



University of the
West of England

This is a pre-publication version of the following article:
*Line, T., Chatterjee, K. and Lyons, G. (2010). The travel
behaviour intentions of young people in the context of climate
change. Journal of Transport Geography, 18(2), 238-246.*



Centre for
Transport &
Society

Abstract

This article examines the factors influencing the future travel behaviour intentions of young people (aged 11 – 18), with specific attention given to how climate change considerations affect these. Overall it is found that the participants’ travel behaviour intentions are dominated by a desire to drive and that their values relating to identity, self-image, and social recognition (at the expense of their environmental values), as well as their affective attitudes towards transport modes, are key influences on this. Although they are aware of climate change, the participants’ understanding of the link between transport and climate change was weak. At the same time, they illustrated an apathy towards climate change - in part due to the timing and intangibility of its associated impacts and their lack of self efficacy with respect to tackling this issue. However, despite claiming that their current environmentally friendly travel behaviours (such as walking or cycling to school) are not influenced by the issue of climate change, a number are accepting of the idea of enforced travel behaviour change - away from use of the car, towards more ‘environmentally friendly’ modes. This acceptance was in part due to their belief that such action would remove the influence of the ‘social dilemma’, where their own efforts to tackle climate change may be rendered worthless by the inaction of others.

Keywords: Young people, travel behaviour intentions, climate change, values

The travel behaviour intentions of young people in the context of climate change

1. Introduction

The importance of climate change has been established by government as the greatest problem facing the world today (Brown, 2007; Dimas, 2007; Beckett, 2007 Oxfam, 2007). Caused by the levels of greenhouse gases in the atmosphere, the most prominent contributor to climate change is the burning of fossil fuels, including that caused by the manufacturing and running of cars (Defra, 2006). Private road transport accounts for over a fifth (21%) of the UK's greenhouse gas emissions and over a quarter (27%) of the UK's CO₂ emissions (Defra, 2006). In response, the UK Government has designed (and continues to develop) policies aiming to reduce CO₂ emissions from surface transport via a reduction in its fossil fuel carbon content, an increase in the fuel efficiency of vehicles, as well as measures to increase the public's use of more 'environmentally friendly' transport modes (such as walking, cycling and use of public transport) (Defra, 2006; King, 2008).

Considering the release of CO₂ only, the car can be considered the least environmentally friendly mode; though for any given journey this can be dependent upon vehicle occupancies. RAC Motoring Services (cited by Transport Direct 2007) estimate that the CO₂ emissions released by a car per km varies between 120g/km for a 1200cc engine to 226g/km for an engine over 3000cc¹ and according to Defra (2005a), the average number of occupants on trips by car is 1.59 (as measured in

2002/2003). Accordingly, it can be estimated that the average car produces between 76.1g and 142.14g of CO₂ per passenger km. In comparison, bus/coach journeys have been estimated to produce 89.1g CO₂ per passenger km and rail journeys 60.2g per passenger km (Transport Direct, 2007). Although it is recognised that each mode may not be used as efficiently as these figures suggest (such as empty buses and trains and cars carrying only the driver), or used more efficiently (i.e. buses, trains and cars carrying a full passenger load), based on the average figures quoted above it is assumed, for the purposes of this article, that the bus and train are more environmentally friendly than the car, as are cycling and walking. Although cycling and walking require food, a bicycle and the necessary infrastructure (i.e. a road, footway, or pedestrian or cycle pathway), the CO₂ produced per person per bike when cycling (through human-respiration, as well as the production of bicycles and food) has been found to be significantly less than is produced per person per car when driving - assuming both journeys are over the same distance (Walsh et al., 2008)².

Therefore, in the context of reducing the impact of the car on climate change, the study reported here was carried out in light of the idea of influencing young people toward an intention to be less reliant on the car and more reliant on alternative modes, before they develop a reliance on the car after the age of licence acquisition. Previous research has shown that the travel behaviour intentions of young people between the ages of 11 and 18 are dominated by the desire to drive and/or own a car in the future (DHC, 2003; Storey and Brannen, 2000; Turner and Pilling, 1999). Table 1 illustrates that this intention often results in real travel behaviour change at the age of 17, when young people move from being predominantly car passengers to

being car drivers. However, little research has been carried out to explore what determines young people's intentions in this context.

Table 1: Trips per person per age group and main mode of transport, 2003-2004, by age. (Source: DfT, 2005)

	< 17 yrs	17 – 29 yrs	30 – 49 yrs	50 – 59 yrs	> 60 yrs
Walk	314	251	230	214	209
Car/van driver	0	354	691	598	354
Car/van passenger	476	181	130	157	160
Stage bus	64	94	42	44	65
Other	51	94	67	54	37

The study focused on the participants' *intention* to drive as the majority are not yet legally able to carry out this behaviour. At the same time, intention is an important influence on actual behaviour in its own right. If an individual does not *intend* to behave in a given way, it is unlikely they will carry out the behaviour, even if they have the *opportunity* to do so³. For example, Table 1 implies that although a high proportion of young people begin driving at 17, some remain as passengers. The relationship between intention and opportunity may play a role in this. For example, it can be assumed that while some young people have the opportunity to drive at 17, not all will have the intention to carry out this behaviour. At the same time, other young people may have the intention to drive but no opportunity to do so, while others may have to create the opportunity to drive (by obtaining a job to finance driving lessons for example) in order to fulfil their intention.

Further to this, behaviour intention will itself be influenced by a number of factors (e.g. the degree to which a young person considers driving a necessary skill or the pressure to drive imposed upon them by friends and family) and the degree to which they impact individuals will differ from person to person. The study reported here is concerned with providing an understanding of such influences, paying particular attention to the potential influence of climate change. The research methodology is outlined in Section 2 with the study's key findings relating to the participants' travel behaviour intentions, and the main influences on these, presented in Section 3. In doing so, this article does not review the relevant literature prior to the presentation of findings, but instead examines the two together.

2. The research strategy and methodology

Previous research concerning the influences on (travel) behaviour intention has often relied heavily on eliciting information via survey questionnaires and interviews using the researcher's words to define the factors being explored. However, recognising the need to examine the subjective, individualistic nature of such influences in more depth, this study moved away from statistical quantification, towards a qualitative approach (as suggested by Sheller, 2004) where the participants' attitudes were investigated in their own words. Consequently, a series of small discussion groups were undertaken between January and July 2006⁴, with the primary aim of exploring the factors that influence young people's travel behaviour intentions, their 'willingness to tackle climate change', and the degree to which this willingness influences, or has the potential to influence, their travel behaviour intentions.

Various studies illustrate the successful use of discussion groups with young people (including Parry-Williams, 1998; Morrow, 2001; Oates et al., 2003; Grant and Stephen, 2005; Yuen et al., 2005; Stafford et al., 2003) and it has been suggested that that this method allows for the 'social nature' of children (Lewis, 1992) and is less 'intimidating' than quantitative methods (Bragg, 2007). Participant-led photography was also used to engage the participants both before and during the group sessions. The photos acquired, together with other 'predetermined' images provided by the researcher, were shown (or returned) to the participants and acted as a lead into discussion. For example, predetermined images of congested traffic versus glossy car adverts were used to begin a discussion of the different types of information and signals the participants may receive in relation to the car and driving. Similarly, photo 1 was used as a trigger for discussion about the environmental impacts of transport. In this sense the images directed the discussion groups.

Photography is an increasingly popular children-centred method due to its ability to harness both the verbal and non-verbal ways in which young people communicate their thoughts and ideas (Orellana, 1999; Aitken, 2001). According to Vygotsky (1971), art and thinking are closely connected and Arnheim (1969) argues that visual arts are a source of visual thinking, because thinking calls for images, and images contain thoughts. According to Collier and Collier (1986) photos are capable of reflecting "complex dimensions of social structure, cultural identity, interpersonal relationships, and psychological expression (Collier and Collier, 1986)." Disposable or instant cameras are also simple to use (Hart, 1997) and Barker (2003) suggests that the responsibility of a camera can provide young research participants with a sense of

empowerment, as well as help to forge a relationship of trust between them and the researcher.

Twelve discussion groups were undertaken in total, differing by the participants' age, or 'life stages'. Three ages were selected; eleven (when most young people move to secondary/senior school), fifteen (the point at they are facing the possibility of leaving formal education and entering the work force or moving to college or sixth form at a new school) and eighteen (the age at which young people may have to cope with leaving education, entering higher education or the workforce, leaving home and have the opportunity to drive).

The groups were also split by gender following the suggestion that groups containing both sexes often become distracted due to their discomfort and involvement with individuals of the opposite gender (Vaughn et al, 1996). Further, due to the study's exploratory nature (Tang and Davis's, 1995) and the desire to hear as much as possible from each participant (Morgan, 1998), a maximum of four to five participants were invited to take part in each group. Although on four occasions this number was reduced to three (due to illness), such smaller group sizes made for particularly intimate and focused discussions, providing rich and detailed information about each participant.

As illustrated in Table 2, the participants were recruited on a sub-regional level, from a range of locations in the city of Bristol and surrounding area in South-West England. Universal issues such as peer pressure and the importance of image and identity are unlikely to have been influenced by the study's location, but it is assumed that this will have influenced more local issues, such as the availability of public transport and cycle facilities (as well as local attitudes towards transport).

Table 2: Characteristics of the schools/ scout groups attended by the participants

Source of recruitment	Characteristics of school/college/scout group
School A	<ul style="list-style-type: none"> • Situated approx 11 miles NE of Bristol City Centre in a small town. • A community comprehensive with a student-body of just over 1000 – both boys and girls aged 11-18 yrs. • The catchment-area is made up of mainly small towns and villages. • No school travel plan. • School bus service.
School B	<ul style="list-style-type: none"> • Situated in a suburb of Bristol, approx 2 miles from the city centre. • A community comprehensive with a student-body of just over 1300 – both boys and girls aged 11-18 yrs. • The catchment-area is suburban residential. • No school travel plan. • School bus service.
School C	<ul style="list-style-type: none"> • Situated in a suburb of Bristol, approx 7 miles north of the city centre. • A community primary school with a student body of 280 – both boys and girls aged 4–11 yrs. • The catchment-area is suburban residential. • No school travel plan. • School bus service.
School D	<ul style="list-style-type: none"> • Situated in a suburb of Bristol, approx 7 miles north west of the city centre. • A community comprehensive with a student-body of just over 1200 – both boys and girls aged 11-18 yrs. • The catchment-area is suburban residential. • No school travel plan. • School bus service.
The college	<ul style="list-style-type: none"> • Situated in a suburb of Bristol, approx 6.5. miles north east of the city centre. • Over 12,000 students from Bristol and South Gloucestershire. • Bus service.
Scout group	<ul style="list-style-type: none"> • Situated in a suburb of Bristol, approx 3.5 miles east of the city centre. • Attendance – approx 25 boys aged 10-14 yrs, from surrounding suburban residential area.

The study was divided into two equal waves (both consisting of 2 groups for each age group, divided by gender). Groups in the first wave were provided with predetermined images as prompts during the discussions. In the second wave the

participants collected their own photos for discussion - thus two cameras were provided to each, with the instruction to collect around half a dozen photos in relation to “the car” on one camera and “any other form of transport” on the other⁵.

The photos acted as effective prompts in the discussion groups, as did the predetermined images supplied by the researcher. The latter images were chosen on the basis that they linked with the key topics the study wished to explore during the discussions, these being ‘attitudes to transport modes’, ‘information about transport modes’, ‘concern about climate change’, ‘willingness to tackle climate change’, ‘information about climate change’, and ‘current/intended transport behaviour’. As part of a deliberative approach to the research, these topics were introduced to the participants in the above order. In doing so, the study aimed to first explore the participants’ travel behaviour intentions and the reasons behind these without *prompting* them to think about specific factors. Having done so, climate change was discussed in detail, before introducing the idea of tackling climate change through voluntary or enforced travel behaviour change. The moderator guide was designed to allow a semi-structured approach to the discussions.

3. Findings

In order to effectively summarise the study in this article, the findings presented here reflect the attitudes of the participants collectively. In this particular study strong indications of heterogeneity defined by age and gender were not prevalent, thus the paper is not framed by distinguishing differences of expressed

views. However, as noted by Goodwin and Lyons (2009), “neither the population as a whole nor any detectable sub-group is homogenous in transport attitudes” – thus differences where they are apparent are highlighted.

3.1. Appeal of the car – a generational issue?

In common with the results of previous studies (DHC, 2003; Storey and Brannen, 2000; Turner and Pilling, 1999), all of the participants stated their intention to learn to drive, or continue driving, in the future. The participants pointed to a number of explanations for this, many of which align with findings from previous studies involving older age groups. For example, as found amongst adults in the UK (see Goodwin, 1995; Anable et al, 2006; and Featherstone, 2004), the participants pointed to the speed⁶, cost savings, convenience and flexibility they believe they currently, or will, gain by using the car in favour of more environmentally friendly modes.

In contrast, the participants referred to the lack of speed they believe is associated with the bus and the time-pressure they feel as a result – both of which act as an incentive for them to choose the car for most journeys (see Granville et al., 2002, for similar findings concerning older age groups). Participants believe that cycling and walking are better for their health than using the car, but they also referred to the inconvenience of cycling and walking, their belief that the car is a way to ‘save energy’ on their journey and, more importantly, to their desire to separate

travelling and exercise - findings found previously amongst both adults (Gatersleben and Appleton, 2007) and young people (DHC, 2003).

In line with previous findings by Steg (2005), the participants' emotional (or affective) responses to the topics discussed were also found to be important to the generally positive attitudes they have towards the car and generally negative attitudes they have towards the bus and cycling. For example, they referred to the feeling of freedom they associate with using the car in comparison to the confinement they feel when using the bus, their discomfort when travelling on an unclean bus or with unfamiliar bus passengers, the fear they feel when cycling on the road and their anger in relation to bike theft and vandalism. For instance, one of the 11 year old females referred to fear of other bus users:

“- I have to use it sometimes but I don't like it because other people are sat there and all the seats are...and like at night time when you use it there are these gangs of teenagers who are always sat at the back of buses.”

Again similar comments have been made by adults (as discussed by Goodwin, 1995; Wright and Egan, 2000; Stradling et al., 2007) suggesting that young people will continue to hold these beliefs in the future. Building on the ideas of Goodwin (1995) and Sheller (2004), these findings also reiterate the importance of considering people's emotional responses to transport in the design of policy and initiatives.

For some of the participants, gender stereotypes were found to act as an influence on their attitudes towards transport modes. For example, participants in one of the 11 year old female groups referred to their beliefs that it is boys who are

interested in cars rather than girls and, similarly, a number of the 18 year old female participants suggested that the impact of car marketing is of more significance to men. In the same way, one of the 15 year old female groups agreed that “BMXing” is not something that girls are as interested in as boys - including them. It became clear that this was due to their desire not to be associated with such male-related images.

Overall it would appear that the appeal of the car applies across generations and with similar explanations, although the research also suggests that there are more specific elements to the participants’ attitudes that can be considered unique to their life stage or gender. Similarly, although both the young participants and adults in previous studies (DfT, 2006) have indicated that cost does not deter them from driving, the participants in this study suggested this is due to the intangibility of such cost via their parents’ bearing of it, which is in turn a consequence of their life stage (i.e. living at home, attending school or college and not being able to pay to learn to drive themselves). As discussed below, it is also clear that the values influencing the participants’ travel behaviour intentions may differ according to life stage.

3.2. The importance of values

The participants’ attitudes and beliefs discussed above can be related to the values identified by Rokeach (1973, 1979) and although these values can be held by individuals of any age group, the degree to which specific values appear to influence the participants’ travel behaviour intentions reflects their particular life stage. For example, the participants’ positive attitudes towards the car are related to two main

sets of beliefs. Firstly, the majority believe the car to be the quickest, most comfortable and efficient way to travel, beliefs that can be linked to 'A Comfortable Life', 'Freedom', and 'Pleasure' as identified by Rokeach. These values are unrelated to life stage. In contrast, the majority of participants associate the car with a second set of beliefs, believing it be capable of providing them with an identity of adult status, an image of success and, with respect to those already driving, a sense of purpose relating to the roles they play as a driver in their family and peer group:

...it's like a mile-stone in teenage life isn't it? Learning to drive and having your own car. Just like everyone does it when they're seventeen.

(15 yr-old female participant)

Limousines, they're like a really special thing for like if you're posh or you have lots of money. That's why I want to have one of them.

(11 yr-old female participant)

I knew how much I relied on my Mum and Dad to take me places so now I just think "well they want to have a night in tonight so I'll just take myself." I also take my Sister places.

(18 yr-old female participant)

These beliefs can be linked to 'Self-Respect' and 'Social-Recognition' as identified by Rokeach and also illustrate the degree to which the participants are influenced by materialistic values, which according to Dittmar (2004) are,

... characterised by three key beliefs that material goods are: a central life goal; the main route to identity, success and happiness; and the yardstick for evaluating self and others. (Dittmar, 2004)

Dittmar (2004) suggests that there has been a relatively recent increase and deepening of consumer culture and branding and that the links between identity and material goods could continue to strengthen in the future. For example, one of the 11 year old male participants (in response to photo 1) suggested that a car's brand is the *only* reason a person would express a positive attitude towards it. This is of particular concern with respect to climate change as the production and consumption of material goods leads to an upwards pressure on pollution, waste and energy use – the car being, in-part, one of these. Although it is likely that these values are still of significance to adults, they are considered here to be particularly important to young people due to the development of identity during adolescence (Dittmar, 2004; Dusek, 1991). This assumption is supported by findings reported Stradling et al. (2001) who found that 17 – 20 year-olds obtained a much higher sense of personal identity when driving in their car than older age groups. It is suggested here that older adults are more likely to be influenced by their valuing of security and safety in relation to the car and driving, particularly when they have children of their own (issues highlighted in this context by Balzani & Borgogni, 2003; Timpero et al., 2004; Fotel and Thomsen, 2004).

Photo 1: Taken by an 11 year old male participant



The degree to which the participants' attitudes appear influenced by these values suggests that transport policy and initiatives aiming to change the travel behaviour intentions of young people should recognise these values and attempt to address them, as attempting to change attitudes alone may only be effective in the short term. However, according to Heberlein (1981), values transcend attitudes, hence they are central in a person's belief system and it is because of this centrality that values are particularly difficult to change. Therefore, such policy should not aim to *change* values, but to understand the hierarchy of values influencing behaviour and frame policy or initiatives around this understanding⁷. For example, the young people in this study indicated that they value image, self-identity and social recognition, each of which are linked to their positive attitude towards the car and driving and their favouring of this mode above other more environmentally friendly means of travel. One answer to this may be to promote cycling as a signal of success and 'being cool', rather than promoting the health and environmental benefits of this behaviour. But where does the environment fit into the participants' value system and to what extent

does a willingness to tackle climate change influence travel behaviour intentions?

Could this factor challenge their attitudes towards the car?

3.3. Willingness to tackle climate change

Previous research has shown that young people between the ages of 11 to 18 are not only unwilling to change their current or intended travel behaviour in light of climate change but, unlike the UK's adult population (Anable et al., 2006), they also express a lack of concern about this issue (Lex Report on Motoring, 1999; Mackay, 1997). The findings of the present study support this, with the majority of participants being either unwilling to change their travel behaviour intentions (dominated by the desire to drive) in light of climate change, or claiming that their current 'environmentally friendly' travel behaviours (such as cycling or walking to school) were not derived from a concern about climate change. In addition to the current literature, a number of factors were identified as influencing these attitudes.

Firstly, the participants' understanding of climate change was questionable⁸. Despite being aware of the more dramatic consequences of climate change (such as large scale flooding), the majority of participants were unsure of the causes - in particular the contribution made by transport⁹. The participants also referred (unprompted) to their need for further information about climate change and more specifically to the importance of being presented with solutions to this problem (thus building on similar findings amongst the adult population as reported by Anable et al (2006)):

You don't really get told what to do. ...Instead of just saying 'we're polluting the world', tell us what we can do about it.

(11 yr-old male participant)

However, they struggled to suggest how such information could be provided; perhaps as a reflection of the multitude of sources from which they receive information about climate change and the variety of messages they receive as a result. The participants explained that television programmes and advertising, film, parents, friends and school all provide them with information about climate change, but it became clear that these sources can also provide contradictory messages – particularly when they promote use of the car.

Secondly, it became clear that the majority of participants feel a lack of self-efficacy with respect to tackling climate change. In explaining these feelings, they pointed to a lack of transport choices and thus the difficulty they have in choosing a more environmentally friendly mode of transport than the car. Further, reflecting the 'Social Dilemma' discussed by Garling et al. (2002), they suggested that tackling climate change via changes in their travel behaviour intentions is impossible to do alone and that even if they make an effort on an individual level, the rest of society may not do the same, rendering their own efforts pointless:

There are little things you can do, but nothing that will change the world, because individually we're only little people.

(11 yr-old female participant)

At the same time, a number of participants suggested that the chance to tackle climate change has already been lost:

In one way if you think about it, all the damage done to the Earth, even if you stop now, even if every single person recycles, the world's too damaged already, all its resources are used up already. If you think about it really, nothing's going to save the Earth now.

(15 yr-old male participant)

It is likely that these feelings relate to the lack of decision-making power available to young people, both legally and as imposed upon them by adults. For example, several participants referred to their experiences of, and beliefs that, people older than them do not listen to young people and subsequently their ideas and efforts to tackle climate change are ignored. Although it could be argued that the participants are using this as an 'excuse' not to act on climate change (currently or in the future), it has long been argued that young people are denied a voice in society and thus feel powerless as a result (Roche, 1999). Efforts to rectify this have included wide-reaching legal instruments such as the Convention on the Rights of the Child (United Nations General Assembly, 1989) and the European Convention on the Exercise of Children's Rights (Council of Europe, 1996), although Aubrey and Dahl (2006) argue that it is action taken at a more local level that can successfully lead to granted and exercised rights for child participation in matters that affect their lives. Schemes recognising this include Defra's 'Climate Change Champions' (Defra, 2008b) and the Bath and

Northeast Somerset “Climate Change Connection” Project, both of which aim to empower young people in relation to their knowledge of climate change and how to tackle this issue, as well as their ability to effectively communicate this knowledge to others. Future research in this area could include further investigation of the impact of such localized schemes on the sense of self efficacy felt by young people, in relation to their future travel behaviour intentions in particular.

Thirdly, with respect to the timescale of climate change, several participants suggested that their concern about issues in the present, such as exams and homework, takes precedence over that in relation to the likely impacts of climate change in the future.

I'll probably get worried when I'm older, but I've got worse things to worry about now, it's exam week this week for us.

(11 year old male participant)

In a similar vein, a number of the 18 year-old participants suggested that young people have difficulty visualising the future and even if they do, they spend more time worrying about how they will obtain a job than they do about climate change. The issue of young people being academically ‘over-stressed’ is entering the public consciousness, in part due to the findings of the University of Cambridge’s (2007) ‘Community Soundings’ Project. Although whether this will lead to changes in the education system which allow young people the emotional room to worry about issues other than academic success is a question for future research.

Fourthly, the participants referred to their lack of concern about climate change due to their lack of experience of the related impacts (such as extreme weather conditions or flooding for example) and its intangibility as a result:

It's not affecting us at the moment so we'll panic about it when it happens.

Yeah if you're in the place where like the tsunami hit or whatever, then you'd be worried about it. You'd be like, "oh what if it happens again?" But nothing's happened to us, so there's nothing to worry about really.

(15 yr-old female participants)

These comments about timing and intangibility are reflective of a wider problem in society in that people (young or old) do not feel they have the time to worry about issues such as climate change, which are yet to be felt on a tangible scale. For example, Lorenzoni and Pidgeon (2005) found that the UK public generally feel a lack of urgency regarding climate change due to their uncertainty about when it will occur and their desire for modern lifestyles even if these pose a threat to the Earth's climate. Although public awareness of climate change is currently exceptionally high in the UK and people express concern about this issue, use of the car is the behaviour people are least willing to change (Anable et al., 2006). It is this 'problem' with respect to climate change that suggests the need for Government intervention to enforce behaviour change. But how did the participants suggest they would react to such an intervention if it imposed a limit on their current and/or future ability to drive?

Having discussed climate change with the participants, the idea of implementing changes in their travel behaviour intentions in light of this issue was introduced. It is firstly of note that the participants highlighted various positive attributes to more environmentally friendly modes and negative aspects of the car and driving. With respect to the bus the majority of participants recognised that, due to its ability to remove people from their cars, the bus is more environmentally friendly (in relation to its contribution to climate change) than the car. However, as noted in Section 3.1 and 3.2, it is clear that, despite this understanding, they would prefer to use the car in favour of this mode for other reasons, such as image, cost, speed and reliability.

With this affection for the car in mind, it is perhaps not surprising that the participants discussed making changes to the car itself and changes in their use of the car, but not removing use of the car altogether. For example, many of the participants suggested increasing the use of alternative fuel vehicles – one of the 15 year old female groups suggested the use of “solar panel cars” and a number of the 18 year old male participants pointed to the use of “hybrid” cars. Similarly, in written response to her photo (Photo 2), an 11 year old female participant pointed to the potential of hydrogen fuelled cars, which she believes are “clean and will NOT pollute anything”, as the hydrogen “turns into water.”

Reducing the number of cars per household, and car sharing were also noted by a number of the participants. For example, one of the 11 year old female groups agreed that people should only be allowed “one car per family”. However, a number of other participants suggested various problems with such a scheme, including their apprehension at sharing a car with “strangers”.

Photo 2: Taken by an 11 year old female participant



Finally, reducing ‘less necessary’ use of the car (see Goodwin, 1995) was mentioned by participants across the age range:

“I think if every one did their little bit it would help. If everyone did their little bit say like walking to the shops rather than driving just the short distances, if everybody did that then I think that would make a big difference.”

(18 year old participant)

“I would like to drive myself but like only when I need to drive. ...If it’s not that far away...and it’s like a hot day, I would like to walk, coz that’s better.”

(11 year old participant)

In this sense it can be argued that there is a positive ‘starting point’ for encouraging or enforcing travel behaviour change away from use of the car amongst young people. However, as already noted, all of the young people involved in this

study are already driving, or intend to drive once they reach the age of licence acquisition. This in itself would suggest that the impact of the car on climate change (via CO₂ emissions) and/or the availability of alternative modes do not provide strong enough incentive to deter them from driving, whether they are fully-informed about these issues and state that they are willing to tackle climate change or not. More importantly, the majority of participants indicated the same when discussing this aspect of car use directly, revealing that climate change (and the contribution of transport towards it) does not act as an incentive to change their current, or future intended travel behaviour. Comments included:

“I wouldn’t buy a certain car to help the environment or anything, I don’t really care that much. My decisions aren’t going to be swayed because I’m damaging the environment. ...If I think shall I drive or should I walk it’s never to do with the environment. It doesn’t affect what I choose.”

(18 year old male participant)

“...when you go to ride a bike you think, you don’t think “ooo global warming” you think “I’m gonna be knackered at the end of it”. So I don’t know, it’s still easier to get in the car even though you know it’s affecting the world.”

(18 year old female participant)

In general, previous research has suggested that, although young people express some support for transport policies aimed at reducing the impact of transport

on the environment, they are generally defensive of their right to retain their use of the car (Lex Report on Motoring, 1999). Similar findings were made in the present study, although their 'negative' responses to such policies are often complex. In this sense, the following findings add to the current evidence base.

All of the groups in the present study were prompted by the moderator to consider how they would feel if the Government were to introduce policies that meant they were forced to change their transport behaviour (using the example of reducing 'less necessary' use of the car, as opposed to removing use of the car altogether, as a policy goal) in light of the impacts of transport on climate change, and therefore take responsibility for the consequences of society's current travel behaviour. As such, they were effectively being asked whether they would give up some of their freedom of choice (alongside other individuals) in order to tackle climate change for "the good of society".

Responses to this question were mixed, both within and between the groups. For instance, one of the 11 year old male groups unanimously agreed that such an idea would "never work", whereas a member of the other 11 year old male group stated that such a policy would not "bother" him. The participants in one of the 11 year old female groups were split – two members of this group did not see such a move as a problem, but the remaining members did. In this case this difference was perhaps reflective of the modes of transport by which the two 'pairs' of respondents most often travel to school, which for the former pair is walking and cycling and for the latter, the car.

More decisively, one of the 15 year old males claimed,

“It would be bad I think but it would be better for the world.”

It would therefore appear that this participant appreciates the environmental benefits of such action, but also recognises the difficulty of implementing it. He also commented on the positive impact he believes it would have on his own transport behaviour, suggesting that he would not change his behaviour otherwise:

“So you do have a sense of responsibility then?”

Yeah but only if there’s a ban I would just go out of my way to just to ride and walk.”

(Moderator in bold)

Expressing similar sentiments, participants also linked this type of policy to the potential health benefits of reducing society’s use of the car (similar results have been found amongst the adult population (Newhouse, 1990; Axelrod and Lehman, 1993; Eden, 1995)):

“...if you live only two to three miles away from your work it should be that you can’t use the car because walking won’t take that long will it? For me to school is one and a half miles and it takes me twenty or thirty minutes, you know. So like an hour’s walk that’s good for you isn’t it, like ten thousand steps a day. So it would be good in two ways isn’t it?”

(15 year old participant)

“I think it would probably help me, because sometimes I get up and I think oh I can’t be bothered to walk. But if you had to do it then you’ve got to haven’t you? So you haven’t got the option.”

(18 year old participant)

Also in support of enforced change, but here due to their belief that such changes will become inevitable anyway, members of one of the 18 year old male groups strongly asserted their belief that choice should be taken away from individuals (and therefore responsibility forced upon them) for the good of society (here, participant A is able to drive):

“- I think they should be forced into it personally that’s the only way they’ll ever get anything done. *(Participant A)*

- Yeah definitely or nothing’s going to happen otherwise. *(Participant B)*

- I think some people may want to help the environment but they don’t do anything about it but then again if they were forced to then they’d have to. I think that people have to want to do it but I think some people want to do it but just don’t do anything about it. ...The only way to get something done properly is if you’re forced to do it. I mean eventually it’s going to happen anyway. It’s going to come to a point in time where there’s going to be a ban on cars or something...there’s just going to be no feasible way they can have all the cars on the road. *(Participant A)*”

Overall, it can be said that, although the participants did not universally agree with the idea of enforced travel behaviour change, some participants from each age group and gender stated their support for such a move, as did a number of the participants able to drive. In turn, due to the line of questioning (i.e. “how would you feel if *your* ability to drive was restricted in some way?”), participants also referred to their own car trips, as well as those they assume they will need to take in the future. In particular they pointed to enforced behaviour change as a way to remove the social dilemma – a way to force people to act in the same way, removing their feelings of powerlessness with respect to making individual changes voluntarily. It can also be assumed that a lack of willingness to make changes to travel behaviour (in light of climate change) voluntarily, *but* a willingness to accept enforced behaviour change is of great importance to those attempting to develop transport policy and initiatives.

4. Discussion, conclusions and future research

Overall the participants illustrated a strong desire to continue driving or to learn to drive in the future and expressed an unwillingness to change their travel behaviour intentions (dominated by the desire to drive) in light of climate change. Consequently, although it was thought that there may remain scope to influence young people away from an intention to drive, towards use of more environmentally friendly modes before they develop driving habits, it would appear that this is more questionable than expected in that ‘socialisation’ of these young people has already occurred - their behaviour intentions with regards transport are already well

developed. Nonetheless, as highlighted below, a deeper understanding of the influences on their behaviour intentions has been gained and it is suggested that it remains possible to challenge them through careful application of this knowledge to transport policy and initiatives.

There are a number of key findings. Firstly, although it was posited by this study that the factors influencing the travel behaviour intentions of those young people unable to (legally) drive may differ from those able to, it was found that these influences did not differ between the age groups studied, although there were differences in the ways in which they discussed them (i.e. in the language used and comments made), both within and across groups. At the same time, the findings were not greatly dissimilar to those of previous studies involving older age groups. For example, the importance of the participants' emotional responses to transport modes became clear, as has been found amongst adults (Goodwin, 1995; Wright and Egan, 2000; Stradling et al., 2001; Stradling et al., 2007). However, with respect to both age groups, it is values that act as the underlying influence on their travel behaviour intentions. Values including 'A Comfortable Life', 'Freedom', and 'Pleasure' are relevant to both age groups, but it was found that the young people in this study value identity, image and social recognition in particular. Although it is recognised that transport policy makers are likely to require an understanding of the degree to which these values are universally held among young people, it is suggested that such policy should recognise these values when seeking to encourage current or future intention travel behaviour change, particularly in relation to soft policy measures aimed at addressing the socio-psychological motivations for travel choice (such as marketing activities).

With respect to encouraging use of more environmentally friendly modes in particular, it is also important to note that, although the participants recognised that using alternative fuel vehicles or modes other than the car may be more 'environmentally friendly', they appear to place little value on 'the environment'. It can be argued that this is, in part, due to their placing higher value on identity, image and social recognition - thus the positive attitudes they have towards the car and driving in light of these values surpass their concern about the environmental impact of using this mode. At the same time, the timing and intangibility of climate change is key to their apathy towards tackling this issue (with respect to changing their travel behaviour intentions in particular), as are their feeling of self-efficacy and the degree to which their responses are influenced by the 'social dilemma' (Garling et al., 2002).

However, this is not to say the impact of transport on climate change should not be focused upon by policy when attempting to change their behaviour intentions. Indeed, it became clear that there is a need to improve the participants' understanding of this issue and provide them with information about what they themselves can do to tackle it (findings extend and add to those in relation to the UK's adult population, as reported by Anable et al., 2006).

Of particular importance with respect to influencing behaviour intention, it was also found that a number of the participants were accepting of enforced travel behaviour change away from use of the car, towards use of more environmentally friendly modes, as long as there are viable alternatives. Although enforced travel behaviour change is unlikely to be pursued by policy on a national or regional level, such findings may prove particularly useful in relation to designing smaller scale initiatives such as the admittance of student parking at schools and/or universities.

In this sense, it would appear that there is also a role to be played by harder policy measures. These not only aim to make improvements to transport infrastructure and operations via the introduction of, or changes in, price (such as the introduction of the congestion charge in London or changes in the level of fuel taxation imposed by Government), but also through physical changes to the transport system (such as the construction of more rail lines or segregated cycle paths). It would also appear that the participants recognise that such policy measures could remove the problem of the social dilemma if they are used to force everyone to behave in the same way.

In conclusion it can be said that, by building a deeper understanding of the influences on the travel behaviour intentions of young people, the research suggests that there remains scope for influencing them toward an intention to be less reliant on the car and more reliant on alternative modes. However, it has also demonstrated the need for further work in the following areas. Firstly, it would appear useful to carry out a study of a representative sample in order to establish the degree to which the findings outlined above, are applicable to young people (within the 11 to 18 year-old age range) on a wider scale. It is also recognised that the sample recruited for the present study was limited by both what the sample controlled for (which did not include, for example, car owning vs. non-car owning households, or schools with/without travel plans) and the sub-regional applicability of a number of the findings. Thus, it would be useful to expand future research to other regions, in order to explore the national applicability of findings, as well as identify other specific groups of interest. For example, DfT (2007) investigated the travel aspirations, needs and behaviour of young people using purposive sampling (via quota-setting) across

certain key variables. These included living circumstances, economic activity, regularity of public transport use, driving status and access to a car, and ethnicity. A large, representative sample could provide the basis for conducting segmentation analysis. Segmentation is used to identify specific groups of people (on the basis of life-stage, similar value systems or travel behaviour intentions for example) that behave (or have behavioural intentions) in a similar way, for similar reasons. In doing so, policy makers may be able to target specific policy measures at particular groups of people (see Anable 2005; Defra, 2008a).

Further, although the importance of understanding the values upon which the attitudes and travel behaviour intentions of young people are based on was highlighted by the study, they were not explored directly. The influence of this factor could be investigated in more detail using a variation on Rokeach's (1973) value survey, or through a scenario-based study. In the latter case, a number of different transport scenarios could be presented to young people and then the reasons why they favour one over another discussed. Following this, their responses could be compared to find common themes and, in turn, the values underlying their reasoning. Such scenarios could include those used in this study (i.e. enforcing travel behaviour change through Government legislation) as well as a wide range of others (chosen irrespective of whether they are likely to become a reality or not) such as car free cities; removing all cars and replacing them with a standard 'environmentally-friendly' car that is only available in one model; or introducing covered cycle paths and walkways to protect people from the weather. A similar method could also be used to further explore the participants' understanding of, and attitudes towards, climate change, by presenting them with realistic scenarios about the likely impacts of

climate change on them as individuals. Thus, it would also be possible to explore whether information provided in this way would prove effective if given to young people (and possibly society as a whole) on a wider scale.

4. Acknowledgements

The authors gratefully acknowledge the School of the Built and Natural Environment at the University of the West of England, Bristol, as sponsors of the research.

5. References

Aitken, S. (2001). Shared Lives: Interviewing Couples, Playing with their children. In M. Limb and C Dwyer (Eds.), *Qualitative Methodologies for Geographers: Issues and Debates* (pp.73-86). London: Arnold.

Anable, J. (2005). Complacent Car Addicts' or 'Aspiring Environmentalists'? Identifying travel behaviour segments using attitude theory. *Transport Policy*, 12(1), 65-78.

Anable, J., Lane, B. & Kelay, T. (2006). *An evidence base review of public attitudes to climate change and transport behaviour*. Retrieved September 1, 2006, from www.dft.gov.uk/sustainable/climatechange

Arnheim, R. (1969). *Visual Thinking*. Berkeley: University of California Press.

Aubrey, C. & Dahl, S. (2006). Children's Voices: The Views of Vulnerable Children on Their Service Providers and the Relevance of Services They Receive. *British Journal of Social Work*. 36, 21-39.

Axelrod, L & Lehman, D. (1993). Responding to environmental concerns: what factors guide individual action? *Journal of Environmental Psychology* 13, 149-159.

Balzani, M. and Borgogni, A. (2003). The body goes to the city project: Research on safe routes to school and playgrounds. In R.G. Mira, J.M.S. Cameselle and J.R. Martinez, (Eds). *Culture, environmental action and sustainability* (pp. 299–312.). Cambridge: Hogrefe & Huber.

Barker, J. (2003). Passengers or Political Actors? Children's Participation in Transport Policy and the Micro Political Geographies of the Family. *Space and Polity*, 7(2), 135-151.

Beckett, M. (2007, April 16). *Climate change – The gathering storm of our generation. Annual Winston Churchill Memorial Lecture, New York.* Retrieved August 2, 2007, from www.britischebotschaft.de.

Bibbings, J. & WCC (2004). *Climate Concern: Attitudes to climate change and windfarms in Wales.* Friends of the Earth Cymru and The Welsh Consumer Council.

Bragg, S. (2007). *Consulting young people: a review of the literature – A Report for Creative Partnerships.* London: Creative Partnerships.

Brown, G. (2007, March 12) *Speech to the Green Alliance, London.* Retrieved (August 2, 2007) from http://www.hm-treasury.gov.uk/newsroom_and_speeches.

Collier, J. (Jr), and Collier, M. (1986). *Visual Anthropology – Photography as a Research Method (Revised and Expanded Edition)*. Albuquerque: University of New Mexico Press.

Corbett, C. (2003). *Car crime, Crime and Society Series*. Devon: Willan Publishing.

Council of Europe (1996). *European, Convention on the Exercise of Children's Rights*. Council of Europe: Strasberg.

Defra (2005a). *Focus on Personal travel: England: 2005 Edition*. Retrieved (August 11, 2007) from <http://www.dft.gov.uk/pgr/statistics/datatablespublications/personal/focuspt/2005/>.

Defra (2006). *Climate Change: The UK Programme*. London: Defra.

Defra (2008a). A framework for pro-environmental behaviours. Department for Environment, Food and Rural Affairs, January, London.

Defra (2008b). *Prime Minister announces Youth Climate Change Champions*. Retrieved (October 26, 2008) from <http://www.defra.gov.uk/news/2008/080220a.htm>.

DfT (2005). *Trips per person per year by purpose and main mode of transport, 2003-2004*. Retrieved (September 8, 2007) from <http://www.dft.gov.uk/foi/responses/2005/dec/tripsperpersonperyear/>.

DfT (2006). *Attitudes to Car Use*. London: DfT.

DfT (2007). *Understanding the travel aspirations, needs and behaviour of young adults*. London: DfT.

DHC (Derek Halden Consultancy) (2003). *Children's Attitudes to Sustainable Transport*. Edinburgh: Scottish Executive Social Research..

Dimas, S. (2007, April 25) *Summary: "Climate change and sustainable use of energy"*. Retrieved (August 2, 2007) from <http://www.europa-eu-un>.

Dittmar, H. (2004). Are you what you have? *The Psychologist*, 17(4), p.206-210.

Dusek, J.B. (1991). *Adolescent Development and Behaviour (2nd ed)*. USA: Prentice-Hall.

Eden, S. (1995). Individual environmental responsibility and its role in public environmentalism. *Environment and Planning A*, 25, 1743-1758.

Featherstone, M. (2004) Automobilities – An Introduction. *Theory, Culture & Society*, 21(4/5), 1-24.

Fotel, T & Thomsen, T.U. (2004). The Surveillance of Children's Mobility. *Surveillance and Society*, 1(4), 535-554.

Garling, T., Loukopoulos, P., & Lee-Gosseliin, M. (2002). Public Attitudes. In Chapter prepared for K. Button and D. Hensher (Eds), *Handbook of Transportation. Volume 4: Transportation and the environment*.

Gatersleben, B. & Appleton, K. (2007). Contemplating cycling to work; attitudes and perceptions in different stages of change. *Transportation Research Part A: Policy and Practice* , 41, 302-312.

Goodwin, P. (Ed.) (1995). *Car Dependence. A Report for the RAC Foundation for Motoring and the Environment*. (ESRC) Transport Studies Unit: University of Oxford.

Goodwin, P. and Lyons, G. (2009). Public attitudes to transport: scrutinising the evidence. Proc. 41st Universities Transport Study Group Conference, January, London.

Grant, I.J. and Stephen, G.R. (2005). Communicating culture: An examination of the buying behaviour of 'tweenage' girls and the key societal communicating factors influencing the buying process of fashion clothing. *Journal of Targeting, Measurement and Analysis or Marketing, Vol. 14(2) p.101-114*.

Granville, S., Laird, A., Barber, M., Riat, F. (2002). *Why do Parents Drive Their Children to School?* Scottish Executive Central Research Unit: Edinburgh.

Hart, R. (1997). *Children's Participants: The Theory and Practice of Involving Youth Citizens in Community Development and Environmental Care*. London: Earthscan,

Heberlein, T.A. (1981). Environmental attitudes. *Journal of Environmental Policy*, 241-270.

King, J. (2008). *The King Review of Low-Carbon Cars. Part II: Recommendations for Action*. HM Treasury: London.

Lewis, A. (1992). Group Child Interviews as a Research Tool. *British Education Research Journal*, 18(4), 413-421.

Lex Report on Motoring (1999). *Driving for the Future: the authoritative research on the attitudes and behaviour of Britain's motorists (11th ed)*. Bourne End: Lex Service Plc.

Lorenzoni, I. & Pidgeon, N. (2005). Defining Dangers of Climate Change and Individual Behaviour: Closing the Gap. [Poster] *Avoiding Dangerous Climate Change Exeter, 1-3 February 2005*,

Mackay, K. and Steer Davies Gleave (1997). *Achieving sustainable change: the role of young adults*. Unpublished master's thesis.

Morgan, D.L. (1998). *Planning Focus Groups*. Thousand: Sage.

Morrow, V. (2001) Using qualitative methods to elicit young people's perspectives on their environments: some ideas for community health initiatives. *Health Education Research Theory and Practice*, 16(3) p.225-268.

Newhouse, N. (1990). Implications of attitude and behaviour research for environmental conservation. *Journal of Environmental Education* 22(1), 26-32.

Oates, C., Blades, M., Gunter, B. & Don, J. (2003). Children's understanding of television advertising: a qualitative approach. *Journal of Marketing Communications*, 9(2), 59-71.

Orellana, M. (1999). Space and Place in an Urban Landscape. *Visual Sociology*, 14, 73-89.

Oxfam (2007). *Climate change*. Retrieved (August 23, 2007) from http://www.oxfam.org.uk/what_we_do/issues/climate_change/index.htm.

Parry-Williams, J. (1998) *Evaluation, Primarily by Children Evaluators, on the SCF (UK) Female-headed Project, Tajikstan*. Tajikstan: Save the Children.

Rokeach, M. (1973). *The nature of human values*. New York, NY: Free Press.

Rokeach, M. (1979). *Understanding human values: A theory of organisation and change*. San Francisco: Jossey-Bass.

Roche, J. (1999). Children: Rights, Participation and Citizenship. *Childhood*, 6(4), 475-493.

Sheller, M. (2004). Automotive Emotions – Feeling the Car. *Theory, Culture and Society*, 21(4-5), 221-242.

Stafford, A., Laybourn, A., Hill, M. & Walker, M. (2003). ‘Having a Say’: Children and Young People Talk about Consultation. *Children and Society*, 17, 361-373.

Steg, L. (2005). Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research Part A: Policy and Practice*, 39(2-3), 147-162.

Storey, P. & Brannen, J. (2000). *Young people and transport in rural areas*. National Youth Agency: Leicester.

Stradling, S., Carreno, M., Rye, T. & Noble, A. (2007). Passenger perceptions and the ideal urban bus journey experience. *Transport Policy*, 14(4), 283-292.

Stradling, S.G., Meadows, M.L., Beatty, S., 2001. Identity and independence: two dimensions of driver autonomy. In: Grayson, G.B. (Ed.), *Behavioural Research in*

Road Safety X. Transport Research Laboratory, Crowthorne.

Tang, K.C. & Davis, A. (1995). Critical factors in the determination of focus group size. *Family Practice*, 12, 474-475.

Timpero, A., Crawford, D., Telford, A. & Salmon, J. (2004). Perceptions about the local neighbourhood and walking and cycling among children. *Preventive Medicine*, 38, 39-47.

Turner, J. & Pilling, A. (1999). Integrating Young People into Integrated Transport: A community-based approach to increase travel awareness. *Paper prepared for PTRC Young People and Transport Conference*.

United Nations General Assembly (1989). *The Convention on the Rights of the Child*. New York: United Nations.

University of Cambridge (2007). *Community Soundings: Interim Report*. Cambridge: University of Cambridge.

Vaughn, S. Schumm, J.S. and Sinagub, J. (1996). Use of Focus Groups with Children and Adolescents. *Focus Group Interviews in Education and Psychology*. California: Sage.

Vygotsky, L.S. (1971). *The Psychology of Art*. Cambridge: The MIT Press.

Walsh et al. (2008). A comparison of carbon dioxide emissions associated with motorised transport modes and cycling in Ireland. *Transportation Research Part D: Transport and Environment* 13(6), 392-399.

Wright, C. and Egan, J. (2000). De-marketing the car. *Transport Policy*, 7, 287-294.

Yuen, F.C., Pedlar, A., & Mannell, R.C. (2005). Building Community and Social Capital through Children's Leisure in the Context of an International Camp. *Journal of Leisure Research*, 37(4), 494-518.

Footnotes

¹ These figures, which according to Transport Direct (2007), “come from DfT and have been agreed with Defra.” represent running (from new) a privately owned car for a period of three years with an annual mileage of 12,000. They are used by Transport Direct (2007) to estimate the CO₂ emissions of different cars. Transport Direct runs a website offering travel information for door-to-door journeys by public transport and the car around Britain. It allows users to compare the use of different transport options for particular journeys.

² Although it is noted that when indirect energy is taken into account Walsh et al’s (2008) results indicate “that a cyclist commuting an equivalent distance to work releases an almost equal amount of carbon dioxide as that attributed to a passenger of an electrically propelled train at full occupancy during peak service times.”

³ They were also informed that they could draw pictures, print images from the internet or collect them from magazines in relation to these topics (although with the exception of two participants, only the cameras were used).

⁴ As with all research into attitudes, the findings are influenced by the timing of the data-collection. Due to the link between information and attitude formation (as well as behaviour intention) it is of note that climate change has gained increasing international attention (both politically and in the media) since the entry into force of the Kyoto Protocol in 2005. Therefore it can be suggested that the findings (particularly those relating to information provision and attitudes) reported here would differ if the study was repeated again.

⁵ Although it is noted that intentions can change over time.

⁶ Of particular note, previous research has suggested that it is *young* males in particular that are attracted to the speed they believe the car can provide them and it was the male drivers in this study that revealed a positive attitude towards this aspect of car use.

⁷ Although it is recognised that targeting materialism could lead to the exacerbation of CC (for the reasons discussed previously), this discretion is required.

⁸ Although it can be argued that as long as an individual understands that climate change is a problem exacerbated by use of the car, a sound understanding of climate change (with regards best scientific evidence) is not needed to encourage travel behaviour change.

⁹ Although, as suggested by Bibbings/WCC (2004) with respect to older age groups, this may be a case of ‘wilful ignorance’ in order to avoid having to reduce car use.