BEHAVE 2020
6th European Conference on Behaviour and Energy Efficiency
Copenhagen, 21-23 October 2020

Abstract for the 6th European Conference on Behaviour and Energy Efficiency

Title: Determinants of car sharing self-efficacy

John Magnus Roos[1, 2, 3, 4]* and Frances Sprei[1]

1:, Chalmers University of Technology
Division of Psychical Resource Theory
SE-412 96 Gothenburg, Sweden
e-mail: Magnus.Roos@chalmers.se (J.M.R); Frances.Sprei@chalmers.se (F.S.)

2: University of Gothenburg
Centre for Consumer Research, School of Business, Economics and Law
SE-405 30 Gothenburg, Sweden
e-mail: Magnus.Roos@cfk.gu.se

3: University of Skövde
Department of Social Psychology, School of Health Sciences
SE-541 28 Skövde, Sweden
e-mail: Magnus.Roos@his.se

4: University of Borås
Department of Business Administration and Textile Management
SE-501 90 Borås, Sweden
e-mail: Magnus.Roos@hb.se

Keywords: User behaviour, mobility service, car sharing, self-efficacy, social psychology

(Track: Users behaviour in transport and mobility)

1. Introduction

Carsharing has been promoted as part of a sustainable and efficient transport system given the possible reduction in number of vehicles and driving distances [1, 2]. Carsharing has been present in Europe since the later forties and has gained in interest and membership in the last years. Still it is only a small part of the general population that uses these services. It is thus interesting to better understand how well these services meet the users' needs and how they are perceived even among non-users.

In this study we focus on the self-efficacy of stationary carsharing in Gothenburg, the second largest city in Sweden. Self-efficacy is defined as an individual's belief in his or her ability to control and manage a specific situation [3]. Self-efficacy depends on four factors: (1) Experiences, (2) Observation of others, foremost persons that are perceived as similar and important. (3) Persuasion from others (i.e. social persuasion), foremost persons that are considered important. (4) Emotional arousal caused by the specific situation (e.g., stress or emotional stability) [3]. The aim of the present study is to explore if the four factors can be used to explain carsharing self-efficacy. We define carsharing self-efficacy as the belief in one's ability to fulfil all needs of a car through carsharing. Thus, we formulate the following four hypotheses:

1. Experiences of carsharing influence carsharing self-efficacy.
2. Vicarious experiences (Observations of others) influence carsharing self-efficacy.
3. Social persuasions influence carsharing self-efficacy.
4. Emotional arousal influences carsharing self-efficacy.

2. Methodology

A survey measuring carsharing self-efficacy and indicators for the four determinants (i.e., past experiences, observation of others, persuasion from others, and emotional arousal) was distributed to a sample to 1 078 citizens in the city of Gothenburg, Sweden. The sample was chosen based on residency in buildings with lower parking availability and easier access to carsharing at some time. For example, there were designated parking spots for car sharing by the building or special membership deals. Thus, membership and experience in carsharing was higher than the average population. The total response rate was 25%, 275 respondents. The study only included respondents who has driven a car during the last 12 months – 204 respondents. Among these 204 respondents, 70 had experiences from carsharing while 129 had no experiences from carsharing (5 respondents did not answer the question). Among the 204 respondents, 91 were females and 112 were males (1 respondent identified as neither male nor female). The mean age was 40.03 years of age. The data was gathered in October-December 2019.

Experience of carsharing was dummy coded: past experiences from car sharing was coded as 1 and no past experiences was coded as 0. Observation of others was measured through the statement "Most of my acquaintances use car sharing services", ranging from 1 (strongly disagree) to 7 (strongly agree). Social persuasion was measured through the statement "Car sharing use is perceived as something positive among my friends and acquaintances", ranging from 1 (strongly disagree) to 7 (strongly agree). Emotional arousal was measured through the statement "I would feel stressed if I used cars from carsharing services", ranging from 1 (strongly disagree) to 7 (strongly agree).

Self-efficacy was measured through a 100-point Visual Analogue Scale (VAS) [4] on how certain the respondents believed that car sharing services could fulfil all needs of car use, varying from not at all certain (0) to completely certain (100), (M = 44.55, SD = 29.85). The validity of a single-item scale has been shown to be satisfactory in relation to self-efficacy in general [5] and to self-efficacy and travel behavior in particular [6].

3. Results

A multiple regression analysis was performed, with car sharing self-efficacy as the dependent variable. The independent variables were past experiences, observation of others, persuasion of others, and emotional arousal. Table 1 illustrates that persuasion from others and emotional arousal influences car sharing self-efficacy, while experience of car sharing, and observation of others do not seem to influence car sharing self-efficacy.

Table 1. Regression model of car sharing self-efficacy

	Car sharing self-eficacy
Experience	.09
Observation of others	.12
Socail persuasions	.28***
Emotional arousal	-.25***
R^2	.21***

Entries for predicors are beta weight (i.e. standard regression coefficients). Car sharing self-efficacy was measured on a 100-point Visual Analogue Scale; Experience was measured on a binary question (i.e. 1= experience of carsharing, 0 = no experience of carsharing); Observation of others, social persuasions, and emotional arousal were measured on a 7-point Likert scale. *** = p <.001. The table only include respondents who have answered all five questions (N=194).

4. Discussions and Conclusions

The result is supported by previous research that has showed that social support (e.g. social persuasion) is important for self-efficacy of transport behaviour [6]. It is somewhat surprising that experiences of carsharing does not influence carsharing self-efficacy. An inability to fulfil the needs of cars among pioneer users of carsharing services, might of course indicate some problems in the carsharing design and offering, which policymakers and service designers need to consider if they would like to replace car owning with carsharing. In the present study, experience was only measured through a binary question (i.e. experience of car sharing or not). It might be interesting to investigate if and how different kind of experiences are related to car sharing self-efficacy, such as time aspects (e.g. length of the period; past or present experience) and attitude of the experience.

It is worth to noticing that the overall confidence in car sharing self-efficacy was rather low, mean value of 44.55 on a scale that ranges from 0 to 100. Further, the current model only explained 21 percentages of carsharing efficacy. Future research could look closer into what affects the carsharing self-efficacy with respect to user profiles (e.g. age, gender, personality), needs and quality of service (e.g. flexibility, costs, and sustainability). We also recommend future research to explore how carsharing self-efficacy influence actual behaviour.

References

[1] H. Nijland and J. van Meerkerk, Mobility and environmental impacts of car sharing in the Netherlands. *Environmental Innovation and Societal Transitions*, Vol 23(6), pp. 84-91 (2017).

[2] F. Sprei. Disrupting mobility. *Energy Research and Social Science*, Vol 37, pp. 238-242 (2018).

[3] A. Bandura. Self-efficacy mechanism in human agency. *American Psychologist*, Vol 37 (2), pp. 122-147 (1982).

[4] R. C. B. Aitken. Measuring of feelings using visual analogue scales. *Proceedings of Roayal Society of Medicine*, Vol 62, pp. 989-993 (1969).

[5] B. B. Hoeppner, J. G. Kelly, K. A. Urbanoski, V. Slaymaker. Comparative utility of a single-item vs multiple-items measure of self-efficacy in predicting relapse among young adult. *Journal of Substance Abuse Treatment*, Vol 41 (3), pp. 305-312 (2011).

[6] F. Skarin, L. E. Olsson, M. Friman, E. Wästlund. Importance of motives, self-efficacy, social support and satisfaction with travel for behavior change during travel intervention programs. *Transportation Research Part F. Traffic Psychology and Behaviour*, Vol 62, pp. 451-459 (2019).