



UNIVERSITY OF LEEDS

This is a repository copy of *Using deliberative methods to understand travel choices in the context of climate change*.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/78965/>

Version: Accepted Version

Article:

Marsden, G (2009) Using deliberative methods to understand travel choices in the context of climate change. *Transportation Research Record* (2135). 114 - 122. ISSN 0361-1981

<https://doi.org/10.3141/2135-14>

Reuse

Unless indicated otherwise, fulltext items are protected by copyright with all rights reserved. The copyright exception in section 29 of the Copyright, Designs and Patents Act 1988 allows the making of a single copy solely for the purpose of non-commercial research or private study within the limits of fair dealing. The publisher or other rights-holder may allow further reproduction and re-use of this version - refer to the White Rose Research Online record for this item. Where records identify the publisher as the copyright holder, users can verify any specific terms of use on the publisher's website.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

promoting access to White Rose research papers



Universities of Leeds, Sheffield and York
<http://eprints.whiterose.ac.uk/>

This is the Author's Accepted version of an article published in **Transportation Research Record**

White Rose Research Online URL for this paper:

<http://eprints.whiterose.ac.uk/id/eprint/78965>

Published article:

Marsden, G (2009) *Using deliberative methods to understand travel choices in the context of climate change*. Transportation Research Record (2135). 114 - 122. ISSN 0361-1981

<http://dx.doi.org/10.3141/2135-14>

Using Deliberative Methods to Understand Travel Choices in the context of Climate Change

For final published article, please see:

<http://trb.metapress.com/content/4v46083763053732/?genre=article&id=doi%3a10.3141%2f2135-14>

Dr Greg Marsden

Institute for Transport Studies
University of Leeds
Leeds
LS2 9JT
United Kingdom
Tel: +44 (0)113 343 5325
Fax: +44 (0)113 343 5334

Dr Suzanne King

People, Science and Policy
Hamilton House
Mabledon Place
London
WC1H 9BB

* Corresponding Author: G.R.Marsden@its.leeds.ac.uk

6072 words + 2 Tables and 3 Figures (1250 words) = 7322 words

ABSTRACT

This paper reports on a two-year study in England with the overall aim to find out what the public understands by climate change and how they see transport contributing to it. The research involved a longitudinal study with 140 participants split into five different socio-economic life stage groups in different parts of England. Each group took part in five deliberative events where the participants were given the opportunity to express their views in an open forum, to challenge each other and to direct the information they received and activities they took part in. While these events formed the core of the project, it is well understood that there is a gap between stated intentions and actual behaviour and the project therefore also required the participants to complete four one-week travel diaries and two psychographic questionnaires through the course of the study. The information from the travel diaries was processed into carbon consumption and fed-back to the participants as part of the study.

This paper describes the research process and presents some of the materials which were developed and used in the study. It then reflects on what each element of the research methodology brought to the study and the combined impact of using the different methods both during the study and in interpreting the findings. The paper concludes by addressing the strengths and limitations of the deliberative approach not only in studying climate change and transport but also broader policy issues.

1. INTRODUCTION

This paper reports on a longitudinal study looking at public attitudes to climate change in England. In the US, a recent report by a TRB special committee found that “little consensus exists among transportation professionals that climate change is occurring or warrants action now” (2). The policy context for the research is, therefore, somewhat different. In the UK even amongst the general population 97% are aware of the concept of climate change, 81% are concerned about the impacts on the UK and 76% agree that they contribute to the problem although only around one quarter of people feel they can have an impact (3). Whilst there remains considerable debate about the right approach to tackling the problem between different sectors (e.g. transport and industry) and within transport, there is a clear national policy priority to take action to reduce climate change emissions and to adapt infrastructure systems against the impacts that will be faced (4).

An important UK governmental review of the economics of climate change has proposed a three-legged policy framework to present and understand the main approaches to tackling emissions from various sectors and this can be applied to transport (5):

- carbon pricing through tax, trading or regulation;
- technology development; and
- behavioural change.

Tight et al. (6) conclude that under a range of different policy futures “significant behavioural change will be needed to complement gains made through technological improvement ...” (p243).

Recognising the importance of understanding the behaviour of individuals and their acceptance of other policies such as tax or regulation moving further into the future, the UK Department for Transport commissioned an evidence base review of public attitudes to climate change and the links to travel behaviour (1). The review found that very little is understood about the relationship between what people know about climate change, how this influences their underlying belief systems and, in turn how this interacts with their travel behaviour (1). The Department for Transport therefore commissioned a study of the problem with three key objectives:

1. to explore public understanding of, and engagement with, climate change;
2. to identify and explore the barriers and incentives to behavioural change which could result in reduced impact of personal travel behaviour on climate change, and;
3. to explore the role of information (especially scientific information) in improving public awareness, understanding and attitudes towards travel behaviour and climate change and its potential for influencing behavioural change.

This paper describes the methodological approach to answering these objectives. The project involved a mixed-methods approach which brought together deliberative discussions, social psychology techniques, travel diaries and interviews. The paper begins by introducing deliberative research as a technique as this was at the heart of the study approach (Section 2). It then describes how the research was conducted including recruitment, how the deliberative events were managed, describes some of the materials used and how they were applied and, importantly, how this linked to other parts of the research project (Section 3). Section 4 presents an evaluation by the research team of how the different methods contributed to the fulfilment of the project objectives and what their respective limitations are. The paper concludes by looking at opportunities for the wider application of deliberative methods in transport research. For readers with an interest in the project outcomes as well as the methods, the main awareness and behaviour change findings can be found elsewhere (7, 8).

2. WHY IS DELIBERATIVE RESEARCH NECESSARY AND WHAT IS IT?

This section begins by explaining why traditional approaches have some weaknesses in the context of exploring climate change behaviour before introducing deliberative research methods.

2.1 Why are traditional approaches not wholly appropriate?

Climate change is a complex issue (9). Unpicking how people might respond to information about climate change requires a detailed understanding of how climate change is conceived, what types of messages are heard and how these are interpreted. Traditional research approaches to investigating a problem as complex as climate change such as questionnaires can be informative (e.g. 10) but only to the extent that the questions asked are the right questions and that the interpretation of responses is clear. In the case of understanding the relationships between attitudes to behaviour change, intentions to change and actual change in the climate change context this has been identified as a key research challenge (1). This research project was therefore commissioned to be based around a more open and bottom-up approach to understanding the public's perception of climate change and how transport fits within this. The research approach was deliberative "where participants are provided with information about the issue being considered and are encouraged to discuss and challenge the information and consider each others' views..." (1, pX).

In addition to the criticisms about how data is elicited, past research linking attitudes to behaviour, intentions and behaviour has been criticised for its lack of longitudinal study and for a reliance on self-reported change strategies without providing any form of validation of actual behaviour change. These are also important challenges to address. The first requires study of a phenomenon with individuals or groups of individuals over time and this is a feature of the types of social learning and interaction promoted through deliberative research. The latter is perhaps more taxing. In this research we are looking to explore changes in: awareness and understanding of the issues; attitudes to behaviour change; intentions to change and actual change. We take the 'validation' to be any actual travel behaviour observed as this is the most appropriate indicator of potential policy impact at least in the short-term. In our study this validation was conducted through self-completed travel diaries throughout the project. Although this too relies on self-report, it was made clear to participants throughout the research that this project was about information, awareness and understanding. Any behaviour change was voluntary and therefore any more formal or advanced form of travel behaviour data collection would have been inappropriate. Section 4 reflects on how the travel diaries worked in combination with the deliberative methods.

2.2 What is Deliberative Research?

Deliberative methods when used as a research method combine research techniques with public consultation mechanisms to enable policy-makers and others to understand the views of members of the public. This approach is particularly useful for topics of which the public are unlikely to have much knowledge, such as the causes of climate change. These methods can also be used to assess the impact of information on attitudes and in this case on behaviours as well. Deliberative methods can range from the traditional focus group (depending on how it is run) to more structured approaches such as Citizens' Juries, deliberative polls and consensus conferences.

It is important that the users of these methods are clear about their objectives. For example, the traditional Citizens' Jury, as developed and trademarked by the Jefferson Centre in the USA, was developed to enable a representative group of citizens to make a recommendation on a policy issue to

policy-makers. Increasingly these methods are being used as research techniques as a way of understanding public perspectives on complex issues. It is incumbent on researchers to make it clear to participants whether they are being consulted or taking part in a more open-ended research project.

Used as a research technique, deliberative methods enable researchers to gain an insight into existing public attitudes, views and opinions through initial discussions using a focus group approach. Thereafter it is usual, especially when dealing with technical topics, to introduce expert information to the group of citizens, usually by inviting experts to meet and debate with the citizens. Then time is allowed for the citizens to deliberate among themselves. Often sessions are reconvened to allow citizens to reflect and to meet again for further deliberation. It is this process of the provision of information, deliberation, reflection and debate that enables citizens to develop their opinions.

Deliberative events usually combine different techniques because to be effective citizens must remain engaged. Sessions with experts tend to be run with short presentations followed by question and answer sessions, often the group is split into smaller, breakout groups for in-depth discussions, sometimes discussions are wide ranging and ‘brainstorming’ in nature, other times they are focused on producing feedback to the main group or to the sponsor on an aspect of the topic. Scenarios and other ‘exercises’ can provide useful ways of eliciting information that bald questions cannot. PSP has found that even in a research context focusing on making recommendations to someone is a useful tool for uncovering citizens’ core values. In the process of deciding ‘what should be done’ values to which the public feels deeply committed emerge easily and we have found the same values emerging across a range of topics.

The findings of these exercises, if they are to add to the understanding of public perspectives on the topic, need to be carefully interpreted, for example, taking on board the influence on the citizens of the presenters as well as of the information presented.

Lastly, it is worth mentioning that deliberative methods can be participatory but do not need to be. The project reported here was only participatory in that the citizens had some control over the nature and format of the information they received. The citizens had no other input to the nature and content of the meetings. This reflects the research focus of the study.

3. THE RESEARCH PROCESS

This section presents the process and practice of conducting the deliberative events and explains how the deliberative research method was integrated with the other key research approaches provided by the travel diaries and psychographic questionnaires.

3.1 Research Methods

Four main methods were used to extract data during the project:

1. Deliberative events – introduced in Section 2.2 and described further below in Sections 3.3 and 3.4
2. Psychographic questionnaires – During the first meeting participants completed an initial questionnaire and at the start of the last meeting they completed a final questionnaire. Both questionnaires explored participants understanding of climate change, their intentions to reduce car use (if any), and where they had heard about climate change. Psychographic variables (such as attitudes towards reducing car use, feelings of moral obligation and responsibility to act and the influence of significant others) were also recorded along with socio-demographic data. The purpose of these questionnaires was to explore individual’s beliefs regarding climate change, and

to use the data to understand intentions and behaviour regarding car use in the context of climate change.

3. Travel Diaries - The participants completed four travel diaries spread across the course of the meetings each of which tracked travel behaviour across a period of a week. The entry diary was completed before the first meeting; the exit diary before the last meeting. The participants documented all trips made, how they were made and for what purpose and this provided a rich and valuable dataset against which to understand what types of behaviour change actually occurred and in which contexts.
4. Telephone follow-up interviews - Towards the end of the main fieldwork period it became clear that we needed more individual stories to enable us to understand motivations, intentions and abilities to change. Follow-up interviews were conducted with 25 participants by telephone about five months after the last meeting.

3.2 Sampling

141 participants were recruited to 'represent' five different groups distinguished by income and life stage as it is understood that these factors are important drivers of travel behaviour (11). This grouping was intended to allow us to determine what sort of information and interventions had most impact on understanding, attitudes and behaviour and whether this differed by grouping. The five groups were also recruited to 'represent' different levels of carbon usage as National Travel Survey data shows that life stage and income also impact on travel-related carbon consumption (11). Individuals were recruited in early 2007 to 'represent' their household and were therefore recruited on the basis of the occupation of the chief income earner in the household, with the exception of the Younger People, who were recruited individually. Hence within each group there is a mixture of occupations. Table 1 provides an overview of the life stage groups. We excluded from this research the lowest income groups who currently travel small distances and already rely on walking and public transport. We also excluded those living in very rural areas, who have few transport options.

3.3 Description of Events

The five groups each followed an identical pattern of activities over a period of around 11 months. One group (Educated Professionals) was run in advance of the other four to allow materials used in the deliberative events to be adapted where necessary. The key tasks are outlined below:

1. Week 0: Complete One Week Travel Diary
2. Week 1: Attend Meeting 1

This meeting aimed to provide a sense of the baseline views of participants and allowed the research team to introduce themselves and the project to the participants. The initial psychographic questionnaire was completed. The session explored awareness and understanding of climate change and had a brief presentation of travel and climate change. The event concluded by establishing the topics the participants wanted to find out more about.

3. Week 3: Attend Meeting 2

This meeting provided presentations from independent experts as requested by the participants in meeting 1 and provided opportunities for discussion and questions with the experts. Presentations were given on: the science of climate change; technological solutions in development with respect to transportation; transport policies in towns and cities around the world that address climate change and support changes in travel behaviour; and UK policy on transport and climate change.

Table 1: Pen Portraits of Groups

Group Name	Location	Number of Participants		Description	Carbon in Initial Travel Diary (kg/person/week)		
		Start	Finish		Private	Public	Total
Educated Professionals	Reading – (41miles west of London)	29	28	Comprised individuals aged 45 and over with above average incomes and professional or managerial occupations (social grades AB), although some were retired. While some participants lived in Reading, others lived in more rural locations. Many had children who were adults, some of whom no longer lived with them.	9.5	2.2	11.7
Middle Class Families	Leicester – East Midlands (90 miles north of London)	29	26	Includes a mixture of suburban and rural dwellers. Aged 30-44, this group was relatively affluent being mainly employed in clerical and managerial occupations (social grades ABC1). Many had school-aged children living at home.	10.8	0.5	11.3
Younger People	Leeds – North of England (198 miles north of London)	28	15	This group was aged 20-29 and included a spread of occupations and therefore income levels and social grades. A few had young children, some lived alone or with partners and others with their parents. Many had started work but some were still in full-time education. Most participants lived in the outer suburbs of the city.	2.9	1.0	3.9
Less Affluent Older Families	Plymouth – South West of England (244 miles from London)	27	26	This group was based in Plymouth and was drawn from the surrounding communities. They were aged 45-64 and some were retired. Their occupations were administrative, clerical and skilled manual (C1C2).	8.3	0.4	8.7
Less Affluent Younger Families	Liverpool – North West of England (176 miles NW of London)	27	24	Based in the Liverpool conurbation, this group's occupations were clerical, administrative and skilled/semi-skilled manual (social grades C1C2D). They were aged 30-44 and tended to have younger children living with them.	3.7	0.8	4.5

4. Week 4: Attend Meeting 3

This event enabled reflection on the information from the previous two meetings and an expert provided information on actions individuals could take to change personal travel behaviour. Participants were also given a presentation from an expert on actions individuals could take to reduce their travel-related carbon consumption. Participants were given feedback from their first travel diary (See Section 3.4).

5. Week 5: Complete One Week Travel Diary 2

6. Week 21: Complete One Week Travel Diary 3

7. Week 22: Attend Meeting 4

To find out whether participants had made changes to their travel behaviour and why/why not and to maintain commitment to the project. Participants discussed changes in travel behaviour and barriers and incentives to behaviour change in breakout groups. A list of possible actions, presented according to the preferences of the participants was also provided to participants (See Section 3.4).

8. Week 41: Complete One Week Travel Diary 4

9. Week 42: Attend Meeting 5

To explore why participants make certain travel choices and not others and the role carbon emissions play in their decision-making. This event considered barriers and motivators to particular transport behaviours and reflected on what had been learnt. At the start of the event participants completed the final psychographic questionnaire

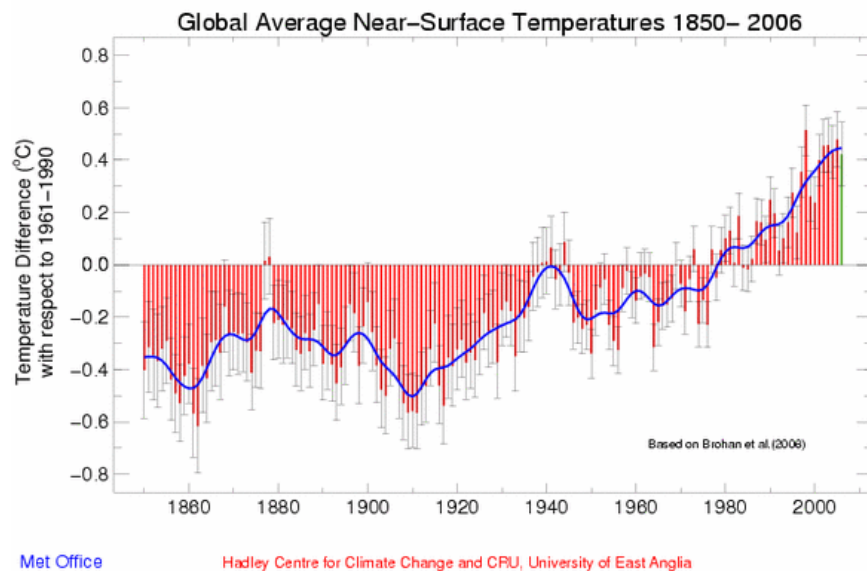
10. Week 58: Selected Follow-up Telephone Interviews.

3.4 Materials

A significant advantage of a series of deliberative events such as those described here is the ability of the research team to react to the requirements of the participants in a manner which is not possible in a one-off forum such as a focus group or interview. Three examples demonstrate this process in action. First, the participants led the choice of topics around which they wanted to receive expert presentations. The research team had identified a long-list of potential experts and were therefore able to respond to the particular requirements of the participants. Of all the presentations, that on the science of climate change was most informative to the participants and in particular, the opportunity to ask questions of the expert about issues such as “isn’t this part of a natural cycle?”, “how do we know what carbon dioxide levels and temperatures were thousands of years ago?”. Figure 1 shows one particular slide from the presentation with some quotes from the participants later in the deliberative process.

Second, the participants were given feedback on the amount of carbon they used from their travel diaries and were given information about the types of trips they made and by what forms of transport. Some participants found the information too complex to fully understand and they suggested a series of improvements to the diary feedback which were implemented in the feedback on their second travel diaries. An example extract of a diary feedback is shown in Figure 2, in particular highlighting the week to week change. Participants particularly appreciated being able to compare their behaviour week to week and to compare themselves against the group and against the UK average. The actual carbon values are difficult to understand (12) so the relative information is critical. Participants were particularly surprised by the number of small trips they made and spent some time discussing the diaries.

Climate Change is Occurring



Reproduced with permission of the Met Office © Crown Copyright

"I think, without a shadow of a doubt, the climate is increasing in temperature, it's established that in my mind."

Educated Professionals, male (meeting 2)

Figure 1: Sample Expert Presentation Slide with sample participant reaction

Finally, the participants were given an expert presentation on individual behaviour changes that they could make that would make a difference. However, they found the presentation difficult to translate to personal experiences and, as noted above, had trouble making the carbon savings "real" to them. Most people said they wanted to know how much money they might save as well as any environmental benefits so a set of actions was developed which was more closely targeted to their information needs (Figure 3). This proved a much easier basis around which to organise the discussions about what people had tried and would/would not be prepared to try

.....

Your travel behaviour during diary week 1 and diary week 2

This section displays the number of trips made by each different type of transport you used during your diary weeks along with trip distance and carbon consumption. Each table displays your travel data from diary week 1 and diary week 2. The final row in each table is the difference in your travel as recorded over both weeks.

Number of trips by each method of travel that you used

	CAR	WALK	Total
Diary Week 1	7	17	24
Diary Week 2	4	14	18
Difference	-3	-3	-6

Number of kilometres that you travelled using each method of travel

	CAR	WALK	Total
Diary Week 1	102.4	13.60	116.0
Diary Week 2	64.0	4.48	68.48
Difference	-38.4	-9.12	-47.52

The amount of carbon that your travel used

	CAR	Total
Diary Week 1	5.53	5.53
Diary Week 2	2.78	2.78
Difference	-2.75	-2.75

Trips by journey purpose

	Business	Leisure	Commute	Other	Week Total
Diary Week 1	3	7	12	2	24
Diary Week 2	0	4	12	2	18
Difference	-3	-3	0	0	-6

How does your travel behaviour compare to the group?

The following table shows the average figures for all people within the group. You can use this information to compare your own travel with that of the group.

Group average values

	Diary Week 1	Diary Week 2	Difference
Average number of trips made by the group	33	30.7	-2.3
Average kilometres travelled by the group	298.6	218.6	-80
Average carbon used by the group (in kilograms)	8.9	7	-1.9

Figure 2: Sample Travel Diary Feedback Extract

Can you use a mode of transport that generates less CO2?

- Walk or cycle for short local journeys (under 2 miles)
 - Replace your short car/taxi journeys with biking or walking and avoid producing about 65 kg carbon per year.¹
- Join a walking bus at your children's school, or use a school bus to eliminate the emissions from my school run.²
 - Your child could do better; research suggests that teachers find that children who walk or cycle to school are more alert and ready to learn than those who travel by car.³
 - The school run accounts for around 15% of all peak-hour car journeys.⁴

Can you generate less CO2 when you drive?

- Drive with smooth acceleration and braking and change gear at 2500 RPMs for petrol and 2000 RPMs for diesel.
 - You'll save as much as 30% on fuel costs!⁵ This driving behaviour can save over 54.5 kg carbon per year.⁶
- Check to see that my tyres are fully pumped up.
 - Driving with soft tyres can add up to 2% to your fuel bills⁷ and wastes about 38.2 kg carbon per year.⁸
- Remove unnecessary weight from the boot and roof.
 - A roof rack can increase fuel consumption and carbon emissions by up to 10% due to wind resistance and the extra weight.⁹

¹<http://www.carplus.org.uk/carclubs/car-clubs-&-carbon-savings.htm>

²<http://www.saferoutestoschools.org.uk/index.php>

³<http://www.changeyourworld.org.uk/inspireme.html>

⁴<http://www.energysavingsecrets.co.uk/CarSharingAndClubs.html>

⁵http://www.rac.co.uk/web/knowhow/hints_tips/fuel_consumption

⁶<http://www.carplus.org.uk/carclubs/car-clubs-&-carbon-savings.htm>

⁷http://www.rac.co.uk/web/knowhow/hints_tips/fuel_consumption

⁸<http://www.carplus.org.uk/carclubs/car-clubs-&-carbon-savings.htm>

⁹<http://globalwarming-facts.info/50-tips.html>

Figure 3: Sample extracts from action forms developed for participants

3.5 Running Deliberative Studies – the research practice and practicalities

This deliberative study, like most, was reconvened over a number of sessions. It is important to have some plan at the outset as to the objective and focus of each session but to retain flexibility so that

each session can react to the findings of the previous session and in this case to the findings from other elements of the study.

Here the first three meetings were run within a two week period. We always knew that the first meeting would be introductory, the second, mainly informative and the third, somewhat informational but mainly deliberative. Meetings four and five were more flexible and the objectives and structure were determined from the findings from the project up to that point. Moreover, we were able to use the findings from the psychographic questionnaire and the travel diary data to divide the citizens into smaller breakout groups (Section 3.6).

While we were trying to explore whether information, whether from the experts or from the travel diaries, impacted on the attitudes and actions of the members of the public who were involved, it was important that the facilitators did not act as an undue influence. At times this proved difficult because of our probing into why individuals were or were not able or willing to adopt carbon saving travel patterns.

Information was presented to participants during the second and third meetings by scientists researching the causes and impacts of climate change, transport practitioners involved in traffic management design, policy-makers from Central Government and pro-environmental transport advisers. Different experts were used in different locations, although some presented two or three times. Trust in the experts was quite high as evidenced by the nature of the questions the presentations generated. Questions tended to be based in acceptance of the information given and to take the form, with a few exceptions, of points of clarification. In particular participants wanted to know more about why specific policy decisions had been made and why national policies have not (in their experience) filtered through to their local area. Trust in the experts tended to grow as the participants questioned them. This was a result of the experts' obvious knowledge of their subject and their willingness to put forward their own views, as well as 'facts' and to explain why they held certain beliefs. Where scepticism remained this tended to be the result of an inability or apparent unwillingness to answer a specific question. At the end of the third and fifth meetings participants were asked to complete a feedback questionnaire and this revealed that the same presenter could be perceived quite differently by different groups. Our observations suggest this is because of the initial prevailing attitudes in the group; the questions varied from place to place and so too the way in which the questions were handled.

At the fifth and final meeting participants were probed on their recall of the information from the experts to explore whether any specific pieces of information were particularly important in shaping or changing understanding and beliefs. This was an important cross-check on what had really made an impact but also allowed us to understand the extent to which the information was trusted. The majority of the participants trusted the experts although a few remained sceptical that human activity is a major cause of climate change.

Planning content is just one aspect of running deliberative events. Valuing participants and creating an atmosphere in which everyone feels able and willing to participate and speak freely is always important in qualitative research. However, deliberative events require participants to return on several occasions and minimising attrition is crucial. It is therefore important that all participants are treated as individuals and that staff are available between events to liaise and maintain engagement.

The nature of the facilitators is crucial in engendering the appropriate atmosphere. We were interested in what the participants had to say, their reactions to the information they were given and how this impacted on their behaviour. Whilst we presented options for behaviour change during the meetings, we were careful not to pressurise participants into taking action they did not wish to. While some participants did try to make some behaviour changes because of their involvement in the

project, rather than out of any commitment to the environment, many did not sustain these behaviours and many committed to making changes which they then reported they did not carry through. It was vital that the participants felt able to report barriers to change, as identifying barriers as well as motivators was an important part of the study. The discussion of the barriers reported in the findings report published by the UK Department for Transport in November 2008 (7), shows that we were able to achieve this. Additionally, the feedback questionnaires completed by participants at the end of the final meeting found that 87 of the 113 said that they felt completely able to express their view freely and openly as much as they would have liked in the main sessions, while 25 said that they did but that they sometimes felt nervous. Up to 29 participants plus presenters and facilitators were present at these. This underlines the need to use breakout groups.

And then there are the logistical issues of booking venues, organising refreshments and paying incentives. In this case participants were paid depending on the tasks they completed – which meant that there were individuals at the same event receiving different amounts.

3.6 Integrating methods

Section 3.1 set out the primary rationale for each of the research methods. It is, however, in their integration that greater value can be seen. Whilst this is particularly true at the analysis stage where the deliberative discussions add crucial depth to the understanding of the psychographic questionnaires, for example, it was also an important feature of the design and operation of the study. Two examples illustrate this:

1. The psychographic data suggested that ‘perceived behavioural control’ might be important to the intentions participants had to change behaviour. Perceived behavioural control is a term used in psychology capturing perceived ease or difficulty of carrying out a behaviour successfully which is assumed to reflect past experience as well as anticipated practical impediments and obstacles (13). Without an ability to explore with participants which aspects of perceived control are important and why our understanding would have been quite shallow.
2. Participants were asked to indicate how important different sources of emissions were to the climate change problem. Again, the simple ranking of the information would not have enabled the research team to explore why this was. The discussions highlighted for example a lack of knowledge on which pollutants are greenhouse gases and suggested that for many people ‘visible’ pollution is associated with bad for the environment.

The psychographic questionnaire was used to help divide the location groups into their breakout groups for meetings 4 and 5. Groups were divided for example on reported intentions to change and levels of feeling of personal responsibility to change. This allowed the research team to compare within groups different types of responses and allowed participants the opportunity to discuss in groups of more similar standpoints, thus further reducing the dominance of individuals of one particularly strong view point.

The travel diary data was collected and fed back to the participants. This had the dual advantages of making the purpose of the diaries more explicit to the participants and encouraged more thorough completion as well as making the consideration of action more reflective at a personal level rather than at a general conceptual level. Research into energy reduction around the house also found that the completion and return of an independent energy audit and suggested action plan was a stimulus for action as part of a deliberative process (14).

In combination, the psychographic questionnaire and travel diaries were used to establish the sample of people to follow up through the telephone interviews. Three groups were identified of

interest (carbon non-reducers with intentions to reduce; carbon reducers with intentions to reduce; and carbon reducers not intending to reduce).

The travel diary data was presented to participants for their own diary showing the amount of carbon consumed by the various transport modes they had used. This impacted on perceptions of carbon emissions from different sources (car, bus, walking, etc.). However, it does not appear to have impacted on participants' understanding of the difference that personal actions can make relative to other interventions.

4 EVALUATION OF RESEARCH PROCESS

This section provides a reflection from the research team about how the methods contributed to the study objectives and their respective strengths and weaknesses.

Table 2 provides a qualitative mapping of how the key research methods contributed to the project research objectives. Each aspect contributed something different to the understanding developed and in combination the methods produced much more powerful outcomes.

Table 2: Mapping of Methods to Objectives

	Obj 1: Explore Understanding & Engagement	Obj 2: Barriers and Incentives to Behaviour Change	Obj 3 Role of Information in Awareness and Behaviour Change
Deliberative Discussions	✓✓✓	✓✓	✓✓
Travel Diaries		✓	✓✓
Psychographic Questionnaires	✓	✓✓	✓✓
Added Value in combination	Psychographic questionnaires added an individual element but shallow in depth relative to deliberative discussions	Psychographic and deliberative used to look at role and depth of attitudinal barriers. Individual tracking through psychographic with some validation through diaries	Any of these by themselves has weaknesses. In combination levels of change and depth of explanation enhanced

The following observations expand on the qualitative scoring in the table:

- The deliberative events worked well in developing a level of trust amongst the participants. They opened up an understanding of the subject and we had longer to work on this with participants than in a focus group. Clarifications were made possible, digging deeper, contrasting (between groups in a location and between locations) and rechecking.

- The deliberative nature allowed the participants to tell us what information they wanted – e.g. how they wanted the travel diary feedback designed, what they wanted in the action forms (e.g. cash and environmental benefits).
- The psychographic questionnaire was helpful in developing groupings for some of sessions and for developing follow-up interview groups. Critically in this research, it provided the individual level detail which connected attitudes to behaviour change with intentions in a way which the deliberative events could not. Although individual tracking of participants could have been undertaken in the discussions this would have been difficult and an even greater data challenge.
- Whilst we were able to split groups by attitudes and travel diary responses for some sessions this is inevitably limited by the need to manage the facilitation of the event. As with any group discussion activity, difficult people can dominate despite good facilitation and the groupings had to be reorganise around personalities sometimes. The dynamics of responses in a social setting such as this where participants meet repeatedly over an extended period are different to interviews (and focus groups).
- By itself the depth of understanding provided by the psychographic questionnaire would have been limiting. In addition to the uses described above, the application of psychological modelling techniques also told us an informative (and very critical) piece of information about motivations for behaviour change but this was only one part of brief. The individual follow-up interviews shed some helpful additional insight on this.
- The travel diaries were initially conceived as part of validation of the participants' stated intentions. Whilst it was always intended to provide individual diary feedback to participants this was clearly valued by the participants and made the notions being discussed more real to them. Further discussions around the diary outputs were scheduled than initially anticipated which helped to inform barriers and motivators to change – for example participants compared the impact of holiday flights with their weekly travel.
- Whilst the problems with travel diary recording are understood (e.g. under reporting of short trips) the feedback to the participants and discussions helped the research team to understand how the participants approached the diaries. We saw no evidence of a social response bias where participants deliberately under-reported journeys to show they were achieving change. The participants seemed fully engaged and, for those that did make changes, interested to see if what they had done had made a difference. Discussions suggest that whilst some journeys might have been missed or mis-recorded this was not systematic. Such a strategy also seemed too difficult to calculate given the apparent lack of detailed understanding of the carbon consequences of individual trips.
- The individual follow-up interviews were required to investigate further the different groupings which the psychographic data and travel diaries identified but which, because of the group nature of the deliberative events we did not have sufficient individual qualitative input to fully understand. The telephone interviews were conducted by members of the research team that had facilitated events which the interviewees had attended and the personal rapport built up over the project led to very open and frank discussions which would have been less likely in a cold call or one-off situation.

5 CONCLUSIONS

Deliberative *research* methods are applicable across a wide range of topics but it is important that sponsors and researchers understand the power of the method. The method enables policy-makers and

others to understand current views on a topic. It also allows information to be imparted and debated and for deliberation and reflection and for members of the public to *indirectly* contribute to policy-making. Some policy-makers have expressed concern that by the end of the process, those involved are no longer representative, in any sense of the term, of the wider public. They are, however, a representation of how public views are likely to change as the issue plays out in society and the public becomes better informed. The issue of quantification and of how to give everyone the benefit of the experience has been long debated. It is possible to run projects on a scale sufficient to provide some quantification but this study is being used to underpin a more traditional quantitative attitudinal segmentation study.

In developing a deliberative research design sufficient allowance must be given to the recording and analysis of the data produced. Our study produced getting on for 200 hours of recorded group discussions and the coding and analysis has been a substantial task. In this context therefore, the notion of individual tracking potentially expands the workload. Here, as with other elements of the study, the mixed methods approach proved invaluable as detailed individual level responses were relatively easily collected and used within the research process.

This paper has described one application of deliberative research and attempted to provide a window into other potential applications. It is undoubtedly a powerful research tool with greater potential for application in the field of transport. In this particular instance, the power of the deliberative approach was necessarily underpinned, and improved, by a range of more quantitative tools and it is important for those commissioning the research to understand where this is necessary.

Acknowledgements

We are grateful to the research participants and to our colleagues in People Science and Policy and the Institute for Transport Studies, University of Leeds for their expert event facilitation and inputs to the research design. The research project was funded by the UK Department for Transport (DfT). The views expressed in this project are those of the authors and not necessarily those of the DfT.

References

1. Anable, J. Lane, B. and Kelay, T. (2006) *An evidence base review of public attitudes to climate change and transport behaviour*, Final Report for Department for Transport, www.dft.gov.uk
2. TRB (2008) *Potential Impacts of Climate Change on U.S. Transportation*, Transportation Research Board Special Report 290, Washington DC <http://onlinepubs.trb.org/onlinepubs/sr/sr290.pdf>
3. BMRB and DEFRA (2007) "Report, questionnaire and data tables following Survey of Public Attitudes and Behaviours toward the Environment: 2007", Department of Environment, Food and Rural Affairs, <http://www.defra.gov.uk/environment/statistics/pubatt/download/pas2007report.pdf>
4. DfT (2008) *Towards a Sustainable Transport System: Supporting Economic Growth in a Low Carbon Economy*, Department for Transport, TSO, London, ISBN 978 0 10172262 9
5. Stern, N., S. Peters, V. Bakhshi, A. Bowen, C. Cameron, S. Catovsky, D. Crane, S. Cruickshank, S. Dietz, N. Edmonson, S.-L. Garbett, L. Hamid, G. Hoffman, D. Ingram, B. Jones, N. Patmore, H. Radcliffe, R. Sathiyarajah, M. Stock, C. Taylor, T. Vernon, H. Wanjie,

- and D. Zenghelis (2006), *Stern Review: The Economics of Climate Change*, HM Treasury, London.
6. Tight, M., Bristow, A.L., Pridmore, A. and May, A.D. (2005) What is a sustainable level of CO₂ emissions from transport activity in the UK in 2050? *Transport Policy*, **12**, 235-244
 7. King, S., Dyball, M., Webster, T., Sharpe, A., Worley, A., DeWitt, J., Marsden, G., Harwatt, H., Kimble, M. and Jopson, A. (2008) “Exploring public attitudes to climate change and the barriers and motivators to behaviour change”, Report to Department for Transport, www.dft.gov.uk
 8. Marsden, G., Harwatt, H., Kimble, M. and Jopson, A. (2009) Better Informed, Better Behaved? Public attitudes to climate change and transport: empirical findings from England, Paper Presented at 89th Transportation Research Board Annual Meeting, Washington D.C.
 9. Lorenzoni, I. and Langford, I.H. (2001) Climate Change Now and in the Future: A Mixed Methodological Study of Public Perceptions in Norwich (UK). *CSERGE Working Paper ECM 01-05*
 10. DfT/ONS (2008) Attitudes to climate change and the impact of transport, Department for Transport, London, UK, www.dft.gov.uk
 11. DfT (2001) Focus on Personal Travel, Department for Transport, www.dft.gov.uk
 12. Coulter, A., Clegg, S., Lyons, G., Chatterton, T. and Musslewhite, C. (2007) “Exploring public attitudes to personal carbon dioxide emission information”, Report to Department for Transport, www.dft.gov.uk
 13. Ajzen, I. (1988). *Attitudes, personality, and behaviour*. Open University Press: Buckingham.
 14. Brook Lyndhurst, 2007. Public Understanding of Sustainable Energy Consumption in the Home. Final report to Defra, <http://www.defra.gov.uk/environment/business/scp/research/themes/theme3/sustainable-consump0607.htm>