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Research Paper

Workplace settings and wellbeing: Greenspace use and views contribute to employee wellbeing at peri-urban business sites

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HIGHLIGHTS

- Knowledge workers' wellbeing is associated with use and window views of greenspace.
- *Total time* spent in workplace greenspace per week predicted wellbeing.
- No associations between *frequency* of greenspace use and wellbeing were found.
- Views of trees, lawn and bushes/flowering plants were associated with wellbeing.
- View satisfaction did not mediate relationships between greenspace and wellbeing.

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ABSTRACT

Low density business developments are a near ubiquitous feature of peri-urban landscapes in the UK and in other developed countries, however little is known about how workers relate to open space in this particular type of working environment. Person–environment relationships in five urban fringe science parks in central Scotland were investigated through a survey of employees ($N = 366$). Specifically, the study sought to explore the impact of viewing and using greenspace at these knowledge-sector workplaces on employee wellbeing. The results of a series of multiple regression analyses indicated that both use of the open space and views of some vegetation types, namely trees, lawn and shrubs or flowering plants, were positively and independently associated with self-reported wellbeing levels. This research provides new insight into the extent to which workplace greenspace contributes to employee wellbeing, whilst controlling for exposure to greenspace outside of the workplace context. Also, by investigating relationships between wellbeing and the particular physical features seen in views, the research provides evidence on how workplaces might be designed to incorporate restorative window views. These findings have relevance both for the planning and design of peri-urban business sites and for the design of interventions to promote employee wellbeing.

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1. Introduction

1.1. Wellbeing, built environment and knowledge sector work

Recent years have seen a growing recognition for the role that urban planning and environmental design play in influencing mental health and wellbeing. Mental health disorders are now recognised as one of the major global challenges to public health (Prince et al., 2007), and there is a growing concern across a number of disciplines that wellbeing is 'a collateral casualty of modernity' in modern consumer societies (Carlisle, Henderson, & Hanlon, 2009). At the same time, the ascendancy of the social model of health (Dahlgren & Whitehead, 1991), in conjunction with growing influence of social–ecological perspectives in health promotion (Stokols, 1992) represent a paradigmatic shift towards an integrative understanding of the determinants of health and wellbeing that extend beyond the individual to include their environment.

These theoretical perspectives also align with a more positive concept of health by considering factors that promote good health as well as those responsible for illness, in line with the World Health Organisation's definition of health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO, 1948). Accompanying this transition,

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a growing body of empirical research has sought to develop the evidence base on the role of the physical environment for population health, and on how an understanding of salutogenic (health promoting) environments may be applied in the delivery of public health objectives. These shifts have led to a broadening of the onus for health promotion to encompass planning, architecture, and landscape architecture as well as the health professions.

Mental health and wellbeing are also of increasing concern in the business world. Amongst non-manual workers in the UK, mental health issues are the second most common cause of sickness absence after minor illnesses (such as colds and flu etc.), and are the single most common cause of long term absence in both manual and non-manual workers (CBI, 2011; CIPD, 2011). Whilst mental ill-health places a burden on employers, positive wellbeing may carry organisational benefits. The 'happy-productive worker hypothesis' proposes that those who are more satisfied in their jobs are also more productive and more engaged employees; there is evidence that higher subjective wellbeing and job satisfaction at work are positively related to job performance, productivity, and organisational citizenship (e.g. being cooperative, friendly and trustworthy), and are negatively related to employee turnover and absenteeism (Harter, Schmidt, & Keyes, 2003; Judge, Thoresen, Bono, & Patton, 2001). Meta-analyses of relationships between job satisfaction and performance have indicated that job complexity and occupational roles moderate the strength of such associations, suggesting that positive relationships between wellbeing and job performance are at their strongest amongst scientists and engineers and others carrying out complex and cognitively demanding work (Judge et al., 2001). Promoting wellbeing in the workplace and mitigating work-related stress may therefore have wide-ranging consequences, not just for knowledge-sector workers themselves but also for the productivity of businesses. This is increasingly being recognised by employers; a 2011 survey of UK businesses found that two-thirds of the public sector and one-third of the private sector organisations surveyed had an employee wellbeing strategy in place (CIPD, 2011).

1.2. Workplace greenspace and employee wellbeing

Building on a long tradition of urban greenspace provision as a public good supportive of population health e.g. by the urban parks and garden cities movements (Ward Thompson, 2011), much recent research exploring links between the physical environment and health has focused on the role of greenspace. A number of studies have reported relationships between the availability of neighbourhood greenspace and mental health and wellbeing outcomes at the population scale. These outcomes include recorded rates of clinical depression and anxiety disorders (Maas et al., 2009); risks of poor mental health derived from self-report scales (de Vries, Verheij, Groenewegen, & Spreeuwenberg, 2003; White, Alcock, Wheeler, & Depledge, 2013); self-reported stress (Grahn & Stigsdotter, 2003; Nielsen & Hansen, 2007); and life satisfaction (White et al., 2013). It is thought that the restorative functions of greenspace – in terms of promoting recovery from stress and attentional/mental fatigue – represent key mechanisms by which these associations might be explained (Maas et al., 2009). Research on the restorative functions of greenspace has tended to focus on home and recreational environments. However, many people spend more of their waking hours at work than at home, and many of the daily activities that cause stress or require sustained attention and focus (leading to a need for restoration) occur at work.

Office workers with views of nature have been found to report less stress (Lottrup, Grahn, & Stigsdotter, 2013; Shin, 2007), lower levels of tension and anxiety (Beute et al., 2011; Leather, Pyrgas, Beale, & Lawrence, 1998), greater job satisfaction (Kaplan, 1993; Lottrup, Stigsdotter, Meilby, & Claudi, 2015; Shin, 2007) and greater overall subjective wellbeing (Kaplan, 1993). Furthermore, the recent paper by Lottrup et al. (2015) reported that views of trees, flowers and 'park-like environments' are associated with higher satisfaction with office window views, which itself predicted employees' self-evaluations of their performance at work. Kaplan (1993) attributes these apparent effects of green window views to 'micro-restorative' experiences. It is argued that although instances of viewing nature through workplace window views may be very brief, short glances lasting perhaps only a few seconds may provide employees with micro-restorative benefits which have a significant cumulative impact on wellbeing and job outcomes. Little is known, however, about how different greenspace elements and configurations may influence the benefits of green office window views. With the exception of the recent paper by Lottrup et al. (2015), the methods used in previous studies have tended to be based on a broad conceptualisation of views as either natural/green versus urban/grey, or as lying on a continuum between these.

Hartig (2006) argues for the potential of short 'booster breaks' in greenspace to counter the negative health effects of work-related stress, emphasising the need for future research to include questions about how the environment in which breaks are taken influences the benefits of work breaks. Research on the benefits of exposure to nature in the workplace context has, however, tended to focus on views and other aspects of the indoor working environment, with few studies addressing the impacts of use of workplace greenspace on employee wellbeing. Lottrup, Stigsdotter, Meilby, and Sola Corazon (2012) examined employees' use of greenspace at knowledge-sector workplaces in Denmark, finding no associations between the frequency of use of such spaces and outcomes such as self-reported health, job satisfaction or employees' evaluations of their work performance. In contrast, other studies have found evidence that outdoor contact with nature at work (Largo-Wight, Chen, Dodd, & Weiler, 2011) and opportunities for physical access to a garden at the workplace, as opposed to only visual access or no access at all (Lottrup et al., 2013), are negatively related to self-reported stress levels. None of these studies have, however, controlled for the effects of views when examining impacts of use of or physical access to workplace greenspace. Understanding of the differential effects of window views of greenspace versus immersive experiences in green environments at the workplace is therefore limited. Also, as both types of exposure could provide opportunities for restoration, examining either without controlling for the other could lead to omitted variable bias, resulting in a masking of the true effect of the single greenspace variable being tested (Lottrup et al., 2012).

1.3. Science park workplaces

The present study focuses on the role of greenspace in influencing the wellbeing of employees at urban fringe business sites, namely science parks. This line of enquiry is particularly salient given that, in the UK, the majority of properties occupied by knowledge economy firms are located outside of traditional city centre locations (GVA, 2014). Urban fringe science parks and business parks represent a dominant spatial form in this 'new economy of the fringe' (Gallent, Andersson, & Bianconi, 2006), where low density development and a high quality environment are prioritised. We might hypothesise that there is a great deal of scope in these workplaces for employees to benefit from the restorative effects of nature by spending time outdoors in the open space there and being able to look out on it from inside the buildings. Campus-style business sites like science parks are also developed to accommodate knowledge sector organisations, to whom employee wellbeing may be of particular importance since the productivity of such businesses is reliant upon human capital and effective cognitive functioning (de la Fuente & Ciccone, 2003).

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