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Are perceptions of the environment in the workplace 'neighbourhood' associated with commuter walking?

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ABSTRACT

Walking for the daily commute is one potential strategy for increasing physical activity levels. Understanding the behaviour-specific environmental correlates associated with commuter walking will help effective interventions to be identified and developed. The aim of this study was to examine the associations of perceptions of the environment in the workplace 'neighbourhood' and commuter walking.

Participants in the baseline survey of the Walking Works intervention study reported perceptions of ten environmental attributes in their workplace neighbourhood, availability of public transport, time spent walking to and from work in the last seven days, their participation in physical activity and socio-demographic characteristics ($n=676$). We built a series of multivariate logistic regression models to examine associations between each environmental item, public transport availability and commuter walking.

Half (52%) of respondents were classified as commuter walkers ($n=352$) (66% female; 47% aged <30 years). Respondents were significantly more likely to walk for their daily commute if they reported there to be convenient walking routes (OR (odds ratio) 2.05, 95% CI (confidence interval) 1.23–3.42), suitable pavements (OR 2.23, 95% CI 1.23–4.04), maintained pavements (OR 1.64, 95% CI 1.02–2.62) or convenient public transport (OR 4.98, 95% CI 3.34–7.44) after adjusting for socio-demographic characteristics, free car parking at work and distance lived from work.

Creating 'pedestrian friendly' environments in workplace surroundings may be important for encouraging walking for the daily commute to work. Such environments would include convenient routes, suitable and maintained pedestrian infrastructure and convenient access to public transport. Improving and maintaining the walking environment around existing workplaces and ensuring infrastructure around new workplaces is designed to support commuter walking should be considered a priority area for investment.

1. Introduction

Participating in regular physical activity and regular walking is known to benefit health (Department of Health, 2011; Kelly et al., 2014). However, 33% of males and 45% of females in England do not meet current physical activity recommendations (Department of Health, 2011; Craig and Mindell, 2013). Strategies are urgently needed to increase participation at the recommended levels to reduce the public health and economic burden of diseases associated with low levels of physical activity (Allender et al., 2007; Scarborough et al., 2011). It is estimated that only between 9% and 11% of adults in England walk for the commute to work (Department for Transport, 2013; Office for National Statistics, 2011) with a high proportion (69%) choosing to drive (Department for Transport, 2013). Increasing the number of individuals who walk for all or part of their daily commute to and from work is one potential strategy to increase overall physical activity levels and improve health (Department of Health, 2011), as well as to reduce carbon emissions and traffic congestion (Department for Transport, 2011). In addition, evidence suggests that accumulating bouts of at least 10 minutes of moderate intensity activity may be

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sufficient to provide health benefits (Department of Health, 2011). The journey to and from work provides two opportunities to accumulate short bouts of activity such as this on each day an individual travels to work, either through walking alone, or walking in combination with the use of public or other motorised transport.

Ecological models identify the physical environment as an important influence on physical activity behaviour (Sallis et al., 1998). Much research has focussed on walking and associations with perceptions of environmental attributes in the residential neighbourhood (Adams et al., 2013; Owen et al., 2004; Saelens et al., 2003; Saelens and Handy, 2008; Van Dyck et al., 2012; Van Holle et al., 2012), which is typically defined as 'within 10–15 minutes' walk from home'. Few studies have assessed perceptions of the walking environment at trip destinations, such as the workplace, which might fall outside of this 10–15 min walk boundary. The importance of studying specific behaviours within clearly defined environments and the need to identify behaviour-specific environmental correlates has been highlighted previously (Giles-Corti et al., 2005).

It is important to identify and develop appropriate strategies to promote and support commuter walking based upon a better understanding of behaviour-specific environmental correlates of the behaviour. Commuter walking is defined as walking for the entire journey to or from work, or walking for part of the journey to work in combination with other modes of transport including by car and by public transport such as bus or train. It could be hypothesised that perceptions of the walking environment in the workplace 'neighbourhood' might influence commuter walking. Only two studies have previously assessed perceptions of environmental attributes in the workplace neighbourhood with walking or physical activity, however neither specifically reported associations with commuter walking as a discrete behaviour and both were conducted outside of the UK (Adlakha et al., 2015; Schwartz et al., 2009). The aim of this study was to examine the association of perceptions of the environment in the workplace 'neighbourhood' and commuter walking in adults employed in England.

2. Methods

2.1. Data collection and sample

The 'Walking Works' intervention project aimed to engage with five employers in England and develop walk to work schemes through recruiting volunteer 'walking champions' and providing resources to encourage people to walk for all or some of their journey to work. Full details are reported elsewhere (Adams, 2012). Data used in this study were collected in the baseline survey which was conducted between December 2009 and June 2010. Overall, 5,512 employees were sent an invitation to complete the survey online and 1,544 employees responded (28% response rate). Ethical approval for this study was obtained from Loughborough University Ethical Advisory Committee (reference R09-P121).

2.2. Measure of commuter walking

Respondents were asked to report the number of minutes they spent walking to and from work separately for each day in the last week (adapted from the Transport and Physical Activity Questionnaire (Adams et al., 2014)). Total number of minutes spent walking to and from work in the past week was computed by summing the number of minutes spent walking to and from work for each day. As the data were positively skewed, a binary variable was computed for commuter walking. Respondents who reported doing some walking (>0 min) on the journey to or from work in the past week were classified as 'commuter walkers', respondents reporting no walking (0 min) were classified as 'commuter non-walkers'. In addition, as Government recommendations suggest bouts of 10 min or more physical activity are needed to benefit health (Department of Health, 2011), any respondents in the commuter walking group who did not report doing at least 10 minutes walking for one journey (to or from work) on at least one day were reclassified as 'commuter non-walkers'.

2.3. Measures of perceptions of the environment in the workplace neighbourhood

Perceptions of the environment in the workplace neighbourhood were assessed using items selected from existing instruments whose reliability has previously been evaluated (Adams et al., 2013; Cerin et al., 2006; Ogilvie et al., 2008; Spittaels et al., 2010). Respondents were asked about ten items relating to walking and perceptions of the built environment in the workplace neighbourhood: 'Thinking about the area within a 10–15 minute walk from your workplace, how much do you agree with the following statements…': (1) There are convenient routes for walking; (2) There are suitable pavements for walking; (3) The pavements are well maintained; (4) There are safe places to cross the road; (5) *It is unsafe to walk because of the traffic; (6) *It is unsafe to walk because of the level of crime/antisocial behaviour; (7) Walking routes are generally well lit; (8) Walking routes are free of litter/graffiti; (9) Walking routes are well signposted; and (10) It is a pleasant environment for walking in. Response options were on a 4-point Likert scale from strongly disagree to strongly agree. Negatively worded items (marked *) were recoded during data cleaning such that a high score equated to agreement with the statements. In addition, respondents were asked to what extent they agreed that 'There is convenient public transport so I can walk some of the way to and from work' with response options on a 4-point Likert scale from strongly disagree to strongly agree. Responses to each environmental item were collapsed so that those who 'strongly disagreed' or 'disagreed' were compared to those who 'agreed' or 'strongly agreed'.

2.4. Confounding variables

Possible confounders included sex, age, ethnic group, educational qualifications, number of children under 16, car ownership (or access to a car), distance lived from work, the availability of free car parking at work, the organisation the respondent is employed by and physical activity levels in the last week (assessed using the single item measure (Milton et al., 2011)). Physical activity levels were also assessed using the short International Physical Activity Questionnaire (IPAQ) with a reference period of 'usual week' (Craig et al., 2003).

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