Transportation Research Part F 27 (2014) 90–98

Contents lists available at ScienceDirect

Transportation Research Part F

journal homepage: www.elsevier.com/locate/trf

The role of deliberate planning, car habit and resistance to change in public transportation mode use

Trond Nordfjærn [a,*], Özlem Şimşekoğlu [c], Torbjørn Rundmo [a,b]

[a] NTNU Samfunnsforskning, Studio Apertura, Dragvoll Allé 38 B, 7491 Trondheim, Norway
[b] Norwegian University of Science and Technology, Department of Psychology, Dragvoll, 7491 Trondheim, Norway
[c] Izmir University of Economics, Department of Psychology, Sakarya Caddesi, NO: 156, 35330 Balcova-Izmir, Turkey

ARTICLE INFO

Article history:
Received 14 February 2014
Received in revised form 23 June 2014
Accepted 21 September 2014
Available online 11 October 2014

Keywords:
Resistance to change
Car
Public transport
Norway
Social influence
Environment

ABSTRACT

Few studies have examined the role of deliberate planning, car habit and resistance to change in relation to transportation mode use. The aim of this study was to examine the relative role of components in the Theory of Planned Behavior (TPB), car habit and resistance to change in use of public transportation. A postal questionnaire survey was carried out in a randomly obtained representative sample (n = 1039) of the Norwegian population living in the six largest urban areas of Norway. The sample was randomly recruited from the Norwegian population registry. The results showed that an isolated TPB-model was better fitted to the data than an isolated habit-resistance to change model. The isolated TPB also explained substantially more of the variance in intentions to use public transport compared to the habit-based model. A combined model including the TPB, car habit and resistance to change was also found to have good fit. Within this model, the most important predictor of intentions to use public transport was strong subjective norms of public transportation mode use. Favorable attitudes towards public transport mode use were weakly related to intentions, when car habit and resistance to change were accounted for in the model. Perceived control was not mediated by intentions to use public transport and solely related directly to use. Car habit was a negative predictor of these intentions. It is concluded that car habit is not the sole factor related to intentions of using public transportation and that social cognition and social influence are instrumental in promoting use of such transportation. Use of public transportation seems to partly reflect a planned and deliberate psychological process.

1. Introduction

Car use is related to a higher prevalence of accidents and injuries compared to use of public transport (Albertsson & Falkmer, 2005). In addition to accidents and injuries, the societal costs of car use also include congestion, noise, air pollution, and substantial use of land. This underlines the importance of promoting use of safe and environmentally friendly public transportation in the urban population. This is a major challenge for authorities worldwide who in recent years have realized that it is imperative to reduce car use in order to promote quality of life and to improve the environment in urban areas. The majority of people in Norway still use private motorized travel modes, especially car (Rundmo, Nordfjærn, Iversen, Oltedal, &

* Corresponding author. Tel.: +47 95 93 47 66; fax: +47 73 59 63 30.
E-mail address: tn@sirus.no (T. Nordfjærn).

http://dx.doi.org/10.1016/j.trf.2014.09.010
1369-8478/

Jørgensen, 2011). In recent decades, the use of private cars for work travels, shopping, and visits to recreational locations had beneficial impacts on human mobility and welfare. Simultaneously, the societal costs of car use have reached the limit of what should be considered tolerable (Greene & Wegener, 1997).

A concurrent discussion in the transport research literature is whether transportation mode use manifests an automatic and habitual process or a planned deliberate psychological process (or both). The role of habit in car use is guided by psychological research showing that previous behavior is a strong regressor on future behaviour (Gärling & Axhausen, 2003; Verplanken & Aarts, 1999). Verplanken, Aarts, and Knippenberg (1997) argued that when car use has been repeated on a frequent basis the 'choice' becomes scripted (see also Aarts, Verplanken, & Knippenberg, 1998). This implies that the 'choice' does not require deliberate cognitive processing and that car use is a result of mental heuristics, which cause the individual to be less attentive or ignorant to new information or behavioral alternatives (Bamberg, Rölle, & Weber, 2003a).

The assumption that car use is merely habitual and scripted has been challenged by social psychological theories, such as the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and its successor the Theory of Planned Behavior (TPB) (Ajzen, 1991). These models suggest that behaviors are under voluntary control and influenced by deliberate cognitive information processing. The TPB argues that behavior is predicted by intentions, which in turn is influenced by attitudes towards the behavior, subjective norms of the behavior and perceived behavioral control. Attitudes are defined as evaluations of the behavior (e.g. whether the individuals have a positive or negative view on using public transport). Subjective norms are defined as whether the individual perceives that significant others wish or encourage the person to conduct the behavior, whereas perceived behavioral control refers to perceptions of control and barriers to conduct the behavior. Further, the causal assumptions in this model argue that attitudes and subjective norm are mediated by intentions to perform the behavior, while perceived control has a direct link to behavior, and an indirect mediated relation through intentions (see also Fig. 1).

The TPB has been found to predict behaviors ranging from seat-belt use (Şimşekoğlu & Lajunen, 2008), protective sexual behavior (Sheeran & Taylor, 1999), pro-environmental behavior (Kaiser & Gutscher, 2003) to travel mode use (Bamberg & Schmidt, 2003; Heath & Gifford, 2002). However, few studies have compared the relative role of the TPB and car habit in predicting use of public transport. An exception was Bamberg and Schmidt (2003) who compared the TPB, Theory of Interpersonal Behaviour (TIB) (a partly habit-based theory) (Triandis, 1977) and the Norm Activation model (NAM) (Schwartz, 1977) in predicting car use. The results showed that the TPB explained more of the variance in car use than the NAM, but car habit was also found to be important for use. Another study was carried out among 241 individuals and showed that habits were weaker predictors of future mode use behavior than the TPB (Bamberg, Ajzen, & Schmidt, 2003b). The generalization potentials in these two citied studies were, however, somewhat mitigated by the fact that the aforementioned study solely consisted of German university students, and the latter study included a relatively small sample from a delimited area within Germany.

Moreover, the intention to use public transport could also be influenced by a person's pre-disposition to resist changes in routines (i.e. resistance to change) (Oreg, 2003). For instance, a person who has developed a strong car habit may be more reluctant to consider a change to public transport if the individual holds negative cognitions about changes in their daily routine and experiences distress and negative emotions when such changes occur (see also Tertoolen, Van Kreveld, & Verstraten, 1998). To our knowledge no studies have implemented resistance to change in the habit models. Consequently, we also integrated this psychological construct into the specification of the habit model.

As indicated above, few previous studies have examined the relative role of the TPB, car habit and resistance to change in relation to use of public transport. This approach is important because it could provide insights into whether transportation mode use is a planned and deliberate psychological process or more automatic and habitual. If the latter assumption is supported, a possible implication would be that it is difficult to change transport mode behavior by campaigns that require a conscious and deliberate processing of the message.

The aim of this urban population-based study was to investigate the relative role of the TPB, car habit and resistance to change in predicting use of public transportation. The working models of the study are displayed in Fig. 1. To test the isolated capability of the TPB and car habit-resistance to change in predicting use of public transportation, we first tested these frameworks separately (Fig. 1a and b). Secondly, we tested an integrated model including all constructs in order to test the relative contribution of the TPB, car habit and resistance to change constructs (Fig. 1c). This model is in line with the Extended Theory of Planned Behavior (Åberg, 2001) which suggested that additional constructs, such as habit, are implemented into the TPB taxonomy. On the basis of the assumption that mode use mainly is habitual and scripted (Gärling & Axhausen, 2003; Verplanken & Aarts, 1999), we hypothesized that the isolated habit-resistance to change model would be better fitted than the isolated TPB. We also hypothesized that the TPB components would be relatively weakly related to public transportation mode use when habit and resistance to change were included in the combined model.

2. Methods and materials

2.1. Sampling

A survey was conducted in June and August 2013 in a random representative sample of the Norwegian population (n = 6200) living in the six largest urban regions of Norway. This random sample was obtained electronically by a firm with access to the Norwegian population registry. The study protocol was approved by the Norwegian Social Science Data Services