
Role of Social Interaction, Social Learning and Social Influence in the Dynamics of Travellers' Mode Choice Behaviour

Social-psychological aspects are likely to be influential in the dynamics of travellers' mode choice behaviour. This briefing sheet describes a 3-year PhD study funded by the Faculty of Built Environment, UWE. The research aims to understand the role of social-psychological aspects, particularly social interaction, social learning and social influence, on travellers' decision making and behaviour. Furthermore, it also aims to find out the possibility of utilizing these aspects to influence travellers' behavioural change. Empirical data from behavioural surveys and laboratory experiments will be collected and used to understand the relationships between these aspects and their influences on behaviour. Models that are sensitive to social-psychological factors will also be developed.

Background

Many practical transport policy issues are concerned with mode choice. Mode choice affects the general efficiency with which we can travel in urban areas, the environmental impacts of traffic, the structure of towns and settlements and consequently the liveability of our cities. The private car is the dominant means of transport in most areas and it contributes considerably to traffic congestion. A lot of money and effort have been exerted on promoting alternative modes to the car, but the results have often been disappointing. The challenge of changing people's mode choice is probably the most pressing problem for transport planners.

The most prominent problem in travel mode choice is the problem raised by the dichotomy between car and public transport. It can be framed as a social dilemma, which is a situation where: a) payoff of non-cooperation (use car) is higher than cooperation (use bus) and b) people are better off if they all cooperate. Solving this dilemma is important in order to reduce traffic congestion so that people can travel more efficiently (e.g. less time/cost, less pollution). *Structural*

approaches ("hard" measures), such as congestion charging and residential relocation, have the potential to resolve the dilemma. Also with this potential are *psychological approaches* ("soft" measures), which include travel awareness campaigns, voluntary programmes to reduce car-use, Travel Plans, and individualized marketing.

The latter measures which lack physical rewards and punishments are prone to be ineffective. Some car users tend to expect that the measures will encourage other drivers to reduce car use and solve the congestion problem, leaving them unaffected and able to "free-ride" on others' compliance. Other car users may decide to reduce their car use if a number of individuals also reduce theirs. Social learning may also exist when people observe and learn from other behaviours, and then decide to follow what others do. These kind of social-psychological aspects are important but unfortunately they are often left unconsidered.

This research seeks to better understand the influence of social-psychological aspects, particularly social interaction, social learning, and social influence, on travellers' mode choice decision making and behaviour. It also aims to develop a conceptual and predictive model which is sensitive to those aspects while also including relevant economical and individual-psychological aspects. Behavioural and policy implications of the model will also be investigated. Considering the non-stationary and uncertain nature of the transport system, changes of behaviour will be viewed as a dynamic process in order to understand change and seek opportunities to encourage positive changes with or without intervention.

Research Justification

There are several arguments that support the need of this research:

- There is a need to understand and predict the dynamics of travellers' behaviour, in

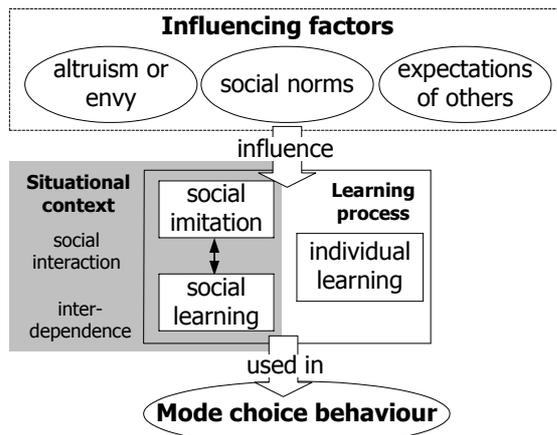
particular their mode choice behaviour, in order to better anticipate effectiveness of policy interventions.

- Identification of behavioural factors that influence travellers' behaviour and their incorporation in modelling may be beneficial to develop better predictive models.
- The concept of learning (individual and social) may have an important role in travellers' decision making and behaviour, so that further understanding and consideration is highly required.
- Interdependencies in the transport system require us to consider that individuals' decision on whether or not to contribute to common interest depends not only on the past but also on their expectations to how their actions will affect those of others.
- It would be beneficial to study interactions of individuals inside a group, or in a wider scope, a society. Interaction followed by communication is likely to influence the spread of a behavioural change within group/society.

Methodology and Interim Results

The methodology of this study can be divided into three main steps:

First step, a literature survey has been conducted to review what is known about the role of social-psychological aspects in decision making in travel behaviour and other spheres of behaviour.



It is followed by a behavioural survey which is used to provide initial information of whether individuals take into account other individuals' decisions and also to know whether they consider opinions from people who are close to them (family, close friends, etc.) on making travel-related decisions.

Second step, laboratory experiments have been designed to explore the role of social learning and influence in repeated travel decisions in a group context. Analyses of group and individual behaviours of travellers provide some indications of the existence of individual and social learning mechanisms in their decision making. It is also revealed that social interaction and social learning may have different effects on different groups of individuals. Simulation models have been developed based on the evidence from the laboratory experiments and utilizing an agent-based approach. They are being used to simulate and analyse behaviours of travellers in larger environments, larger group sizes, longer time periods, and various scenarios.

Final step, further analyses on the revealed findings, which could be useful as informed insights for influencing travellers' behavioural change, are currently being studied. Some travel behavioural policy implications will also be discussed.

Outcomes and Benefits

We expect the research to provide a greater understanding on how social-psychological aspects affect travellers' behaviour and how decisions are made based on them. The use of microsimulation is also expected to have implications for travel behaviour modelling practice, especially for predicting the changes in travellers' behaviour during the implementation of a policy intervention.

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