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Employees' perceptions of cycle commuting

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**Employees' Perceptions of Cycle Commuting:
A Qualitative Study**

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Manuscripts

Review

Abstract

Purpose - This study aimed to gain an in-depth individual level understanding of the psychological factors that affect cycle commuting.

Design/methodology/approach - A total of 15 participants (eight cycle commuters and seven potential cycle commuters) from a 'cycle friendly' employer based in a Scottish city took part in the study. Semi-structured interviews and Interpretative Phenomenological Analysis (IPA) were used to collect and analyse data.

Findings - The present study found that cyclists are more aware of the benefits of cycle commuting than potential cyclists. Those who did not currently cycle to work displayed a heightened awareness of the challenges of cycling to work, whereas cyclists reported more coping strategies for negotiating or overcoming the challenges involved in cycle commuting. These individual cognitions are potentially modifiable through psychological interventions.

Research limitations/implications - Future research should be carried out on samples in different contexts to examine whether some of the findings would be supported in other populations.

Practical applications - The findings from this paper suggest that psychological interventions based on challenging perceptions of the benefits and barriers to cycling may have a valuable role to play in enhancing cycle commuting rates.

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8 **Originality/value** - This study uses IPA to explore the complexities of perceptions in
9 relation to cycle commuting. It also brings to light, the types of coping strategies used to
10 enable cyclists to overcome some of their challenges associated with cycle commuting.
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21 **Introduction**

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23 Physical inactivity poses a major public health challenge in western societies
24 (Department of Health, 2004). Presently in Scotland, 67% of women and 55% of men are
25 not meeting the current recommendations of 30 minutes of moderate exercise on most
26 days of the week, with inactivity accounting for over a third of deaths from heart disease
27 (Scottish Government, 2009).
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35 On a national level cycling in Scotland has been receiving heightened attention
36 due to its potential to improve public health (Cavill and Watkins, 2007; Cavill and Davis,
37 2007; Wardman *et al.*, 2007). Cycling is a sustainable, healthy, transport option that can
38 improve physical and psychological health and decrease carbon emissions (Cavill and
39 Davis, 2007). Cycle commuting fits into daily life and provides the working population
40 with an opportunity to be physically active (Vuori *et al.*, 1994) and travelling through
41 green space promotes self-esteem and enhances mood (Barton and Pretty, 2010).
42 Although there is some debate surrounding the associated dangers of cycling, Hillman
43 (1993) has suggested that the benefits outweigh the risks by 20 to one. More recently, de
44 Hartog *et al.* (2010) reported more modest findings that the benefits of cycling are seven
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3 times larger than the risk involved in the UK context. Furthermore, the risks of road
4 traffic accidents among cyclists, although higher than car users are lower than for
5 pedestrians (Cavill and Davis, 2007).
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10 Despite the benefits of cycling, only a small sector of the population cycle to
11 work. Currently around 2% of people in Scotland cycle commute (Scottish Executive,
12 2009), which reflects UK figures of cycling for transport (Department for Transport,
13 2008). Studies in the UK have found that over 85% of respondents would be interested in
14 cycling more often (Scottish Executive, 2009; Department for Transport, 2002).
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22 Environmental factors such as danger from motor traffic, poor infrastructure and
23 bad weather are commonly cited as key challenges deterring people from cycling
24 (Crawford *et al.*, 2001; Scottish Executive 2009; Unwin, 1992). A recent UK study
25 suggested that the environmental context has an important role to play in people's choice
26 to cycle or not (Cavill and Watkins, 2007). However, providing a supportive physical
27 environment alone is insufficient to increase cycling (Giles-Corti and Donovan, 2002;
28 Wardman *et al.*, 2007). To effectively promote cycling coordinated action is needed that
29 addresses individual and social change, organisational change and environmental
30 measures (Davies *et al.*, 1997; Giles-Corti *et al.*, 2005). The complex task of
31 understanding cycling behaviour is also dependent on the journey type (Anable and
32 Gatersleben, 2005).
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48 Some people regularly cycle to work despite environmental challenges. A Belgian
49 study found individual factors had a stronger influence on cycle commuting behaviour
50 than environmental ones (de Geus *et al.*, 2008). Research addressing individual factors
51 (e.g. perceptions, attitudes and beliefs) is therefore crucial to understanding uptake of
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3 cycling and is also of value because individual factors are frequently more modifiable
4
5 than environmental ones. Several questionnaire studies have addressed psychological
6
7 factors related to cycling such as motivations and barriers (Crawford *et al.*, 2001; Anable
8
9 and Gatersleben, 2005; Shannon, *et al.*, 2006; Gatersleben and Appleton, 2007). However
10
11 these quantitative surveys may overlook some of issues that are of importance in
12
13 determining cycling behaviour and qualitative exploratory research that focuses on
14
15 individual perceptions and experiences is sparse (Cavill and Watkins, 2007; Davies *et al.*,
16
17 1997; McKenna and Whatling, 2007).
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22 A range of intervention approaches to increase rates of commute cycling have
23
24 been developed and piloted. These include hard measures, such as infrastructure changes
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26 within the workplace and the wider environment, and softer measures such as incentives,
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28 social marketing techniques and psychological techniques (e.g. Cleary and McClintock,
29
30 2000; Mutrie *et al.*, 2002; Wen *et al.*, 2005; Gatersleben and Appleton, 2007). Sloman *et*
31
32 *al.* (2009) found that a combination of hard and soft intervention approaches in six
33
34 demonstrations towns in the UK has led to an 27% increase in cycling over a three-year
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36 period.
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41 There are very few published psychological intervention studies that have aimed
42
43 to increase cycle commuting. One such study, based on the transtheoretical model of
44
45 behaviour change (Prochaska and DiClemente, 1982), tailored its intervention to
46
47 employees in the contemplation and preparation stages of cycling and walking to work
48
49 (Mutrie *et al.*, 2002). The intervention achieved success for walking but not for cycling.
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51 The study concluded that it is more difficult for cyclists to overcome environmental and
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53 workplace barriers than it is for walkers. Follow-up qualitative research found that
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3 although many people perceived similar environmental barriers, the individuals who were
4
5 successful at walking and cycling developed coping strategies to overcome their own
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7 perceived barriers (Crawford *et al.*, 2000; Mutrie *et al.*, 2002). Further research on
8
9 psychological approaches will add to the momentum of success achieved in promoting
10
11 cycling by explaining how individual variables interact with other factors to predict
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13 cycling.
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16
17 McKenna and Whatling (2007) suggest that more in-depth qualitative research
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19 that focuses on the individual may offer a fresh view on how to support and encourage
20
21 cycle commuting. Their findings reveal a range of perceptions of barriers and motivations
22
23 for commute cycling. Uniquely their work also highlights the power relations between the
24
25 dominance of car users and the marginalisation of cyclists on the roads.
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29 The aim of the present study is to explore people's perceptions and lived
30
31 experiences of cycle commuting and the influences that underlie their decision of whether
32
33 to cycle to work or not. The research focus is on discerning a greater understanding of
34
35 commonalities and differences of opinion regarding cycle commuting between a group of
36
37 cycle commuters (CC) and a group of potential cycle commuters (PCC) who are
38
39 interested in the idea of cycling to work. This work is original in a number of respects.
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41 Firstly, this study adopts a qualitative methodological approach to a field that is largely
42
43 explored using quantitative surveys and interventions. Secondly, the focus purely on
44
45 people's perceptions and experiences of cycle commuting allows the opportunity to
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47 explore the complexities of this behaviour. Thirdly, the qualitative nature of the study
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49 facilitates closer consideration of the impact of context on cycle commuting.
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Method

This research used semi-structured interviews alongside interpretative phenomenological analysis (IPA) to gain a more ideographic and detailed examination of participants' lived experiences with regard to cycle commuting (Smith and Osborn, 2003). IPA is an increasingly popular form of qualitative analysis (Reid *et al.*, 2005). The strength of IPA is the concern with individuals' subjective perceptions of a topic, referred to as the 'insider perspective' as opposed to trying to produce objective statements (Smith *et al.*, 1999).

In IPA the emphasis is placed on both the researcher's commitment to gain an in-depth understanding into the participant's world whilst also taking a step back and trying to learn something common about the group (Smith and Eatough, 2007). It is acknowledged that participants' thoughts are not always immediately visible from their accounts as they try to make sense of their world. Rather, by engaging in an analytical process the researcher can cautiously interpret a participants cognitions (Smith *et al.*, 1999).

Participants

A purposive sample of 15 participants took part in the study. All participants were employees of a workplace based in central Edinburgh, UK. The workplace held a Cycle Friendly Employer Certificate for providing good cycle facilities and support. These included, introduced or improved: showers and changing rooms; and storage space and cycle parking facilities. The company also offered financial incentives for cycling (e.g. milage allowances and discount schemes) and social support (e.g. promotional events). It

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2
3 was anticipated that using a centrally based, cycle friendly employer would reduce
4 organisational and environmental barriers to cycling and therefore facilitate a clearer
5 understanding of the psychological factors that affect cycle commuting.
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10 Participants were selected on the basis of fulfilling the criteria of being either
11 regular cycle commuters (n=8) or potential cycle commuters (n=7). Potential cycle
12 commuters stated an interest in cycle commuting and were contemplating the idea of
13 cycling to work. Potential cycle commuters were chosen as opposed to all non-cycle
14 commuters because interventions to increase cycle commuting are more likely to be
15 successful if focused on this group. Four women and 11 men took part, aged from 21 to
16 65 (see Tables 1 and 2). The daily commute made to work by CC participants ranged
17 from two to nine miles. The PCC participants commuting journeys ranged from two to 16
18 miles. However, those travelling longer distances planned to cycle only a part of their
19 commuting journey. The CC participants' routes varied widely in terms of the actual
20 paths and roads they take, as well as the surrounding landscape. Some journeys primarily
21 consisted of quiet off-road cycle paths, green space and countryside. In contrast, others
22 cycled their entire journey on busy main roads, using shared cycle lanes, advisory on-
23 road cycle lanes and, in some instances, no designated cycle lanes.
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46 Insert Tables 1 and 2 here.
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50 *Interviews*

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52 Semi-structured interviews were used which lasted between 30 minutes and one hour. A
53 flexible interview guide was designed whereby questions could be ordered differently and
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3 novel areas could be explored if deemed helpful in addressing the research aims
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5 (Bryman, 2004). A similar interview schedule was developed for the two groups with
6
7 small modifications to attend to their different behaviours. The questions were designed
8
9 to identify the individual perceptions of personal, organisational and environmental
10
11 factors relating to cycle commuting. A list of follow-up questions and facilitative
12
13 comments were developed in advance and were non-leading to encourage further
14
15 elaboration of answers.
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20 In an attempt to enhance the commitment to the participant's perspective the
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22 interviewer used the principle of bracketing, to identify and make explicit her own
23
24 opinions and assumptions to encourage self-reflexivity (Langdridge, 2007). Emphasis
25
26 was given to the participant's accounts and areas deemed important and salient to the
27
28 participant's world. Each interview was audio-recorded and supplemented by filed notes
29
30 of the interviewer's interpretations (Kvale, 2007).
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36 *Analysis*

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38 All interviews were transcribed word-for-word with pseudonyms assigned to each
39
40 participant. Analysis guidelines were followed (Smith and Osborn, 2003) to ensure that a
41
42 thorough analysis was carried out whilst paying attention to the original aims of the
43
44 investigation. Throughout the transcription and analysis process a research journal was
45
46 kept to document the researcher's ideas about tentative relationships and emerging
47
48 themes within and between data sets. The CC and PCC groups were initially analyzed
49
50 separately to facilitate a more idiographic and nuanced analysis. Emerging themes from
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52 the initial notes were written in the right hand margin allowing for theoretical connections
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3 whilst still grounded in the specifics of the accounts. The transcripts were then re-read,
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5 with a more critical focus. Through carrying out this process some small changes were
6
7 made to the existing interpretations. The transcripts were then uploaded into NVivo, a
8
9 qualitative software package, and analysis entailed clustering the emerging themes into
10
11 overarching themes across the two participant groups systematically.
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15 Care was taken to keep interpretations as close as possible to the data and not to
16
17 over-interpret. This was achieved through an analytical audit was carried out on six
18
19 transcripts by all three authors. There was a high degree of concordance in the emergent
20
21 themes and the few divergences were resolved through discussion.
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23

24 25 26 27 **Findings**

28
29 Nine themes emerged from the interviews. These themes encompass beneficial,
30
31 challenging and facilitating aspects of cycle commuting behaviour. The analysis attempts
32
33 to strike a balance between the emic (insider perspective of the participant) and the etic
34
35 (researcher's interpretation) by doing justice to the individual as well as emerging
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37 commonalities within the group (Reid *et al.*, 2005). Within the themes commonalities and
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39 differences between the two groups are described.
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45 46 *Health and Wellbeing*

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48 All CC and PCC participants discussed how cycle commuting contributes to general
49
50 health and wellbeing. Each individual spoke about the physical activity aspect of cycle
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52 commuting (e.g. aerobic fitness and weight management). For many this was a key
53
54 contributing reason for cycling to work. Additionally, several participants highlighted
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3 that cycling to work was a convenient opportunity to exercise in an otherwise busy day.
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6 One of the cycle commuters, Carl, stated:
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10 From a point of view of cycling, it fits in to the extent of, for me, it's just dead time.
11
12 ... it's half an hour twice a day that I do it and that's just my exercise done...
13
14 whereas otherwise because of the family side of things, I don't have that time.
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19 Whilst most of the CC participants highlighted the psychological wellbeing they
20
21 experienced from their cycle journeys, this was rarely discussed by the PCC group. Only
22
23 Dawn and Grant in the PCC group, who had previously cycle commuted, spoke in any
24
25 detail about the psychological benefits of cycling. Most CC participants discussed how
26
27 cycle commuting can 'clear your head', 'provide thinking time', 'help you to de-stress
28
29 and unwind', and 'make you feel better'. Fred, who cycle commutes through mixed
30
31 terrain said:
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38 It means that on most days here [at the workplace] and at home I'm probably in a
39
40 reasonably positive frame of mind... I have the unwinding space on the way home
41
42 and the contemplative space on the way in, which gives some balance and order, if
43
44 you like, to my day... I wouldn't get this coming to work any other way.
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50 Most of the CC participants spoke of how they also cycled for leisure. When
51
52 discussing the advantages of cycle commuting, some PCC participants showed awareness
53
54 of the impact cycle commuting may have on increasing their recreational cycling. For
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3 example, Amy stated: “I think if I cycled more regularly into work we’d probably
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5 increase what we did as a family”. Euan and Felix (PCCs) thought that if they purchased
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7 a bike for the purpose of commuting they would also use it to cycle at the weekend with
8
9 family and friends.
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12 13 14 15 *Time and Cost*

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17 Everyone in the CC group said that cycling to work either saved them time or took a
18
19 similar amount of time to alternative forms of transport. CC participants living nearer to
20
21 the city centre acknowledged that ‘door to door’ cycling was by far the quickest and most
22
23 reliable means of transport, especially during rush hour. Carl stated: “I can’t take the bus
24
25 trip any more. Sometimes it’s double the amount of time it takes for me on a bike”. By
26
27 contrast, the view that cycling to work would save time was opposed by all, except one,
28
29 of the PCC participants. Although some of the PCC participants provided a detailed
30
31 estimate of the time their cycle journey would take them, Amy, Belle and Harry all
32
33 thought that cycling would take longer than their current commute. Grant spoke of the
34
35 more pleasant cycling route to work taking longer and therefore being “less appealing”.
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41 Over half of the CC group mentioned that cycling into work saves money in terms
42
43 of bus fares, car parking, petrol, and the costs of owning and maintaining a car. Bert, who
44
45 has cycled for many years and doesn’t own a car, found there to be a significant cost
46
47 saving involved. Whilst recognising costs associated with cycling, Carl took a long-term
48
49 view that cycling was a financially viable option: “So its £1.10 per single on the bus
50
51 every time I go... with all my gear and bike it was around about £500 I think to buy
52
53 everything, so, couple of years, so that’s, it’s paid for itself”. In comparison, only two of
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3 the PCC group thought that cycling would save them money and one PCC participant
4 mentioned that the expense of purchasing a bike was a deterring factor.
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10 *Enjoying the Cycling Experience*

11
12 All CC participants positively discussed aspects of being outdoors. For many, travelling
13 by bike provided the opportunity to get some fresh air, although some questioned the
14 freshness of the air in the city centre. Fred, who cycles part of his route through the
15 countryside said:
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25 There's something about being out in the open air and it doesn't really matter
26 whether it's raining or windy or sunny or a combination of those things. ... it's
27 something about a sense that you're enjoying, how would I best describe it, you
28 enjoy the natural world... You're actually really feeling, you feel the sun, you feel
29 the rain, let's say you enjoy the flowers, you smell the flowers and so on. ... It's
30 being out and in touch with the elements of the world.
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41 In contrast, only Grant and Dawn from the PCC group, both with previous cycle
42 commuting experience, spoke positively about enjoying being outdoors on their bikes.
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44 The other PCC participants did not speak in any detail about enjoying cycling.
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50 *Socially Responsible Behaviour*

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52 Both CC and PCC participants, who mentioned having young children, felt it was
53 important to be healthy role models for them. Amy, a potential cycle commuter, stated:
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3 “I’d like my son to see that cycling was a viable choice of transport. He’s too ready to
4 jump into the car at every opportunity”. Some CC and PCC participants mentioned
5 environmentally friendly aspects of cycling into work, but this seemed a peripheral
6 benefit. Fred, one of the cycle commuters said: “I am able to feel that I am doing
7 something towards the environment”.

17 *Work and the Workplace*

18
19 Many CC and PCC participants had to travel regularly within their work role and
20 discussed the difficulty of cycling to work on these days. Carl, who cycled into work
21 three days per week on average, said: “I work in Aberdeen a day; I’ll be through in
22 Glasgow, up and down to London so it’s quite difficult to sort of work that all out”.
23 Working in different locations could also hinder cycle commuting the day before
24 travelling as it was sometimes necessary to take large files and equipment home on the
25 evening beforehand.

26
27 Within the CC group, those who carried their belongings in a backpack were more
28 likely to view carrying their laptop as a barrier, whereas those who used panniers saw this
29 as no problem. Of those in the PCC group who owned a bike, none of them used pannier
30 bags and felt that carrying a laptop would create a barrier to cycling. Grant said:
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48 On some occasions I wouldn’t have the option of leaving the laptop here [at the
49 workplace] because I have some work at home... but I’m not going to carry six,
50 seven, eight kilos on a back pack, do that as well as cycling up hill and over the
51 cobbles. No, there’s just no way that’s going to happen.
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6 The company dress code required participants to wear smart clothes. Most of the
7
8 CC participants cycled to work in casual clothes and then got changed into their work
9
10 attire. Getting their clothes to the office and getting changed was seen as a challenge for
11
12 some. Dan stated:

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17 It's a hassle trying to get all of your stuff in the same place, because it's important in
18
19 what we do to have a nice suit and be well presented so that's kind of hard work
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21 sometimes, and then, how do you get your shirts to and from work?
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27 Their workplace had many cycle facilities including showers, secure and sheltered cycle
28
29 parking, lockers and changing facilities. These facilities were commonly discussed in
30
31 positive terms. However, some participants commented on difficulties in accessing the
32
33 cycle parking and one CC participant mentioned that on occasion there were queues for
34
35 the showers.
36
37

38 The two PCC participants who did not own bikes were the least aware of the
39
40 facilities the workplace had to offer. Euan wasn't sure if there were any showers and was
41
42 concerned about arriving "all sweaty" at his work station. Although the workplace had
43
44 two showers available for employees to use, Felix thought there was only one shower and
45
46 he was concerned about queuing, which deterred him from cycling to work.
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50 Both groups considered that suitable workplace cycle facilities an essential pre-
51
52 requisite for cycle commuting and generally viewed their workplace facilities positively.
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54 Amy, one of the potential cycle commuters said: "The firm's made it as easy as possible
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3 if you want to come in on a bike. There's the storage and the showers and the lockers and
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5 so there's no disadvantage".
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8 Another positive factor discussed by both groups was social support. Their
9
10 workplace had a strong pro-cycling ethos and an active cycle community as well as a
11
12 senior figure seen as a 'cycle champion' who offered support and advice to colleagues.
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14 Carl, who had recently started cycle commuting, talked about the impact that their cycle
15
16 champion had on him:
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21 He has been really good at promoting it generally. And I guess it's just been
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23 chipping away at my collective thoughts for quite a while ... that I kind of know it's
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25 something that I should really try and do.
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32 Additional forms of workplace support for cycling such as staff discounts
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34 at a local cycle shop, tax relief payment schemes for purchasing bikes, cycle training
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36 courses and cycling breakfasts were also discussed positively.
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41 *Roads and Paths*

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43 The overall view was that cyclists are vulnerable on the roads, though individuals varied
44
45 widely with regard to how they personally felt about cycling there. Individuals from both
46
47 groups who had more experience of cycling on the roads generally perceived them to be
48
49 safer than those with less experience. Within the CC group, Andrew and Carl, who had the
50
51 least exposure to busy roads during their commute, both commented on their anxieties.
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53 Carl said that: "If I had to cycle on the actual 'road' roads all the time then that would
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3 really put me off". In contrast, Helen, who travelled all of her journey to work on busy
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5 main routes, felt comfortable cycling on the roads:
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10 It isn't dangerous, cycling in town, I'm sure there are more accidents with cars than
11
12 there are with cyclists and things. I guess the other hurdle to get over is the fact that
13
14 if a cyclist does have an accident then it can be very serious.
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19 Some of the road infrastructure was viewed negatively by both the PCC and CC
20
21 group participants. The CC group acknowledged that the city roads varied in the quality
22
23 and quantity of cycling provision available. Certain areas were considered as dangerous
24
25 and challenging for inexperienced cyclists. Ed stated:
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30 I'm OK nowadays, but if you weren't a regular cyclist I think a lot of people would
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32 get quite scared to go on the roads. When you've got buses this close to you... some
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34 of it is just dangerous.
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40 PCC participants mainly mentioned the lack of separate cycle lanes on the roads. They
41
42 discussed infrastructure issues in relation to the current routes they travelled on, which all
43
44 seemed to be via busy main roads. These would not necessarily be the only routes
45
46 available to them if they were to cycle to work. Felix felt deterred from cycling due to the
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48 busy main roads but later mentioned that there may be alternative cycle friendly routes
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50 for him to travel on.
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3 Over half of the CC group felt that cyclists were not respected enough by other
4 road users. Bert spoke of drivers not giving enough road space to cyclists: “The worst
5 sorts are not giving clearance and ... cutting in when the driver is not allowed, not being
6 aware that a cyclist actually has got forward motion”. Some PCC participants’ concerns
7 also related to other road users’ attitudes. Amy, Dawn and Belle spoke of their
8 experiences of seeing cyclists interact with traffic from a bus or a car’s perspective. Amy
9 said:
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22 Having been a bus user, having seen a lot of times how little respect is paid to
23 cyclists, how close buses get to them ... how easy it is not to see a cyclist coming up
24 the side of a bus. You know I’d just be very conscious, unconfident in both my
25 behaviour in those circumstances and the other drivers’ behaviour.
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34 Although busy main roads were viewed by some as challenging, off-road cycle
35 paths and shared bus and cycle lanes were discussed positively by the CC group. In
36 particular, the off-road cycle routes were seen as facilitating pleasant cycling experiences.
37 This view was shared by two of the PCC participants, Grant and Dawn, who had
38 previously cycle commuted. Andrew (CC) stated:
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48 I’m lucky with the route, and that is a big driver for me in terms of the cycling I
49 do... You’re cycling through forest effectively, by water so it’s, it’s a really nice
50 place to be, it’s relaxing.
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3 Over half of the PCC participants reported that if there was a more cycle-friendly route or
4 path that they could use, they would be more encouraged to cycle commute.
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10 *Bad Weather*

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12 Some of the PCC group were deterred from cycle commuting by inclement weather
13 regardless of the workplace facilities such as showers and changing rooms. They voiced
14 their dislike of being outside in poor weather condition. However, many of the CC group
15 along with Dawn, a PCC participant with cycle commuting experience, highlighted that
16 inclement weather conditions did not normally affect their decision to cycle. It was only
17 more extreme weather conditions such as ice and snow that prevented them from cycling
18 into work. Discussing inclement weather, Greg (CC) said: “That doesn’t usually bother
19 me too much either because unless it’s really bad, we have all the facilities we need
20 here”.
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38 *Personal Challenges*

39 The PCC group spoke about a variety of personal factors that they perceived as
40 challenges when considering cycle commuting. In contrast, only self-motivation was
41 discussed as a personal challenge by some of the CC group. PCC participants seemed less
42 aware of the strategies that the CC group employed to overcome the daily challenges of
43 cycling and perhaps consequently the PCC group seemed more concerned about these
44 challenges.
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3 The three PCC commuters with young children all spoke of the challenges of the
4 school run. Amy and Belle felt that cycling into work may not be a feasible option until
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6 their children were slightly older:
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12 When you've got family and kids and it's just, your time is not really your own time
13 you know to really make a choice and go for it... if I had to cycle I would probably
14 leave a lot earlier you know, which wouldn't be too good for him (her son) ... But
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16 he's getting older so you never know, once they do their own thing and you've got
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18 your time you've got more choices.
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27 Dawn and Felix (PCCs) perceived difficulties with bike storage and security. Both
28 participants lived in flats within the city centre area. Living in a top-floor flat, Dawn
29 spoke of the challenge she would face, having to carry her bike up and down the stairs
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31 each day. Felix, who did not own a bike, had nowhere to store one and would not like to
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33 leave a bike outside in the street.
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41 It was interpreted that in some cases, PCC participants' lack of awareness of
42 cycling and cycle facilities acted as a barrier to commute cycling. For instance, Felix,
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44 who discussed being deterred by busy roads, spoke of his general lack of awareness about
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46 cycling:
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53 I don't really pay attention to what cycling facilities there are. In terms of bike lanes
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55 and things like that, I just see kind of what's beside me or if I see people cycling and
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3 getting cut up by buses and I know that the bus lanes and cycle lanes are right beside
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5 each other. But other than that I don't really pay attention so there might be more out
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7 there that I'm not aware of.
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12 In terms of initiating cycle commuting, two PCC participants, Dawn and Euan,
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14 both felt that lack of self-motivation played a detrimental role. Dawn said: "I think there's
15
16 an element of just laziness". Harry spoke in similar terms about discipline: "So you
17
18 know, it probably is more just a case of kind of personally making that commitment and
19
20 getting on and doing it". Some CC participants also discussed the motivational challenges
21
22 they faced when working late, very tired, or if the weather was particularly inclement.
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24 However, it was only on rare occasions that CC participants' lack of motivation stopped
25
26 them from cycling. Andrew spoke of the kind of things that de-motivated him:
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34 At the end of the day or if you're running late or whatever it's just thinking 'right,
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36 I've just got to get on this bike now and cycle for the next hour' but generally once
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38 you get going it's fine. But sometimes you had a hard day here and you've got to
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40 cart stuff with you... sometimes you're a bit like 'can I really be bothered?'
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46 Although many challenges were discussed by the PCC participants, it was commented on
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48 by some of the PCC group that each individual challenge, and many environmental ones,
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50 did not make cycle commuting impossible rather, as a collective, these challenges did not
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52 make it an easy or straightforward option. Harry said: "I think there are a number of
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54 factors in there but none of those are insurmountable".
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Coping Strategies

To negotiate some of the challenging factors involved in cycle commuting, all CC participants had developed a range of personal coping strategies, to help them to fit cycling more easily into their daily lives. Planning and preparation were crucial in initiating and maintaining cycle commuting behaviour. The CC group and one PCC participant with previous experience of cycle commuting discussed the importance of developing a routine. They mentioned strategies such as: preparing the night before, planning which days of the week you are going to cycle into work in advance, obtaining the correct outdoor wear and cycle equipment and keeping clothes at the office.

Helen, one of the CC participants spoke about how she negotiates the school run. In her case, she was able to find ways of integrating the school run into her cycle commute by purchasing child seats for her bike and later buying her children their own bikes and cycling with them. When Greg (CC) felt unmotivated to cycle he reminded himself of the enjoyment he experienced from being outdoors. Similarly, Andrew (CC) overcame his lack of motivation for cycling by reminding himself of the limitations of his alternative journey:

I could go and stand and wait for a bus for ten minutes. Then I'm going to be shoe-horned onto that and then, by the time I get to the other end I've got to walk up the hill anyway so, I might as well just cycle and I get home about the same time.

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3 To minimise the risks of cycling on the roads, there was a strong consensus that
4
5 cyclists need a high awareness level to counteract the low visibility cyclists have on the
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7 roads and the dangers posed by other traffic. Bert (CC) elaborated on the importance of
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9 developing what he termed 'road craft' to minimise the risks of cycling:
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15 I'm thinking not only of what's coming in front of me, but also people who may
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17 suddenly do a U turn in front of me or somebody coming from behind me that wants
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19 to cut me up... you've got to have a rubber neck, make sure you have eye contact
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21 with drivers at junctions... the key points are that other drivers are aware where you
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23 are and what your intention is.
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29 Helen (CC) spoke about the strategies she employs to manage the traffic around her:
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34 You need to be assertive and demonstrate what your intentions are, make sure it's
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36 clear and carry those through, that's the way to control traffic I think. It's a lot safer
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38 if you can do that. I think it's having confidence.
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44 In terms of initiating cycle commuting, some individuals from both the CC and
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46 PCC group spoke of preparatory plans and ideas that could be employed to overcome
47
48 some of the initial hurdles and uncertainties related to starting to cycle. Plans and ideas
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50 were discussed such as: having a practice run by bike to work out a suitable route and
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52 how long it would take, investing in a suitable bike, panniers and clothing, seeking
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3 information from colleagues who cycled and from the internet, and going on a cycle
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5 training course to help build confidence to cycle in traffic.
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10 **Discussion**

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13 This study provides original insights into cycle commuting by qualitatively
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15 investigating both potential and regular cycle commuters' perceptions and experiences of
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17 cycling to work alongside exploring the impact of the context in which the research is set.
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19 A synthesis of findings indicates that potential cyclists are less aware of the range of
20
21 benefits associated with cycling to work than regular and experienced cycle commuters.
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23 Potential and regular cycle commuters' accounts also differed in the way they discussed
24
25 personal coping strategies, perceptions of supportive workplace facilities and perceptions
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27 of cycling infrastructure within the local environment. Cycle commuters discussed fewer
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29 challenges and more coping strategies than potential cycle commuters, who generally
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31 spoke more about challenges and less about coping strategies.
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37 This study also brings to light the complex nature of cycle commuting and the
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39 high level of effort needed to take part in this behaviour. Even in a supportive workplace
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41 context, numerous psychological and perceptual factors can still pose as challenges to
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43 cycle commuting. In sum, the findings show that whilst cycling to work is a complex and
44
45 effortful behaviour choice, cycle commuters are more able to favourably adapt their
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47 social cognitions towards cycling by either offsetting the challenges against the benefits
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49 they experience or by finding effective ways to cope with the challenges they encounter.
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56 *Being Aware of the Benefits*
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3 As with previous studies, physical health benefits and the convenience of exercising as
4 part of your daily routine were viewed by both groups as motivating factors (Crawford *et*
5 *al.*, 2001; Unwin, 1995). The CC and PCC participants' views differed the most in
6 relation to cycle journey times. Whilst the CC group viewed the journey time as being
7 quicker or the same as other transport modes, the majority of the PCC group felt that
8 cycling would extend their journey time. Previous research has suggested that non-cycle
9 commuters may inaccurately estimate the time that their cycle journeys would take (de
10 Geus *et al.*, 2008). Although this may not always be the case, when promoting cycling, it
11 would be valuable to provide information about average journey times by bike.
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24 The CC group generally discussed more immediately experienced benefits
25 associated with cycle commuting than the PCC group such as psychological wellbeing,
26 relaxation, enjoyment of being outdoors and time and cost savings. Awareness of these
27 immediate benefits may be more important than longer-term benefits (e.g. physical
28 health) in promoting and maintaining cycling because behavioural decisions are more
29 strongly influenced by immediate consequences (Gatersleben and Appleton, 2004). The
30 present study found that the more immediate benefits associated with cycling to work
31 were less recognised by potential cycle commuters. Although physical activity does not
32 always confer emotional benefits (Backhouse *et al.*, 2007) the majority of cycle group
33 participants in this study highlighted this as a benefit for them. Emphasising the
34 immediate benefits and explaining the direct gains one can experience may encourage
35 more people to start cycle commuting.
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53 Being environmentally friendly was discussed by few participants and viewed as a
54 peripheral benefit. This contradicts previous research that found the environmentally
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3 friendly factor to be an important benefit of cycle commuting (de Geus *et al.*, 2008). The
4
5 contrasting findings could relate to the differences in personal values, beliefs and cultures
6
7 between the participant groups. Another beneficial but peripheral factor for those who
8
9 had young children was being a positive role model. Although these may not form the
10
11 key reasons for choosing to cycle, peripheral benefits add weight to the decision to start
12
13 cycling. Therefore, they should be viewed as valuable counterparts within the decision-
14
15 making process.
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20 Over half of the PCC group believed that starting to cycle commute would lead to
21
22 increases in leisure cycling. For some people this increase in leisure cycling related
23
24 purely to purchasing a bike but for others, starting to regularly cycle to work would be a
25
26 catalyst to increasing their overall cycling behaviour. Promoting cycle commuting may
27
28 therefore have wider benefits to people's health (Wen *et al.*, 2005) and potentially their
29
30 families too, through increasing leisure cycling.
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33 34 35 36 *Overcoming the Challenges*

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38 It is clear that cycling to work is a complex and effortful behaviour, and that numerous
39
40 challenges need to be negotiated in order to cycle commute. The CC group described a
41
42 range of coping strategies, to help them to overcome a number of challenging factors,
43
44 such as: planning, preparation, mental strategies, developing a routine and learning 'road
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46 craft' (skills and confidence to cycle in traffic). Relatively little was said about such
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48 coping strategies by the PCC group, presumably because they were not yet familiar with
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50 such strategies that they could use to overcome the daily challenges of cycle commuting.
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3 According to Mutrie *et al.* (2002), the use of effective coping strategies plays a
4 role for people who successfully adopt active travel behaviours. Research into coping
5 theory has received attention in performance sport (Nicholls *et al.*, 2005; Gould *et al.*,
6 1993a; 1993b) but has not yet been discussed in detail in the context of cycle commuting.
7
8 The Transactional Process Theory of coping (Lazarus and Folkman, 1984) proposes two
9 main categories of coping: problem-focussed coping and emotion-focussed coping.
10 Problem focussed responses are associated with situations amenable to change; whereas
11 emotion focussed responses are associated with situations not amenable to change. In
12 this study the CC groups appeared to employ more problem-focussed coping strategies,
13 (e.g. planning, problem solving and increasing efforts) than the PCC group. Potentially,
14 problem-focussed coping strategies can be identified and developed through
15 psychological interventions in a relatively short time period for a small cost. The coping
16 strategies described by participants in this study could be easily incorporated into cycle
17 commuting interventions. For instance: information about the use of panniers for carrying
18 laptops, clear advice on how to deal with road traffic, suggestions on how to tackle lack
19 of motivation, and tips on how to look presentable at work.
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41 Preparatory plans and actions for initiating cycle commuting can also be
42 understood as problem-focussed coping strategies that could help people considering
43 cycle commuting to deal with uncertainties they may have about starting to cycle. In this
44 study a number of the PCC group held uncertain or conflicting views towards aspects of
45 cycling. According to Prochaska *et al.* (1994), individuals who are contemplating
46 changing a particular behaviour are often in a state of ambivalence, which can prevent
47 them from taking up a new behaviour. Plans and actions such as searching for
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3 information via the internet and by talking to peers, trying out prospective bike routes at
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5 quiet times, purchasing appropriate equipment and taking cycle training courses may all
6
7 facilitate the transition from other modes of transport to cycling. Developing and carrying
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9 out such preparatory plans and actions could be capitalised upon in interventions by
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11 promoting the use of specific action plans and implementation intentions (Gollwitzer,
12
13 1999). These have proved successful in encouraging change in habitual stable travel
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15 behaviour such as commuting (Gardner, 2009).
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20 As with previous studies, adequate cycle workplace facilities and social support at
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22 work for cycle commuting were seen as important for cycling to be a viable transport
23
24 option (Cleary and McClintock, 2000; Wardman *et al.*, 2007). Workplaces should not
25
26 only invest in cycle facilities but also ensure that they are user-friendly, accessible and
27
28 known about by staff. Some PCC participants were deterred from cycling due to
29
30 misconceptions about workplace facilities and lack of knowledge about cycle routes in
31
32 the city. People who don't regularly cycle and do not view themselves as cyclists are
33
34 more likely to overlook cycle related information in their environment. Targeted
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36 marketing and communications techniques could raise awareness of local cycling
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38 resources amongst potential cyclists.
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44 It was commonly understood that improving the cycling infrastructure within the
45
46 local environment is an important foundational requirement to overcome many of the
47
48 safety concerns surrounding cycling. Similar suggestions have been made by previous
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50 studies (Cavill and Watkins, 2007; de Geus *et al.*, 2008; Wardman, *et al.*, 2007).
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52 However, infrastructure changes alone may not be sufficient to lead to behaviour change.
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55 Social Ecological Theories (e.g. Giles-Corti *et al.*, 2005) highlight the need to consider a
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3 complex range of diverse factors, including physical environment, social environmental
4 and psychological variables that influence the up-take of cycle commuting and other
5 forms of physical activity. Until the necessary infrastructure is created, cycle training
6 courses are valuable resources that develop on-road cycling skills, safety and confidence
7 towards road cycling.
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18 *Links to Theory and Intervention Implications*

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20 The present qualitative study was inductive by nature; however, the key findings parallel
21 some of the main constructs found within social cognition theories. Within the
22 Transtheoretical Model (TTM, Prochaska and DiClemente, 1982) and the Theory of
23 Planned Behaviour (TPB, Ajzen, 1985), awareness of benefits and challenges mirrors the
24 decisional balance (TTM) and the outcome expectancy (TPB) constructs. Coping
25 strategies relate to the processes of change (TTM), self efficacy (TTM) and perceived
26 behavioural control constructs (TPB). Indeed more social cognition theories could be
27 mentioned in relation to the present findings as there is substantial convergence between
28 constructs within numerous theories (Biddle and Mutrie, 2001). The present study
29 indicates that in relation to cycle commuting taking a 'bottom up' inductive approach
30 does not contradict a more 'top down' theoretical approach. Rather, understanding
31 specific psychological factors that most closely relate to cycling can be valuable in
32 identifying the most appropriate constructs, theories and techniques required to
33 effectively promote cycle commuting.
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53 This study supports the view that psychological interventions designed to enhance
54 understanding of the benefits of cycling to work, and develop more realistic perceptions
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3 of barriers to cycling commuting along with appropriate problem-focussed coping
4 strategies are appropriate means of enhancing behaviour change. However, as previously
5 acknowledged psychological approaches should be used in conjunction with other
6 interventions including changes to the physical and social environments. This study
7 demonstrates that even in cycle friendly workplaces, where physical and social changes
8 have already been made, there is still scope to enhance rates of commute cycling through
9 psychological intervention.
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20 21 22 *Strengths and Limitations* 23

24 In the present study, more empirically generalisable and universal knowledge, which
25 would involve larger sample groups, has been traded for an in-depth analysis. IPA, in the
26 context of this study, proved to be a useful tool for revealing the full complexities of the
27 psychological reasoning involved in choosing to commute cycle. This study employed a
28 purposive sample of 15 participants, selected on the basis of them being either active
29 cycle commuters or having an interest in cycle commuting. All participants worked at a
30 single city centre site which had Cycle Friendly Employer status. The type of
31 generalization that can be made here would be more analytical in nature, involving a
32 reasoned judgement about the extent to which the findings from one study can be used as
33 a guide to what might occur in another situation (Kvale, 2007). These findings are more
34 likely to apply to individuals in similar settings in supportive cycle friendly
35 environments. For example, in the current study participants did not discuss any security
36 concerns which have been expressed by participants in studies based in other contexts
37 (Cavill and Watkins, 2007). Future complementary research should be carried out on
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3 samples in different contexts to examine whether some of the findings that emerged
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5 within this study would be revealed in other populations.
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10 **Conclusions**

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12 This study describes the complexities of similarities and differences in perceived benefits,
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14 challenges and coping strategies of cycling to work between commute cyclists and
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16 potential commute cyclists. Potential cycle commuters perceived fewer immediate
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18 benefits of cycling and greater challenges. In contrast, commute cyclists described a
19
20 range of coping strategies that counteracted these challenges and facilitated their cycling
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22 behaviour. Raising awareness amongst potential cycle commuters of the immediate
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24 benefits of cycle commuting and highlighting some of the coping strategies employed by
25
26 existing cyclists may be useful in psychological interventions to promote cycle
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28 commuting.
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Table 1: Demographic information for commute cyclists (CC)

Pseudonym	Gender	Cycle commuting experience	Distance to work (one-way)	Age category
Andrew	Male	3-4 years	8 miles	31-40 years
Burt	Male	40+ years	4 miles	61-70 years
Carl	Male	2 months	3.5 miles	31-40 years
Dan	Male	4 years	5 miles	31-40 years
Ed	Male	2 years	3 miles	31-40 years
Fred	Male	14 years	9 miles	51-60 years
Guy	Male	5 years	2 miles	31-40 years
Helen	Female	8 years	2 miles	41-50 years

Table 2: Demographic information for potential commute cyclists (PCC)

Pseudonym	Gender	Commuting transport mode	Distance to work (one-way)	Age category
Amy	Female	Bus	5 miles	31-40 years
Belle	Female	Train	16 miles	31-40 years
Dawn	Female	Bus	2 miles	51-60 years
Euan	Male	Bus or walking	3 miles	31-40 years
Felix	Male	Walking	1.5 miles	21-30 years
Grant	Male	Bus or car	3 miles	21-30 years
Harry	Male	Bus and car	11 miles	41-50 years

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