

Car attitudes in children from different socio-economic backgrounds in the Netherlands.

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'It doesn't matter whether cars ride on oil, hybrid motors or water. Where a car stands, a garden could grow'. – Extract from the interview, Mischa, 11 years old.

Abstract.

This research explores the attitudes of children from different socio-economic backgrounds towards cars. This article explores their projected choices and motivations in the context of 1. post-materialist values; 2. economic constraints; and 3. social status theories; and draws upon survey research among 140 upper elementary school children in the Netherlands between September 2010 and January 2011. Comparative analysis shows that there are significant differences in attitudes of children from different socio-economic backgrounds. Pupils from the affluent predominantly ethnically Dutch schools showed greater awareness of and concern about their parents' and general use of cars, and less desire to own a car in the future, children from less economically advantaged schools demonstrated lower environmental awareness and concern and more desire to own a car in the future. This study is based on a small sample and indicates a need for a large-scale follow-up study of children's attitudes towards cars.

Keywords: environmental attitudes, transportation, socio-economic status, elementary school children, post-materialist values, survey

Introduction.

Private car use is often associated with air pollution, carbon dioxide emissions, resource depletion, degradation of landscapes to create roads and parking spaces, roadkill and other environmental problems. Following cancer, traffic accidents in the Netherlands are the main cause of death in Dutch children under the age of 15 (CBS 2007).

Within the European Union, The Netherlands appears to be one of the worst countries for air pollution by emissions from diesel cars. Despite European Environmental Agency regulations, by 2010 emissions had decreased much less than anticipated by the EU standards (European Environmental Agency 2010). 2011).

There is growing evidence of asthma symptoms in children who live near roadways with high traffic counts (Morris et al, 2000; McConnell et al, 2006), and traffic pollutants have been linked to higher occurrences of allergies (Liu, 2004). In a Dutch cross-sectional study examining whether motor vehicle exhaust from freeways has an effect on respiratory health of children, traffic intensity and the concentration of black smoke measured near schools were found to be significantly associated with chronic respiratory symptoms (Van Vliet et al, 1997).

The problems related to car use demand not only technological improvements, for example, more fuel efficient engines, but also changes in people's everyday behavior (Klockner and Matthies, 2004; Lucas et al, 2011). Yet while different peoples in the course of history have been quite successful in combating political or ideological movements with new beliefs and ideas, the appeal of car ownership seems resistant to efforts to impose an alternative narrative upon it. How did the use of public transport in many countries and (sub)cultures come to be associated with economic necessity and poverty, while a private vehicle implies independence, freedom, and above all, social status? How is it that the self-proclaimed 'nature-friendly' proponents of Hindu and Buddhist religions seem to be interested in cars as much as members of other religions? Why do the 'environmentally enlightened' socio-economic elites not give up their driving? Why does it seem that the rich and the poor, the Moscovites, the New Dehlieans, the Amsterdammers, and the Ottawans, do not resist the marketing-driven miracle of the supposed 'freedom', 'independence', 'convenience', and social status offered by the car? While recent news articles have indicated declining auto ownership in Germany and the US, the overall trend in global car ownership shows increases rather than decline (World Bank, 2012).

The research outlined here is based partly on the qualitative study of Dutch children's attitudes to cars recently reported in *Transport Policy* (Author, 2011). That preliminary research aimed to

enrich the growing repository of evidence on how alternatives to car use can be sought through examining the socio-cultural contexts in which the future generation of transport users grows up (Kopnina, 2011). In addressing the question of which experiences children associate with cars, and how aware children are of the environmental implications of car driving, the research indicated variation in both effective states (emotional responses to cars) and cognitive levels (knowledge about environmental implications of car driving) of children in relation to cars. This preliminary study addressed some of the questions associated with the role of the children's of lifestyle as well as information available to children from their children, peers, as well as printed press and media in regard to cars.

However, the sample for the preliminary study was rather homogenous and involved only children from affluent schools, and thus questions concerning possible differences in attitudes to cars associated with socioeconomic status were not addressed. To follow up on the original study (Kopnina, 2011), the questions guiding this research were: What are the children's attitudes towards cars? Does socio-economic and cultural background influence children's attitudes to transportation in general and cars in particular?

The present research attempts to establish whether environmental awareness plays a role in the car attitudes of a group of future transportation users, Dutch upper-elementary school children. There is a wealth of literature on the differences in environmental behavior and attitudes between nations, as well as between different socio-economic and cultural/ethnic (minority) groups. The core of it is embedded in arguments about individual, economic, societal, political, and/or cultural variables in determining or influencing environmental behavior. This article explores the differences between perceptions of cars among upper-elementary school children from different socio-economic backgrounds in the context of three strands of theory: 1. Post-materialist values; 2. Economic and other structural constraints; and 3. Social status theories. We have formulated three main hypotheses related to these strands of a theory which will be expanded upon in the following section. After that, we shall present the case study, results and analysis as related to these three hypotheses.

Post-materialist values.

The literature on so-called postmaterialist values advances the hypothesis that while wealthier societies – or individuals – can ‘afford’ to care about the environment, developing countries or poor people need to worry about meeting their basic needs. A prominent thinker in this field, Ronald Inglehart, drew upon Abraham H. Maslow’s (1954) work *Motivation and Personality*. Evoking Maslow’s pyramid of human needs, Inglehart suggested that while economic scarcity prevails, materialistic goals emphasizing economic and physical security will take priority over post-materialist goals or ‘higher order values’ like belonging, aesthetic and intellectual satisfaction and caring for the environment. He reasoned that once the satisfaction of the survival needs can be taken for granted, the focus will gradually shift to ‘non-material’ goods.

It is worth noting that while the post-material value theory may not encompass all elements present in social class, cultural or ethnic differences, it does provide a general framework upon which nuances of class, culture, and ethnicity could be mapped. Applying this theory to the case of private car ownership, a post-materialist hypothesis would predict that people in wealthier societies can afford the ‘luxury’ of environmental concern and would, therefore, be less inclined to own (big) private vehicles, while the reverse would be true for people from lower socio-economic backgrounds. In applying this theory specifically to our case study we may thus hypothesize that children from lower-income families may have a lower environmental concern and a greater desire for car ownership than children from wealthier or more (environmentally) educated families.

Yet it must be noted that the use of cars in wealthier societies is not in fact diminishing. An implicit assumption of the post-materialist theory is that once basic material needs have been met, people will start to worry about other issues, such as the environment. But the evidence indicates that the necessary level of material saturation is quite high and may be far from ‘sustainable’ if the more privileged societies and classes continue at the same level of consumption. So while the prominence of ‘clean’ and energy efficient car discussions are growing in wealthier societies, the actual use of cars continues to increase globally. Scholars have warned of a “‘rebound effect” (Greening et al., 2000) in which ‘green’ cars are purchased to appease the consumer’s conscience, while other environmental considerations related to car use, such as the roads and parking space that cars require as well as valuable metals and other materials used for making cars are not addressed. The

increasing affordability of energy efficient vehicles also drives demand for the resource-intensive production of new cars, regardless of the functionality of existing automobiles or the absence of plans for their further use or safe disposal (Isenhour, 2010: 459).

There is also some evidence that environmental concern, in general, is an exception to the post-materialist thesis. There has been a proliferation of grassroots environmental organizations in developing countries, and opinion polls demonstrate that such concerns are a global phenomenon (Brechtin and Kempton, 1994). Inglehart suggested that poorer nations or societies may express environmental concern in response to a dire need or material threat – for example, because their immediate environment is so polluted that it threatens their ability to survive. Dunlap and York state something similar, while also arguing that for the rich, the environment represents a higher order ‘quality of life’ value beyond basic material needs, and that taken together these two phenomena explain the global reach of environmental concerns (Dunlap and York, 2008:532-536).

If we apply these theories to our case study, we might hypothesize that children from lower status socio-economic backgrounds will not care about the environmental impact of cars unless this impact directly threatens their safety or health. But it must be acknowledged that some existing evidence contradicts such a hypothesis. Dunlap and York (2008) themselves cite international surveys which indicate that national wealth is not correlated with environmental concerns of a global nature, challenging the claim that the poor are too preoccupied with their material needs to support such ‘luxury’ issues as environmental protection. Some studies even show that national wealth is more likely to be ‘negatively rather than positively related to citizens’ environmental awareness and concern’ (Dunlap and Mertig, 1997: 24).

However, while this shared environmental concern may apply at the level of nations, it does not necessarily apply to the case of vulnerable or socio-economically weaker groups within one society. If we apply Inglehart's theory of post-material values not just to nations, but to socio-economic groups within one nation, we may still hypothesize that children from lower status socio-economic backgrounds will not care about the environmental impact of cars unless this impact directly threatens their safety (through, for example, traffic accidents) or health (through, for example, air quality). Yet Dunlap and York's (2008) analysis would suggest that children, independent of their

socio-economic status, will be concerned about the environmental impact of cars. For this study, therefore, our first or 'null' hypothesis is that children from lower socio-economic status backgrounds will show similar environmental concern to those from higher socio-economic backgrounds. Another hypothesis is that children from lower-income families may have a lower environmental concern and a greater desire for car ownership than children from wealthier or more (environmentally) educated families.

Economic and structural constraints.

Recent research suggests that an assessment of the social and political barriers to sustainable living is essential to understanding transportation patterns and sustainable behaviors (Gardner and Stern, 2002; Isenhour, 2010). Environmental choices must be examined in the context of prevailing structural constraints, which themselves are often entwined with political and economic structures: 'people cannot purchase energy efficient cars, use public transportation or travel on bikeways, for example, unless business and government make these choices available' (Chawla and Cushing, 2007:441-442). In some countries, such as Australia, Canada, and the US, there are many practical limitations for people wanting to rely on public transportation – frequently systems are simply not sufficient to meet individual transport needs. Isenhour (2010:461) suggests that 'exploration of barriers to sustainable living is particularly salient when working with consumers who are already aware, interested, and engaged'.

The environmental behaviors and attitudes of people from disadvantaged communities have also been linked to economic constraints. For example, it has been argued that the low ecological impact of socio-economically disadvantaged people 'results not from conscious conservation efforts, but from various combinations of low population density, inefficient extraction technology, and lack of profitable markets for extracted resources' (Low, 1996:353). People in disadvantaged communities are likely to be more 'conservationist' as part of their efforts to save on costs (Kahn and Friedman, 1995). It could be argued that given the choice, the poor would want to own more than they do. This is consistent with Weinberger and Goetzke (2010) who find, controlling for social network effects, poorer people own more cars than traditional models would predict and better-educated people own fewer. While there is also evidence of lower environmental awareness and non-

economically motivated environmental behavior in socio-economically disadvantaged groups (Anderson et al, 2007), it seems there are sufficient grounds to hypothesize with respect to our study that if children from the lower socio-economic status families do not engage in environmentally damaging behaviors like driving a car when they grow up, it may be due to economic constraints, rather than environmental considerations.

Evidence on car use in relation to income appears contradictory and points to complex interrelations between various socioeconomic variables. Steininger et al. (2007) and Golob (2001) assume that people with lower incomes still use public transport more often and therefore do not use cars as frequently as high-income car users. Cao and Mokhtarian (2005) found that people with high incomes were more willing to reduce their car use compared to people with low incomes. In summary, the results concerning socioeconomic differences in acceptability of car use reveal inconsistent patterns, indicating that socioeconomic variables seem to be interrelated and influence the acceptability of car use acceptability in a conjoint manner (Gehlert et al, 2011).

Social status

The third and the most speculative hypothesis is based on a generalized theory of ‘human nature’ and various theories of human behavior, which indicate certain universal features in human patterns of consumption. Aside from the well-theorized socio-economic explanations for environmental degradation, such as the tragedy of the commons, the power of capitalism, industrialism, and dominant socio-political and economic elites (and more concretely, the auto industry’s powerful global lobby), we are left with the staggering question of how the apparently global spread of car culture became possible, given the supposed diversity and resilience of ideologies, religions, and cultures. The scope of this article does not allow for detailed discussion of the subject of human universals – suffice to say that the idea of ‘conspicuous consumption’ developed by Veblin in combination with rich anthropological evidence of culturally variable practices may be indicative of the fact that social status in most human societies is linked to material possessions. In modern

industrial societies – as well as in aspirant ‘developing’ societies – the car has become such a status-laden object.

Other universal motives are linked to the extent to which cars are seen to facilitate individual freedom, which may itself be connected to a prevailing tendency towards individualization - an individualism which may also tend to outweigh concern for the environmental impacts of one's behavior. Car ownership has been shown to have symbolic and affective functions, generating feelings including power, superiority, and arousal (Steg, 2005:147). The car represents independence, convenience, autonomy and freedom (Lefrançois, 1998; Nordlund and Garvill, 2003; Abrahamse et al, 2009).

The third hypothesis is thus based on the idea that objects associated with social status – in this case, cars – will be desirable for children from both lower and higher socio-economic status groups, as long as they remain a status symbol.

Case study.

With more than seven million passenger vehicles on its roads, the Netherlands is the sixth largest automotive market in Europe (European Automobile Manufacturers' Association, 2011). According to Eurostat (2008), car density in the Netherlands is 460 per 1000 inhabitants, up from 371 per 1000 in 1991. This is remarkable because the Netherlands is a small country with a highly developed public transportation system.

According to research published in 2010, there are 7,348 million households in the Netherlands (Mobility Research, Netherlands - Mobiliteitsonderzoek Nederland). Four out of five (79,1 percent) own one or more cars, and 20,9% do not. There are very few car-less families (4%), and four out of five single-parent families own a car. Migrants or ethnically diverse nationals own significantly fewer cars: 24 % of Turks, 32 % of Moroccans and 34 % of Surinamese respectively (SCP, 2005).

In a recently published dissertation, researcher Hans Jeekel (2011) suggests that car ownership is becoming increasingly necessary in the Netherlands. An expanding number of residential and commercial areas are positioned along highways, and employers

increasingly expect employees to travel by car. Working mothers ride to and fro between office, school, sports club and supermarket, all within a few hours. While Jeekel accepts that a very small percentage of people decide against car ownership for ideological (environmental) reasons, he argues that in the vast majority of cases where people do not own a car, it is only because they cannot afford it (Jeekel, 2011). He warns against a new division in Dutch society: those who have a car and those who do not.

There have been no previous studies exploring the attitudes to cars of children in the Netherlands, aside from ad hoc media articles, such as the one recently published in popular Dutch newspaper *Volkskrant*. The newspaper correspondent talked to children about the air quality in the urban areas and elicited this response from a 10-year-old girl:

I live my whole life in Utrecht. If you bike behind a car, you notice that it stinks. But I am used to it. I won't put on a facemask any time soon. If all city children had to move away from the city, there will be a new city. I would rather prohibit all cars if I had to choose (*Volkskrant*, 2012:20)

The present research is based on a study in which two schools participated between September 2009 and May 2010, and in which one school participated between May 2010 and January 2011. At all these schools, the children were selected after contact was made with their parents through class mailing lists and who were consequently asked whether they wanted to take part. The sample consisted of elementary school children aged between 7 and 10 from three Dutch elementary schools in the Amsterdam area. One (Montessori) school contained a population of seventy-nine children aged between 7 and 10, and another (regular public) school contained a population of one hundred and twenty-two children of the same age. The first two schools selected for this study were located in the predominantly 'white' (ethnically Dutch), well-to-do areas of Amsterdam, with parents' reporting an average income 45.000 euros net per year (based on school records available and self-reports of parents whose consent was necessary for this study), which is relatively high for average Dutch standards. The total number of children participants from these schools was 91. The results of this study are reported in Kopnina (2011).

The previous study pointed out the need for examination of different patterns of attitudes and behavior in children of different socio-economic backgrounds and ethnic groups, as it was

hypothesized that the children's transportation attitudes and attitudes in more ethnically heterogeneous schools might produce different data (Kopnina, 2011a). Another case study was therefore conducted at the third school between May 2010 and January 2011. This school was designated as a 'mixed' or 'black' school as it contained 87% children of non-Dutch origin (mostly of Moroccan, Turkish or Antillean heritage¹). The total number of child participants from this school was 49. The parents' average income was approximated to be 20.000 euros per year and 60% of the parents were unemployed and/or collected disability benefits.

All three schools had similar 'environmental education' programs of what may be broadly termed 'environmental awareness'. These programs were integrated into the science and history curriculum and included topics related to the use of natural resources, energy efficiency, and the need for greater environmental protection. Neither school had any specific program on the environmental impacts of different modes of transportation.

Methodology.

The pilot study results published in *Transportation Policy* involved the use of written assignments, followed by in-depth interviews with the children. Qualitative data from these interviews helped to generate closed-ended questions for this survey.

A total of 140 children participated in the study. About half of the children from each school were boys. The summary of the sample is indicated in Table 1 below.

Table 1

Methodology	Participants School	Participants School	Participants School
Survey	31	60	49
Interviews	10	21	18

¹ The children in the sample come from a variety of ethnic backgrounds, some have parents with Dutch or double nationality; some of which are the second generation Dutch citizens still classified in Dutch statistics as being of non-Dutch origin

Results: Comparison

One remarkable finding was that while 78 children (86%) in Schools 1 and 2 indicated that their parents owned a car, only 21 (23%) answered affirmatively to the question of whether they eventually want to own a car themselves. This is in stark contrast to the 39 children (80%) from School 3 who want to own a car, while only 19 of the School 3 children (39%) reported that their parents owned a car. Furthermore, only 35% of the children from School 1 reported ‘liking cars’, as opposed to 78% of the School 3 children.

Table 2

Survey question	Answer	Schools 1&2	School 3
Would you like to own a car when you grow up?	Yes	21 (23%)	39 (80%)
	No	30 (33%)	5 (10%)
	Maybe	40 (44%)	5 (10%)
Do your parents own a car?	Yes, they do	78 (86%)	19 (39%)
	No, they don't	13 (14%)	30 (61%)
Do you like cars?	Yes	32 (35%)	38 (78%)
	No	13 (14%)	10 (20%)
	I don't know	30 (33%)	1 (0%)

Table 3: Would you like to own a car when you grow up?

Answer		Schools 1&2	School 3	Total
Yes	Count	21 (23%)	39 (80%)	60
	Expected count	39 (43%)	21 (43%)	
No	Count	30 (33%)	5 (10%)	35
	Expected count	22.75 (25%)	12.25 (25%)	
Maybe	Count	40 (44%)	5 (10%)	45
	Expected count	29.25 (32%)	15.75 (32%)	
Total		91	49	140

Table 4: Do your parents own a car?

Answer		Schools 1&2	School 3	Total
Yes	Count	78 (86%)	19 (39%)	97
	Expected count	63.05 (69%)	33.95 (69%)	
No	Count	13 (14%)	30 (61%)	43
	Expected count	27.95 (31%)	15.05 (31%)	
Total		91	49	140

Table 5

Answer	Schools 1&2	School 3
Cars are beautiful	49 (54%)	34 (69%)
Cars are cool	21 (23%)	40 (82%)
Cars are fast	20 (22%)	31 (63%)
I like traveling in a car	24 (26%)	25 (51%)
I like being in a car with others	12 (13%)	20 (41%)
I like listening to music when I am in a car	11 (12%)	9 (18%)
I like looking out the window when I am in a car	40 (44%)	10 (20%)

Table 6

Answer	Schools 1&2	School 3
Cars are dangerous for other people	34 (37%)	20 (41%)
Cars are dangerous because you can get in an accident	37 (41%)	18 (37%)
Cars are polluting (dirty)	78 (86%)	11 (22%)
I feel sick in a car	19 (21%)	18 (37%)
Car parking and garages take too much space	21 (23%)	2 (4%)
Roads for cars take too much space	45 (49%)	2 (4%)
You often get stuck in traffic	69 (76%)	37 (76%)
I don't like the way cars look	3 (3%)	2 (4%)
People tend to show off their cars and make others jealous	9 (10%)	12 (24%)
Cars are bad for the environment	67 (74%)	19 (39%)
There's nothing I dislike about cars. Cars are great	7 (8%)	20 (41%)

Table 7

Answer	Schools 1&2	School 3
Cars can be safer by changing the way they are made	13 (14%)	5 (10%)
Cars can be made safer by building bigger roads	11 (12%)	28 (57%)
Cars can be cleaner by changing the fuel that they use	85 (93%)	10 (20%)
Building more garages to make parking easier	3 (3%)	19

		(39%)
Cars should only be allowed in some areas and not in others	51 (56%)	2 (4%)
There should be more roads built to prevent traffic jams	11 (12%)	19 (39%)
I think they should change the way cars look	2 (2%)	2 (4%)
People should stop showing off their cars and making others jealous	7 (8%)	14 (29%)
I don't think cars should be allowed. Cars are bad	20 (22%)	2 (4%)
Cars are great as they are	7 (8%)	20 (41%)

In order to support conclusions about the relationship between schools (or school types) and children's views on cars, we will test our (null) hypothesis stating that attitudes to cars are independent of which school (either Schools 1&2 or School 3) the children attend against the (alternative) hypothesis that there is such a dependency. To compute the Chi-square test statistic we use for this purpose, for each cell in a (two-way) table we first calculate the expected count. The expected count is the absolute frequency under the assumption that the two classifications (school (type) and children's view/fact about cars) are independent, and is defined by the row total times the column total divided by the sample size. The Chi-square test statistic is obtained by calculating the difference between the count and the expected count, squaring it and dividing it by the expected count, and then summing over all cells of the table. Obviously, a high (value of the) Chi-square test statistic will indicate that there is a dependency between schools (or school types) and children's attitudes to cars in which case we have to reject our null hypothesis.

Firstly, we test the hypothesis that school type and the children's wish to own a car in the future are independent. The Chi-square test statistic is 41.63. For $\alpha = 0.05$ (the confidence level is 95%) and $\alpha = 0.01$ (the confidence level is 99%), respectively, and 2 (number of rows minus one times the number of columns minus one) degrees of freedom the critical values of Chi-square are 5.99147 and 9.21034, respectively. We conclude that there is very strong evidence that school type and the desire of children to own a car in the future are dependent. Next, we test the hypothesis that school type and the fact that the children's parents own a car are independent. The Chi-square test statistic is 32.98. For $\alpha = 0.05$ and $\alpha = 0.01$, respectively, and 1 degree of freedom the critical values of Chi-square are 3.84146 and 6.63490, respectively. Again, we conclude that there is very strong evidence

that school type and the fact that the children's parents own a car are dependent. It appears that the attraction of a car had much more to do with 'coolness' for children from the third school than with extra perks like the ability to listen to music or look out of the window for children from Schools 1 and 2.

The notion of cars as status symbols seems to be significant for School 3 children. Items 'People tend to show off their cars and make others jealous' and 'People should stop showing off their cars and making others jealous' were particularly recognized by children from the third school, suggesting that the status associated with car ownership is more important to children from the lower socio-economic group.

As for the environmental impacts, the item 'Cars are polluting' was recognized by 78 children from Schools 1 and 2 and only by 11 from School 3, while roads and parking were thought to take too much space only by two children from the third school. Negative environmental effects were significantly underplayed by children from School 3, with the item 'Cars are bad for the environment' item producing only 19 positive responses from School 3 as opposed to 67 from Schools 1 and 2. These results support the hypothesis that children from lower-income families may exhibit a lower degree of environmental concern about cars than other children.

The item 'Cars can be cleaner by changing the fuel that they use now (diesel, gasoline) into solar or electric power' was more supported by children from Schools 1 and 2, suggesting a greater awareness among this group of efforts to reduce the environmental impact of cars, and perhaps also of the extent to which regular petrol cars are damaging.

However, it appears that across all groups there is very little understanding of cars' impact on the environment. This finding is supported by the in-depth interviews reported in the previous study (Kopnina 2011), in which it was evident that the perceived link between the use of cars and environmental damage or health problems was weak. While some children were aware of the negative effects of fossil fuels, particulate matter, greenhouse gases, et cetera, few of them thought about the materials from which cars are made or the space required for roads and parking facilities (aside from the quote cited at the beginning of the article). None of the children were aware of the

links between traffic levels and asthma and other health-related issues. This could be related to the driving parents' own apparent lack of awareness of the link between cars and environmental impacts, and the unintended effect of socialization of their children into the 'car culture'.

Another very significant difference was in appreciation of the items 'I don't think cars should be allowed' and 'Cars are bad', with only 2 children from the third school (as opposed to 20 from the first two schools) supporting it, and 'Cars are great as they are', with 20 children from the third school supporting it (as opposed to only 7 from schools 1 and 2).

Items 'Cars can be made safer by building bigger roads', 'There should be more roads built to prevent traffic jams' and 'Building more garages to make parking easier' were supported much more by children from the third school, indicating that modification of the built environment to facilitate car use is a strategy perceived to have more legitimacy amongst the third group. This finding may also imply that there are differing perceptions among the various groups of students in terms of the extent to which humans should adapt to their environment, or to which the environment can be adapted to them.

The item 'You get often stuck in traffic' had the most overlap, unsurprisingly as this is quite a value-neutral statement. None of the children saw the item about the way cars look to be of significant importance.

Reflection

The issues emerging from this data are whether children from the different groups view the world in the same way and whether the more affluent, ethnically Dutch children have had their needs met to the extent that they can now afford to address post-material concerns. On the basis of this study, it appears that attitudes and behavior may be inconsistent in both cases: the poor do not own cars but want to; the wealthy own cars but do not want to use them. Simply put, this implies that the aspirations of the so-called post materialists appear somewhat dishonest. If the authors could follow

these children into adulthood it would have been helpful to see if their attitudes are reflected in their patterns of car ownership.

At the outset of this article, we formulated different hypotheses in relation to children's concerns about the environmental impact of cars. First, we hypothesized that if children from lower socio-economic backgrounds do not engage in environmentally damaging behaviors like driving a car when they grow up, it may be due to economic constraints rather than environmental considerations. Secondly, in line with Dunlap and York's (2008) critique of post-materialist theory, we hypothesized that children from different socio-economic backgrounds would be equally concerned about the environmental impacts of cars. The third hypothesis was based on the idea that objects associated with social status – in this case, cars – will be desirable for children from both lower and higher socio-economic status groups, as long as they remain a status symbol. Finally, we have formulated the 'alternative' hypothesis "that children from lower-income families may have a lower environmental concern and a greater desire for car ownership than children from wealthier or more (environmentally) educated families".

We can now observe that in contrast to the claims of Dunlap and York (2008), which suggest that the poor do not worry about the environment unless it directly concerns them and that environmental concern is universal and independent of socio-economic status, the evidence from this case study demonstrates support for Inglehart's theory. We may note that Dunlap and York seem to contradict Dunlap and Mertig, although the authors also explain elsewhere that this is due to empirical evidence that shows these contradictions². The scope of this article does not allow for a

² Inglehart (1995) did provide an explanation for the surprisingly high levels of public concern for the environment in poor nations and indicated similar levels of willingness to pay higher taxes for environmental protection. Brechin (1999:794) created a two-factor explanation called "objective problems-subjective values" (OPSV): "In the South, it is derived from citizens experiencing directly pollution and other environmental degradation. In the North, it is derived from citizens experiencing a shift in their subjective or cultural values. . . ." According to the critique by Dunlap and York, this explanation is basically unfalsifiable, for if environmental concern is found to be higher among residents of wealthy nations, it is attributed to their postmaterialist values; whereas if it is found to be higher among residents of poor nations, it is attributed to their reactions to high levels of pollution. They also argued that Inglehart's explanation for the increasingly global spread of environmental concern is surprising in its emphasis on the importance of objective environmental conditions, as these were downplayed in his earlier analyses of the emergence of environmentalism in wealthy nations. Following Inglehart's logic, Dunlap and York have pointed out, empirically, we would expect poor nations to only care about their own local issues such as water pollution and not global problems – which, based on a

detailed analysis of this contradiction. Suffice to say that the data – at least in the case of urban minority groups in this study's small sample – environmental considerations are lower among the less economically privileged group than among the more privileged group. In line with Inglehart's theory of post-material values, children from lower-income families did exhibit lower environmental concern than children from wealthier or more (environmentally) educated families. The 'universal' environmental concern predicted by Dunlap and York was not evident.

This could stem from a number of factors. First, both Inglehart's post-material value theory and Dunlap and York's critique of it apply to nations, rather than minority groups or groups of different socio-economic status within (developed) nations. Second, given that the Netherlands is a high GDP country with a successful system of social welfare, the argument that the basic material needs of the lower socio-economic status group are not met is somewhat weak. Other factors, such as ethnic or cultural values (in the case of migrant minority groups, as were present in this study) might play a role, as well as structural constraints and status considerations. On the other hand, we might also suggest that the level of material satisfaction required to reach a point of 'saturation' may be very high and perhaps unattainable in practice. As an example, we may think of West European citizens, some of whom are conscious vegetarians who recycle, buy green products and engage in other forms of environmental behavior while they still own a large house, drive a car and travel by airplane. It is also interesting to note that Inglehart argues that 'the basic value priorities of western publics' shift in affluent times 'from giving top priority to physical sustenance and safety, toward a heavier emphasis on belonging, self-expression and the quality of life'. Since statistical and scientific evidence indicates that car use is negatively correlated with physical sustenance and safety, greater recognition of this fact would form a case for making car use reduction a basic value priority. As it happens, this research indicates that children might not think of cars in these terms. This makes the deeper examination of the implications of post-material theory all the more interesting.

number of international case studies, does not seem to be the case. In line with Brechin (1999) Dunlap and York argue that "the environmental concerns of the poorer countries appear to be based on a broader set of values and effects than those generated simply from direct experiences." (Dunlap and York, 2008:536-537).

It is also apparent from this study that the wealthier families in actuality own more cars. There is no evidence yet that the children, despite their expressed concerns about the adverse effects of cars on the environment, will be more environmentally conscious than their parents when they grow up. As indicated by the previous studies of perception of sustainability in children (Kopnina 2011, 2011a), which included an examination of parents' attitudes, while higher socio-economic parents consider themselves to be pro-environment and are aware of the negative environmental impacts of private transportation use, the actual behavioral data (the fact that almost 80% of these parents own a car) shows a discrepancy between 'ideal' or 'desired' behavior and actual choices. Given the evidence of the growing trend towards car ownership in the Netherlands, and the fact that almost 80% of the children from higher socio-economic backgrounds are 'socialized' into car ownership by their car-driving parents, children's pro-environmental attitudes will not necessarily lead to less car ownership in a few years time.

The study identified few structural constraints in terms of transport infrastructure for the either socio-economic status group. Related to Chawla and Cushing's discussion of structural constraints to environmental behavior, we might inquire: Could it be that children in the lower socio-economic group live in neighborhoods where having a car is more desirable for practical reasons? Is it possible they live further from the city center than the affluent groups, perhaps not in such walkable neighborhoods? Could it be that public transport is not as safe in their area? Yet schools 1 and 3 were located in the same urban area and accessibility of public transportation and distances traveled to school were the same. Generally, public transport in Holland is affordable and well-developed, there are very few areas that are not reachable by bus, train or tram. However, research on Dutch automobile owners' attitudes indicates that car drivers may believe that they need a car, for example, when they have families or need to access geographically dispersed locations. Such individuals may not be able to rely on public transport, walking or cycling and therefore the car becomes a necessity for them. Despite a proliferation of newly built roads that cut through increasingly splintered Dutch country-side and continuous traffic jams, recent polls among the Dutch car drivers show that very few are considering using public transport as an alternative (Smilde, 2011). Nonetheless, it is possible that there might be other structural issues, which might influence the desire to own a car, which was not covered by this research.

Economic constraints, such as an inability to afford a car – which in terms of total costs is much more expensive than using public transport – played a larger role for the low-income families. The results of this study provide some support for the second hypothesis that the children from the lower socio-economic status families may not engage in environmentally damaging behaviors like driving a car when they grow up due to economic constraints rather than environmental considerations. The children from socio-economically disadvantaged families expressed considerable desire to own a car, and expressed little environmental concern about car driving, so whether these children will indeed own a car in the future may be strongly influenced by their current conceptions of cars as status symbols and thus as desired objects, and their ability to actually afford to buy one.

The third hypothesis was based on the idea that objects associated with social status will be desirable for children from both lower and higher socio-economic status groups. In the case of the present study, this hypothesis could really only be proven by a longitudinal study of children's (changing) attitudes and the decisions they will take when they grow up. But it does seem that the notion of cars as desirable varies among the groups: children from School 3 were much more likely to perceive cars as cool or beautiful, and the items 'People tend to show off their cars and make others jealous' and 'People should stop showing off their cars and making others jealous' were particularly endorsed by children from the third school. This may indicate that the perceived desirability of cars is indeed influenced by socio-economic status and culture.

This study has a few limitations which could be potentially used as a basis for future research. Due to the small sample size, analysis remains primarily descriptive with limited hypothesis testing. The cultural (ethnic) division and the social class division are the same based on income level characteristics in the sample. A follow-up study could expand the sample size and examine if there are different attitudes between ethnically (and culturally) Dutch and ethnically mixed of the same income status.

Conclusion

This study has only opened the first page in the vast and growing repository of research on transportation attitudes in children, and how important socio-economic background can be in

determining these attitudes. The study of the social influences of children's peers, parents, teachers and socio-economic background in their transportation choices requires further investigation.

We have examined a number of hypotheses pertaining to children's attitudes to cars, having to do with post-materialist values; economic constraints; and social status. At the moment, the results concerning socioeconomic differences in car attitudes reveal inconsistent patterns but do indicate that children of a lower socio-economic status exhibit more positive attitudes towards cars than their more economically privileged peers. This preference for cars is likely to be related to the children's idea of social status. It also appears that in line with post-material theory, children from more privileged backgrounds exhibit more environmentally conscious attitudes. If the results of this study can be considered along with a wider array of international case studies, the bigger picture might emerge. Alternative explanations of children's attitudes need to be further explored. To reach firm conclusions, the role of parents and peers in influencing children's perception of cars needs to be explored, accompanied by a detailed analysis of school curricula that might have addressed the subject of transport and sustainability needs. Sources of information available to children, such as books, online articles, and the media need also be examined. Based on the current data, alternative explanations of children's attitudes cannot be ruled out, as many possible confounding factors need to be controlled for in the follow-up study.

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