Applying behavioural theories to studying the influence of climate change on young people's future travel intentions

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Transport policy in the UK is seeking to promote the development of low carbon transport technology and to encourage people to choose to use low carbon travel options. This paper draws on existing behavioural theories to study young people's travel behaviour intentions and the influence on these from their knowledge of, and willingness to act on, climate change. The study involved a series of focus groups with young people aged 11–18 years, where attitudes to transport modes, attitudes towards climate change and travel behavior intentions were discussed. Knowledge and values are established as the key determinants of young people's attitudes and behaviour intentions towards transport in the context of climate change. More specifically it is established that young people's values emphasise speed and freedom and that it is important to young people that the mode of transport they choose is reflective of the image they want to portray.

1. Introduction

Private road transport is a significant contributor to climate change, accounting for over a quarter (27%) of the UK's CO2 emissions (Department for Environment, Food and Rural Affairs, 2006). UK Government response to this (at the time of writing) is reflected in three policy goals: a reduction in the CO2 output of transport, an increase in the fuel efficiency of vehicles, and efforts to enforce and encourage travel behaviour change away from a reliance on the car, towards use of public transport, walking and cycling. This paper focuses on the latter approach, reporting on an exploration of the travel behavior intentions of young people in the context of tackling climate change[1].

It has been 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 (Derek Halden Consultancy, 2003; Storey and Brannen, 2000) and Depart for Transport (2005) found that this intention often results in real travel behaviour change at the age of 17, when young people move from being car passengers to car drivers. It has also been reported that 11–18 year olds at large are unwilling to change their current or intended travel behaviour in light of climate change and also, unlike the UK's adult population (Anable et al., 2006), express a lack of concern about this issue (Lex Report on Motoring, 1999). However, little has been done to explore why this is the case.

Here we examine the results of discussion groups with young people aged 11–18 years, which explored their stated travel behaviour in the context of climate change. This may be useful for two reasons. First, young people are yet to form a reliance on the car as a driver and so it is assumed there remains scope to influence them before they develop travel behaviour habits. This necessitated a focus on behavioural intentions, rather than behaviour, and an examination of the factors that lead to the formation of intentions. From a policy perspective it is recognised that behaviour intentions will not necessarily be translated into behaviour in practice and that there may be intervening factors, but this is a problem not confined to young people under the age of licence acquisition (17 years in the UK) – drivers may also intend to give up the car, but not follow this with actual behaviour change. Secondly, it can be argued that young people are more likely to experience the impacts of climate change (more extensively and for a greater proportion of their lifetimes) than older people. It is thus assumed that concern over climate change may have greater capacity to influence young people away from the intention to drive and towards an intention to use more environmentally friendly modes.

[1] The paper complements a previous paper that considered the policy implications of the study (Line et al., 2010).

2. Methodology

We investigate the factors influencing the travel behaviour intentions of young people in the context of climate change. We take a constructivist approach (Blaikie, 2000) to allow participants to construct their reality, in the context of their transport behaviour intentions and climate change, in their own words.

Exploratory, qualitative methods were thus chosen and 12 focus groups of 3–5 participants were undertaken. Below we explain the choice of participants, group size and structure. However it is important to note that we were not attempting to recruit a representative sample to find 'truths' about the participants, to compare them to find 'significant differences', or to use the findings to generalise out to 'all young people'. Instead, we recruited a purposive sample of young people across different ages/life stages and from a variety of locations and backgrounds.

In choosing the number of groups, the authors followed Morgan's (1998) suggestion that the average number of groups it takes to reach 'theoretical saturation' (the point at which the insights given by the participants become repetitive) for a specified group of the population is between 2 and 5. Groups were formed based on age and gender and two focus groups were conducted for each age/gender combination with 12 focus groups conducted in total.

The ages were chosen in relation to the study's desire to investigate whether particular 'life stages' experienced by young people are likely to influence the degree to which they are concerned, or open to new information, about transport and climate change. Thus three ages were identified for whom it was considered that transport would potentially be a 'front of mind' issue but for different reasons: 11 – when most young people move to secondary/senior school; 15 – the point at which 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 18 – 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 as it has been suggested that groups containing both sexes often become distracted due to their discomfort and involvement with individuals of the opposite gender (Vaughn et al., 1996). The small groups size – 3–5 participants – were implemented to encourage intimate and focused discussions, providing rich and detailed information about each participant.

Various ethical considerations were adhered to. By recruiting from schools, a scout group and hockey club, attention was paid to the power relations between the adults (i.e. the teachers, scout leader and

hockey coach) and the participants in that the adults controlled these environments and it was important that this did not lead to the participants feeling that they had to take part in the research (Robinson and Kellet, 2004). Consequently, power was given back to the participants by briefing them about the project and by allowing them to choose to participate in the research and give their consent to do so, as well as gaining parental consent if they were under 18 years of age.

The issue of power was also important within the groups. Bragg (2007) notes that an imbalance in power may be caused if the make-up of the group is not homogenous in that younger participants may feel intimidated by older ones, girls by boys or vice versa. This was partly the reason why single age and single sex groups were chosen. Further, Barker and Weller (2003) suggest that the use of methods based on children's preferred ways of communicating (such as social conversation and activity based, participatory learning) addresses the issue of power relations between the moderator and the young participants. This was achieved by using focus groups in conjunction with photography and picture prompts.

As illustrated in Table 1, the participants were recruited from both urban and semi-rural locations in the city of Bristol and surrounding area in South-West England, a factor which can cause variations in individual's access to, and attitudes towards, different transport modes (e.g., attitudes to buses may vary between those living in the city, where there are frequent services, and those living outside the city). However, gaining specific socio-demographic information about the individual participants was made impossible by the data-protection enforced by the schools, scout group and hockey club. With this in mind, apart from the information the participants revealed in the course of the discussions (such as living near to a bus stop, or their parents owning a car), it was considered unethical and potentially likely to cause distress to ask the participants about their living situation.

Due to the limited time available with the participants at School A, the focus groups were divided into two equal waves (both consisting of two groups for each age/gender combination). In the first wave, the participants were provided with various images that acted as prompts during the discussions. In the second wave the participants collected their own photos for discussion via the use of two disposable cameras – one with the instruction to collect photos in relation to ''the car'' and the other to collect photos in relation to ''any other form of transport''. Visual methods are an increasingly popular form of children-centred research (Barker, 2003). According to Collier and Collier (1986), photos are capable of reflecting ''complex dimensions of social structure, cultural identity, interpersonal relationships, and psychological expression'' and it is for these

reasons that images (including self-directed photography) were integrated into the methodology.

Both the photos and the predetermined images were used to stimulate discussion during the focus groups, and were supplemented by a semi-structured moderator guide whereby the questions reminded the moderator of the key issues the study wished to explore, and the order in which it wanted to do so, but did not restrict the particular ideas or experiences the participants wanted to discuss. A number of questions were simply considered (and written in the guide) as 'potential', and were only used if the discussion was lagging or if particularly important themes did not come up in the natural course of conversation. The key themes and questions focused on by the guide reflected the authors' prior understanding of attitude and behaviour theory and thus included: attitudes to transport modes (e.g. 'What do you think about cars/buses/bikes?', information about transport modes (e.g. 'Can you think where you've heard positive/negative things about the train?'), concern about climate change (e.g. 'Do you worry about climate change?), willingness to tackle climate change (e.g. 'Would you be prepared to walk or cycle more to help tackle climate change?), information about climate change (e.g. 'Do you discuss climate change at home/school/with your friends?'), and current/intended transport behaviour (e.g. 'How do you get to school?'). The topics were introduced to the participants in this order so that the participants' travel behaviour intentions and the reasons behind these could be explored before prompting them to think about the impact of transport on climate change. Following this, climate change was discussed, before introducing the idea of tackling climate change through intended travel behaviour change.

The focus groups comments were transcribed and thematically analysed. The data was broken down into specific sentences or paragraphs and each one labelled according to the aims of the work (as noted above), while also allowing new themes to emerge. Essentially, each line, sentence, or paragraph was read in search of the answer to the repeated question ''what is this about? What is being referenced here?'' The themes arising from each individual were compared across each group, then across all of the groups.

3. Current theory and new empirical findings

Consistent with previous studies (Climatechallenge, 2006), the participants indicated that they are aware of climate change and that use of the car is a key contributor to this problem, yet they intend to continue driving, or to drive as soon as they reach the age of licence acquisition. However, they

illustrated a confused understanding of exactly what climate change is (the participants often confused it with ozone depletion) and how transport is a contributing factor (for example, participants referred to 'smoke' rather than CO2). They also expressed a need for information about climate change, as well as that relating to what they can do to tackle it:

> ''You need to get like all the information from people, but like school will only tell you what's happening, they don't tell you how to stop it. So you're kind of a bit. . .you don't know how to stop it.''
>
> (15 year old female)

> ''They give us loads of information like about the ice-caps melting, species are dying, islands are getting covered by water- . .but they never actually say well if you do this it will stop it.''
>
> (18 year old male)

The participant also indicated that they are left confused by the different messages they receive about climate change – both directly on the topic itself and indirectly via the promotion of products like the car. For example, television based news reports on climate change were noted by the participants in particular, as well as the BBC's Climate Chaos Series[2]. In contrast, several participants talked about the positive messages about the car they receive from family members and watching Top Gear[3]:

[2] This series ran from 24th May to 6th June 2006 and included a range of programs (such as Panorama, Test the Nation – Know Your Planet, 'Are we Changing Planet Earth?'), as well as eight short documentaries available on the BBC Four website. This documentary series was shown after the majority of focus groups took place. Perhaps if participants had had the chance to see this highly publicised and popular series, there may have been further mention of it.

[3] Top Gear is a 'magazine' program about cars, shown on the UK's BBC.

‘‘. . .my dad always used to watch Top Gear, and you can see the cars that people like look up to. . .and like you don’t want a horrible banger that’s going to break down’’

(11 year old female)

Table 1: Characteristics of the schools/scout groups attended by the participants

Source of recruitment	**Characteristics of school/college/scout group**
School A	• 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	• 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	• 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	• 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	• 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	• 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.

In many ways these findings reflect the assumptions of the deficit models, the oldest conceptual models of attitude–behaviour theory in the context of environmental issues; without sufficient knowledge of an environmental issue, people will not develop an environmental concern that leads to pro-environmental behaviour. However, our findings illustrate that attitudes and behaviour intentions are not solely formed on the basis of knowledge.

The deficit models also assume that individuals will behave rationally, as does the rational choice model that forms the basis of classic tools of government policy such as price signals, information and legal punishment. Nonetheless, our findings suggests that the participants' behaviour intentions are far more complex than this. Firstly, we find evidence that attitudes and control beliefs influence the participants' behaviour intentions. For example, the participants' intention to use the car can partly be explained by their generally positive attitudes towards this mode and generally negative attitudes towards public transport, as well as their beliefs that they have less control over public transport than the car due to its availability (i.e. number and location of bus stops), unreliability, inefficiency (in terms of required route and journey times) and their lack of choice about with whom they travel:

> ''. . .there's more flexibility to do what you want to do once you can drive.''
>
> (11 year old female)

> ''[If you've got a car] you can, like, go at whatever time you want instead of having to wait for the bus.''
>
> (15 year old male)

They also referred to normative beliefs such as the social pressure of driving the 'right' car:

‘‘– I mean I wouldn’t like to drive a car that wasn’t very nice. (Participant A)

– Why?

– Because people look at you and go (he pulls a disgusted facial expression). (Participant B)

– Yeah, or kids go ‘‘mummy look, it’s an old car!’’ (Participant C)’’

(11 year old male participants, moderator in bold)

The importance of attitudes and behavioural beliefs are also illustrated in the theory of planned behaviour (Ajzen, 1991; Ajzen and Fishbein, 2000), arguably one of the most influential theories used in transport behaviour studies. Yet, other factors may be relevant.

Participants’ emotional responses to (or ‘affective’ attitudes towards) transport were found to be a particularly important influence on their current/intended travel behaviour. For example, a number of participants referred to the feeling of freedom they associate with, and experience, when using the car in comparison to the lack of freedom and confinement they feel when using the bus.

‘‘It’s a bit more comfortable, a bit more personalised. . . If you’re in your own car, you can have your own music and atmosphere, like your own little space.’’

(18 year old male)

Others referred to their fear and anger in relation to issues of safety (when walking and/or cycling), bike theft and vandalism, and their feelings of discomfort at ‘‘having to sit with strangers’’ and the lack of cleanliness on the bus.

The majority of participants expressed attitudes towards transport that can be linked to speed, freedom and image led ‘egoistic’ values. For example, in relation to the car the participants attributed their positive attitudes and beliefs towards this mode to a) its quickness, comfort and efficiency and b) its ability to provide the driver/owner with a positive self-image, self-identity and role-identity. It was the car that stimulated the only positive body language among the participants when discussing transport modes with participants becoming wide-eyed, smiling or rubbing their hands together at images of sports cars.

Participants explained that both the ability to drive and the image a person portrays via their car is important to them with respect to their self-identity and their role identity. They also see the car as a way to illustrate a person's financial and power status and see the ability to drive as a key stage in becoming an adult and a lift provider in their family:

> ''. . .driving a clapped out banger would be embarrassing!''
>
> (15 year old female)

> ''Yeah 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 year old female)

> ''– I don't really want to but everyone, like my Mum, wants me to drive so I can drive her round. And so I don't really want to do it for myself but I think I should for like, others. . .my Mum and that.''
>
> (18 year old male)

In contrast, the majority of participants expressed their belief that the bus has a negative image and is used only by people who cannot drive – thus suggesting that they will move away from this mode once they can drive themselves:

> ''Mainly old people and teenagers who can't drive yet are the only people who use buses I think.''
>
> ''. . .even though there's the bus. . .everyone would use a car over a bus if they had the option.''
>
> (18 year old males)

Also, the majority of participants indicated that they consider the bus to be uncomfortable, inefficient and slow and that there is no part of it as a vehicle, or its use, that is capable of improving their self-image, or influencing their self- and roleidentity:

> ‘‘Well they’re pretty lame aren’t they (laughs), ‘ha you’re on a bus, you’re a sad weirdo’.’’
>
> (18 year old male)

In addition, a number of participants referred to the negative image afforded by wearing a cycle helmet:

> **‘‘Do you not want to wear a helmet?**
>
> It’s just embarrassing wearing one of them.
>
> **Why is it embarrassing?**
>
> It looks quite lame.
>
> (The participants start laughing)’’
>
> (15 year old females, moderator in bold)

Of particular importance is the degree to which image and identity are considered equal to, if not more important than, the behavioural and control factors influencing the participants’ attitudes towards transport modes. For example, they implied that driving would take precedence over a (hypothetical) fast, reliable and cheap bus service as using the bus presents the wrong image to society. In contrast, despite recognising the costs associated with car use (although they often stated that this cost is ‘removed’ by their parents acting as lift providers and offering to pay for their driving lessons and car insurance) and their limited ability to afford a desirable car, the participants suggested that the social status they would gain by doing so is their main motivation for driving and owning a car.

> ‘‘– There’s not so much pressure to do your driving test or whatever, it’s more what car you have afterwards (the other participants nod). Like some people, their parents will buy them a

car and it would be a really nice car and you'd get a...third hand kind of car and then. . . (Participant A)

– . . .you'd have to pay for it yourself. (Participant B)

– . . .yeah pay for it and your insurance and they get everything paid for them and there's just that kind of pressure. (Participant A)

– Like to live up to their car really. (Participant C)

– Yeah and you like to think ooo I'm as good as them, but they've got a better car than me, just because their mum's rich.

(Participant A)

(15 year old females)

These findings reflect the extent to which the car is 'consumed', not only as a product, but also due to its symbolic meanings (Dittmar, 1992). The influence of image and identity is also reflective of the multitude of sources of information about the car and about climate change that the participants are subject to; including television programmes and advertising, film, family, friends and school. Some of these contradict each other, yet all will contribute to the social factors influencing the participants. However, despite this evidence, image and identity have been paid little attention in travel behaviour studies (Anable et al., 2006). Although the theory of interpersonal behaviour (Triandis, 1980), and self identity theory, can be used to illustrate how an individual views themselves in relationship to others (Stryker and Burke, 2000) and how transport behaviour intentions may be influenced by ''social factors'' including 'subjective norms', 'roles' and 'self-concept' (Jackson, 2005), the results also emphasise image and identity as important social factors.

At the same time, participants suggested that their current and/or intended travel behaviour is not influenced by climate change, as this as a 'future' issue and they have more immediate issues to deal with in the present, such as school work and exams. Similarly, 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 the impact of, and need to tackle, climate change.

''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)

''– For teenagers in general, they've got more interesting things to talk about. You know they're still young – it doesn't worry them, it's when they're older and they've really thought about it. (Participant A)

– Well if you do think about your future you just think of yourself like in some amazing job somewhere really amazing.

(Participant B)

– Yeah really rich and you're not worried about it (laughs). (Participant A)''

(18 year old females)

Thus we find that the majority of participants 'off-set' the responsibility of tackling climate change and the speed, freedom and image led values they associate with the car are 'higher' in their value system than protection of the environment. In this sense it would appear that the participants are behaving 'rationally', in that they are prioritising personal benefits.

However, the participants' lack of motivation to tackle climate change in this context is also influenced by their lack of self-efficacy - the belief that one can successfully execute an action (Bandura, 1986) and of particular importance here due to the environmental context of the study. For instance, the participants referred to their beliefs that climate change is 'impossible' to tackle alone and the likelihood that others will not make changes to their behaviour even if they do.

''I'd like to change it. But I know I wouldn't be able to, just me. If I really tried I know that I would just be wasting my life trying to do one thing I knew I couldn't change.''

(11 year old female)

In this sense it would appear that a social dilemma (Lyons, 2004) or social trap (Hallsworth et al., 1995) is at play, where people are not prepared to change their own behaviour until others do the same.

Also the participants suggested that they have a lack of transport alternatives available to them beyond the car and a small number indicated that their self-efficacy is influenced by the attitudes of older members of society towards them in that they believe their ideas are not given recognition.

> **''So if you wanted to make a difference [to climate change] do you think your voice would be listened to?**
>
> No. Because we're kids. No one listens to kids these days.
>
> Yeah coz everybody thinks teenagers are trouble.''
>
> (15 year old female, moderator in bold)

Further, the evidence reveals that past experiences are especially important with respect to the bus and cycling in that the participants have had exceptionally negative experiences relating to efficiency and comfort on the bus and safety, vandalism and theft in relation to cycling. In contrast, their experiences of using the car have been generally positive.

> ''– . . .that's also the reason why you can't just like cycle into town and leave it there coz someone will nick your tyres or slash them.
>
> – The one time I left my bike in town, it got nicked (he shakes his head).''
>
> (15 year old males)

Comparatively, the participants lack experience in relation to the effects of climate change, i.e. they did not refer to any changes that they believe have already occurred (such as global temperature rises) and instead only referred to large scale effects associated with sea level rise which will happen ''in the future''):

''– 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 year old female participants)

For this reason, the issue of climate change is intangible to them, leaving them feeling unconcerned about it. In addition, as noted in the methodology, we considered the different life stages that young people may move through such as changing schools, leaving school, leaving home and reaching the point of licence acquisition, when they are more likely to turn to new information about transport and climate change. However, the majority of specific comments made and issues raised by the participants did not differ according to age beyond differences in phrasing and wording. Nonetheless, the participants own, 'internalised' beliefs about the importance of gender and life-stage were found to act as an influence on their attitudes towards transport modes. For example, a number of the female participants referred to their beliefs that males are more interested in cars than females and therefore car advertising is more effective when viewed by men.

Similarly a number of female participants suggested that ''BMXing'' is something that girls are less interested in then boys, often in a tone that suggested that they do not want to be associated with such male images – again reiterating the importance of image to young people within the age range considered and providing insights into where and how information about transport and climate change should be targeted at specific groups.

4. Conclusion

We find that the attitudes and transport behaviour intentions of the our participants, in the context of climate change, ultimately derive from the knowledge (of transport and climate change) and values held by the individual. In particular, the young participants hold egoistic values related to self-image, identity and materialism higher than those related to protecting the environment. Their attitudes and beliefs, and behaviour intention expressed in relation to this value hierarchy therefore illustrate an often emotionally charged preference for the car due to the speed, freedom and positive image they believe it would provide them, even though they generally recognise the impact this mo3de has on climate

change in comparison to other modes. Their behaviour intentions are also influenced by a lack of self-efficacy in relation to their ability to tackle climate change and their belief that it is a future issue, less important than the present pressure of exams and schoolwork.

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