



## Context, control and the spillover of energy use behaviours between office and home settings



Clare Littleford <sup>a, \*</sup>, Tim J. Ryley <sup>b</sup>, Steven K. Firth <sup>c</sup>

<sup>a</sup> UCL Energy Institute, UCL Faculty of the Built Environment, Central House, 14 Upper Woburn Place, London WC1H 0NN, UK

<sup>b</sup> Transport Studies Group, School of Civil and Building Engineering, Loughborough University, Loughborough LE11 3TU, UK

<sup>c</sup> Building Energy Research Group, School of Civil and Building Engineering, Loughborough University, Loughborough LE11 3TU, UK

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### ABSTRACT

This paper examines how office-based lighting and computer use behaviours relate to similar behaviours performed by the same individuals in a household setting. It contributes to the understanding of energy use behaviour in both household and organisational settings, and investigates the potential for the ‘spillover’ of behaviour from one context to another. A questionnaire survey was administered to office-based employees of two adjacent local government organisations (‘City Council’ and ‘County Council’) in the East Midlands region of the UK. The analysis demonstrates that the organisational or home setting is an important defining feature of the energy use behaviour. It also reveals that, while there were weak relationships across settings between behaviours sharing other taxonomic categories, such as equipment used and trigger for the behaviour, there was no evidence to support the existence of spillover effects across settings.

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### 1. Introduction

In recent years, concern about environmental impacts and the cost, availability and security of energy supplies has led to heightened interest in ways to reduce energy use within buildings. For psychologists, work in this area has frequently focused on understanding the determinants of energy use behaviours, or on testing the effectiveness of intervention strategies aimed at changing behaviours (Abrahamse, Steg, Vlek, & Rothengatter, 2005). Much of the research into the determinants of energy use behaviours has focused on household settings (Abrahamse, Steg, Vlek, & Rothengatter, 2007; Owens & Driffill, 2008; Steg, Dreijerink, & Abrahamse, 2005). However, non-domestic buildings account for around one quarter of total UK energy use (Brown, Wright, Shukla, & Stuart, 2010), with local government buildings alone estimated to consume 26 billion kWh of energy annually (Carbon Trust, 2007). Interest is now growing in understanding energy use behaviours in non-domestic, organisational settings such as offices and other workplaces (Lo, Peters, & Kok, 2012; Matthies, Kastner, Klesse, & Wagner, 2011; Murtagh et al., 2013, in press; Scherbaum, Popovich, & Finlinson, 2008). At the same time, many behaviour change interventions include, explicitly or otherwise, the notion of

‘spillover’ – that encouraging people to take up one pro-environmental behaviour may lead them to take up further pro-environmental behaviours (Thøgersen & Ölander, 2003). By exploring how office-based lighting and computer use behaviours relate to similar behaviours performed by the same individuals in a household setting, this paper contributes to the understanding of energy use behaviour in both household and organisational settings, and investigates the potential for ‘spillover’ of behaviour from one context to another.

Energy saving behaviours such as turning off equipment when it is no longer in use are not necessarily motivated by pro-environmental intentions; they may be the result of, for example, habit or routine, organisational practice, a personal dislike of waste, or a fear of electrical faults. Literature exploring these behaviours from an environmental standpoint can nevertheless provide insights. Stern (2000) identifies and describes four classes of pro-environmental behaviour: environmental activism such as involvement in environmental organisations; non-activist public behaviour such as support for or acceptance of public policies; private-sphere environmentalism including the purchase, use and disposal of household products; and other environmentally-significant behaviour including behaviour within organisations. This classification distinguishes behaviours performed in household settings from those performed in organisational settings. In particular, it identifies that individuals may affect the environment

\* Corresponding author. Tel.: +44 (0) 20 3108 9164.

E-mail addresses: [c.littleford@ucl.ac.uk](mailto:c.littleford@ucl.ac.uk), [clarelittleford@gmail.com](mailto:clarelittleford@gmail.com) (C. Littleford).

by influencing organisations to which they belong, or by how they carry out their role within an organisation.

Much of the literature examining individual environmentally-significant behaviour focuses on behaviours that could be classed as private-sphere environmentalism: waste and recycling (e.g. Barr, 2007; Tudor, Barr, & Gilg, 2007), energy demand (e.g. Abrahamse et al., 2005) and travel mode choice (e.g. Anable & Gatersleben, 2005; Bamberg & Schmidt, 2003). For much of this research, the context of the behaviour is a household setting, where individual control over the performance of behaviours is likely to be relatively high. While even in households individuals do not have complete autonomy (their behaviour may be influenced or constrained by the people they live with, or by the finances, time or facilities available to them) it is still likely that an individual will have greater control over these behaviours in their own home than in an organisational setting such as an office. In offices, behaviours are shaped by the physical context of the office (the presence of controls over building systems or equipment), but also by the social context (the needs, expectations or norms of the people they share the office with) and by the organisational context (the policies and expectations of the organisation that employs them). However, many pro-environmental behaviours within organisational settings could fit into more than just Stern's (2000) fourth category of 'other behaviour including within organisations'. Non-activist public behaviour within an organisation could include support for a company's environmental policies, while private-sphere environmentalism choices could affect an employee's actions within the workplace. For such behaviours to be classified separately to similar behaviours performed in a household setting, the setting that the behaviour occurs within would need to be a defining feature of that behaviour.

A number of researchers have considered how environmentally-significant behaviours in one setting relate to similar behaviours in different settings. Barr, Shaw, Coles, and Prillwitz (2010) found that people tend to behave in a less pro-environmental manner when on holiday than when at home, often finding it difficult to transfer commitment to environmental action into other, more problematic contexts. The problematic aspects of other contexts are likely to vary according to the nature of the context in question. This is an area that has not yet been fully explored by researchers. However, it has been identified that the influencing factors most relevant to a particular behaviour are specific to each context (Stern, 2000). For example, Siero, Bakker, Dekker, and Van Den Burg (1996) argue that it is not possible to generalise from household energy saving behaviour to workplace energy saving behaviour because expenditure is experienced more directly by the household, while employees only benefit indirectly from financial benefits of energy saving at work. However, this suggests that cost is an overriding factor in the decision-making process, while other research has identified a wide range of factors that may influence environmentally-significant behaviour, including situational characteristics, prior awareness and experience of the behaviour, habits and routines, environmental beliefs and values, social and personal norms, and perceptions of behavioural control and self-efficacy (Bamberg & Möser, 2007; Barr, 2007; Clayton & Brook, 2005). Who pays for the energy used, then, is only one difference between the home and workplace settings, and not necessarily the decisive difference.

Where connections have been found between behaviours performed in household and organisational settings, prior experience of the behaviour has been shown to be important. Studies of waste and recycling behaviour found that office workers who actively recycled at home were more likely to recycle paper (Lee, De Young, & Marans, 1995) and textiles (Daneshvary, Daneshvary, & Schwer, 1998) at work than colleagues who did little home recycling,

while a sample of hospital workers reported recycling similar items in the workplace to those they recycled at home (Tudor et al., 2007). Tudor et al. (2007) suggest that similarities between specific recycling items may act as a cue to prompt the behaviour in each location. Barr (2007) suggests that the link identified by Daneshvary et al. (1998) between behavioural experiences in one setting and action in another implies a 'behavioural snowball effect', with participation in one behaviour leading to uptake of others.

This has also been identified as a 'spillover' effect in the context of behaviour change interventions (Thøgersen & Ölander, 2003). Much of the evidence suggesting the existence of a spillover effect is correlational (Barr, Gilg, & Ford, 2005; Poortinga, Whitmarsh, & Suffolk, 2013; Thøgersen & Noblet, 2012; Whitmarsh & O'Neill, 2010), with evidence that correlations between behaviours increase with the similarity (Bratt, 1999) and the perceived similarity (Thøgersen, 2004) of the behaviours. Thøgersen and Noblet (2012) argue that behaviours in the same taxonomic categories (time and place of behaviour, skills employed etc.) tend to be more strongly correlated than behaviours within different taxonomic categories. For similar behaviours in household and organisational settings, however, it is not clear whether prior experience of the behaviour in one setting will encourage the performance of the behaviour in the other setting, leading to spillover effects, or whether differences between the household and organisational contexts will lead to differences in the performance of the behaviour.

This question is important because the concept of spillover is influential in the design of many public behaviour change campaigns, which encourage people to take small steps to mitigate environmental impacts in the hope that small actions will lead to more and larger pro-environmental actions (Thøgersen & Crompton, 2009). If such an effect does exist and can be encouraged across contexts, this could add to the potential influence of behaviour change campaigns, with workplace-based campaigns able to influence home behaviours and vice versa. However, Nye and Hargreaves (2010) argue that different mechanisms drive behaviour change in workplace and household settings, with normative influences particularly influential in the workplace. Furthermore, the notion of spillover is problematic. Thøgersen and Noblet (2012) criticise behaviour change programmes and policies that attempt to trigger spillover, arguing that there is little evidence that 'wedge' or 'catalyst' behaviours lead to large behavioural changes, beyond a weak 'foot in the door' effect. This effect suggests that performing pro-environmental behaviours can 'prepare the ground' for acceptance of more far-reaching pro-environmental changes, but that this is likely to only work when the original behaviours are considered pro-environmental, rather than common, socially mandated or providing individual benefits (Poortinga et al., 2013; Thøgersen & Noblet, 2012). This is problematic in organisational settings such as offices, where other considerations such as carrying out tasks related to the job role, meeting the expectations of the employing organisation or interacting with colleagues in a shared environment may lead to multiple or competing motivations.

This paper, then, addresses two questions:

1. Is there a fundamental difference between energy use behaviours performed in the organisational setting of an office and energy use behaviours performed in a household setting?
2. Does the performance of an energy use behaviour in the organisational setting of an office spill over to influence the performance of related behaviours in a household setting?

These questions are addressed by examining responses to a questionnaire survey on lighting and computer use in office and

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