

# **Equity in the office? to spark conversations about workplace wellbeing and health**

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## **1. Introduction**

**“People in the social hierarchy at work have worse health than those above them, and better health than those below them”**

(Marmot and Bell 2010, p.162).

This social gradient in health is of interest to those endeavouring to reduce health inequalities. Given that so many adults spend significant parts of their lives at work, the contribution of work and work conditions to health inequalities is a key area of interest (Hoven and Siegrist 2013). Research interests include seeking explanations of how the work environment impacts on health (Clougherty et al 2010) and on proposing and evaluating workplace interventions (Bambra et al 2009).

Physical features of manufacturing environments, such as exposure to chemicals and dust, have been identified as potential contributors to the health difference between ‘blue collar’ and ‘white collar’ workers (Clougherty et al 2010; Kaikkonen et al 2009). However, physical features of non-manufacturing environments, such as offices, have not been a focus in health inequalities research.

Those in desk-based jobs use different types of workspace including personal offices and various different sizes of shared offices with a wide range of different layouts (Felstead et al 2005a). There is a growing trend in the use of shared offices – as well as home working and hot desking - with the main reported drivers being the promotion of collaborative working and cost reduction (Felstead et al 2005b). This trend means it is timely to consider the health impact of the physical office environment and to identify whether or not it could contribute to the social gradient in health.

In this paper, the term ‘workplace’ is used in a generic way to include physical and psychosocial aspects of the conditions in which work is carried out. Whereas ‘workspace’ is used more specifically to apply to the physical features of an office based employee’s working environment.

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<sup>1</sup> The material in this paper is based on an assignment I prepared for my Professional Doctorate in Public Health. I have decided to make it more widely available because it seemed too important to leave in an assignment!

## 2. Health and wellbeing impact of workplace stress

Studies of the health and wellbeing impact of workplace stress vary in the outcomes studied, for example they may look for self-reported psychological affect (e.g. fear, anxiety), self-reported 'sub-clinical' symptoms (e.g. headaches, sleep disturbance), clinical risk factors (e.g. blood pressure) or disease endpoints (e.g. cardiovascular disease) (Ganster and Rosen 2013) or simpler measures such as sickness absence. Studies predominantly focus on isolating the impact of single variables in the workplace environment but more recently it has been demonstrated that models that integrate the cumulative impact of multiple low-level stressors can predict wellbeing (Evans et al 2012). However, it is difficult, or potentially impossible, to completely unravel the complex web of interactions to isolate all stressors and effect (Bluyssen et al 2011b).

But regardless of the source of stress, the physiological mechanisms that link stress with poor physical and mental health outcomes are the same. This is most commonly explained using the 'allostatic load model' which distinguishes three sets of processes (Ganster and Rosen 2013). Primary processes involve the immediate responses to stressful stimuli which include physiological reactions (e.g. cortisol release), negative psychological affect (fear, anxiety) and symptoms such as headache, fatigue or sleep disturbance. If this stress response is prolonged then secondary processes result in changes to the body's immune, cardio-vascular and metabolic systems, for example changes to resting blood pressure, insulin levels and body mass index. The tertiary processes, arising from prolonged secondary adjustments, lead to longer term disease outcomes, including cardiovascular disease, diabetes and depression (Ganster and Rosen 2013).

In addition to the impact on physical and mental health, exposure to stress also affects social wellbeing by decreasing social support and altruistic behaviours and increasing hostility and aggressive tendencies (McCoy and Evans 2005).

There has also been an interest in the degree to which unhealthy lifestyle behaviours can account for the relationship between workplace stress and physical and mental health problems. A systematic review (Siegrist and Rodel 2006) concluded that work stress is associated with changing body weight, alcohol consumption (in men, but not women) and co-existence of multiple unhealthy lifestyle behaviours. No association was found with smoking status, although it was noted that smoking intensity may be a better focus for future research. The authors concluded that only part of the pathway between stress and disease outcomes could be explained by unhealthy lifestyles and cautioned not solely focus on behaviour change and ignore the direct pathway.

### 3. Understanding stressors in the psychosocial environment

The social gradient in health was first documented amongst different grades of office workers in the longitudinal 'Whitehall' studies (Marmot and Brunner 2005). Given that all of the participants were 'white collar' office based workers, this gradient could not be explained by differences in strenuous work or exposure to contaminants such as chemicals or dust. As a result, attention to explain the differences has focused on the psychosocial work environment.

Two models are widely used to understand the nature of stressful work (Hoven and Siegrist 2013; Clougherty et al 2010; Siegrist and Rodel 2006). The demand-control model, first described by Karasek (1979), pays attention to the interaction between psychological job demands (e.g. workload) and the degree of decision latitude or discretion that the individual can use in fulfilling those demands. Job strain arises when job demands are high but decision latitude is low. The model was later modified to also integrate the degree of social support - job strain is further exacerbated when there is also low social support (Johnson and Hall 1988). The second model, the effort-reward imbalance model, focuses on reciprocity. Distress arises when the degree of reward, such as pay, other benefits, or possibilities of promotion, is perceived to be imbalanced with the degree of effort (Siegrist 1996).

Both of these explanations have been independently linked to poor health, such as cardiovascular risk (Hoven and Siegrist 2013) but more importantly the two mechanisms working together lead to ongoing stress reactions with implications for long-term health (Siegrist and Marmot 2004). Crucially for a discussion of health inequalities, this effect has been shown to be socially distributed – people in lower social classes have lower decision authority and lower skill discretion (Borg and Kristenson 2000) and are more likely to experience effort-reward imbalance (Siegrist 1996) than those in higher social classes. Furthermore, people in lower social classes are disproportionately vulnerable to the health harms of a poor psychosocial environment (Landsbergis et al 2012).

A third explanatory theory, known as organisational justice, focuses on perceived fairness in the workplace rather than the nature of the work. Discussions of organisational justice distinguish three different aspects:

“distributive justice (the fairness of the outcomes), procedural justice (the fairness of the process by which the outcomes are assigned), and interactional justice (the fairness of the interpersonal transaction)” (Cropanzano et al 2005, p.64).

Perceived organisational injustice, particularly distributive and procedural injustice, has been associated with poorer health (Robbins et al 2012), physical health symptoms (Elovainio et al 2010) and mental health concerns (Ndjaboué et al 2012).

To date, the physical office workspace has not been included in studies seeking to understand the contribution of work conditions to health inequalities. For example, workspace characteristics are not included in the list of data collected in the Whitehall II

studies (listed in Marmot and Brunner 2005). This omission is predicated on an assumption that the physical workspace is neutral and has no impact on the occupants' health and wellbeing. However, there are studies within ergonomics, facilities management, occupational and environmental psychology which suggest that this may be an oversight; it is to that body of literature that I now turn.

## 4. Contribution of workspace

A healthy indoor environment can be thought of as one **where the “combination of its physical, chemical and biological properties” do not lead to or aggravate illnesses and provide a comfortable environment for the occupants to be able to perform the tasks they need to do in that setting** (Bluyssen et al 2011a, p.281).

A number of interdependent and interacting factors influence those working in an office (Bluyssen et al 2011b; Danielsson and Bodin 2008). Although perceived comfort cannot be fully explained by the additive effects of separate components (Bluyssen et al 2011a), the factors associated with higher comfort are also those that enhance satisfaction, job performance and psychological wellbeing (Klitzman and Stellman 1989). Furthermore, an uncomfortable physical office environment affects job performance and satisfaction (Vischer 2007), contributes to workplace stress (Vischer 2007) and can lead to poor sleep quality (Aries et al 2010).

Of all workspace features, satisfaction with the amount of space for individual work is the most important aspect of overall workplace satisfaction (Kim and de Dear 2013). Knowledge work, which is carried out by many workers in offices, requires both interaction for collaboration and concentrated work (Hua et al 2011; Roper and Parminder 2008). Knowledge work does not only involve inputting into a computer, it involves tasks, such as visual mapping work and project work drawing on a range of reference sources, which can be difficult in smaller, wall-less workspaces (Erlach and Bichard 2008). In addition to determining the amount of space for individual work, density of people in an area affects occupants' subjective feelings of crowding - smaller desk sizes increase the likelihood of infringement of personal space, feelings of intrusion and discomfort (Oseland 2009).

Other factors associated with environmental satisfaction at work include good air quality, thermal comfort, good light levels, lower noise levels and higher privacy (Veitch et al 2007). These factors can be thought of as 'hygiene' factors, in that their absence is associated with dissatisfaction (Oseland 2009), poor performance (Oseland 2009) and poorer mental health (Klitzman and Stellman 1989).

Poor air quality, connected with pollutants, odour and poor ventilation, has been linked to a range of symptoms (collectively referred to as 'sick building syndrome' (SBS) symptoms) such as dryness of the nose, throat and lips; headaches; tiredness; and inability to concentrate (Wargocki et al 1999). Many of the same SBS symptoms are linked to higher office temperatures (Witterseh et al 2004). However, it has been noted that these symptoms are also associated with stressful working conditions (McCoy and

Evans 2005) so it is difficult to determine whether the health impacts are direct or at least partly mediated through stress mechanisms.

Daylight has important physiological and psychological impacts – impacts that have been acknowledged in some European countries by setting specifications on the distance that office occupants can be from a window (Rashid and Zimring 2008). For example, in the Netherlands the legislation stipulates a distance of 16 feet (McCoy and Evans 2005). Headaches, seasonal affective disorder and eyestrain are all associated with lack of daylight or insufficient light (Rashid and Zimring 2008). There is more employee satisfaction amongst those who are sitting near a window (Yildirim et al 2007). However, this may not only be because of light levels, occupants who have attractive window views report less discomfort (Aries et al 2010) and men who have visual access to greenery at work have lower levels of stress (the study did not find the same beneficial effect for women) (Lottrup et al 2013).

Noise exposure can cause work related stress (Andrejs and Rietschel 2008) and those in higher noise environments report more tiredness and less motivation (Jahncke et al 2011; Witterseh et al 2004). Noise takes various forms including general background noise; intermittent noise like phones ringing; and speech. Irrelevant speech is particularly associated with increased stress and fatigue (Smith-Jackson and Klein 2009). Protection from unwanted sound is one element taken into consideration in perceptions of privacy alongside unwanted observation and the degree to which occupants feel they can have conversations without being overheard (Kim and de Dear 2013).

The trend from personal to shared offices makes it more difficult to ensure that the factors associated with workspace satisfaction and comfort (space to do individual work, air quality, thermal comfort, light levels, noise and privacy) are optimised for all occupants and the task they are engaged in. Larger shared offices are consistently associated with ‘problem variables’ including increased distractions; loss of privacy; frequent interruptions; and, impairments in concentration all of which are associated with increased stress (Roper and Parminder 2008). Professional workers moved from private to open-plan offices report “increased distraction, reduced privacy, increased concentration difficulties and increased use of coping strategies” (Kaarlela-Tuomaala et al 2009, p.1423). Occupants of shared offices report more dissatisfaction with their environment than those in personal offices, especially with the amount of space they have to do individual work (Kim and de Dear 2013). Cooperation between professional workers was worse after moving from private to open-plan offices (Kaarlela-Tuomaala et al 2009) suggesting a reduction in social support which exacerbates job strain.

Different shared offices have different layouts and density. Using layouts designed for interaction create a greater likelihood of both auditory and visual distractions (Oseland 2009) which disrupts concentrated work. Higher density levels increases the likelihood of infringement of personal space (Oseland 2009). Using high partitions can provide a degree of visual privacy associated with greater satisfaction (Yildirim et al 2007) but are also associated with lower satisfaction with light (Lee and Guerin 2010) and more difficult interaction (Kim and de Dear 2013).

Individual workspaces in shared offices also vary in the degree to which they provide the occupant with environmental satisfaction. Some workspaces will be nearer the

distractions of copier/printer facilities; meeting spaces; shared kitchen facilities; or circulation areas (Hua et al 2011). Others will benefit from being near a window potentially compensating for other negative effects of the office environment (Yildirim et al 2007).

The combinations of these 'problem variables' has an impact on the health of those in shared offices. Self reported health is highest amongst those in personal offices and poorest in fixed open plan spaces (Danielsson and Bodin 2008). As office size increases, so does reports of "mucous membrane symptoms like eye-, nose- and throat- irritation, and CNS [central nervous system] symptoms like fatigue, headaches and difficulties in concentrating" (Pejtersen et al 2006, p.399). These effects occur independently of psychosocial work characteristics (Pejtersen et al 2006).

#### **4. Towards an understanding of workspace-induced stress**

It is possible to adapt the models used in understanding the stressful nature of the psychosocial work environment (demand-control, effort-reward imbalance, and organisational justice as described above) to considerations of workspace.

Drawing on demand-control theory, Vischer (2007) suggests a framework to understand how strain can arise from the demands the workspace places on the occupant and the degree of control the occupant has over it. Greater psychological demands arise when the workspace is not appropriate for the task being undertaken (Vischer 2007). Whilst individuals can use coping strategies to maintain task performance, this may elevate physiological stress reactions further (McCoy and Evans 2005). Decision latitude and discretion with regard to workspace have been shown to reduce stress. For example, high levels of job satisfaction and self-reported health were reported by those in successful 'flex offices' (a flexible space where individuals select their workspace according to their task) (Danielsson and Bodin 2008). Both productivity and wellbeing is improved when people work in a space that they have self-decorated (for example, with plants and art) (Knight and Haslam 2010). Office occupants find it less stressful and uncomfortable if they can control noise and light levels to suit their own needs (Rashid and Zimring 2008) and can personalise their workspace, for example with photos (Oseland 2009). Increased control over the workspace can also reduce the reported effects of distractions (Lee and Brand 2010).

Elsewhere, Vischer (2011) suggests that there is a spatial component to the social contract that an individual has with their organisation and in doing so implicitly draws a parallel with the effort-reward imbalance theory's focus on reciprocity. In exchange for their efforts, an individual expects to be provided with an appropriate and decent space to work in that allows them to express their individuality and 'call their own'. This means that changes to workspace involve a change to the social contract requiring full engagement of informed and empowered employees in any decision making processes (Vischer 2011).

Finally, workspace allocation and the processes through which distribution decisions are made could influence an individual's perception of organisational justice. This is

likely to be particularly pertinent to organisations where there is a wide variation in the distribution and quality of workspace.

## 5. A possible social gradient in workspace

Differences in workspaces have long been used as an expression of status (Felstead et al 2005a; Baldry 1997) suggesting that there is a social gradient in workspace. This has been noted in studies of the health impacts of the office environment. For example, Danielsson and Bodin (2008) noted that more people of higher job ranks were in personal offices. Whilst, Pejtersen et al (2006) noted that as office size increased so did the number of occupants from lower socio-economic groups. However these studies treated these variables as confounding factors to be dealt with in analysis, rather than the focus of analysis.

It has also been suggested, although without providing empirical evidence, that in shared offices, more senior staff are more likely to have workspaces near the windows (Leaman 1992) or have their backs to a wall (Hammersley 2013) in spite of the fact they spend less of the working day at their desks (Leaman 1992). Managers have greater negative reactions to reductions in their privacy than staff like clerical workers. Two possible explanations for this have been proposed – firstly, the need for greater confidentiality to perform their work tasks and secondly, the loss of the symbolic power associated with private offices (Davis et al 2011).

An option open to some, but not all, employees is to choose to work from home when doing concentrated work. However, a study in academic settings reported that those in more junior positions are less likely to have a suitable workspace at home (Baldry and Barnes 2012). It seems likely that this would also be the case for those with lower incomes.

## 6. Conclusion

Our work environment affects our wellbeing and health in a myriad of subtle ways – isolated and short-term stressors may not show a significant impact but multiple low-level stressors sustained over time are likely to harm wellbeing and health.

Research shows that for those in ‘desk based’ jobs, the office environment and the individual workspace is not neutral. It can enhance or harm wellbeing and health. Literature also points at the possibility that those in lower grades are more likely to be in workspaces that are associated with negative impact, adding additional stress to that arising from the psychosocial environment.

In addition to drawing attention to these wellbeing and health concerns, research also challenges the view that going open-plan is better for collaboration and productivity. For example, Kim and De Dear (2013, p.25) state “the open-plan proponents’ argument

that open-plan improves morale and productivity appears to have no basis in the research literature”

This means that in seeking to reduce office overhead costs, organisations can unintentionally create the conditions for less productive, less healthy workforces and potentially contribute to societal health inequalities. Office changes should not be seen as a neutral, technical activity – the office should be seen as a strategic tool to support a productive, healthy workforce.

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