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Social learning under the labeling effect: Exploring travellers' behavior in social dilemmas



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ABSTRACT

This paper presents results of a laboratory experiment, in which subjects made choices between public and private transportation when managing Personal Carbon Allowances (PCAs). The objectives of this study were twofold. Firstly, it was aimed at investigating the labeling effect under the social dilemma context. Secondly, it showed insights into the decision-making process when feedback about others' choices was provided. A combination of the labeling effect and feedback helped individuals change their commuting pattern and increase the number of trips by public transportation under the PCAs regime. Feedback on others' choices resulted in social learning and incentivized choice of public transportation more frequently in social dilemma situations.

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1. Introduction

Commuting choices by public *vis-à-vis* private transport modes are often framed as a social dilemma situation regarding environmental protection (e.g., Van Vugt & Meertens, 1995; Kitamura, Nakayama, & Yamamoto, 1995; Sunitiyoso et al. 2011a). The social dilemma situation occurs when an individual chooses more polluting transport mode (for example a car) when he considers only his short-term benefits. By choosing private transportation s/he pollutes more but usually travels comfortably (i.e., on-demand and door-to-door travel). If all group members would have chosen a car, the whole group loses. An alternative assumes that all group members choose private transportation for the benefit of less polluted environment in the future. The latter choice has negative personal aspects. By choosing public transportation, s/he pollutes less the environment but may have to support all the inconveniences that this transport is associated with (i.e., waiting for a metro, changing from a metro to a bus).

When thinking about more sustainable ways of travelling, all individuals should be better off by choosing public transportation. Such behavior could be seen as social co-operation because all pollute less and thus benefit from a cleaner environment. There is a body of evidence to suggest that in social dilemma situations, decision-makers tend to take actions that are in the common interest – provided they expect others will also take pro-environmental actions (e.g., Dudley, 1993; Hackett, Schlager, & Walker, 1994; Kramer & Brewer, 1986; Randall, 1975, 1978; Walker, Gardner, & Ostrom, 1990; Walker & Gardner, 1992).

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Theoretically, a limitation of environmental pollution can be achieved by granting individuals a limited number of rights to pollute (see for example Komorita & Parks, 1995 as well as Oxoby & Spraggon, 2006). For example, Fleming (1996) presented a concept of such rights in a form of personal carbon allowances (PCAs). The PCAs constitute an entitlement to pollute the environment and create a personal emissions' "budget" (Howell, 2008, 2012; Parag, Capstick, & Poortinga, 2011; Roberts & Thumim, 2006). Individuals would have to administer them for their anthropogenic activities, such as travelling.

Although such PCAs have not yet been implemented on a wide scale, there are some examples of voluntary groups (e.g., Carbon Rationing Action Groups (CRAGs)) that have set up their emission-tackling goals (Howell, 2008, 2012). These groups showed that organization of regular meetings, interaction among group members, exchange of ideas and reciprocal support were key in lowering the emissions' levels of group members. Therefore, a provision of feedback and dissemination of information seem to be crucial components of the management of PCAs. It could be conjectured that individuals would be observing what others do and would take their decisions not only on the basis of their personal experiences but also by observing others' choices.

In this paper, micro-societies were created to investigate the management of PCAs, when both personal and group feedback was provided simultaneously over ten experimental periods. According to Baum et al. (2004) experimental micro-societies consist of human participants who repeatedly interact in controlled ways within a laboratory. The social dilemma context was related to subjects' choices between public and private transport modes.

Two aspects were tested in this experiment: the labeling effect and group's feedback. Roughly speaking, by labeling a part of the budget for a certain good, people tend to increase spending on this good not only by the labeled amount but also additional spending (Heath & Soll, 1996). In addition, feedback about others' commuting choices influenced the decisions in the micro-societies. In the presented laboratory experiment, when the labeling effect was applied, subjects received feedback about their personal and group fellows' choices from the previous round to make decisions in the following round.

A combination of the labeling effect and feedback helped individuals change their commuting pattern and increase the number of trips by public transportation. These results were obtained from a consumer optimization model, commonly used in the neoclassical economics, and show deviations from the neoclassical model. The model enables finding an optimal commuting bundle between public and private transport modes that theoretically maximize consumer utility. The presented experimental results show, however, that subjects did not seek to optimize their choices, when they received feedback on others' choices and when a part of the budget was labeled for public transportation.

The paper proceeds as follows. Section 2 of the paper provides an overview of the relevant academic literature. Section 3 provides details about the experimental procedures. Section 4 presents the results. Section 5 lays out the discussion and conclusions.

2. Related literature

Individuals are not indifferent to decisions undertaken by others (Messick, 1985). On the contrary, others' choices influence them consciously or unconsciously (Simon, 1956). Provision of feedback about personal and fellow group members is one of the forms of influencing others. Sharing of information on expected travel times, for example, nudged drivers to change their habitual itineraries (Avineri & Prashker, 2005). Feedback received by the members of the UK's Carbon Rationing Action Groups (CRAGs) was crucial in motivating its members to diminish their personal carbon footprint (Howell, 2012).

Sociologists, social psychologists and behavioral economists have long recognized the importance of feedback about personal and others' choices in social comparisons. People may need these pieces of information to learn about the differences of one's and others' choices (Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990; Hattie & Timperley, 2007; Suls, Martin, & Wheeler, 2002), or to seek conformity to the group norms (Manski, 1993, 2000). Nevertheless, feedback may have either a positive or negative impact on one's choices. On the one hand, social comparisons may positively affect well-being in public domains of life. On the other hand, they may have a negative impact in private domains due to the scarcity of information (Fox & Kahneman, 1992).

Individuals compare themselves to others after exchanging information about the attributes of experienced behavior (Abou-Zeid & Ben-Akiva, 2011). They do so for various reasons, including evaluation and validation of actions or opinions, affiliation with a group or self-improvement (Brickman & Bulman, 1977; Goethals & Darley, 1977; McFadden, 2005). Festinger (1954) postulated that people have an intrinsic drive to compare themselves to others and to conform to a group.

The above statement also holds true in the context of travel but the social dimension in choice of behavior has not been investigated profoundly. For example, the study of Hamed and Mannering (1993) provides an extensive model of commuting between home and work place, taking into account other activities such as shopping or free time. However, the model does not consider the environmental impact of commuting choices, which are investigated in this study. Similarly, the study of Abou-Zeid and Ben-Akiva (2011) did not consider the environmental aspects of commuting, although the authors looked at social dimension in travel choices. In contrast, the main objective of this study was to examine the commuting choices by considering their environmental footprint and thus creating social dilemma situations.

Furthermore, the effect of social influence on travel choice behavior has been studied within the context of residential location choice (Páez & Scott, 2006), the decision to adopt telecommuting (Páez & Scott, 2007), and mode choice (Dugundji & Walker, 2005), for example. Usually, this research incorporated others' previous actions as an additional explanatory variable in the utility of one's alternatives. In addition, Abou-Zeid and Ben-Akiva (2011) modeled the effect of social comparisons on travel behavior through comparative happiness (called also well-being).

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