

Communication with non-drivers for promoting long-term pro-environmental travel behaviour

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Abstract

The decision whether to obtain a driving license has a substantial effect on a person's travel behaviour for the rest of his/her life and on lifetime CO₂ emissions. In heavily motorized societies, non-drivers often decide to obtain a driving license simply because others one, and with little unawareness of the negative aspects of automobile use. It is hypothesized that providing non-drivers with better information would influence their choice on whether to obtain a license. To obtain objective information, a field experiment was conducted followed by a survey. When information about the risks, costs, and enjoyment of automobile use was made available, it affected a person's attitude toward life using an automobile. This information also influenced whether respondents possessed a driving license 18 months after the experiment.

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1. Introduction

Global environmental problems are a consequence of energy use. Travel behavior can cause energy conservation problems because many people choose to use automobiles, producing greenhouse gases such as CO₂. Consequently, many psychological studies have examined daily travel choices for the purpose of mitigating global environmental problems by promoting pro-environmental travel behaviour (c.f. Vlek and Michon, 1992). These studies have focused on the choice between automobiles and other modes, such as public transport or bicycles. They focused mainly on the transport choices of drivers with the purpose of reducing automobile use. Although knowledge of a driver's decision-making is valuable, understanding non-drivers' decision-making processes concerning the possession of a driving license may be more important because those who have a license can use automobiles, whereas those who do not possess one cannot. Individuals' decisions regarding obtaining a driving license have a substantial effect on their travel behaviour for the rest of their lives, as well as on their lifetime CO₂ emissions.

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In highly motorized societies such as the US and Japan, people regard obtaining a license as a matter of course, akin to marriage or finding a job, and most people obtain them. When the majority of people act just because like others, this is a conformity effect (Asch, 1951). The influence of the conformity effect is that people do not think through their decisions completely because their behavior is strongly influenced by peer pressure. If people decide to obtain driving licenses in order to conform, they may not be aware of the negative aspects of automobile use. More information may thus lead to more prudent decisions. In contrast, if people are already aware of the negative aspects of automobile use, any further attempt at informing them is likely have no effect on their attitude about automobile use or on their decision to obtain a license. Cairns and Okamura (2003) found that with education about the financial cost of automobile use, 17–18-year-old non-drivers changed their attitudes toward car ownership and use support the notion that non-drivers are not fully aware of the negative aspects of automobile use.

Cairns and Okamura only investigated the effect of providing information on financial costs; however, information on the negative aspects of automobile use such as accident risk and stress due to traffic congestion may have a similar effect. If such information affects attitude and licensing behaviour, information campaigns or education targeting non-drivers could reduce excessive automobile use. Furthermore, this would be an effective strategy for “de-marketing the car” (Wright and Egan, 2000) to mitigate global warming effects.

Here we investigate the effect of information of the negative aspects of automobile use on an individual’s attitude and the decision to obtain a driving license. It is presumed that non-driving young adults heavily motorized countries are not completely aware of the negative aspects of car use. McGuire’s (1964) theory concerning truism postulates that behaviour is strongly and persistently influenced by information if the information could successfully alter the beliefs or expectations that had supported the behaviour. Thus, it is hypothesized that the provision of information about the negative aspects of automobile use to young non-drivers will show persistent negative effects on their decision to obtain a driving license.

2. Method

An experiment was performed in which information was provided to non-drivers in June 2001. The experiment involved 178 non-drivers in their first year of study at Kyoto University. In Japan, the legal driving age is 18 years, and first-year university students are at least 18 years old. Of 178 participants, 118 respondents were men with an average age of 18.57 ± 0.69 years. The students were assigned at random to a control group of 35 individuals and an experimental group of 143, in which the participants received information on the negative aspects of automobile use. The experimental group was further divided to the following four subgroups: the cost-information subgroup of 38, who received information on the financial costs of automobile use; the risk-information subgroup of 34, in which the participants received information on the risks of traffic accidents; the stress-information subgroup of 35, in which the participants received information about stress due to traffic congestion that might be experienced during leisure trips; and finally the all-information subgroup of 36, in which the participants received information about the costs, risks, and stress associated with automobile use.

The experiment was conducted at Kyoto University. Each subgroup in the experimental group met at different times, and the participants in the four experimental subgroups received leaflets containing information that corresponded to their experimental subgroup. Participants were requested to read the leaflets for 3 min in the cost-, risk-, and stress-information subgroups, and for 5 min in the all-information subgroup. The leaflet for the cost-information subgroup stated that the cost of owning an automobile was approximately 2,000 yen (approximately \$16) per day. The leaflet for the risk-information subgroup stated that accidents resulting in injury happen to two out of three drivers, an accident involving death happens to one out of 100 drivers, one out of 300 drivers dies in an accident, and one out of 250 drivers is involved in lethal vehicle-person collisions. The leaflet for the stress-information subgroup presented the results of a survey that found visitors to a leisure venue in Kyoto City who arrived by automobile were less satisfied than those who arrived by public transport because they were stressed due to the effects of traffic congestion. Each leaflet noted the source of the information that it contained. All participants were then requested to answer a simple questionnaire evaluating their attitude toward life using an automobile and obtaining a driving license.

Table 1
Number of license holders in experimental subgroups and control group 18 months after the interventions

	Sample size	Number of license holders	Of license holders (%)
All-information group	34	16	47.1
Cost-information group	36	19	52.8
Risk-information group	26	10	38.5
Enjoyment-information group	33	10	30.3
Control group	29	9	69.0

A follow-up panel survey was conducted in December 2002, 18 months after the experimental intervention. A questionnaire was sent to all 178 participants in the experiment, and 158 responses were received. Of these, 104 respondents were men, and their average age was 19.58 ± 0.71 years. Of the 158 respondents, 29 were from the control group and 129 were from the experimental group. Of the 128 respondents, 34 were from the all-information subgroup, 36 were from the cost-information subgroup, 26 were from the risk-information subgroup, and 33 were from the stress-information subgroup. The survey simply asked whether the participants had obtained a driving license. As in the first survey, attitudes toward life using an automobile were also investigated for respondents who did not possess driving licenses.

3. Results

The follow-up survey indicated that the proportion of license holders in the control group (69.0%)¹ was higher than that of the experimental group (42.6%), and the difference was statistically significant. The survey also indicated that attitude toward life using an automobile among participants without licenses in the control group was marginally more positive than in the experimental group.

Differences among the experimental sub-groups were analysed with respect to the effects of the different areas of information on the negative aspects of automobiles. As Table 1 shows, the increase in license holders was lowest for the stress-information group and highest for the cost-information group, although a χ^2 test did not yield a significant difference across experimental subgroups. The difference in attitude towards lifetime automobile use for participants without a license across experimental subgroups was not significant. Thus, no differences are found in the effects of providing information on the different negative aspects of automobile use.

4. Discussion

The results indicated that the experimental groups who received information about automobile use with respect to risk, cost, and/or stress due to congestion for 3 or 5 min had relatively less enthusiasm toward life using an automobile than the control group. The results also showed that fewer participants in the experimental group had a driving license than in the control group. These results support our hypothesis and indicate that the information provided had a negative effect on an individual's need to obtain a driving license and his/her attitude, even 18 months after participating in the study. Although studies looking at a larger sample are necessary to reach a final conclusion, the results imply that young non-drivers were not fully aware of the negative aspects of automobile use and providing such information to them may change their travel behaviour. This could help reduce total lifetime CO₂ emission of an individual, because the decision to obtain a driving license will have substantial effects on the travel behaviour for the rest of his/her life.

¹ A survey with a larger sample size indicated that 62.2% of second-year students at Kyoto University were license holders, which was similar to the percentage for the control group.

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