# Grounded Theory analysis of commuters discussing a workplace carbon-reduction target: Autonomy, satisfaction, and willingness to change behaviour in drivers, pedestrians, bicyclists, motorcyclists, and bus users

Gregory O. Thomas [a,*], Ian Walker [a], Charles Musselwhite [b]

[a] Department of Psychology, University of Bath, Bath BA2 7AY, United Kingdom
[b] Centre for Innovative Ageing, College of Human and Health Sciences, Singleton Campus, Swansea University, SA2 8PP, United Kingdom

ABSTRACT

This qualitative analysis compared focus group discussions of a carbon reduction target amongst users of different modes who travel to the same workplace. Grounded Theory analysis showed discussions expanded to wider carbon costs and more issues than those specifically described in the target. Differences in people's perceptions of carbon emissions varied with travel mode: walkers and bicyclists showed high awareness and concern; car drivers and motorcyclists were more pessimistic and cautious of imposing restrictions, with a particular suspicion of 'greenwash' actions that do not provide actual benefits. Changing travel mode for carbon reduction was discussed cautiously by all groups, with concern over the legitimacy of efforts to influence a personal choice, and the need for a 'balanced' approach that would not punish personal decisions. Notably, participants discussed their current mode in terms of perceived autonomy, and feared losing this autonomy if they changed mode. This role of autonomy emerged as a central theme in discussions of carbon reduction, providing ideas for future interventions.

© 2014 Published by Elsevier Ltd.

## 1. Introduction

Despite overwhelming support by the scientific community (Cook et al., 2013), public support for the existence of anthropogenic climate change lags behind. Surveys in the UK suggest that since 2005, those who consider the world's climate to be changing has dropped by 13%, and there has been an 11% drop in those either 'fairly' or 'very concerned' about climate change (Spence, Venables, Pidgeon, Poortinga, & Demski, 2010). Beside falling support, actual scepticism that climate change exists has also risen in recent years (Whitmarsh, 2011) with increased belief that claims of climate change are exaggerated (Shuckburgh, Robinson, & Pidgeon, 2012). Reduced public support has also seen falls in willingness to change behaviour to reduce emissions; since 2006 the proportion of people willing to change their behaviour to reduce emissions has fallen from 77% to 65% (DfT, 2012). Facing falling support, despite the increasing concerns about the impact of climate change, there is a need to understand how individuals perceive changing behaviour, and how to address potential concerns.

* Corresponding author.
    E-mail address: G.O.Thomas@bath.ac.uk (G.O. Thomas).

To explore the potential for behaviour change, we wanted to examine people's consideration of a common behaviour with environmental implications, and so selected travel mode choice as a topic for discussion. Private car use is the most commonly used mode of travel in Europe (European Commission, 2013). In the UK, 64% of all trips in 2010 were taken by car, accounting for 78% of total distance travelled by UK residents (DfT, 2011). With 313.2 billion vehicle miles travelled by motor traffic in 2009 (DfT, 2010), car and motor use is a serious concern for the environment: transport is the second biggest producer of carbon dioxide in the UK (behind electricity production) with 121 million tonnes emitted in 2010 (DECC, 2011), and cars and taxis create the majority of these emissions (DfT, 2010).

Even if fuel efficiency dramatically improves, engineering solutions alone will not sufficiently reduce emissions in the foreseeable future (Chapman, 2007), and nor will they do anything to reduce congestion or road injuries, meaning behavioural change is still needed to reduce car use. A shift from cars to active travel modes for shorter journeys also offers considerable public health benefits from increased physical exercise (British Medical Association, 2012). Efforts have been made to create such a shift using 'soft' measures such as incentives or information, though the effectiveness of such interventions is still uncertain. A large meta-analysis showed a slight to moderate reduction in driving following 'soft' interventions, but also noted evidence of publication bias, rendering conclusions unreliable (Möser & Bamberg, 2008). A recent meta-analysis of a select, but rigorous, sample of best-practice research indicates no effect of interventions on car use (Walker & Thomas, in preparation). Literature reviews also highlight numerous methodological issues with car reduction interventions (Graham-Rowe, Skippon, Gardner, & Abraham, 2011) which perhaps explains their varied conclusions – Graham-Rowe et al. (2011) suggest only modest reductions in car use, in contrast to an earlier review of 24 case studies which suggested soft measures were cost effective and capable of 5–10% reduction in car use (Cairns et al., 2004).

Furthermore, with a gap between intentions and action on climate change (Whitmarsh, 2009a), it is uncertain how people's understanding of carbon is linked with their travel mode actions. While there is some evidence that those with stronger environmental concern are more likely to use sustainable modes (Kahn, 2007), there is very little research in understanding how users of various travel modes differ in their environmental concern (Flamm, 2009; Thomas & Walker, in review), and the link between environmental attitudes and travel mode choice remains uncertain (Gardner & Abraham, 2008; Steg & Vlek, 2009). Certainly, various studies have addressed a supposed "information deficit" (Anable, Lane, & Kelay, 2006, p. 139) surrounding carbon and travel without seeing much change in behaviour. Indeed, interventions using environment-based feedback to change travel behaviour can actually lead to a reduction in environmental concern (Tertoolen, van Kreveld, & Verstraten, 1998). It seems participants reduced their concern as a way of justifying continued car use, in what appears to be an example of cognitive dissonance – the process whereby mismatches between attitudes and behaviour can be resolved through attitude change, particularly when the behaviour is somehow induced (Festinger, 1962). Instead of seeing people as sitting in information deficit, and ready to act on environmental information if only they had it, research might more usefully seek to understand the complexity of personal knowledge and attitudes for environmental issues, by exploring exactly how people understand the topic at hand (Anable et al., 2006).

To understand people's motivations and views about complex issues such as emissions and travel mode choice, where we lack sufficient understanding to know exactly what ought to be measured quantitatively, qualitative methods can provide novel insights to guide future research (Schwanen, Banister, & Anable, 2011). One particular benefit of qualitative methods is that they allow participants to give more detailed answers and thereby "*overcome self-presentation biases and reveal the complexity of motivational structures*" (Gardner & Abraham, 2007, p. 188). Accordingly, such methods have been used in investigations of motives for driving. For example, Mann and Abraham (2006) identified four types of satisfaction linked with car use (personal space, identity, autonomy, and experiential), and Gardner and Abraham (2007) expanded upon this by noting the blurring between utility and satisfaction; for example how the speed of a journey could lead to greater satisfaction. However, the more basic question of how people understand the role of travel mode choice and carbon emissions in anthropogenic climate change has received very little attention so far: Mann and Abraham (2006) found some reported guilt after driving, but Gardner and Abraham (2007) found no discussion of the environment by their participants, leading them to suggest the environment is not a factor when people make travel mode decisions. Chatterton, Coulter, Musselwhite, Lyons, and Clegg (2009) examined the use of carbon calculators and the environmental impact of daily behaviours: analysis of discussions saw participants describing various reasons that they personally should not reduce their car use, including concerns that changing to public transport would prove too expensive and claims that the focus ought to be on larger scale industrial emissions sources before individuals are expected to change their driving behaviours. The discussions overall revealed strong links between the use of the car and perceived freedom (Chatterton et al., 2009). As far as we are aware, Chatterton et al. (2009) is the only in-depth qualitative analysis of how people understand the environmental consequences of transport choices. This alone would justify further research in the area, but we also perceive an additional gap in the literature, which is that previous studies included no comparison between users of different travel modes. The analyses discussed above included either just car users (Gardner & Abraham, 2007; Mann & Abraham, 2006) or did not specify participants' preferred travel modes (Chatterton et al., 2009). With the possibility that users of different travel modes might hold different views, and the limited work comparing travel mode groups in their understanding of carbon and travel mode choice, this paper describes a qualitative analysis comparing views from several travel mode groups on the discussion of emissions and travel mode, with a focus on how people consider their modal choice in the context of a carbon reduction target.