no significant differences between the subsamples for any of the variables included.

On average, employees scored higher on task performance than on contextual performance. Employees were less aware of the availability of healthy menus (38%) than sports facilities (41%) in their organisations. Conversely, healthy menus were used more: 30% of employees reported having used these, while 17% had used sports facilities.

Table 7.3 displays the results of multilevel structural equation models focusing on WHP awareness. Our first hypothesis, which posited that employees who were aware of the existence of WHP scored higher on task and contextual performance, was supported by the data. Awareness of the availability of healthy menus in their organisation was positively associated with both employees' task performance ( $B = 0.118, p < 0.001$ ) and contextual performance ( $B = 0.144, p < 0.001$ ). Similarly, awareness of the available sports facilities in their organisation was also positively associated with employees' task performance ( $B = 0.063, p = 0.005$ ) and contextual performance ( $B = 0.104, p < 0.001$ ).

The results of the multilevel structural equation models concerning WHP use are displayed in Table 7.4. We expected that WHP use was positively associated with task and contextual performance (H2). This hypothesis was largely supported by our findings. Employees who used healthy menus scored higher on task performance ( $B = 0.112, p < 0.001$ ) and contextual performance ( $B = 0.162, p < 0.001$ ). For use of sports facilities, we only found a significant positive association with contextual performance ( $B = 0.116, p < 0.001$ ), but not task performance ( $B = 0.031, p = 0.224$ ).

**Table 7.2** Descriptive statistics

Variables	Healthy menus		Sports facilities		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Task performance	3.78	0.77	3.78	0.77	1-5
Contextual performance	3.27	0.93	3.27	0.93	1-5
WHP awareness	0.38		0.41		0-1
WHP use	0.30		0.17		0-1
Female	0.56		0.56		0-1
Age in years	42.06	10.98	42.04	10.97	16-77
Education in years	13.73	3.10	13.72	3.09	3-21
ISEI: occupational status	56.84	18.59	56.83	18.57	11.74-88.70
Working hours per week	39.47	9.55	39.48	9.53	0-80
Working from home	1.72	1.38	1.72	1.38	1-7
Tenure in years	10.62	9.83	10.57	9.81	0.08-52
Permanent contract	0.89		0.89		0-1
Physical work demands	2.94	1.49	2.94	1.49	1-5
WHP availability	0.45		0.54		0-1
Organisational size					
Small	0.24		0.24		0-1
Medium	0.29		0.30		0-1
Large	0.46		0.46		0-1
Sector					
Manufacturing	0.23		0.23		0-1
Health care	0.24		0.24		0-1
Higher education	0.17		0.17		0-1
Transport	0.13		0.13		0-1
Financial services	0.13		0.13		0-1
Telecommunication	0.10		0.10		0-1
Country					
UK	0.07		0.07		0-1
Germany	0.09		0.09		0-1
Finland	0.08		0.08		0-1
Sweden	0.10		0.10		0-1
The Netherlands	0.24		0.24		0-1
Portugal	0.11		0.11		0-1
Spain	0.07		0.07		0-1
Hungary	0.12		0.12		0-1
Bulgaria	0.13		0.13		0-1
<i>N</i> <sub>employees</sub>	9278		9322		
<i>N</i> <sub>organisations</sub>	249		250		

We expected that the relation between WHP awareness was stronger for contextual performance than task performance (H3a). However, this hypothesis was not supported by our data, neither for healthy menus ( $\chi^2 = 1.26$  (1),  $p = 0.262$ ) nor for sports facilities ( $\chi^2 = 2.55$  (1),  $p = 0.110$ ). We furthermore expected, that the relation with use of WHP would be stronger for contextual performance than task performance (H3b), which was supported by our data, both for use of healthy

**Table 7.3** Multilevel generalised structural equation models simultaneously predicting task and contextual performance by WHP awareness and covariates

	Task performance				Contextual performance			
	B	SE	B	SE	B	SE	B	SE
Awareness healthy menus	0.118***	0.019			0.144***	0.022		
Awareness sports facilities			0.063**	0.022			0.104***	0.024
Female	0.043*	0.018	0.046**	0.018	0.049*	0.020	0.052*	0.020
Age in years	-0.000	0.001	-0.000	0.001	-0.004***	0.001	-0.004***	0.001
Years of education	0.002	0.003	0.002	0.003	0.028***	0.004	0.026***	0.004
ISEI: occupational status	0.001	0.001	0.001	0.001	0.005***	0.001	0.005***	0.001
Working hours per week	-0.006***	0.001	-0.006***	0.001	0.011***	0.001	0.012***	0.001
Working from home	-0.014*	0.007	-0.014*	0.007	0.048***	0.007	0.050***	0.007
Tenure in years	0.002	0.001	0.002	0.001	0.002	0.001	0.001	0.001
Permanent contract	-0.066*	0.028	-0.068*	0.028	-0.009	0.032	-0.017	0.032
Physical work demands	0.008	0.007	0.011	0.007	0.034***	0.007	0.037***	0.007
WHP availability	-0.090**	0.029	-0.029	0.033	-0.036	0.022	0.060*	0.024
Size (Large = ref.)								
Small	0.068*	0.032	0.068*	0.032	0.033	0.024	0.044	0.025
Medium	-0.003	0.032	0.005	0.032	0.031	0.023	0.040	0.023
Sector (Health care = ref.)								
Manufacturing	0.050	0.041	0.056	0.041	0.041	0.030	0.051	0.030
Higher education	0.053	0.045	0.035	0.045	0.026	0.034	-0.010	0.034
Transport	0.024	0.047	0.026	0.047	-0.063	0.036	-0.057	0.036
Financial services	0.052	0.048	0.063	0.047	0.129***	0.037	0.130***	0.036
Telecommunication	0.056	0.050	0.074	0.051	0.093*	0.040	0.080*	0.040
Country (Netherlands = ref.)								
UK	0.054	0.057	0.053	0.057	0.150***	0.041	0.145***	0.041
Germany	-0.126*	0.051	-0.105*	0.051	-0.114**	0.037	-0.107**	0.037
Finland	0.033	0.053	0.032	0.055	-0.222***	0.040	-0.257***	0.042
Sweden	-0.224***	0.048	-0.235***	0.050	0.083*	0.036	-0.014	0.038
Portugal	-0.054	0.049	-0.054	0.050	0.057	0.036	0.072*	0.037
Spain	-0.025	0.056	-0.039	0.058	0.059	0.042	0.068	0.042
Hungary	0.246***	0.051	0.260***	0.050	-0.291***	0.035	-0.295***	0.034
Bulgaria	0.126**	0.046	0.123**	0.045	-0.401***	0.034	-0.400***	0.034
Constant	3.900***	0.089	3.885***	0.090	2.121***	0.092	2.094***	0.092
$\sigma^2$ organisation level	0.021		0.022		0.019		0.020	
$\sigma^2$ employee level	0.554		0.554		0.772		0.773	
Covariance task & contextual performance	0.249***		0.250***					
$N_{employees}$	9278		9322		9278		9322	
$N_{organisations}$	249		250		249		250	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

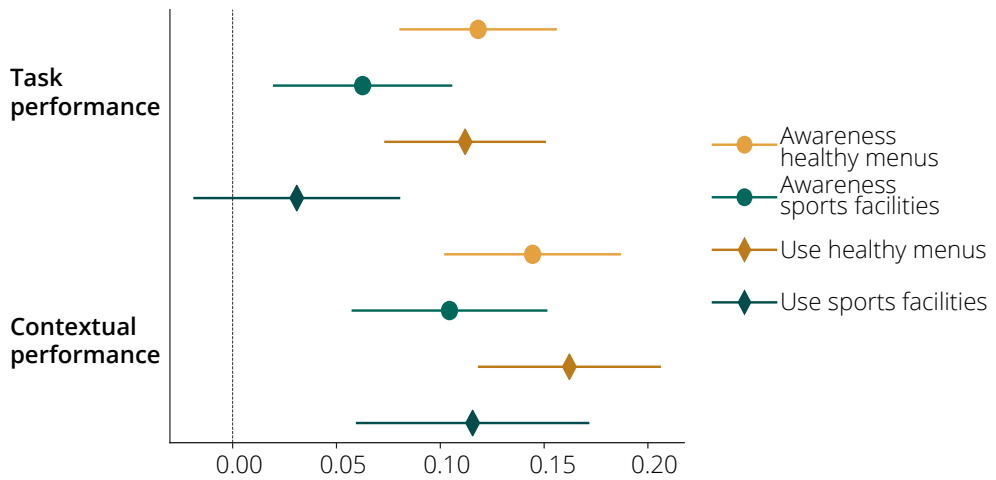
**Table 7.4** Multilevel generalised structural equation models simultaneously predicting task and contextual performance by WHP use and covariates

	Task performance				Contextual performance			
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Use healthy menus	0.112***	0.020			0.162***	0.022		
Use sports facilities			0.031	0.025			0.116***	0.029
Female	0.042*	0.018	0.047**	0.018	0.046*	0.020	0.051*	0.020
Age in years	-0.000	0.001	-0.000	0.001	-0.004***	0.001	-0.004***	0.001
Years of education	0.002	0.003	0.002	0.003	0.028***	0.004	0.027***	0.004
ISEI:	0.001	0.001	0.001	0.001	0.005***	0.001	0.005***	0.001
Working hours per week	-0.006***	0.001	-0.006***	0.001	0.011***	0.001	0.012***	0.001
Working from home	-0.014*	0.007	-0.014*	0.007	0.048***	0.007	0.050***	0.007
Tenure in years	0.002	0.001	0.002	0.001	0.002	0.001	0.001	0.001
Permanent contract	-0.064*	0.028	-0.066*	0.028	-0.005	0.032	-0.017	0.032
Physical work demands	0.009	0.007	0.011	0.007	0.034***	0.007	0.037***	0.007
WHP availability	0.079*	0.029	-0.007	0.032	-0.031	0.021	0.085**	0.023
Size (Large = ref.)								
Small	0.064*	0.032	0.065*	0.032	0.028	0.024	0.040	0.025
Medium	-0.006	0.032	0.004	0.032	0.027	0.023	0.041	0.023
Sector (Health care = ref.)								
Manufacturing	0.046	0.041	0.057	0.041	0.036	0.030	0.052	0.030
Higher education	0.050	0.045	0.041	0.045	0.021	0.034	-0.001	0.034
Transport	0.022	0.047	0.028	0.047	-0.067	0.036	-0.058	0.036
Financial services	0.049	0.048	0.064	0.047	0.123***	0.037	0.129***	0.036
Telecommunication	0.058	0.050	0.079	0.050	0.091*	0.040	0.082	0.040
Country (Netherlands = ref.)								
UK	0.060	0.057	0.054	0.056	0.161***	0.042	0.146***	0.041
Germany	-0.120*	0.051	-0.107*	0.051	-0.106**	0.037	-0.116**	0.037
Finland	0.031	0.053	0.036	0.056	-0.231***	0.040	-0.281***	0.042
Sweden	-0.223***	0.048	-0.226***	0.050	0.088*	0.036	-0.025	0.039
Portugal	-0.056	0.050	-0.060	0.050	0.056	0.036	0.060	0.037
Spain	0.029	0.056	-0.046	0.057	0.058	0.041	0.055	0.042
Hungary	0.246***	0.051	0.252***	0.050	-0.290***	0.035	-0.311***	0.034
Bulgaria	0.124**	0.046	0.115*	0.045	-0.400***	0.034	-0.416***	0.034
Constant	3.912***	0.089	3.892***	0.090	2.135***	0.091	2.110***	0.092
$\sigma^2$ organisation level	0.021		0.021		0.021		0.021	
$\sigma^2$ employee level	0.554		0.554		0.772		0.773	
Covariance task & contextual performance	0.249***		0.251***					
$N_{employees}$	9278		9322		9278		9322	
$N_{organisations}$	249		250		249		250	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

menus ( $\chi^2 = 4.39 (1), p = 0.036$ ) and use of sports facilities ( $\chi^2 = 7.68 (1), p = 0.006$ ).

To examine whether the relation between awareness and use and performance differed between types of WHP (i.e. healthy menus and sports facilities), we plotted the coefficients of the multilevel structural equation models and their confidence intervals relating to both task and contextual performance in Figure 7.1. Visual inspection shows that there were no significant differences between healthy menus and sports facilities for any of the associations. Effects appeared to be larger for healthy menus, but in each case, coefficients were similar in size and the confidence intervals overlap, suggesting there was no significant difference between healthy menus and sports facilities.



**Figure 7.1** Coefficients of multilevel structural equation models relating awareness and use of both types of WHP to task and contextual performance

### Sensitivity analyses

We performed several sensitivity analyses to check the robustness of our findings. Firstly, we included healthy menus and sports facilities simultaneously in one model. In this analysis, the association between awareness of sports facilities and task performance became marginally significant ( $p = 0.053$ ) and we no longer found that use of healthy menus was more strongly related to contextual than to task performance ( $p = 0.109$ ).

Secondly, we fitted our models only for employees who worked in organisations where WHP was formally available, as reported by the HR manager, who allegedly is the most reliable source concerning availability of policies



(Kalleberg, 1994). According to 12% of employees healthy menus were available in their organisation while these were not available according to the HR manager, and 5% of employees reported the availability of sports facilities, while the HR manager did not. Results were similar to those of the main analyses, except for the association between awareness of sports facilities and contextual performance which became marginally significant ( $p = 0.079$ ) and the finding that using healthy menus was no longer more strongly related to contextual performance ( $p = 0.275$ ).

Thirdly, instead of running analyses in separate subsamples of participants who provided data regarding either healthy menus and sports facilities, we re-ran our analysis using a single, smaller sample of participants who had provided data for both ( $N = 9256$ ). The results were nevertheless robust for all hypothesised associations.

Fourthly, for the analyses of WHP use, we examined whether results would differ if we conducted our analyses only among employees who reported WHP to be available (given that employees cannot use it if they do not know of its existence). Use of healthy menus was only marginally more strongly related to contextual performance ( $p = 0.051$ ). We also examined WHP use if we excluded employees who reported not to know whether it was available in the organisation. Again the results were mostly robust, apart from the strength of the association between using healthy menus and task and contextual performance ( $p = 0.052$ ).

Finally, to examine if our results were influenced by sector or country differences, we performed jack-knife analyses, excluding one sector or country at a time (Neumayer & Plümpner, 2017). All associations between WHP and performance were robust, with some exceptions. When excluding the healthcare sector, we found a marginally significant relation between awareness of sports facilities and task performance ( $p = 0.067$ ). Also, when excluding some sectors (manufacturing, healthcare and financial services) and some countries (the UK and Hungary), we found using healthy menus no longer to be more strongly related to contextual performance than to task performance (H3b).

## Discussion

This chapter examined whether employees' awareness and use of worksite health promotion (WHP) activities is related to their performance. Most studies on WHP and work-related outcomes focus on use only, but on average only 33% of employees make use of WHP (Rongen et al., 2013). Studies on other

organisational arrangements suggest that awareness alone may be positively related to work performance (Begall et al., 2022). It is thus critical to study the effects of both awareness and use of WHP. We made use of unique multilevel data on over 11000 employees in 259 organisations (Van der Lippe et al., 2016) to study whether the awareness and use of both healthy menus and sports facilities is related to employees' task and contextual performance.

We found that, as expected, employees who are aware of the existence of healthy menus and sports facilities in their workplace score higher on task and contextual performance than employees who did not know about the existence of these arrangements. To our knowledge, no other studies have demonstrated this link before. This relationship is nevertheless in line with previous research which reported that employees who were given access to WHP view this as a sign of concern with their well-being on behalf of the organisation (McCleary et al., 2017; Seward et al., 2019). This perceived concern was, in turn, associated with more commitment to the organisation (Milner et al., 2015). Organisational support theory (Kurtessis et al., 2017) and social exchange theory (Cropanzano & Mitchell, 2005) support the hypothesis that WHP may be a signal that the organisation cares for the well-being of its employees, and in return employees reciprocate by performing well. Our results seem to support this view.

Our findings also showed that the use of healthy menus is associated with both task and contextual performance. There may be two possible explanations for this association. On the one hand, employees who make use of healthy menus experience the organisations' concern for their well-being first-hand, making them reciprocate by performing well more than non-users (Kilpatrick et al., 2016; Ott-Holland et al., 2019). On the other hand, eating healthily during working hours may be associated with having less fluctuations in energy levels and better mood, which allows employees to do their job well and also provide them with the energy to help their colleagues (Cho & Kim, 2022). Though our study can not illuminate how the use of healthy menus is associated with higher performance, results suggest that employers are well advised to enable their employees to eat healthily during working hours.

We found the use of sports facilities to be only related to contextual performance, and not to task performance. Sports facilities may be used less often than healthy menus, or be used outside of working hours, so that these have less of an effect on task performance. It could also be that providing sports facilities are seen as a discretionary arrangement on the employers' part, something that is voluntary rather than a legal requirement (Gavino et al., 2012).

This may elicit a wish to reciprocate among employees who use this arrangement, by performing additional tasks that benefit the organisation and result in higher contextual performance.

We expected overall WHP awareness and use to be more strongly related to contextual performance than task performance, and found this only the case for using WHP. It could be that when employees experience the benefits of WHP, they will reciprocate even more than when they feel the concern but do not personally profit (Casper & Harris, 2008; Ott-Holland et al., 2019). Benefitting directly may increase motivation, which is directed more towards contextual performance (Motowidlo & Van Scotter, 1994). Furthermore, the additional energy and better mood employees may experience after using WHP could be fuelled into performing additional tasks such as helping colleagues rather than doing the main tasks, which need doing anyways (Cho & Kim, 2022).

Our results have clear practical implications for employers. Firstly, we show that WHP matters for employees' work performance, supporting the business case for offering WHP (Verbeek et al., 2009). To date, only 30-40% of European organisations are estimated to provide healthy menus and about 30-50% enable physical activity in the workplace (Van der Put & Mandemakers, 2019), underscoring not all employers currently reap the potential benefits WHP may bring. However, only making it available is not enough: it is crucial to ensure employees are aware of the existence of WHP in their organisations (McCleary et al., 2017). This is also demonstrated by our results. For example, employers could frequently raise attention to the WHP they are offering, for example by email campaigns or through intranet (Kent et al., 2016; Seward et al., 2019). This does not mean employers should not prioritise use. Our results show that signs of organisational support are powerful to elicit higher performance among the workforce, be it through social exchange or self-selection into using the policies. There are several ways in which employers can help their employees in using WHP, for example by allowing them autonomy over their working hours, so that they can fit a visit to the gym into their working day (Van der Put & Van der Lippe, 2020). Additionally, the workplace culture is also important, so that making healthy choices and using WHP becomes the normal choice. Colleagues can be each other's role models here, which could be highlighted in communication about WHP (Van der Put et al., 2021). Finally, it is important that the WHP offerings match the needs employees have (Rongen, Robroek, Van Ginkel, et al., 2014b). It may be less effective to set up an extensive cafeteria in a truck company where employees spend most of their time on the road. Rather, healthy lunch packages

may be more suited here. In these ways, both employees and employers may benefit from WHP.

We want to note several limitations of our study. Firstly, we used a self-report measure of work performance, which may be subject to response bias (Podsakoff et al., 2003). A manager report may be more appropriate, although this often overlooks aspects of contextual performance (Begall et al., 2022). Future research could make use of an assessment of work performance that combines employee and manager reports. Secondly, our indicator of WHP use may not fully capture what WHP consists of. This may result in an underestimation of its strength. While other studies measured WHP use in a similar matter, a more detailed assessment of WHP is recommended. Thirdly, it could be the case that organisations that offer WHP also provide other employee benefits that may be associated with increased performance and for which we did not account in our study. Perhaps WHP is a proxy for being an attractive employer or offering good working conditions. However, this does not negate the fact that employees still need to be aware and use those arrangements in order to benefit, and we showed that this is at least the case for WHP. It would nevertheless be good if future research studies WHP alongside other arrangements. Finally, we did not study the actual mechanisms that relate WHP awareness and use to performance. Future studies could examine these.

The strengths of our study include that we are, to our knowledge, the first to include assessments of both awareness and use of WHP in one study, which was due to our unique multilevel data. We furthermore examined policies that are actually implemented in organisations compared to experimental studies, so as to increase external validity by capturing the real-life benefits of WHP outside a research context (Glasgow et al., 2019). Additionally, we studied task and contextual performance, rather than commonly used outcomes as absenteeism and presenteeism. Absenteeism can have many reasons (e.g., having to care for a sick child or family member) while presenteeism mainly applies to people who experience health issues, rather than the entire employed population (Pereira et al., 2015). We thus believe that our study captures more relevant aspects of performance.

## Conclusion

Organisations offer WHP to improve the health and lifestyle of their employees, but also because they may benefit from it themselves. This chapter demonstrates

that both awareness and use of healthy menus and sports facilities are positively associated with employees' work performance. It is important for employers to ensure employees become aware of WHP's existence as well as stimulate them to use the policies available. Our results show that not only will employees perform better on their job-related tasks, they are also more likely to go beyond what is normally expected from them. In this way, both employees and employers benefit.



8

# Conclusion





In this dissertation, I examined the role of the work environment in explaining worksite health promotion (WHP) use and its outcomes. Currently, only 21% of Europeans eat enough portions of fruits and vegetables daily and 33% engages in sufficient physical activity. These health behaviours reduce the prevalence and incidence of chronic disease, so there is a need to promote them (Marques et al., 2019). As the workplace is seen as a key place to do so, organisations increasingly offer WHP, such as onsite fitness facilities or healthy catering during business events and in the cafeteria. However, only a limited number of employees makes use of WHP and there is large variation between organisations in take-up rates (Bull et al., 2003; Rongen et al., 2013).

The work environment is often put forward as a reason why WHP may be successful, yet not always included in studies trying to explain its use and outcomes (Clancy et al., 2018; Grawitch et al., 2006). The work environment does however shape under which conditions employees make use of WHP – for example because it is seen as an accepted thing to do – both in the workplace, but also in other contexts where they perform work such as the home office. It therefore deserves more attention, which I provided in this dissertation. In doing so, I focussed specifically on the role of the social work environment, i.e., colleagues and managers. Supportive social relations in the workplace may aid employees in making healthy choices, especially since people may see their colleagues more than their partner (Burke et al., 2017; Passey et al., 2018), but have of yet received little attention. Finally, not all employees may be equally affected by WHP. Not all employees may know that WHP is available in their organisation or make use of it, which could have consequences for WHP's health- and work-related outcomes (Jørgensen et al., 2015). By emphasising the role of the work environment, I contribute to deeper insights into how the workplace promotes employee health and who is affected by it.

## Answering the research question

The overarching research question was: *What is the role of the work environment in explaining WHP use and its outcomes?* To find an answer to this question, I posed three sub-questions, which will be answered in turn.

### **To what extent does the work environment affect WHP use, both in the workplace and when working from home?**

Participating in WHP is not just an individual choice, but is affected by the

environment in which this behaviour takes place. Several theories that have been used to design WHP interventions recognise that the surroundings in which employees use WHP are of key importance (Linnan et al., 2001; Tabak et al., 2015). The work environment refers to the broader context in which employees work, including both the conditions under which employees perform their work as well as the larger organisational culture. For example, are employees free to schedule their work tasks and through that make room for WHP? Does the organisation support WHP use or does an ideal worker norm prevail, meaning work is expected to go above and beyond everything (Van der Lippe & Lippényi, 2020a)? These aspects of the work environment do not only encompass the physical workplace, but apply to all employees wherever they perform their work, be it from their office, on the road or from their home. I therefore expected the work environment to relate to WHP use in different work contexts.

The results of this dissertation show that the work environment matters for WHP use, both in the workplace and when employees work from home. In chapter 2 I studied to what extent job conditions as well as organisational culture relate to making use of healthy menus, sports facilities and performing a health check. I found that employees with more autonomy more often made use of healthy menus and sports facilities. I also found that employees that worked more hours more often make use of healthy menus in their workplace cafeteria. Perhaps because they spend more time at work and need to eat anyways. The main finding was that the organisation plays a substantive role in whether employees used WHP or not. Employees in organisations with a work-oriented culture were less likely to perform a health check and make use of healthy menus. When work is emphasised over other aspects of life such as health, employees will refrain from doing other activities at work. Colleagues' WHP use was the most important predictor to use healthy menus, sports facilities and health checks. Their behaviour contributes to the norm that making healthy choices is accepted in the workplace.

Also when employees work from home, the organisational culture and what their colleagues do matters. Chapter 3 described the results from a vignette experiment which I designed to examine whether several aspects of the work environment that are known to play a role in the workplace also relate to employees' intentions to use WHP while they work from home. When WHP took place during work time, employees were more likely to intend to participate. Not only does this help them to fit WHP into their working day, organisations that allow employees to use WHP during work time also show they care about employee

health and well-being. When more of their colleagues participated, employees working from home were also more likely to intend to participate. The results also showed that intentions were higher for walking and breaks than for participating in an online sports class, and for WHP with a shorter duration. The extent to which employees worked from home was not related to intentions to participate.

Together, the results from chapters 2 and 3 show that the work environment matters for WHP use, both in the workplace and when working from home.

### **To what extent do workplace social relations affect the healthy choices employees make, both at work by participating in WHP and in their lifestyles more generally?**

Workplace social relations – colleagues and managers – are an important part of the work environment. Supporting social relations are often suggested to make WHP successful, yet rarely studied (Jenkins et al., 2015; Passey et al., 2018). Previous studies have shown that significant others affect health behaviours outside work, such as partners, family, friends and neighbours (Dailey et al., 2018; McNeill et al., 2006; Powell et al., 2015; Smith & Christakis, 2008; M. L. Wang et al., 2014). Many employees spend most of their working hours in the same place surrounded by the same colleagues with whom they frequently interact and share experiences. This provides colleagues the opportunity to influence each other's (un)healthy behaviour and attitudes, both in the workplace and concerning lifestyle more generally (Burke et al., 2017; Clohessy et al., 2019). I hence expected that colleague encouragement of a healthy lifestyle, and their health behaviours, relate to employees' health behaviours both at work and outside.

Colleagues indeed matter for the healthy choices employees make. In chapter 4 I zoomed in on the role of workplace social relations in WHP use and examined whether colleagues' and manager's encouragement of a healthy lifestyle, and colleague WHP use, were related to the use of healthy menus and sports facilities. The results showed that employees were more likely to use healthy menus and sports facilities when their colleagues encouraged them to eat healthily and engage in sufficient physical activity. WHP use was also higher when more colleagues participated. Surprisingly, manager encouragement for a healthy lifestyle played no role. I also studied whether the effect of colleague encouragement and behaviour differed the more employees worked from home. This was not generally the case, although colleague behaviour appeared less

important for use of healthy menus the more employees worked from home. This could be because use of healthy menus inherently takes place at work, and is visible to colleagues, while sports activities can also be done outside work and may hence be less visible. Higher visibility of the norm may make it more salient and hence influential.

Colleagues do not only affect WHP use, but also lifestyle choices more generally. In chapter 5 I studied whether employees ate healthily and engaged in sufficient physical activity when their colleagues encouraged a healthy lifestyle. I found this to be the case. Additionally, the results showed that the healthy eating behaviours of colleagues were related: the more their colleagues ate fruit and vegetables, the more employees did too. Against expectations I found that the more their colleagues engaged in physical activity, the less employees did so. Partly this may be explained by the fact that the result was not very robust, but also because eating behaviour takes place at work more and is thus more easily influenced by colleagues.

The findings in chapters 4 and 5 demonstrate that colleagues are important in employees' health behaviours, both at work and outside.

### **Which employees are affected by WHP?**

Organisations offer WHP out of concern for the health and well-being of their employees, but also because they hope to benefit from it themselves (Goetzel & Ozminkowski, 2008; Grawitch et al., 2007; Ungureanu et al., 2019). Previous studies have shown that WHP is associated with both health- and work-related outcomes (Cancelliere et al., 2011; Conn et al., 2009; Kuoppala et al., 2008; Maes et al., 2012; Parks & Steelman, 2008). Though WHP has positive effects for both employees and employers, less is known about which employees benefit. For example, even though potentially all employees can participate in WHP and hence achieve better health, it could be that WHP unintentionally contributes to health inequalities if higher educated use WHP more often than lower educated employees. Additionally, not all employees use WHP, but maybe also those that do not make use could be affected by it. To know more about WHP's effectiveness, it is important that we know who makes behaviour changes as a result of WHP, both in terms of health and work.

The use of healthy menus and sports facilities may increase health inequalities. In chapter 6 I studied the relations between use of healthy menus, sports facilities and health checks, education and self-rated health. The findings

showed that higher educated employees enjoyed better health and that using WHP also contributed to better self-rated health. As higher educated employees more often used healthy menus and sports facilities, this resulted in increased health inequalities. Lower educated employees, on the other hand, more often used health checks, which could diminish health inequalities. The effect WHP had on self-rated health did not differ between higher and lower educated employees. These results highlight that it is important that all employees have equal opportunity to use WHP.

Finally, both awareness and use of healthy menus and sports facilities are positively associated with employees' work performance. In chapter 7 I turned to employee performance as work outcome, and examined whether this is affected by whether employees are aware of and use healthy menus and sports facilities. To do so, I included two types of performance: task performance (the proficiency with which employees perform the tasks central to their job) and contextual performance (behaviours that go beyond what is normally expected of employees). I found that, in line with organisational support and social exchange theories, employees that were aware their organisation offered healthy menus and sports facilities scored higher on both task and contextual performance. Using healthy menus was related to both task and contextual performance, and using sports facilities to higher contextual performance. Overall the relation between WHP use was stronger for contextual performance than for task performance. It is important for organisations to ensure employees are aware of the availability of WHP as well as to stimulate employees to make use of it, so that both employees and employers may benefit.

The results of chapters 6 and 7 show that mainly higher educated employees are affected in terms of health as they use WHP more often, but also that employees that know WHP is available (in addition to those using it) are affected and in return perform better at work.

## Main conclusions

Based on the findings of my dissertation and the answers to the research questions, I can draw several main conclusions:

### Colleagues matter for healthy behaviour both at work and outside

First and foremost, in this dissertation I show that colleagues are key players in contributing to the lifestyle choices employees make. When colleagues encourage a healthy lifestyle, employees are more likely to participate in WHP aimed at healthy eating and physical activity, but they are also more likely to eat healthily and engage in physical activity as a whole. However, fine words are not enough. I find that the more colleagues make use of WHP, the more likely an employee is to do so too. Colleague WHP use may be even more important than encouragement. Also in the case when employees work from home and have less direct contact with their colleagues, their participation in WHP is still a motivating factor. I explain this by drawing on social norms and the fact that colleagues may be important role models. Employees usually spend a lot of time with the same colleagues in the same place, meaning there is ample opportunity to examine what kind of behaviours colleagues engage in and model those (Quist et al., 2014). When my great-aunt eats lunch with her colleagues, it is easy to see whether these go for a salad or choose something less healthy, and she may make a similar decision so as to not stand out. This role modelling does not only occur regarding WHP use but may extend to health behaviours more generally. In this dissertation, I show that the healthy eating habits of colleagues are related to each other. In this case, I did not just measure eating that takes place in the workplace but used a more universal measure. As employees consume about a third of their calories in the workplace (Clohessy et al., 2019), it is not surprising that colleagues may copy each other's behaviours there and that these extend to outside the workplace. In explaining health behaviours at work, previous work has mainly focussed on personal characteristics of employees and aspects of WHP (for example, whether healthy food is placed centrally in the workplace restaurant). Supportive social relations are often put forward as a reason why WHP may be successful (Jenkins et al., 2015; Passey et al., 2018), and I demonstrate that this indeed is the case. In examining the role of social relations in health behaviours outside work, colleagues are often neglected as a social actor. Colleagues may spend more time with each other than their partner and friends, at least on working days, and I show that this also impacts the healthy choices they make outside work. The

health behaviours of colleagues contribute to the culture of health that exists in employees' work environments (Kwon & Marzec, 2019), so also employees that do not participate in WHP may profit from their colleagues' health behaviours, both in the workplace and outside.

### **When work goes above and beyond everything, employees are less likely to make healthy choices**

The second main conclusion of this dissertation is that the organisational culture affects the extent to which employees make healthy choices during their work. In work environments with an ideal worker culture, meaning that work goes above and beyond anything else, employees refrain from using WHP. Previous studies showed that working long hours and putting work first adversely affects employees' health (Lallukka et al., 2008; Taris et al., 2011), and my findings on WHP use fit into this larger picture. Even though employers may think they are helping their employees in promoting a healthy lifestyle by offering WHP, the implicit norms in the work environment may make employees feel guilty about actually utilising those programmes during work, because they have the feeling that taking care of their own health is of secondary importance. Rather, it is important that organisations adopt a culture that does not solely focus on work and in which healthy choices are the norm, also referred to as a culture of health (Kent et al., 2016; Zweber et al., 2016). When organisations allow employees to make use of WHP during their working hours and, through that, signal they care about employee health and well-being, employees are more likely to want to participate, as my findings show. In such work environments, employees know that their colleagues and manager value a healthy lifestyle and they may feel less guilty about spending time on healthy choices, both when working at the workplace and from home. My supervisors were very supportive allowing me to take breaks when working from home during the Covid-19 pandemic and thought it no problem if I participated in the online yoga class which started at 16.00h, knowing that I would still finish this thesis. This kind of support may contribute to increasing WHP use among employees.

### **Employers should ensure *all* employees are provided access to WHP, are aware of its existence and are able to use it to reap the benefits from their investments in WHP**

Organisations offer WHP to improve the health and lifestyle of their employees,

but also because they may benefit from it themselves. In reaping these benefits, it is important that WHP is targeted towards *all* employees. My findings show that currently higher educated employees have more access to WHP, but they are also more likely to make use of WHP than lower educated given equal access. This results in larger health inequalities. The exception here concerns health checks, which I found to be more often used by lower educated employees. Employees with better health are better able to perform their work (Koopmans et al., 2014; Merrill et al., 2013; Shi et al., 2013; Stepanek et al., 2019), so it is also in the self-interest of employers to invest in WHP for lower educated employees. For these employees especially a supportive work environment is important. Lower educated employees less often have autonomy in their job (Jørgensen et al., 2016) and more often come into contact with unhealthy norms (Bukman et al., 2014) so they may need some additional help in finding their way to the healthy options in the cafeteria or the fitness facilities in the workplace. The results also indicate that employees that use WHP perform better, both in terms of doing the tasks central to their job as well as going an extra mile. However, this also applies to employees that do not make use of WHP but do know that it is available in their organisation. This is in line with arguments put forward by organisational support and social exchange theories (Cropanzano & Mitchell, 2005; Kurtessis et al., 2017). Employees view WHP as a signal their employer cares for their well-being, and to reciprocate this concern, they perform better in their jobs. Furthermore, I found that using WHP relates more strongly to contextual (or extra-role) performance than to task performance. If employees are indeed willing to perform more than what they are strictly asked for, this may allow for new ideas to develop and through that help the organisation prosper (Motowidlo & Van Scotter, 1994). In ensuring employers benefit most from their investments in WHP, it is important WHP is made available to all employees, these know that it exists in the organisation and are stimulated to use it.

### **If employers want to stimulate a healthy lifestyle among their employees, they can best focus on eating behaviours**

The final main conclusion of this dissertation is that employees' healthy eating is mostly influenced by the work environment. For example, I showed that employees are more likely to make use of healthy menus when they work more hours, and thus spend more time in the workplace. Colleagues are also mostly influential for whether employees eat healthily, both at work but also taken as a whole. Eating often happens at work, so it is not surprising that the work



environment is so decisive for what employees eat. The two other types of WHP I studied – sports facilities and health checks – may also take place elsewhere, for example when employees join a gym in their neighbourhood after work and the employer pays for this subscription. In addition, it could be that physical activity behaviour is less visible to colleagues than eating behaviour, which may explain why I found a robust association between colleagues' eating behaviours but not their physical activity behaviours. The focus theory of normative conduct holds that norms are mainly effective when they are specific to the situation at hand (Kallgren et al., 2000). Dieting norms can be supported more easily via observing others in the workplace, where colleagues often eat lunch or other foods together (Thomas et al., 2017). These findings do not mean that employers should only offer healthy menus and not care about other types of WHP. However, when resources are limited and employers want to help their employees in living a healthy lifestyle, providing a healthy lunch may be a good place to start. Additionally, these findings teach us that when implementing different types of WHP, it is important that employers devote attention to the visibility of different types of health behaviours.

## Contributions

In my dissertation, I made several contributions. Firstly, I extended the field answering novel questions in relation to WHP and health behaviours in the context of work. For example, in chapter 2 I included both job conditions and organisational culture as part of the work environment in explaining WHP use, while previous studies only focussed on either. No study had yet examined how employers can stimulate WHP for employees who work from home, which is a question I addressed here in chapter 3. Prior to the Covid-19 pandemic, only a small proportion of employees sometimes worked from home, while it has now become a new reality for many employees and is expected to remain common (Oakman et al., 2020; Oude Hengel et al., 2021). Employers want to stimulate employees' health both when these are at work and when they work from home (Oude Hengel et al., 2021; Pescud et al., 2015), and my dissertation provides insights into how they can do so. I dived deeper into the role colleagues can play in a healthy lifestyle, both by examining support specific to health behaviours, while previous studies looked at generic social support, as well as by including their actual behaviour. Moreover, I showed that colleagues also affect health behaviours outside work where previous studies examined other social relations. Furthermore, I studied how WHP relates to health inequalities in chapter 6,

contributing an additional explanation of why higher educated enjoy better health than lower educated employees. Additionally, most studies linking WHP to work outcomes have only focussed on use, and in chapter 7 I demonstrated that also when employees know that WHP is available in their organisation they perform better. This is both an extended test of organisational support and social exchange theory (Cropanzano & Mitchell, 2005; Kurtessis et al., 2017), as well as helps in building a business case for WHP. All these findings extended previous work and means we have more insights into how employees can be healthy at work.

Secondly, by focussing on the work environment, and social relations in this work environment specifically, I have contributed to understanding how we can increase WHP use. Currently participation rates tend to be low and differ between organisations, which means both employers and employees miss out on the benefits (Rongen et al., 2013). Previous studies have mainly tried to explain this from a behavioural perspective which focussed on individual characteristics of employees, while I incorporated the social structure and highlight the role of the work environment. Furthermore, by showing that colleagues matter so much for health behaviours both in the workplace – i.e. for WHP use – and outside, I extended theoretical explanations on the role of social norms and role modelling to a work context (Bandura & Walters, 1977; Cialdini & Goldstein, 2004; Higgs & Thomas, 2016). Theories such as the theory of planned behaviour (Ajzen, 1991) and social learning theory (Bandura & Walters, 1977) highlight that the behaviours of others in the social environment are important in explaining the (un)healthy choices people make. I showed that this is also the case for the lifestyle choices of employees, both at work and outside. Previous literature showed that significant others such as one's partner, family and friends matter for health, and I showed that colleagues should also be included as social actor. In doing so, I provided insights into how social relations can be leveraged to create a healthy workforce.

Thirdly, this dissertation contributed by making use of a unique dataset, namely the European Sustainable Workforce Survey (ESWS: Van der Lippe et al., 2016, 2018). In both waves, collected in 2016 and 2018, employees, their team managers and HR managers were sampled in many organisations, providing rich data. It is through the ESWS that I could meet the main aim of this dissertation, which is to study the role of the work environment, because it includes data on many different organisations and teams. Most previous studies on WHP have included only one or few organisations (Bull et al., 2003; Rongen et al., 2013) which means there is little variation within employees' work environments. Other

studies have sampled a large number of organisations (e.g. Lier et al., 2019) but do not contain reports from employees. The multilevel design of the ESWS is another of its strengths. This allowed me to use reports from the different actors in the empirical chapters, which helps in preventing common method bias (Podsakoff et al., 2003). In addition, by the way the data were collected, it was possible to construct which employees work together in the same team. Because of this I could compose the networks of colleagues, which I used in chapter 5 to examine how their eating and physical activity behaviour is related. Without the ESWS, many of the questions I addressed could not have been answered.

Fourthly, because I made use of survey data rather than designed an intervention specifically for this dissertation, I studied WHP that have actually been implemented in organisations. The randomised controlled trials many other studies rely on, in which all employees in a team or organisation participate in WHP designed for those studies, definitely have their merits. However, it is also good to examine what actually happens in organisations and employees' work environments. There may well be a gap between research and practice (Glasgow & Emmons, 2007), and by looking at what really happens in organisations I hope to have addressed this. Studying policies that are actually implemented in organisations may better reflect the real-life benefits of WHP and provide results that have higher external validity (Glasgow et al., 2019).

Fifthly, another contribution of this dissertation is that I showed that WHP exceeds the physical limits of the workplace. I did so when I accounted for the new context of hybrid working. To prevent the spread of Covid-19, many governments advised their employees to work from home as much as possible, and after restrictions were lifted hybrid working remained part of the working reality for many employees (Oude Hengel et al., 2021). To see how employers can promote the health of employees when these work from home, I specifically designed a vignette experiment to examine whether they intend to participate in WHP when working from home and which factors affect these intentions. This study in chapter 3 showed that employees are willing to participate in WHP when they are not in the workplace, and can be used as a starting point in effectively designing health-promoting activities for hybrid working situations.

Finally, throughout this dissertation I examined several types of WHP. Not all organisations offer their employees all types of WHP, for example because they lack the means or because the different arrangements may be less applicable due to the workforce they employ. In addition, there are differences between healthy menus, sports facilities and health checks regarding the extent to which they are

incorporated into the working day, how often they take place and how visible the use of each is to colleagues, and through that how much they are open to be influenced by the work environment. Studying these distinct policies provided deeper insights into the use and outcomes of WHP.

## Limitations and suggestions for future research

While I make some important contributions to the literature, this dissertation also has its limitations. Firstly, the measure of WHP use which I employed in chapters 2, 4, 6 and 7 does not fully capture how often employees use WHP and what exactly is included. For example, it is unclear if a health check includes measuring weight and blood pressure or is a more extensive examination which addresses different aspects of physical and mental health. The measures were intentionally kept very general so as to allow them to be applicable to as many organisations, sectors and countries as possible. In addition, I only assessed whether employees used WHP during the past 12 months prior to filling in the survey, so if employees only ate a salad in the workplace cafeteria once while resorting to deep fried options for all of the other days, they were considered as using WHP. The measure for sports facilities also included a financial contribution towards a sports facility outside the workplace, and it could be the case that employees purchased a gym membership, had this reimbursed by their employer, but then never actually visited the gym. However, I still found effects of our WHP measures, and if anything, the fact that also irregular or infrequent use was included means that effects may be underestimated. Other studies also made use of these general measures (Jørgensen et al., 2015), but to gain a more complete picture it would be good if future studies are more specific in the types of WHP they study, or if they at least for sports facilities make a distinction for onsite facilities and activities that take place outside the workplace.

Secondly, this dissertation largely focussed on the role of colleagues and showed how they affect WHP use and lifestyle behaviours more generally, but disregarded the fact that colleagues may also share other characteristics as they work for the same teams and in the same type of jobs. I tried to account for some variation by using multilevel models and including relevant control variables. Moreover, I often only included colleagues who also participated in the survey and so I may not always have been able to fully examine the role of all colleagues. I tried to address this by relying on other measures, for example in the robustness check of chapter 2 using HR manager reports, or in chapter 4 using the team

manager's appraisal of WHP use among colleagues in the team. However, to further assess the role of colleagues, future studies would do well in finding ways to sample all employees in a team, for example by collecting whole network data and more information about the linkages between employees in a team. Such studies can also address other interesting questions, such as whether colleagues who are similar in terms of gender or age may be more influential.

Thirdly, some of the argumentation in this dissertation draws on the culture of health literature, while I did not actually include a measure of the culture of health in the studies. This was mainly due to this not having been measured in the ESWS. However, most operationalisations of a culture of health point to the important roles colleagues and managers can play, which I did include in my dissertation (see for example Kwon & Marzec, 2019; Lemon et al., 2013; Sliter, 2013; Zweber et al., 2016). It would however be intriguing to gain more insights into how other aspects of the culture of health play a role. Interesting questions to ask would be if colleagues are more influential in different work environments, or, if there are other ways in which employees perceive healthy behaviour to be normal and accepted (e.g. through communication from management), colleagues appear less important.

Fourthly, future studies would benefit from using different types of data which allow for more certainty about causality in comparison to the cross-sectional designs I employed. Even though the ESWS contains two waves, the items that I used to assess the role of colleagues were only included in the second one. While collecting data for the second wave, we focussed on including the same teams as in the first wave, not the same employees. Although there is some overlap, there are also many employees that only participated in one of the waves, because they retired, only joined their organisation after 2016 or due to reorganisations. Longitudinal data may shed light on some issues I came across – though many waves may be required to fully separate cause and effect. For example, regarding the relation between WHP use and health, there is debate about whether WHP use improves health, or whether healthier employees tend to use WHP more (Gretebeck et al., 2017; Jørgensen et al., 2015). I could not address this reversed causality, although I did include controls for self-rated health in chapters 2, 3 and 4 on WHP use. Additionally, it was impossible to separate selection from influence processes regarding the role of colleagues in chapters 4 and 5. Though it seems unlikely that employees choose to work in a certain team or organisations based on the healthy lifestyles of their colleagues, and some argue that indeed selection and influence processes are mutually influential

(Powell et al., 2015), I would nevertheless have gained more insights if I had used longitudinal or conducted an experiment to see how employees change their health behaviours in response to their colleagues. These types of studies may also answer some interesting new questions, such as how long it takes new employees to adapt to the health norms that exist in a certain team.

Finally, although I have focussed extensively on the work environment, there are also many other factors that explain why employees make (un)healthy choices, and which I have only partly addressed in my dissertation. For example, the home environment may also play a role in whether employees make use of WHP (Tavares & Plotnikoff, 2008). It would be difficult for an employee to make use of a sports class which starts at 17.00h if the children need to be picked up from day care by 17.30h. In addition, the lifestyle behaviours of family members or others in the home environment may clash with those that exist at work, which could also affect how much employees are open to be influenced by the health behaviours of their colleagues. While I did include the home environment to some extent, for example by including control variables for having a partner and children, it would be good if future studies combine the different environments employees find themselves in.

Additionally, though there is ample variation in work environments which I address, not all types of contexts are included. The ESWS only contains information on organisations with 50 employees or more, while many people work in smaller organisations that could have different work environments (McLellan et al., 2015). These smaller organisations may have fewer resources to implement WHP, but on the other hand informal health arrangements may be present. For example, in my partner's consultancy firm which employs about 40 people, the employees take shifts in getting the groceries for their healthy lunches paid by the employer rather than relying on a caterer. In addition, ties between colleagues may be stronger in smaller organisations, so employees are more likely to make healthy choices together. It would be interesting if future research also paid more attention to WHP in these types of organisations.

## Practical implications

Although organisations are increasingly offering WHP, not all employees work for an employer that makes WHP available. On average about 40% of employees has access to healthy menus, 50% is offered sports facilities and 70% of employees has the option to do a health check (Verra et al., 2019). Of the employees that

participated in the ESWS, about 13% has no WHP available. As I showed in chapter 7, WHP can also benefit organisations other than through improving employee health, so an important first step for employers would be to make WHP available to employees. If the workplace cafeteria is operated by a catering company, employers can make agreements with them to only offer healthy food choices. Another option is to arrange a healthy lunch within the organisation, like in my partner's firm where they take turns to get groceries.

Governments can also help employers to offer WHP. Currently EU and national policies on healthy workplaces focus mostly on preventing incidents or work-related risks, not health promotion as such. To change this, health promotion should become part of regulations for a safe working environment, for example by making a health check mandatory. Additionally, tax rules can help. The Netherlands has fiscal regulations which employers can use to offer their employees healthy lunches which are not taxed up to a certain amount or contribute to buying a bike which can be used to travel to and from work (Belastingdienst, 2022). These policies lower the costs and help employers to offer WHP.

In offering WHP, it is important that *all* employees receive access to it. There are many different types of WHP that can be offered, for example offering ready packed lunches for employees that are on the road like my bus-driving cousin, or offering sports classes at various times for those in shift work (Backman et al., 2011; Passey et al., 2014). Similarly, when many employees work in a hybrid manner, WHP specifically designed for employees working from home should be offered. It is important that the WHP that is made available matches where and when employees work, as well as the kind of work they do. Employers do not need to decide on this themselves, but can ask their employees for input on what they need, for example in an employee satisfaction survey conducted by the HR department. If WHP availability matches employees' preferences, they are more likely to use it (Rongen, Robroek, Van Ginkel, et al., 2014b).

Only making WHP available, is however unlikely to be effective. If organisations only offer WHP and then leave it to employees to find out WHP exists and make time to use it, this will likely not result in high participation rates. As suggested in chapter 6, relying on individual agency may also mean not all employees turn to WHP equally. Previous studies have highlighted communication is key for employees to know about WHP on offer (Kent et al., 2016; Seward et al., 2019). Employers and/or HR departments should inform employees about the availability of WHP. They can do so through email campaigns and via intranet, but

also by posting success stories on more public places like LinkedIn. Additionally, managers may be important gatekeepers by providing information about WHP to employees. This does not have to be in a very formal way; pointing out to employees that they can exchange their unused holiday hours for a new bike may also help. As I show in chapter 7, when employees are aware of the existence of WHP they perform better, so it is good if organisations direct resources to making sure that this is indeed the case.

When employees are offered WHP and they have been made aware of its existence, employers and HR departments cannot sit back and relax. Stimulating WHP use is most important. This can be achieved by providing employees autonomy in their work, which relates to WHP use as shown in chapter 2. This can take the form of allowing employees to work from home, so they can use their sponsored gym subscription during their lunch break. For employees whose work does not allow working from home, for example nurses, autonomy can be provided by individual management of working times. Employees that want to participate in the onsite yoga class can then choose to work those shifts that match the timing of the class.

Another way to increase WHP use is by allowing employees to do so during working hours. Throughout the dissertation I have shown that employees want to demonstrate they are good, committed workers, so organisations should not fear that employees slacken if they are given the opportunity to make use of WHP during work. In fact, for many employees a (perceived) lack of time is a reason not to participate. As I have shown in chapter 3, the likelihood that employees want to participate is higher if they can do so during their working hours. Allowing employees to use WHP during working hours furthermore creates a strong signal that the organisation really cares about the health and well-being of employees, rightly because it is considered as part of the job. For example, when employees are allowed to take a walk during work they may even return more productive, as they have had a short break where new ideas may have come up.

Creating a supportive work environment is crucial when implementing WHP. A culture of health appears to be key here. When the workplace is conducive to health, employees feel open to talk about it and can be relevant sources of support to their colleagues, as suggested in chapters 4 and 5. It is also important that employees know that work does not need to go above and beyond everything, both when working in the office and at home (see chapters 2 and 3). For example, if managers proactively include their lunch time in their schedule,



and make this apparent to everyone, they signal that taking a break is an accepted and normal way to behave.

Although it is not easy to change the organisational culture from one day to the next, this does mean that WHP should be embedded within the organisational structures. Setting up a vitality week, where employees get free apples on Monday, participate in a yoga class on Tuesday and then thinking that the box is ticked for the year is not sufficient. Additionally, outsourcing health activities, for example by hiring lifestyle coaches who come into the organisation every now and then to hold consultations with employees, may not be good enough either (Lier et al., 2019). Assigning a dedicated health officer, or someone in the HR team, may help in ensuring that attention to employee health and well-being becomes part of the organisational DNA.

In creating supportive work environments, colleagues are of the utmost importance. Throughout this dissertation, I have shown that colleagues are role models that affect the health behaviours which employees display in the workplace, their home office but also outside work. Making use of health champions, which are employees specifically trained to take on a leading role and provide support to other employees regarding a healthy lifestyle, can be a successful way to increase WHP use (Edmunds & Clow, 2016). Other ways of showing that also other colleagues make healthy choices and employees are not alone in doing so is by sharing success stories through communication channels (e.g. a video of colleagues who share their favourite lunch walk route near their workplace) or organising challenges in which everyone can participate. It is important that this includes achievable targets, as employees may be discouraged when they perceive their colleagues to be overenthusiastic (Edmunds et al., 2020). Additionally, the examples need to reflect employees' own situations: only showing young and fit role models in an organisation that consists mainly of older workers is likely not going to work. As shown in chapter 5, colleagues may also play a role for those not using WHP, and in these ways organisations can show health behaviours are a normal thing to do. Finally, in encouraging health behaviours, employers can also initiate activities that stimulate team spirit, such as participating in a running relay event together. Colleagues motivate each other, so participating together stimulates use (Mazzola et al., 2019) and may also make the activity more fun. Employees also play a part themselves here, for example by inviting their colleagues for a lunch walk if they intend to go.

## Final reflections

In this dissertation, I have studied the role of the work environment in the use and outcomes of WHP. I showed that it is important that organisations devote attention to the health behaviours of their employees and suggested ways in which employers can stimulate their employees to use the WHP that are available. Several trends may shape how WHP is to develop within organisations in the coming years, which I outline below.

First of all, the Covid-19 pandemic has for some employees and organisations changed the way they think about work and where it needs to take place. Many employees that worked from home liked this and have adapted to hybrid working rather than coming back to the office full-time. Meanwhile, also some organisations favour hybrid working because it means they need less office space (Appel-Meulenbroek et al., 2022). Technological advancements have enabled this (Sorensen et al., 2021). The increase in hybrid working may have implications for the type of WHP that organisations need to offer in order to help their employees live a healthy life, and how to reach employees so these know of its existence and make use of it.

Secondly, the Covid-19 pandemic has not been the only pandemic that we have had to (and continue to) deal with. There is also an increasing obesity pandemic with the number of obese people reaching peak levels as early as 2030 (Janssen et al., 2020). In the Dutch national prevention agreement, the workplace is mentioned as one of the places to battle obesity (Ministerie van Volksgezondheid, Welzijn en Sport, 2018). This could mean that WHP may become a less discretionary practice, showing the need to know how to reap its benefits.

Thirdly, the aging of the population contributes to the share of older employees in organisations as well as increasing retirement ages that go hand in hand with an older population. This growing group older employees has a larger risk of ill health and physical problems (Poscia et al., 2016), and if these are to remain in the labour force, it is important that they stay in good health. WHP can help here, but especially for this older group it is important available arrangements are suitable.

A final trend I want to highlight is connected to the increasing age of the population and one which we already see in our current society, namely that of labour shortages across sectors. In attracting and retaining employees, organisations may need to move beyond paying a good salary and devote more attention to fringe benefits (Eriksson & Kristensen, 2014). WHP could play a role

here, especially for those employees that value a healthy lifestyle (Ungureanu et al., 2019).

I started my dissertation by describing how several of my family members make use of the WHP that is on offer in the diverse organisations they work for. It appears as though they all have a supportive work environment that enables them to do so, which my study showed to be related to the use and outcomes of WHP. Their colleagues are encouraging and also behave healthily during their working days. My father takes a walk with his colleagues and my great-aunt eats lunch together with hers. Organisational norms also support healthy behaviour. When the norm is that work goes above and beyond everything, employees refrain from using WHP. This is not the case in our department, as I feel comfortable with taking an extended lunch break when I work from home to go to the swimming pool. In order to make use of this WHP, my family members know that it exists. Employers need to ensure their employees know WHP is available and make use of it, for they also benefit through increased job performance. This is what happens at my partner's workplace, as he frequently tells me how he and his colleagues challenged each other in their numerous table football games, after which they return to their work and come up with good solutions for the problems of their clients. I hope that my research encourages more and more organisations to also offer WHP and create supportive work environments. In that way, when my nephew, who was born in Spring 2022, enters the labour market in many years, he can also be supported in making healthy choices at work.

# 9

## Appendices

## Appendix A – Chapter 3

**Table A.1** Multilevel linear regression models predicting intention to participate in WHP when working from home, by type of WHP

	Walking		Breaks		Online sports class	
	$\beta$	SE	$\beta$	SE	$\beta$	SE
Duration (30 minutes = ref.)						
45 minutes	0.024	0.138	-0.046*	0.143	-0.026	0.126
60 minutes	-0.115***	0.137	-0.097***	0.143	-0.038*	0.129
WHP takes place during work time	0.178***	0.092	0.166***	0.095	0.122***	0.079
Working from home most of the time	0.005	0.092	0.020	0.095	-0.013	0.079
Colleague participation (no colleagues = ref.)						
Some colleagues	0.029	0.139	0.067**	0.142	0.049**	0.128
Most colleagues	0.004	0.140	0.065**	0.143	0.079***	0.127
Vignette order of presentation	-0.074**	0.044	-0.063**	0.044	-0.073**	0.050
Female	-0.047	0.184	-0.040	0.180	-0.190***	0.235
Age	-0.011	0.008	-0.021	0.008	-0.038	0.010
Higher educated	0.013	0.215	0.033	0.211	0.039	0.273
Occupation (managers = ref.)						
Professional	-0.011	0.244	0.065	0.238	0.062	0.309
Clerical	0.004	0.336	0.040	0.329	0.029	0.424
Working hours per week	-0.061*	0.011	-0.019	0.011	-0.078*	0.014
Suitable workplace at home	0.041	0.067	0.008	0.066	-0.037	0.085
Self-rated health	-0.015	0.123	0.031	0.120	-0.026	0.156
Partner	-0.051	0.217	-0.000	0.213	-0.021	0.277
Children	0.109**	0.203	0.048	0.199	0.033	0.260
Time household activities per week	-0.014	0.005	-0.073*	0.005	-0.016	0.007
Current walking	0.424***	0.045				
Current breaks			0.320***	0.079		
Current physical activity WHP					0.120***	0.326
Constant	6.322***	0.859	3.407***	0.869	6.771***	1.085
$\sigma^2$ vignette level	3.537	0.172	3.819	0.186	2.633	0.128
$\sigma^2$ employee level	3.813	0.290	3.448	0.281	7.833	0.461
$\sigma^2$ organisational level	0.114	0.086	0.106	0.075	0.104	0.139
$N_{vignettes}$	1690		1690		1690	
$N_{employees}$	845		845		845	
$N_{organisations}$	31		31		31	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Appendix B – Chapter 6

**Table B.1** Multilevel linear regression models predicting self-rated health by use of *healthy menus* and its interaction with education

	M1		M2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Years of education	0.027***	0.003	0.029***	0.003
WHP use	0.078***	0.018	0.203*	0.079
Education X WHP use			-0.009	0.006
Age	-0.184***	0.049	-0.184***	0.049
Age*Age	0.014*	0.006	0.014*	0.006
Female	-0.065***	0.015	-0.065***	0.015
WHP availability	-0.030	0.021	-0.030	0.021
Country (Netherlands = ref.)				
UK	0.090*	0.042	0.093*	0.042
Germany	-0.104**	0.038	-0.102**	0.038
Finland	0.085*	0.041	0.090*	0.041
Sweden	0.033	0.037	0.034	0.037
Portugal	-0.064	0.036	-0.062	0.036
Spain	-0.056	0.042	-0.053	0.042
Hungary	-0.127**	0.037	-0.125**	0.037
Bulgaria	0.078*	0.034	0.078*	0.034
Constant	4.066		4.035	
$\sigma^2$ organisation level	0.008		0.008	
$\sigma^2$ employee level	0.512		0.512	
$N_{employees}$	9991		9991	
$N_{organisations}$	249		249	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table B.2** Multilevel linear regression models predicting self-rated health by use of *sports facilities* and its interaction with education

	M1		M2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Years of education	0.027***	0.003	0.029***	0.003
WHP use	0.156***	0.023	0.113	0.070
Education X WHP use			0.003	0.005
Age	-0.189***	0.049	-0.189***	0.049
Age*Age	0.014*	0.006	0.014*	0.006
Female	-0.064***	0.015	-0.064***	0.015
WHP availability	-0.038	0.022	-0.038	0.023
Country (Netherlands = ref.)				
UK	0.074	0.041	0.073	0.041
Germany	-0.113**	0.037	-0.113**	0.037
Finland	0.030	0.042	0.029	0.042
Sweden	-0.030	0.039	0.029	0.036
Portugal	-0.083*	0.035	-0.083*	0.037
Spain	-0.084*	0.042	-0.084	0.043
Hungary	-0.138***	0.036	-0.138***	0.037
Bulgaria	0.057	0.033	0.056	0.034
Constant	4.098		4.104	
$\sigma^2$ organisation level	0.008		0.008	
$\sigma^2$ employee level	0.511		0.511	
$N_{employees}$	10027		10027	
$N_{organisations}$	250		250	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table B.3** Multilevel linear regression models predicting self-rated health by use of *health checks* and its interaction with education

	M1		M2	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Years of education	0.027***	0.003	0.025***	0.003
WHP use	0.083***	0.018	-0.027	0.070
Education X WHP use			0.008	0.005
Age	-0.192***	0.049	-0.193***	0.049
Age*Age	0.014*	0.006	0.014*	0.006
Female	-0.062***	0.015	-0.063***	0.015
WHP availability	-0.066**	0.023	-0.067**	0.023
Country (Netherlands = ref.)				
UK	0.076	0.041	0.075	0.041
Germany	-0.113**	0.037	-0.111**	0.037
Finland	0.094*	0.042	0.094*	0.042
Sweden	0.023	0.036	0.024	0.037
Portugal	-0.086*	0.036	-0.084*	0.036
Spain	-0.084	0.043	-0.081	0.043
Hungary	-0.146***	0.037	-0.144***	0.037
Bulgaria	0.063	0.034	0.061	0.034
Constant	4.118		4.158	
$\sigma^2$ organisation level	0.007		0.008	
$\sigma^2$ employee level	0.511		0.511	
$N_{employees}$	10063		10063	
$N_{organisations}$	251		251	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



**Table B.4** Multilevel logistic regression models predicting the likelihood of using healthy menus, sports facilities and health checks

	Healthy menus		Sports facilities		Health checks	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Years of education	0.025*	0.011	0.030*	0.014	-0.028**	0.010
Age	-0.332	0.190	0.159	0.253	0.430*	0.201
Age X Age	0.025	0.022	-0.033	0.029	-0.025	0.023
Female	0.260***	0.061	0.102	0.078	-0.027	0.062
WHP availability	1.900***	0.198	2.364***	0.231	2.040***	0.243
Country (Netherlands = ref.)						
UK	-1.259**	0.408	0.278	0.446	0.274	0.470
Germany	-0.187	0.355	0.937*	0.376	1.430***	0.402
Finland	1.340***	0.362	3.378***	0.363	3.033***	0.414
Sweden	-0.360	0.333	3.005***	0.329	1.193**	0.376
Portugal	-0.653	0.340	1.130**	0.372	3.041***	0.375
Spain	-2.105***	0.431	0.027	0.518	3.282***	0.424
Hungary	-0.475	0.371	0.904*	0.378	3.280***	0.402
Bulgaria	-1.283***	0.329	0.573	0.354	2.512***	0.356
<i>N</i> <sub>organisations</sub>	9991		10027		10063	
<i>N</i> <sub>employees</sub>	249		250		231	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

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# 11

## Nederlandse samenvatting

## Achtergrond

Veel organisaties bieden gezondheidsbevordering op het werk aan om hun werknemers te helpen gezond te leven. Gezondheidsbevordering op het werk bestaat uit de gezamenlijke inspanningen van werkgevers, werknemers en de maatschappij om de gezondheid van werknemers te verbeteren en ziekte te voorkomen. Dit kan op vele manieren, bijvoorbeeld door het aanbieden van fruit op de werkplek, het financieren van de deelname van werknemers aan lokale sportevenementen of het inrichten van een fitnessruimte in het bedrijfspand.

De werkvloer wordt gezien als een veelbelovende plek om gezond gedrag te stimuleren omdat veel volwassenen daar een groot deel van hun tijd doorbrengen waardoor een grote groep kan worden bereikt. Daarnaast kunnen collega's elkaar steunen en aanmoedigen om gezonde keuzes te maken. Eerder onderzoek heeft dan ook aangetoond dat gezondheidsbevordering op het werk positieve effecten heeft voor werknemers, hun werkgevers en de maatschappij als geheel. Zo genieten werknemers die deelnemen aan gezondheidsbevordering op het werk een betere gezondheid, eten ze gezonder en bewegen ze meer dan werknemers die niet deelnemen. Ook zijn deelnemers meer tevreden met hun baan en hebben ze meer energie. Werkgevers profiteren van toegenomen prestaties, hoger werkvermogen en minder verzuim. In het licht van een vergrijzende samenleving en toenemende zorgkosten helpt een gezond personeelsbestand ook werknemers langer inzetbaar te houden. Ook impliceert dit minder zorguitgaven. Daarnaast is het mogelijk dat de gezonde gewoontes die werknemers op het werk aanleren zich verspreiden naar de thuisomgeving, waardoor ook hun familieleden gezonder gaan leven.

Veel van deze positieve gevolgen van gezondheidsbevordering op het werk zijn echter afhankelijk van de mate waarin werknemers hier gebruik van maken. Maar een kleine groep van de werknemers doet dit: gemiddeld zo'n 33%. Daarnaast zijn er grote verschillen tussen organisaties in het aantal werknemers dat deelneemt. In een poging te achterhalen waarom niet alle werknemers gebruik maken van gezondheidsbevordering op het werk is tot nu toe vooral gekeken naar individuele kenmerken van deze werknemers, zoals hun leeftijd of intentie om gezond te leven. De sociale structuur is echter net zo belangrijk. Gezondheidsbevordering heeft niet alleen een individuele gedragsverandering, maar heeft ook een gezonde leefomgeving nodig om deze verandering in stand te houden. Bij gezondheidsbevordering op het werk is de werkomgeving dan ook van belang om te begrijpen wie gebruik maakt van de diverse regelingen

en wat de gevolgen daarvan zijn. Als we niet weten hoe deze omgeving een rol speelt, kunnen we ook geen succesvolle gezondheidsbevordering op het werk implementeren. Daarom focus ik me in dit proefschrift op de invloed van de werkomgeving op het maken van gezonde keuzes (of niet) van werknemers. Ik maak gebruik van unieke data met ruime variatie aan werkomgevingen en draag bij aan de literatuur door de volgende vraag te beantwoorden:

*Wat is de rol van de werkomgeving in het verklaren van het gebruik van gezondheidsbevordering op het werk en de gevolgen daarvan?*

## De werkomgeving

Het gebruikmaken van gezondheidsbevordering op het werk gebeurt niet in een vacuüm, maar wordt beïnvloed door de omgeving waarin werknemers zich bevinden. We weten echter nog te weinig over welke rol deze werkomgeving precies speelt en dat is jammer, omdat we deze kennis nodig hebben om te zorgen dat werknemers gezond gedrag gaan doen en volhouden. Wanneer ik het heb over de werkomgeving dan bedoel ik daarmee de bredere context waarin werknemers hun werk uitvoeren. Dit bevat zowel de condities waaronder werknemers werken, bijvoorbeeld de vrijheid die ze hebben om te bepalen wanneer zij werken, alsmede de bredere organisatiecultuur. Deze organisatiecultuur bestaat uit de gedeelde overtuigingen, waarden en normen, en bepaalt wat voor gedrag als geaccepteerd wordt gezien en waar men op neerkijkt. Wanneer we het dan hebben over gezond gedrag is het belangrijk dat de gezondheid en het welzijn van werknemers ondersteund worden door een zogenaamde gezondheidscultuur. Dit kan bijvoorbeeld door geen vergaderingen te plannen tussen 12.00 en 13.00, zodat werknemers de tijd hebben om gezamenlijk te lunchen of de tijd die werknemers besteden in de bedrijfsfitness mee te tellen als werktijd.

Wat waarschijnlijk niet helpt is wanneer bedrijven georganiseerd zijn rond de notie van een "ideale werker" of overwerkcultuur. In dit soort werkomgevingen wordt van werknemers verwacht dat hun werk de hoogste prioriteit heeft en dat alles voor het werk moet wijken. In organisaties met zo'n soort cultuur worden werknemers er waarschijnlijk hard op afgerekend als zij onder werktijd deelnemen aan een sportles terwijl al hun collega's aan het werk zijn. Werknemers geven ook regelmatig aan dat zij zich soms schuldig voelen tegenover collega's wanneer ze hun eigen gezondheid prioriteit geven boven hun werk. Daarnaast hebben ze vaak het gevoel geen tijd te hebben voor gezondheidsbevordering



op het werk. Dit geeft wel aan dat de meeste werknemers zeer geïmmiteerd zijn aan hun baan. Hoewel werkgevers goede bedoelingen hebben wanneer zij gezondheidsbevordering op het werk aanbieden, moeten werknemers wel het gevoel hebben dat zij hier ook gebruik van kunnen en mogen maken.

Het is belangrijk om op te merken dat de werkomgeving niet alleen maar de fysieke werkvloer omvat, maar betrekking heeft op alle werknemers, waar zij hun werk ook uitvoeren. Hoewel buschauffeurs constant onderweg zijn, hebben zij ook te maken met uitdagingen om gebruik te maken van gezondheidsbevordering op het werk, bijvoorbeeld wanneer er wel een gezonde lunch in de bedrijfskantine wordt aangeboden maar ze dan net een dienst hebben. Ook werken sinds de Covid-19 pandemie veel werknemers vanuit huis. Gezondheidsbevordering op het werk hoeft niet per se op het werk plaats te vinden, maar we weten hier nog weinig over. Tijdens de lockdowns bood de Universiteit Utrecht bijvoorbeeld online yogalessen aan, waar ik dankbaar gebruik van maakte gezien de sportschool was gesloten. Het is lastig om vanuit huis gebruik te maken van regelingen die gebonden zijn aan de werkplek, maar werkgevers kunnen ook aanbod voor thuiswerkenden aanbieden. Wanneer werknemers hieraan deelnemen worden zij echter nog steeds beïnvloed door de werkomgeving, ook al zijn ze niet op hun werk.

In het eerste deel van dit proefschrift onderzoek ik daarom in welke mate de werkomgeving verband houdt met het gebruik van gezondheidsbevordering op het werk, zowel op de werkplek als wanneer werknemers thuiswerken.

## **Sociale relaties op het werk**

Een cruciaal onderdeel van de werkomgeving zijn de sociale relaties op het werk, namelijk de manager en collega's. Sociale steun van deze actoren wordt vaak genoemd als reden waarom gezondheidsbevordering op het werk zo succesvol kan zijn, maar zelden onderzocht. De werkvloer is niet alleen een plek waar mensen werken, maar ook een sociale omgeving waar werknemers elkaars opvattingen en gedrag kunnen beïnvloeden. Veel werknemers brengen het grootste deel van hun werkdag door op dezelfde plek omringd door dezelfde collega's met wie ze vaak een praatje maken en ervaringen delen, zodat het niet ondenkbaar is dat ze beïnvloed worden door het (on)gezonde gedrag van deze collega's. Het is dus van belang om hier meer te weten over te komen.

Eerder onderzoek naar de rol van sociale relaties heeft zich vooral gericht op sociale steun en sociaal kapitaal, door bijvoorbeeld te kijken naar of

collega's die elkaar vertrouwen een betere gezondheid genieten. Hier zijn weinig significante relaties gevonden en dat is ook niet zo verrassend, het is immers niet direct duidelijk hoe vertrouwen leidt tot het maken van gezonde keuzes. Onderzoek over veiligheid op het werk laat zien dat steun specifiek gericht op veilig gedrag er voor zorgt dat werknemers veiliger gaan werken, en dat kan ook zo zijn voor gezondheidsgedrag op het werk.

Daarnaast spelen sociale normen waarschijnlijk een belangrijke rol. Werknemers werken vaak nauw samen, waardoor het gemakkelijk is om te zien wat voor (on)gezond gedrag zij vertonen tijdens het werk. Wanneer een collega constant zit te snoepen en jou daarbij telkens chocoladekoekjes aanbiedt, word je zelf ook eerder verleid om wat lekkers te nemen. Op deze manier nemen collega's elkaars gedrag over, omdat wat collega's doen wordt gezien als normaal gedrag. Mensen zijn sociale wezens die graag bij een groep horen. Dit uit zich doordat we ons op eenzelfde manier gedragen als de mensen om ons heen, om op deze manier te laten zien dat we erbij horen. Het is immers makkelijker om achter de kudde aan te lopen. Daarnaast geeft het doen en laten van collega's ook een idee van wat voor gedrag haalbaar is. Collega's die op de fiets naar het werk komen in plaats van met de auto zorgen zo misschien wel voor inspiratie. Hierbij is het wel van belang dat dit gedrag haalbaar is. Die ene collega die elke enkele reis 30 kilometer door weer en wind fietst gaat waarschijnlijk niet voor een gedragsverandering zorgen. We weten nog weinig over hoe het daadwerkelijke gedrag van collega's samenhangt met de gezonde keuzes die we zelf maken, terwijl dit wel belangrijke informatie kan zijn om te zien hoe (on)gezonde normen ontwikkelen op het werk en hoe deze kunnen bijdragen aan gezondheidsbevordering.

De invloed van collega's hoeft niet beperkt te blijven tot de werkvloer. De gezonde normen die ontstaan op het werk kunnen vertaald worden in gezonder gedrag thuis. Wanneer werknemers gewend zijn om op het werk een stuk fruit als tussendoortje te nemen, wordt dit wellicht een gewoonte die ze ook thuis in het weekend overnemen. We weten al heel veel over hoe andere mensen om ons heen ons gezonde gedrag beïnvloeden, maar nog niet zo veel over collega's. Onze partner, familie, vrienden en burens zijn allemaal toonbaar van invloed op of wij gezonde keuzes maken. Het is dan ook verbazingwekkend dat nog zo weinig bekend is over de rol onze collega's, die we soms vaker zien dan onze partner.

Naast collega's zijn ook managers onderdeel van de sociale werkomgeving. Eerder onderzoek heeft vooral gekeken naar het hogere management, en of het gepast is voor managers om zich bezig te houden met de

gezondheid van hun ondergeschikten. Directe managers zijn wellicht van meer belang, omdat zij meer betrokken zijn bij de dagelijkse uitvoering van het werk en daardoor de mogelijkheden die werknemers hebben om gebruik te maken van gezondheidsbevordering op het werk kunnen beïnvloeden. Een van mijn begeleiders vertelde dat hij tijdens de lockdown regelmatig een lunchwandeling maakte met zijn partner, die op dat moment ook thuiswerkte. Op deze manier liet hij zien dat een gezonde leefstijl belangrijk is en dat het geen probleem is om hier onder werktijd aandacht aan te besteden.

In het tweede deel van dit proefschrift onderzoek ik daarom op welke manier de sociale relaties op het werk de gezonde keuzes van werknemers beïnvloeden, zowel wanneer het aankomt op het gebruik van gezondheidsbevordering op het werk als op een gezonde leefstijl in het algemeen.

## **De gevolgen van gezondheidsbevordering op het werk**

Werkgevers bieden gezondheidsbevordering op het werk aan omdat ze begaan zijn met de gezondheid en het welzijn van hun werknemers, maar ook omdat ze daar zelf belang bij hebben. Eerder onderzoek heeft laten zien dat het gebruik van gezondheidsbevordering op het werk verband houdt met gevolgen voor de gezondheid zoals gezond eten, meer beweging en lager gewicht, maar ook met gevolgen voor het werk zoals minder verzuim, meer baantevredenheid en toegenomen werkvermogen. Toch zijn er ook nog wat open vragen.

Zo weten we bijvoorbeeld nog niet goed of gezondheidsbevordering op het werk de gezondheid van alle werknemers verhoogt, of dat dit onbedoeld bijdraagt aan gezondheidsverschillen. In principe is gezondheidsbevordering op het werk een manier om de gezondheid van alle werknemers te promoten. Echter hebben laagopgeleide werknemers over het algemeen een minder goede gezondheid dan hoogopgeleide werknemers, en als zij minder toegang tot gezondheidsbevordering op het werk hebben en hier minder gebruik van maken, dan is het mogelijk dat dit de verschillen alleen nog maar verder vergroot. Eerdere studies hebben zich wel gericht op gezondheidsbevordering op het werk specifiek voor laagopgeleide werknemers, maar op deze manier kunnen we deze groep niet vergelijken met hoogopgeleide werknemers, en komen zo dus niets te weten over gezondheidsverschillen.

Een andere open vraag is of ook werknemers die geen gebruik maken van gezondheidsbevordering op het werk hier toch door beïnvloed worden. Eerder onderzoek naar het verband tussen deze regelingen en de gevolgen voor

werk gaat er vaak van uit dat alleen de deelnemers profiteren, wat implicaties heeft voor de effectiviteit. Door het gebruik van gezondheidsbevordering op het werk verbetert de gezondheid van werknemers, waardoor zij beter in staat zijn hun werk te doen. Studies naar andere typen organisatiebeleid, zoals ouderschapsverlof of werkflexibiliteit, hebben laten zien dat alleen het op de hoogte zijn van het bestaan van deze regelingen al tot toegenomen performance kan leiden. Dit kan ook het geval zijn voor gezondheidsbevordering op het werk, als werknemers het feit dat hun werkgever dit aanbiedt zien als een teken dat deze begaan is met hun welzijn en daardoor een stapje extra doen. We weten echter nog niet of dit ook daadwerkelijk zo is.

In het derde deel van dit proefschrift richt ik me daarom op de gevolgen voor de gezondheid en het werk van gezondheidsbevordering op het werk, en onderzoek wie er wordt beïnvloed door het op de hoogte zijn en gebruik daarvan.

## Zes empirische hoofdstukken

Dit proefschrift bevat zes empirische hoofdstukken die gezamenlijk de onderzoeksvragen beantwoorden.

### **Hoofdstuk 2: De werkomgeving en gezondheidsbevordering op het werk in negen Europese landen**

In hoofdstuk 2 begin ik met het onderzoeken wat de rol van de werkomgeving is in het gebruik van gezondheidsbevordering op het werk gericht op gezond eten, bewegen, en het doen van een preventief medisch onderzoek. Ik kijk hierbij naar kenmerken van het werk alsmede naar de bredere organisatiecultuur, iets wat nog weinig wordt gedaan in eerder onderzoek. Werkkenmerken die ik meeneem zijn werkdruk, werkuren en autonomie. Voor de organisatiecultuur kijk ik naar overwerkcultuur en het gedrag van collega's. Wanneer we weten hoe deze aspecten verband houden met het gebruik van gezondheidsbevordering op het werk helpt dit om te begrijpen waarom niet alle werknemers dit doen.

De resultaten laten zien dat de werkomgeving ertoe doet. Zo maken werknemers met meer autonomie vaker gebruik van maatregelen gericht op gezond eten en bewegen. Ook is er een verband tussen het aantal werkuren en de mate waarin werknemers gebruik maken van gezonde voedingsopties op hun werk. De grootste rol is echter weggelegd voor de organisatiecultuur. In organisaties met een overwerkcultuur – waarin het werk boven alles gaat – laten

werknemers minder vaak een preventief medisch onderzoek uitvoeren en ook maken ze minder gebruik van gezonde voedingsopties. Het gedrag van collega's is een belangrijke voorspeller voor alle drie de maatregelen. Het is dus van belang om niet alleen op werkkenmerken te richten, maar om ook te zorgen voor een ondersteunende gezondheidscultuur. Hierdoor kunnen werkgevers het gebruik van gezondheidsbevordering op het werk onder hun werknemers stimuleren.

### **Hoofdstuk 3: Gezondheidsbevordering voor werknemers die thuiswerken: een vignetexperiment naar de intenties om deel te nemen**

In hoofdstuk 3 richt ik me op thuiswerken, iets wat naar verwachting vaker voor gaat komen in het werkende leven van veel werknemers, en wat ook implicaties heeft voor hun gezondheid. Via een vignetexperiment onderzoek ik of werknemers bereid zijn om deel te nemen aan gezondheidsbevordering aangeboden door hun werkgever op dagen dat zij thuiswerken. In zo'n vignetexperiment krijgen werknemers verschillende korte situaties voorgelegd die een klein beetje van elkaar verschillen, waarna wordt gevraagd hoe ze zich in die situatie zouden gedragen.

In dit vignetexperiment kijk ik daarnaast naar welke overwegingen een rol spelen in het gebruik van gezondheidsbevordering wanneer men thuiswerkt. Ik neem hierbij verschillende factoren mee die een rol spelen op het werk, zoals het feit dat de regelingen het werk niet belemmeren maar onder werktijd plaatsvinden, hoe lang de verschillende activiteiten duren, en het gedrag van collega's. Ik kijk daarbij naar drie activiteiten: lunchwandelen, het nemen van diverse korte pauzes, en de deelname aan een online sportles.

De resultaten laten zien dat werknemers open staan voor deelname aan gezondheidsbevordering aangeboden door hun werkgever wanneer zij thuiswerken. Lunchwandelen en het nemen van diverse pauzes zijn daarbij populairder dan het deelnemen aan een online sportles. Daarnaast blijkt dat werknemers liever deelnemen aan kortere activiteiten. Ze willen waarschijnlijk nog steeds graag laten zien dat ze gecommitteerde werkers zijn. Ook wanneer deelname onder werktijd valt en meer collega's meedoen, zijn werknemers eerder bereid om deel te nemen aan gezondheidsbevordering op het werk wanneer zij thuiswerken. Op deze manier sijpelt de werkomgeving dus door in het thuiswerkkantoor. De bevindingen geven organisaties handvaten om

gezondheidsbevordering voor thuiswerkenden te implementeren.

Samen laten de resultaten van hoofdstuk 2 en hoofdstuk 3 zien dat de werkomgeving een rol speelt in het gebruik van gezondheidsbevordering op het werk, zowel op de werkplek als wanneer werknemers thuis werken.

#### **Hoofdstuk 4: Geen woorden maar daden. Sociale relaties op de werkvloer en het gebruik van gezondheidsbevordering op het werk**

In hoofdstuk 4 zoom ik verder in op de rol van sociale relaties op de werkvloer, en beargumenteer dat dit aspect van de werkomgeving een van de belangrijkste redenen kan zijn waarom niet alle werknemers deelnemen aan gezondheidsbevordering op het werk. Ik kijk daarbij of werknemers vaker gebruik maken van regelingen gericht op gezond eten en bewegen wanneer hun manager en collega's ze aanmoedigen om gezond te eten en voldoende te bewegen. Ook kijk ik of collega's rolmodellen kunnen zien wier gedrag gekopieerd wordt. Uit eerder onderzoek weten we dat onze partner, familie en vrienden een belangrijke rol spelen in de gezonde keuzes die we maken, en in dit hoofdstuk bestudeer ik of collega's ook van belang zijn.

Mijn bevindingen tonen aan dat werknemers meer geneigd zijn om gebruik te maken van gezondheidsbevordering op het werk wanneer hun collega's ze aanmoedigen om gezond te eten en voldoende te bewegen. De kans dat ze deelnemen is ook groter als meer collega's deelnemen aan gezondheidsbevordering op het werk. Opvallend genoeg speelt de manager geen rol. Daarnaast heb ik onderzocht of de invloed die collega's hebben afhangt van de mate waarin werknemers thuiswerken. Over het algemeen is dit niet zo, hoewel het gebruik van gezonde voedingsopties door collega's minder belangrijk lijkt wanneer werknemers vaker thuiswerkten. Het is dus van belang om mee te nemen hoe collega's elkaar kunnen motiveren wanneer gezondheidsbevordering op het werk wordt geïmplementeerd.

#### **Hoofdstuk 5: Gezond eten en bewegen onder werknemers: de rol van de steun en het gedrag van collega's**

Hoofdstuk 5 gaat nog dieper in op hoe steun voor een gezonde leefstijl en het gedrag van collega's kan bijdragen aan het maken van gezonde keuzes. Hierbij kijk ik naar gezond eten en bewegen in het algemeen, dus niet alleen op het werk. Ik onderzoek of werknemers gezonder eten en meer bewegen wanneer

hun collega's hen aanmoedigen dit te doen, omdat zij daarmee laten zien dat een gezonde leefstijl belangrijk is. Ook bestudeer ik of het eet- en beweeggedrag van collega's samenhangt.

Zoals verwacht gaan werknemers gezonder eten en meer bewegen wanneer hun collega's hen aanmoedigen om gezond te leven. Daarnaast hangt het eetgedrag van collega's positief samen: wanneer collega's meer groente en fruit eten, doet een werknemer dat naar alle waarschijnlijkheid ook. Tegen de verwachtingen in vind ik een negatief verband voor beweeggedrag, wat inhoudt dat hoe meer collega's gemiddeld bewegen, hoe minder een werknemer dit zelf doet. Dit kan deels verklaard worden doordat dit effect misschien niet zo robuust is en afhankelijk kan zijn van de grootte van het team. Het is echter mogelijk dat eetgedrag veel meer zichtbaar is op het werk, en daarom meer beïnvloed wordt door wat collega's eten. Hoewel niet alle werknemers deelnemen aan gezondheidsbevordering op het werk, laat dit hoofdstuk zien dat de (on)gezonde keuzes die zij maken wel degelijk beïnvloed worden door hun sociale werkomgeving.

De resultaten van hoofdstuk 4 en hoofdstuk 5 laten gezamenlijk zien dat collega's van invloed zijn op het gezonde gedrag van werknemers, zowel op het werk als daarbuiten.

## **Hoofdstuk 6: Gezondheidsbevordering op het werk en gezondheidsverschillen**

De laatste twee hoofdstukken van dit proefschrift gaan over de gevolgen van gezondheidsbevordering op het werk. In hoofdstuk 6 richt ik me daarbij op ervaren gezondheid. Ik onderzoek of regelingen gericht op gezond eten, bewegen en preventief medische onderzoeken verband houden met gezondheidsverschillen. Hoewel gezondheidsbevordering op het werk in principe de gezondheid van alle werknemers dient te bevorderen, kan het zijn dat dit niet het geval is wanneer vooral hoogopgeleide werknemers gebruik maken van de maatregelen of wanneer het effect anders uitpakt voor laag- en hoogopgeleide werknemers. Eerder onderzoek laat zien dat werkkenmerken een rol spelen in gezondheidsverschillen, en ik borduur hier op voort door gezondheidsbevordering op het werk te onderzoeken als een van deze kenmerken.

De resultaten laten zien dat, in lijn der verwachtingen, hoogopgeleide werknemers een betere gezondheid genieten en dat ook het gebruik van

gezondheidsbevordering op het werk positief bijdraagt aan de ervaren gezondheid. Gezien hoogopgeleide werknemers vaker gebruik maken van maatregelen gericht op gezond eten en bewegen, vergroten deze de gezondheidsverschillen. Preventief medische onderzoeken worden echter vaker gebruikt door laagopgeleide werknemers, en zouden daarom een rol kunnen spelen in het verkleinen van gezondheidsverschillen. Het effect dat gezondheidsbevordering op het werk heeft op gezondheid is niet afhankelijk van opleidingsniveau. Om te zorgen dat alle werknemers profiteren van gezondheidsbevordering op het werk is het van belang om laagopgeleide werknemers te stimuleren er gebruik van te maken.

## **Hoofdstuk 7: Gezondheidsbevordering op het werk en werknemer performance: bewustzijn of gebruik?**

Ten slotte kijk ik in hoofdstuk 7 op welke manier regelingen gericht op gezond eten en bewegen verband houden met de prestaties van werknemers. Om te zorgen dat meer werkgevers gezondheidsbevordering op het werk aanbieden is het van belang om aan te tonen dat ze hier zelf ook baat bij hebben. Ik beargumenteer dat werknemers die op de hoogte zijn van het bestaan van gezondheidsbevordering in hun organisatie dit als teken zien dat hun werkgever begaan is met hun welzijn. Uit dank hiervoor presteren ze beter. Daarnaast ga ik er van uit dat werknemers die gebruik maken van gezondheidsbevordering op het werk als gevolg hiervan een betere gezondheid hebben, en daardoor beter in staat zijn hun werk uit te voeren dan werknemers die geen gebruik maken van de regelingen. Ik onderzoek twee vormen van performance: taakprestatie (het uitvoeren van de taken die horen bij de baan, bijvoorbeeld de mate waarin werknemers in staat zijn hun werk zo in te plannen dat het op tijd af is) en contextuele prestatie (het doen van een stapje extra, bijvoorbeeld de mate waarin werknemers hun vaardigheden up-to-date houden).

De resultaten tonen dat wanneer werknemers weten dat gezonde voedingsopties en gezondheidsbevordering gericht op bewegen beschikbaar zijn in hun organisatie, ze hoger scoren op taakprestatie en contextuele prestatie. Wanneer ze gebruik maken van gezonde voedingsopties presteren ze ook op beide vlakken beter. Het gebruik van regelingen gericht op bewegen hangt samen met contextuele prestatie. Sowieso is de relatie tussen gebruik van gezondheidsbevordering en performance sterker voor contextuele prestatie dan voor taakprestatie. Dit laat dus zien dat ook werkgevers van



gezondheidsbevordering op het werk kunnen profiteren.

De bevindingen uit hoofdstuk 6 en 7 laten zien dat vooral hoogopgeleiden worden beïnvloed door gezondheidsbevordering op het werk omdat zij dit vaker gebruiken, maar ook dat werknemers die op de hoogte zijn van het bestaan van gezondheidsbevordering (naast het gebruik ervan) beïnvloed worden en daardoor beter presteren.

## Conclusies

Op basis van de zes hoofdstukken in dit proefschrift kom ik tot de volgende conclusies:

### **Collega's zijn van belang voor gezond gedrag, zowel op het werk als daarbuiten**

In de eerste plaats laat ik in dit proefschrift zien dat collega's een sleutelpositie innemen bij de gezonde keuzes die werknemers maken. Wanneer deze collega's een gezonde leefstijl aanmoedigen, participeren werknemers eerder in gezondheidsbevordering op het werk gericht op gezond eten en bewegen, maar zijn zij ook eerder geneigd om daarbuiten gezond te eten en voldoende te bewegen. Mooie woorden zijn echter niet genoeg. Mijn bevindingen laten zien dat hoe meer collega's gebruik maken van gezondheidsbevordering op het werk, hoe groter de kans dat een werknemer dit ook doet. Het gedrag van collega's lijkt belangrijker dan aanmoediging. Zelfs wanneer werknemers thuiswerken en wellicht minder direct contact hebben met hun collega's, speelt wat deze collega's doen een rol in de mate waarin werknemers openstaan om deel te nemen aan gezondheidsbevordering aangeboden door hun werkgever. Ik verklaar dit doordat het gedrag van collega's vormgeeft aan de sociale norm waaraan werknemers willen voldoen. Werknemers brengen vaak veel tijd door met dezelfde collega's op dezelfde plaats, waardoor er voldoende mogelijkheid is om gedrag van elkaar over te nemen. Sociale relaties op het werk worden vaak genoemd als reden waarom gezondheidsbevordering op het werk kans van slagen heeft, en dit proefschrift toont aan dat dat inderdaad het geval is. Daarnaast laat mijn onderzoek zien dat het overnemen van het gedrag van collega's niet beperkt blijft tot het gebruik van gezondheidsbevordering op het werk, maar ook van toepassing is op gezond gedrag in het algemeen. De eetgewoontes van collega's blijken gerelateerd aan elkaar. Het gaat hierbij niet alleen om het consumeren van groenten en fruit op de werkvloer, maar ook daarbuiten. Gezien werknemers tot wel een derde van

hun dagelijks aantal calorieën op het werk nuttigen, is het ook niet verrassend dat collega's hier een rol in spelen. Werknemers brengen op een werkdag misschien wel meer tijd met hun collega's door dan met hun partner of vrienden. Het gezonde gedrag van werknemers draagt ook bij aan de gezondheidscultuur binnen organisaties. Op deze manier profiteren dus ook werknemers die geen gebruik maken van gezondheidsbevordering op het werk van de gezonde keuzes die hun collega's maken.

## **Wanneer het werk boven alles gaat maken werknemers minder gezonde keuzes**

De tweede les die we uit dit proefschrift kunnen trekken is dat de organisatiecultuur een rol speelt in de gezonde keuzes die werknemers maken tijdens hun werk. In werkomgevingen met een overwerkcultuur, wat inhoudt dat het werk prioriteit boven alles heeft, worden werknemers weerhouden om gebruik te maken van gezondheidsbevordering op het werk. Eerder onderzoek heeft al laten zien dat het maken van lange dagen en het prioriteren van werk negatieve effecten heeft op de gezondheid van werknemers. Mijn bevindingen passen dus in het grote plaatje. Hoewel werkgevers wellicht denken hun werknemers te helpen door gezondheidsbevordering op het werk aan te bieden, heeft dit geen zin wanneer de werkomgeving niet ondersteunend is. Werknemers kunnen zich dan schuldig voelen doordat ze hun eigen gezondheid boven hun werktaken plaatsen. Het is van belang dat organisaties een zogeheten gezondheidscultuur creëren, waarin de focus niet alleen maar op werk ligt, maar waarin gezonde keuzes de norm zijn (al is dit makkelijker gezegd dan gedaan). Door het toestaan dat werknemers gebruik maken van gezondheidsbevordering onder werktijd geven werkgevers het signaal dat ze betrokken zijn bij de gezondheid en het welzijn van werknemers. Mijn resultaten laten zien dat dit werknemers stimuleert om deel te nemen. Het is belangrijk dat werknemers weten dat hun collega's en manager een gezonde leefstijl belangrijk vinden zodat ze zich hier minder door laten weerhouden, zowel op de werkvloer als wanneer ze thuiswerken. Mijn begeleiders lieten geregeld blijken dat het belangrijk was om niet alleen maar met werk bezig te zijn tijdens de Covid-19 pandemie, waardoor het geen probleem was als ik onder werktijd deelnam aan de online yogales vanuit de universiteit. Dit soort steun kan eraan bijdragen dat meer werknemers gebruik maken van gezondheidsbevordering op het werk zoals ik aantoon in dit proefschrift.

## **Werkgevers moeten zorgen dat alle werknemers toegang hebben tot gezondheidsbevordering op het werk, weten van het bestaan en hier gebruik van kunnen maken**

Werkgevers bieden vaak gezondheidsbevordering aan omdat dit positief bijdraagt aan de gezondheid en leefstijl van hun werknemers, maar ook omdat ze er zelf van kunnen profiteren. Deze voordelen kunnen echter alleen worden genoten wanneer gezondheidsbevordering zich richt tot alle werknemers. Mijn bevindingen laten zien dat momenteel hoogopgeleide werknemers meer toegang hebben tot gezondheidsbevordering, maar ook dat ze er meer gebruik van maken, zelfs als laagopgeleide werknemers er ook toegang tot hebben. Dit resulteert in grotere gezondheidsverschillen. De uitzondering hier is het uitvoeren van een preventieve medische keuring, wat laagopgeleide werknemers vaker doen. Werknemers die deelnemen aan gezondheidsbevordering op het werk genieten een betere gezondheid en zijn beter in staat hun werk uit te voeren, dus het is ook in het belang van werkgevers om te zorgen dat laagopgeleide werknemers gebruik kunnen maken van gezondheidsbevordering op het werk. Juist voor deze werknemers is een stimulerende werkomgeving belangrijk. Laagopgeleide werknemers hebben vaak minder autonomie en komen vaker in contact met ongezonde normen, dus ze hebben net een extra duwtje in de rug nodig om hun weg te vinden naar de gezonde voedingsopties in de bedrijfskantine of de fitnessfaciliteiten in het kantoor. De resultaten laten ook zien dat werknemers die gebruik maken van gezondheidsbevordering op het werk beter presteren. Ze voeren hun werk beter uit en zetten vaker een stapje extra. Dit geldt echter ook voor de werknemers die geen gebruik maken van de regelingen maar wel weten dat deze beschikbaar zijn. Dit komt overeen met onderzoek naar ander organisatiebeleid zoals verlofregelingen. Werknemers zien gezondheidsbevordering op het werk als indicatie dat hun werkgever zich bekommert om hun welzijn, en als dank hiervoor doen ze beter hun best. Mijn bevindingen tonen aan dat dit vooral geldt voor extra taken die boven op het normale werk komen. Om te profiteren van de investeringen in gezondheidsbevordering op het werk is het dus van belang dat alle werknemers toegang hebben tot gezondheidsbevordering op het werk, zij weten van het bestaan en gestimuleerd worden om er gebruik van te maken.

## **Wanneer werkgevers willen bijdragen aan een gezonde leefstijl onder hun werknemers kunnen zij zich het beste richten op gezonde voeding**

Dit proefschrift toont aan dat de voedingskeuzes van werknemers het meeste worden beïnvloed door hun werkomgeving. Zo laat ik bijvoorbeeld zien dat werknemers meer gebruik maken van gezondheidsbevordering gericht op gezonde voeding wanneer zij meer uren werken, en dus meer tijd doorbrengen op het werk. Collega's zijn ook belangrijker voor de eetgewoonten van werknemers dan voor de mate waarin zij voldoende bewegen, zowel op het werk als daarbuiten. Veel werknemers eten regelmatig op hun werk, en doen dat vaak samen met hun collega's. Het is dus ook niet verrassend dat de werkomgeving hier zo'n grote rol in speelt. De andere typen gezondheidsbevordering op het werk die ik onderzoek, gericht op bewegen en medisch preventieve onderzoeken, kunnen ook ergens anders plaatsvinden, bijvoorbeeld wanneer een werknemer het door zijn werkgever vergoede fitnessabonnement gebruikt bij een sportschool vlakbij waar hij woont. Daarnaast is beweeggedrag waarschijnlijk minder zichtbaar voor collega's dan eetgedrag. Normen zijn vooral effectief wanneer ze specifiek zijn voor de situatie, en eetnormen kunnen daardoor makkelijker overgedragen worden wanneer collega's samen lunchen. Samen sporten gebeurt veel minder vaak. Deze bevindingen betekenen niet dat werkgevers alleen maar moeten zorgen dat werknemers gezond kunnen eten en zich verder niet druk hoeven te maken over andere typen gezondheidsbevordering op het werk. Echter, wanneer de middelen beperkt zijn en werkgevers wel graag iets willen doen is het verzorgen van een gezonde lunch een goede actie om mee te beginnen. Daarnaast leren deze bevindingen ons dat het belangrijk is om na te denken over de zichtbaarheid van verschillende soorten gedrag wanneer het aankomt op de implementatie van gezondheidsbevordering op het werk.

## **Bijdragen**

Dit proefschrift levert diverse bijdragen aan de wetenschappelijke literatuur. Ten eerste breid ik de bestaande kennis over gezondheidsbevordering op het werk uit door nieuwe vragen te beantwoorden. In hoofdstuk 2 combineer ik bijvoorbeeld kenmerken van het werk en de organisatiecultuur als onderdeel van de werkomgeving, terwijl eerder onderzoek slechts een van deze kenmerken meenam. Er was nog geen onderzoek naar gezondheidsbevordering voor werknemers die thuiswerken, wat ik heb onderzocht in hoofdstuk 3. Voor de

Covid-19 pandemie werkte slechts een klein deel van de werknemers soms thuis, maar nu is het voor veel onderdeel van hun werkrouetine. De verwachting is dat dit ook zo blijft. Mijn proefschrift biedt het inzicht hoe werkgevers ook de gezondheid van hun werknemers kunnen bevorderen wanneer deze thuiswerken. Daarnaast duik ik dieper in de rol van collega's, door zowel steun voor een gezonde leefstijl alsmede hun gedrag te onderzoeken. Ik toon daarbij ook aan dat collega's ook een rol spelen buiten het werk, wat nog niet eerder was onderzocht. Verder laat ik zien hoe gezondheidsbevordering op het werk is gerelateerd aan gezondheidsverschillen in hoofdstuk 6, wat bijdraagt aan onze kennis over waarom hoogopgeleiden een betere gezondheid genieten dan laagopgeleiden. Ten slotte toon ik in hoofdstuk 7 aan dat wanneer werknemers op de hoogte zijn van het bestaan van gezondheidsbevordering binnen hun organisatie zij beter preteren, waar eerdere studies naar de gevolgen van dit soort regelingen vooral naar gebruik keken. Al deze bevindingen gaan verder dan eerder onderzoek en dragen daarmee bij aan meer inzicht over hoe werknemers gezond kunnen zijn op hun werk.

Ten tweede wordt het gebruik en de gevolgen van gezondheidsbevordering op het werk vooral onderzocht vanuit de gedragswetenschappen waarbij wordt gekeken naar individuele kenmerken van werknemers, terwijl ik een sociaalwetenschappelijke benadering hanteer. Dit doe ik door te focussen op de samenhang tussen werknemers en hun werkomgeving. Hoewel gezondheidsbevordering op het werk vaak plaatsvindt in een werkcontext, wordt deze context niet altijd meegenomen in het verklaren waarom werknemers wel of geen gebruik maken van de regelingen. Gezien de deelname van werknemers gemiddeld genomen laag is, en sterk wisselt tussen organisaties, kunnen we door te focussen op de werkomgeving meer inzicht verkrijgen in hoe we het gebruik van werknemers kunnen verhogen. Ik focus daarbij speciaal op de rol van sociale relaties op het werk. Ook al wordt vaak aangenomen dat anderen om ons heen belangrijk zijn voor het maken en volhouden van gezonde gewoonten, toch worden collega's bijna nooit onderzocht. Normen ontwikkelen echter ook in de werkomgeving, waar werknemers veel tijd doorbrengen. Dit heeft wellicht niet alleen betrekking op gezondheidsbevordering op het werk, maar ook op de algemene organisatiecultuur, waar ook werknemers die de regelingen niet gebruiken door worden beïnvloed. Dit proefschrift biedt dus inzichten in hoe we de rol van sociale relaties op het werk kunnen inzetten voor een gezond personeelsbestand.

De derde bijdrage van dit proefschrift is het gebruik van unieke data,

namelijk de twee metingen van de European Sustainable Workforce Survey (ESWS) aangevuld met een vignetexperiment. Dit vignetexperiment heb ik speciaal voor dit proefschrift ontworpen en uitgezet, en ook heb ik bijgedragen aan het verzamelen van de tweede meting van de ESWS. In beide metingen van de ESWS hebben werknemers, hun team managers en HR managers in veel organisaties vragen beantwoord over onder andere gezondheidsbevordering op het werk. Een groot pluspunt van deze dataset is het feit dat er zoveel verschillende organisaties aan hebben meegedaan (meer dan 250 in de eerste meting uit 2016 en meer dan 100 in de tweede meting uit 2018), en er daardoor veel variatie is in de werkomgeving van werknemers. Het meeste andere onderzoek over gezondheidsbevordering op het werk kijkt maar naar een klein aantal werknemers of organisaties, waardoor het moeilijk is om de bevindingen te generaliseren. De ESWS faciliteert me in het hoofddoel van dit proefschrift, namelijk het onderzoeken van de rol van de werkomgeving in het gebruik en de gevolgen van gezondheidsbevordering op het werk, juist omdat er informatie is over verschillende werkomgevingen van veel werknemers in diverse organisaties. Zonder de ESWS had ik veel vragen die ik in dit proefschrift aan de kaak stel niet kunnen beantwoorden.

Ten vierde kijk ik in dit proefschrift naar gezondheidsbevordering op het werk die al bestaat in organisaties, in plaats van naar de meer experimentele setting waar ander onderzoek op leunt, zogenaamde randomised controlled trials. In dat soort onderzoek nemen alle werknemers in een organisatie of afdeling deel aan een gezondheidsprogramma op het werk, welke meestal speciaal ontworpen is voor de studie. Wanneer wordt aangetoond dat het programma werkt, wordt vaak geconcludeerd dat deze ook uitgerold dient te worden in andere organisaties. Er kan echter een groot gat zijn tussen onderzoek en implementatie. Onderzoekdesigns die goed werken in organisatie A werken niet per se ook goed in organisatie B. Zo is het mogelijk dat een manager van een bepaald team het nut niet inziet van gezondheidsbevordering op het werk omdat hij dit iets voor het privé-domein vindt, of bevat het programma intensieve sportlessen terwijl het personeelsbestand vooral bestaat uit oudere werknemers die liever een iets minder inspannende activiteit zouden doen. Onderzoek dat gebruik maakt van randomised controlled trials is vaak heel goed in staat om het effect van gezondheidsbevordering op het werk aan te tonen, meestal omdat deze effecten voor en na de implementatie ervan worden gemeten, maar ze vinden wel plaats in een onderzoekcontext. Het is ook belangrijk om gezondheidsbevordering te onderzoeken die daadwerkelijk plaatsvinden in bedrijven, omdat dit de werkelijke

bijdragen van gezondheidsbevordering op het werk in kaart kan brengen. Bovendien is het ook makkelijker om deze bevindingen te generaliseren.

Een vijfde bijdrage van dit proefschrift is dat ik aantoon dat gezondheidsbevordering aangeboden door werkgevers de fysieke grenzen van de werkplek overschrijdt. Dit doe ik door rekening te houden met de nieuwe context van hybride werken. Om de verspreiding van het coronavirus tegen te gaan adviseerden veel overheden werknemers om zo veel mogelijk thuis te werken, en toen deze restricties werden opgeheven bleven veel werknemers dat ook doen. Om te zien hoe werkgevers de gezondheid van hun werknemers kunnen bevorderen terwijl deze thuiswerken heb ik een vignetexperiment ontworpen. Met deze studie, beschreven in hoofdstuk 3, heb ik aangetoond dat werknemers open staan voor gezondheidsbevordering vanuit de werkgever wanneer zij thuiswerken en wat hun intenties om hieraan deel te nemen beïnvloedt. Deze bevindingen kunnen gebruikt worden om op succesvolle wijze gezondheidsbevorderende activiteiten voor thuiswerkende werknemers te implementeren.

Ten slotte kijk ik in dit proefschrift naar verschillende typen gezondheidsbevordering op het werk. Niet alle organisaties bieden hun werknemers alle regelingen aan. Ook is er verschil in hoeverre diverse typen gezond gedrag onderdeel zijn van een werkdag, hoe vaak deze plaatsvinden en hoe groot de kans is dat ze worden beïnvloedt door de sociale werkomgeving. Zo eten de meeste werknemers elke dag op hun werk, maar zullen ze niet elke dag een sportactiviteit doen. Het onderzoeken van de verschillende vormen die gezondheidsbevordering op het werk kan aannemen stelt me in staat om diepere inzichten te geven in het gebruik en de gevolgen van gezondheidsbevordering op het werk, waarmee ik hoop werkgevers en werknemers in staat te stellen om gezond te zijn op het werk.

## **Praktische aanbevelingen**

Hoewel werkgevers steeds vaker gezondheidsbevordering op het werk aanbieden, is het zeker niet zo dat alle werknemers voor een organisatie werken waar dit het geval is. Gemiddeld heeft 40% van de werknemers toegang tot regelingen gericht op gezond eten, voor 50% zijn regelingen gericht op bewegen beschikbaar en 70% van de werknemers kan een preventieve medische keuring laten uitvoeren. Van alle werknemers in de ESWS heeft ongeveer 13% geen toegang tot welke vorm van gezondheidsbevordering dan ook. Zoals ik laat zien in hoofdstuk 7 heeft gezondheidsbevordering op het werk ook positieve effecten voor werkgevers

naast het vergroten van de gezondheid van hun werknemers. Een belangrijke eerste stap is dus om het aan te gaan bieden. Dit kan op verschillende manieren. Wanneer de bedrijfskantine wordt gerund door een cateraar kunnen afspraken worden gemaakt om alleen gezonde voeding aan te bieden. Een andere mogelijkheid is om een gezonde lunch zelf te verzorgen, bijvoorbeeld door om beurten boodschappen te doen of deze te laten bezorgen. Dit is vooral een optie voor het MKB.

De overheid kan werkgevers ook helpen om gezondheidsbevordering op het werk aan te bieden. Momenteel is er nog geen EU-wijde of nationale regelgeving die zich richt op gezondheidsbevordering, maar wordt vooral ingestoken op het voorkomen van ongelukken en het verminderen van risico's op het werk. Het bevorderen van de gezondheid van alle werknemers zou hierbij moeten worden opgenomen, bijvoorbeeld door het verplicht maken van een preventief medisch onderzoek. Daarnaast kunnen belastingregelingen een rol spelen. Zo zijn er in Nederland fiscale aftrekposten die werkgevers kunnen gebruiken om een gezonde lunch te verzorgen, of werknemers in staat te stellen een fiets te kopen welke gebruikt kan worden voor actief woon-werkverkeer. Dit soort beleidsmaatregelen verlagen de kosten en helpen werkgevers om gezondheidsbevordering op het werk aan te bieden.

Daarnaast doen werkgevers er goed aan dat wanneer zij gezondheidsbevordering op het werk aanbieden erop te letten dat dit toegankelijk is voor *alle* werknemers. Gezondheidsbevordering kan veel verschillende vormen nemen, bijvoorbeeld het verzorgen van verpakte gezonde lunches voor vrachtwagenchauffeurs of het aanbieden van sportlessen op verschillende tijden wanneer er gewerkt wordt met ploegendiensten. Ook wanneer veel werknemers thuiswerken is het belangrijk om gezondheidsbevordering welke past bij hun werksituatie aan te bieden. Bij het implementeren van gezondheidsbevordering op het werk is dient dit te matchen met waar en wanneer werknemers werken, alsmede het type werk dat zij doen. Werkgevers hoeven dit niet helemaal zelf te verzinnen, maar kunnen hun werknemers daarbij om input vragen, bijvoorbeeld in het jaarlijkse medewerkerstevredenheidsonderzoek. Wanneer de aangeboden regelingen matchen met de voorkeuren van werknemers zullen zij hier eerder gebruik van maken.

Alleen het beschikbaar stellen van gezondheidsbevordering op het werk is niet effectief. Wanneer het aan de werknemers zelf gelaten wordt om uit te vinden welke regelingen voorhanden zijn en hier tijd voor vrij te maken, resulteert dit zeer waarschijnlijk in lage deelname. Ook zou het in dat geval zo kunnen zijn



dat sommige groepen werknemers überhaupt niet op de hoogte zijn van het bestaan van regelingen. Eerder onderzoek heeft laten zien dat communicatie van groot belang is. De werkgever en/of de HR-afdeling moet werknemers informeren over de beschikbaarheid van gezondheidsbevordering op het werk. Dit kan door emailcampagnes en berichten op het intranet, maar ook door succesverhalen te delen op sociale media zoals LinkedIn. Ook managers zijn belangrijke poortwachters voor het verspreiden van informatie over gezondheidsbevordering op het werk. Dit hoeft niet op een heel formele manier, maar bijvoorbeeld door werknemers erop te wijzen dat ze hun ongebruikte vakantie-uren mogen inzetten in het fietsenplan. Ook werkgevers profiteren wanneer werknemers op de hoogte zijn van het bestaan van gezondheidsbevordering op het werk, dus het is niet gek om hier middelen voor in te zetten.

Dit betekent echter niet dat het op de hoogte stellen van werknemers van het bestaan van gezondheidsbevordering op het werk genoeg is en werkgevers daarna ontspannen achterover kunnen leunen. Het stimuleren van deelname aan gezondheidsbevordering op het werk is het belangrijkste. Hierbij helpt het bijvoorbeeld wanneer werknemers zeggenschap hebben over hun werk. Als werknemers de mogelijkheid hebben om thuis te werken, kunnen ze in de lunchpauze gebruik maken van het door hun werkgever gesponsorde sportschoolabonnement. Voor werknemers wiens werk het niet toelaat om thuis te werken, zoals verpleegkundigen, kan worden gedacht aan zelfroosting. Werknemers kunnen dan een dienst kiezen die hen in staat stelt om deel te nemen aan de yogales die door de werkgever wordt aangeboden.

Wanneer deelname aan gezondheidsbevordering onder werktijd kan, is dit voor veel werknemers een belangrijke motivatie om dat ook daadwerkelijk te doen. Dit is dus ook zeker iets waar werkgevers op moeten inzetten. Werknemers graag laten zien dat ze hardwerkend en toegewijd zijn (een uitzondering daargelaten), dus werkgevers hoeven niet bang te zijn dat werknemers de kantjes ervan af lopen wanneer zij de kans krijgen om tijdens hun werk gebruik te maken van gezondheidsbevordering. Veel werknemers geven aan dat een gebrek aan tijd een reden is om geen deel te nemen. Zoals mijn bevindingen laten zien zijn veel werknemers meer geneigd om gebruik te maken van gezondheidsbevordering op het werk wanneer dit onder werktijd kan. De werkgever geeft hiermee een sterk signaal dat de gezondheid en het welzijn van werknemers belangrijk is, juist omdat het onderdeel van het werk is. Wanneer werknemers de mogelijkheid krijgen om even een rondje te wandelen onder werktijd bestaat de mogelijkheid dat ze met allerlei nieuwe, frisse ideeën terugkeren en na deze pauze dus productiever zijn.

Het is daarnaast belangrijk om een ondersteunende werkomgeving te creëren wanneer gezondheidsbevordering op het werk wordt geïmplementeerd. Een gezondheidscultuur is hierbij van groot belang. Wanneer welzijn een centrale plaats inneemt op het werk, voelen werknemers zich open om hier met elkaar over te praten en kunnen ze elkaar zo steunen in het maken van gezonde keuzes. Het is van belang dat werknemers weten dat werk niet de topprioriteit heeft, zowel op het werk als wanneer wordt thuisgewerkt. Zo kunnen managers de lunchpauze in hun agenda zetten en werknemers laten weten dat dit vrijgehouden wordt, zodat duidelijk wordt dat het houden van pauze een normaal iets is om te doen.

Hoewel het lastig is om van de ene op de andere dag een cultuuromslag te bewerkstelligen, is het toch cruciaal dat gezondheid onderdeel wordt van waar de organisatie voor staat. Een vitaliteitsweek, waarbij werknemers op maandag een schaalje fruit krijgen en op dinsdag mee kunnen doen aan een sportklasje, en dan denken dat het thema vitaliteit voor dit jaar weer afgevinkt is, helpt niet genoeg. Ook het outsourcen van gezondheidsactiviteiten, bijvoorbeeld door leefstijlcoaches in te huren die af en toe langskomen voor een gesprekje met werknemers, is waarschijnlijk niet effectief genoeg. Beter is het om iemand vast in dienst te nemen of om dit onderdeel te maken van het HR-team, zodat aandacht voor de gezondheid en welzijn onderdeel wordt van het DNA van de onderneming.

Collega's spelen een cruciale rol in het creëren van een stimulerende werkomgeving. In dit proefschrift heb ik laten zien dat collega's rolmodellen kunnen zijn die de gezonde keuzes die werknemers maken op de werkvloer kunnen beïnvloeden, en ook wat zij daarbuiten doen. Het kan helpen om bepaalde werknemers zogenaamde health champions te laten worden. Dit zijn werknemers die speciaal getraind zijn om een voortrekkersrol te nemen en ondersteuning bieden aan andere werknemers om gezonder te leven. Eerder onderzoek heeft aangetoond dat dit vaak succesvol werkt en dat werknemers het ook fijn vinden wanneer een mede-collega deze rol op zich neemt. Daarnaast kunnen succesverhalen openlijk worden gedeeld, bijvoorbeeld met een video van collega's die hun favoriete route voor een lunchwandeling in de buurt van het kantoor delen of door het organiseren van een uitdaging waaraan iedereen kan deelnemen. Hierbij moet men in gedachten houden dat deze voorbeelden haalbaar zijn voor alle werknemers, want het kan juist tot demotivatatie leiden wanneer collega's als erg fanatiek worden gezien. Ook moeten er realistische voorbeelden worden gebruikt: het heeft niet zo veel zin te laten zien hoe vrouwen

van middelbare leeftijd een rondje wandelen in een organisatie waar vooral jonge mannen werken. Zoals ik laat zien in dit proefschrift zijn collega's ook van belang voor de werknemers die geen gebruik maken van gezondheidsbevordering op het werk, en op deze manieren kunnen werkgevers laten zien dat gezond gedrag normaal is binnen de organisatie. Ten slotte kunnen werkgevers ook activiteiten opzetten die teamspirit stimuleren, zoals bijvoorbeeld gezamenlijk deelnemen aan een estafeteloop in de buurt. Collega's motiveren zo elkaar door samen naar een doel te werken, en dit zorgt voor veel werknemers ook dat gezonde keuzes leuker worden. Werknemers hebben hier ook zelf een verantwoordelijkheid in, bijvoorbeeld door hun collega's uit te nodigen om mee te gaan op hun lunchwandeling. Zo zijn ze samen gezond op het werk.

# 12

## Dankwoord

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# 13

**About the author**

Anne van der Put was born on 7 February 1994 in Noordwijk, The Netherlands. She received her VWO-diploma from the Rijnlands Lyceum Sassenheim, where she also acquired the International Baccalaureate English A2 Higher Level diploma. Next, she moved to Maastricht where she obtained her Bachelor's degree in Liberal Arts and Sciences from Maastricht University (2015, cum laude). She also studied a semester at the Swedish School of Social Sciences from Helsinki University in Finland. During 2015-2016, she worked as a junior lecturer at University College Maastricht.

Anne obtained her Master in Sociology and Social Research from Utrecht University (2018, cum laude). During this period, she did two research internships, one at the Wetenschappelijke Raad voor het Regeringsbeleid and one at the Centraal Bureau voor de Statistiek. She also worked as a research assistant and aided in diverse data collections, among which the second wave of the European Sustainable Workforce Survey, for which she was data coordinator.

In September 2018, Anne started working as a PhD candidate at the Interuniversity Center for Social Science Theory and Methodology (ICS) at the department of sociology at Utrecht University. This dissertation is the final product and has been written under the supervision of dr. Jornt Mandemakers, prof. Tanja van der Lippe and prof. John de Wit. For this dissertation, Anne collected data on working from home and healthy lifestyles using a survey and vignette experiment, for what has become chapter 3. As part of her PhD training, she collaborated with prof. dr. Lea Ellwardt from Cologne University. Chapter 5 is the result of this digital research visit. Anne supervised Bachelor theses and was workshop instructor for the course Research Practical 1: Work-family issues, organisations and inequality. As vice president of the PhD council of the Faculty of Social and Behavioural Sciences, and PhD representative for the department of sociology, she organised several PhD meetings and surveys. Additionally, she was involved in the project Agape in ondernemingen, a collaboration between Utrecht University and Maastricht University about the ways in which Dutch organisations are committed to the well-being of their employees. During her PhD project, Anne has appeared several times in the media sharing the results of her research, among others in newspaper articles, blogs, on regional and national radio and in podcasts.

As of February 2023, Anne works as post-doctoral researcher at the department of sociology, Utrecht University. Here she will, among others, coordinate the collection of the third wave of the European Sustainable Workforce Survey.

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Organisations increasingly offer worksite health promotion in order to improve the health and lifestyle of their employees, and also because doing so affects employees' productivity. Worksite health promotion can take diverse forms, such as healthy food choices in the worksite cafeteria and onsite fitness facilities. Using large-scale survey data and a vignette experiment, this dissertation studies the role of the work environment in explaining the use of worksite health promotion and its outcomes. Results show that the work environment plays a role in the use of worksite health promotion and that colleagues matter for healthy behaviour, both at work and outside. Employees and employers benefit from worksite health promotion through better health and performance. Employers should ensure all employees are provided access to worksite health promotion, are aware of its existence and are able to use it. This will help employees in being healthy at work.



Anne van der Put obtained her cum laude Research Master's degree in Sociology and Social Research at Utrecht University in 2018. She conducted the research presented in this dissertation between 2018-2022 at the Department of Sociology at Utrecht University, as part of the Interuniversity Center for Social Science Theory and Methodology (ICS).