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Incorporating walking or cycling into car journeys to and from work: The role of individual, workplace and environmental characteristics

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ABSTRACT

Objective. Small increases in walking or cycling for transport could contribute to population health improvement. We explore the individual, workplace and environmental characteristics associated with the incorporation of walking and cycling into car journeys.

Methods. In 2009, participants from the Commuting and Health in Cambridge study (UK) reported transport modes used on the commute in the last week as well as individual, workplace and environmental characteristics. Logistic regression was used to assess the explanatory variables associated with incorporating walking or cycling into car commuting journeys.

Results. 31% of car commuters (n = 419, mean age 43.3 years, SD 0.3) regularly incorporated walking or cycling into their commute. Those without access to car parking at work (OR: 26.0, 95% CI:11.8 to 57.2) and who reported most supportive environments for walking and cycling en route to work (highest versus lowest tertile, OR: 2.7, 95% CI 1.4 to 5.5) were more likely to incorporate walking or cycling into their car journeys.

Conclusions. Interventions that provide pleasant and convenient routes, limit or charge for workplace car parking and provide free off-site car parking may encourage car commuters to incorporate walking and cycling into car journeys. The effects of such interventions remain to be evaluated.

Introduction

Promoting physical activity is a public health priority (Beaglehole et al., 2011). Encouraging walking or cycling for transport could benefit population health not only by increasing physical activity, which helps prevent disease and improve wellbeing, but also by reducing noise, air pollution and carbon dioxide emissions, which may mitigate future climate change (Das and Horton, 2012). Even small increases in walking and cycling could lead to health benefits (Jarrett et al., 2012). Predominantly cross-sectional studies have found that those who report walking or cycling to work are healthier and less likely to be overweight than those who do not (Hamer and Chida, 2008; Wen et al., 2006).

Promoting active lifestyles may require social and environmental changes beyond the health sector (British Medical Association, 2012; Morabia and Costanza, 2012) and transport policies are increasingly aimed at shifting travel from car use towards walking and cycling (Department for Transport, 2011a). However, this may not be possible for everyone, particularly those who live far from work for whom it may be impractical to walk or cycle all the way (Iacono et al., 2008; Ogilvie et al., 2010). For example, commuters in the US and the UK travel 12.2 and 8.6 miles each way to and from work on average (Department for Transport, 2011b; Santos et al., 2010). It is possible to combine active and sedentary modes of travel by walking or cycling sections of a journey made mostly by car.

Behavioural epidemiological research on the correlates of walking and cycling has generally produced mixed evidence of associations (Panter and Jones, 2010), and although studies in the transport literature have also explored the factors associated with cycling (Heinen et al., 2010) and cycling in combination with public transport (Martens, 2007) we are unaware of any studies that have used disaggregated data on modes of commuter travel to assess the correlates of walking or cycling when used in combination with the car. Given the potential contribution of walking and cycling journeys to overall physical activity, understanding why people choose to make these journeys may help shape the design of intervention strategies to promote incidental physical activity. The aim of this study, therefore, was to examine the correlates of the incorporation of walking or cycling into commuting journeys made primarily by car.

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Table 1
Descriptive characteristics of the sample from Cambridge, UK.

Variable	Percentage (number)			
	All participants (n = 419)	Car (n = 288)	Car in combination with walking or cycling (n = 131)	p
Personal characteristics				
Mean age in years (SD)	43.7 (11.9)	43.8 (10.8)	43.5 (11.8)	0.816
Gender				
Male	23.4 (98)	24.0 (69)	22.1 (29)	0.683
Female	76.6 (321)	76.0 (219)	77.9 (102)	
Weight status				
Underweight/normal	56.3 (232)	53.4 (151)	62.8 (81)	0.073
Overweight/obese	43.7 (180)	46.6 (132)	37.2 (48)	
Work type				
Sedentary/standing	81.8 (342)	83.6 (240)	77.9 (102)	0.157
Manual	18.1 (76)	16.4 (47)	22.1 (29)	
Difficulty walking				
Yes	2.4 (10)	2.1 (6)	3.0 (4)	0.546
No	97.6 (409)	97.9 (282)	97.0 (127)	
Number of children in the household				
None	67.3 (282)	67.3 (191)	71.0 (91)	0.525
One or more	32.7 (137)	32.3 (97)	29.3 (40)	
Urban–rural status				
Urban	44.3 (185)	42.9 (123)	46.6 (61)	0.479
Rural	55.9 (234)	57.1 (164)	53.4 (70)	
Socio-economic characteristics				
Highest educational qualifications				
Lower than degree	35.1 (146)	35.3 (101)	34.6 (45)	0.890
Degree or equivalent	64.9 (270)	64.7 (185)	65.4 (85)	
Housing tenure				
Owned	85.4 (356)	84.6 (242)	87.0 (114)	0.518
Privately rented/shared ownership/social housing	14.6 (61)	15.4 (44)	13.0 (17)	
Index of multiple deprivation				
Quartile 1 (most deprived)	291 (25.0)	28.5 (82)	17.5 (23)	0.093
Quartile 2	291 (25.0)	22.9 (66)	29.7 (39)	
Quartile 3	291 (25.0)	25.4 (73)	25.9 (34)	
Quartile 4 (least deprived)	290 (25.0)	23.2 (67)	26.7 (35)	
Workplace-related characteristics				
Distance to work				
<10 km	22.9 (97)	21.8 (63)	26.0 (34)	0.642
10.01–19.99 km	27.0 (112)	26.8 (77)	26.8 (35)	
20 km and over	50.1 (210)	51.4 (148)	47.2 (62)	
Workplace car parking				
Free parking	48.5 (203)	62.2 (179)	18.3 (24)	0.001
Pay for parking	35.3 (148)	32.6 (94)	41.2 (54)	
No parking	16.2 (68)	5.2 (15)	40.5 (53)	
Geographical context of commuting journey				
Commuting to the heart from within the city	24.7 (103)	26.7 (76)	20.6 (27)	0.298
Commuting to the outskirts from within the city	26.9 (112)	28.0 (80)	24.4 (32)	
Commuting to the heart from outside the city	22.6 (94)	20.7 (59)	26.7 (35)	
Commuting to the outskirts from outside the city	25.7 (107)	24.6 (70)	28.3 (37)	
Perceptions of the route environment[a]				
Reported the least supportive route (lowest tertile)	33.4 (138)	39.4 (111)	20.6 (27)	0.001
Middle tertile	34.2 (158)	37.9 (107)	38.9 (51)	
Reported the most supportive route (highest tertile)	28.3 (122)	22.7 (64)	40.5 (53)	
Psychological measures relating to car use				
Intention to use car (2 items)				
Below median	56.4 (234)	61.4 (175)	45.4 (59)	0.002
Above median	43.6 (181)	38.6 (110)	54.6 (71)	
Positive attitude towards car (2 items)				
Below median	51.9 (214)	59.7 (169)	34.8 (45)	0.001
Above median	48.1 (198)	40.3 (114)	65.1 (84)	
Perceived behavioural control (2 items)				
Below median	57.4 (236)	63.3 (179)	44.6 (57)	0.008
Above median	42.6 (175)	36.7 (104)	55.4 (71)	
Social norm (2 items)				
Below median	59.0 (242)	66.7 (188)	42.2 (54)	0.001
Above median	41.0 (168)	33.3 (94)	57.8 (74)	
Habit strength				
Low habit strength	50.5 (210)	54.5 (157)	40.5 (53)	0.008
High habit strength	49.5 (206)	45.4 (131)	59.6 (78)	
Physical activity				
Mean minutes/day spent walking on the commute (SD)	5.14 (11.9)	0.65 (3.1)	11.8 (14.7)	0.001
Mean minutes/day spent cycling on the commute (SD)	4.3 (9.6)	1.3 (5.1)	17.4 (18.2)	0.001