

10th International Conference on Transport Survey Methods

Workshop synthesis: Measuring attitudes; quantitative and qualitative methods

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Abstract

In this paper, we present the discussion and main findings from the ISCTSC Workshop B3, which focused on measuring the role of attitudes and perceptions in people's travel choices. The paper considers various issues concerning the design and use of quantitative and qualitative approaches in the measurement of attitudes and perceptions within travel surveys. It first identifies the importance of measuring the underlying psychological motivations for people's travel choices and behaviors and provides some examples of how travel surveys have applied these concepts to date. It then considers the complimentary role of qualitative methods for improving quantitative survey and model design, as well as for providing deeper understandings and interpretations of travel behaviors. Finally, it makes some recommendations for the advancement of research practice in these two respects and also briefly discusses the opportunity for mix method approaches.

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1. Introduction

Over the last ten or so years, academics and policymakers have shown a growing interest in studying the role of psychological, social and cultural factors to determine people's travel behaviors and choices. Research into these 'softer' or more 'intangible' issues often demands survey methods that are either entirely new in their design and approach and/or introducing methods that are largely unfamiliar within mainstream travel survey methods. The aim

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of this workshop session was to help to promote discussion about the influence of people's attitudes and perceptions on their travel choices and to assess the potential for different quantitative and qualitative travel surveys designs and analytical methods to capture these effects.

In developing the various workshop activities, we referred to the previous sessions in ISCTSC conferences that have focused on the development and application of social survey methods for understanding travel behaviors (see Grosvenor, 2000; Pendyala and Bricka, 2006 and Clifton, 2011). These have already served to identify state-of-the-art social scientific methodologies and have made some useful recommendations for improvements to the design and analysis of quantitative and qualitative survey instruments. Within this paper, it is our intention to build upon, rather than repeat, these previous recommendations based upon our observations from this latest 2014 workshop.

A first observation was that the 2014 workshop participants came from two distinct groups in terms of their disciplinary expertises and interests in the development of travel survey methods. One group was mainly interested in finding ways to represent people's attitudes to travel in order to improve the predictive powers of their choice models, the other wanted to understand people's attitudes and perceptions of transport and their travel experiences using social scientific and primarily qualitative approaches. This is also a reflection of the disciplinary divides within current literatures around this topic and a challenge we aimed to address within the workshop.

2. Setting the scene

In the workshop, we agreed that our different disciplinary approaches were not necessarily competing and, in fact, they could potentially provide mutually reinforcing approaches for understanding the influence of people's attitudes on their travel choices. On this basis, we used the first session of the workshop to establish some basic definitions and concepts to help to clarify what exactly we mean when we refer to 'attitudes and perceptions'. This would assist us in understanding when it is most appropriate to utilize quantitative and/or qualitative approaches, when and how these methods are more useful, as well as to discuss how we might begin to develop mixed method survey designs.

First and foremost we identified that attitudinal studies tend to be primarily people- rather than systems-focused (Stinger, 1981; Baron and Byrne, 2002). Secondly, such surveys usually go beyond a basic explanation of people's behaviors and preferences in order to capture a wide range of psychological and social influencers of people's travel choices and behavioral outcomes (ibid). Most commonly, in the past attitudinal surveys have simply sought to measure people's attitudes to and perceptions of the transport system in quantifiably meaningful ways (e.g. Gärling *et al.*, 1998; Johannson *et al.*, 2006). Less commonly they have sought to understand the habits, social norms, personal networks and social interactions that reinforce these attitudes and perceptions, as well as how other less tangible factors might serve to influence the uptake of different transport options and/or the direction of travel trends (Triandis, 1977; Anable *et al.*, 2006).

Although all of these issues can be broadly described as 'qualitative' in nature, it does not mean that they necessarily demand the utilization of *qualitative* survey instruments (such as ethnographies, in-depth interviews, focus groups, etc.). Indeed, many surveys are design with the explicit intention of providing *quantitative* measurements of these factors so that they can be incorporated within travel behavior models. Neither, on the other hand, should qualitative survey methods be restricted solely to the research of social factors in transport. Rather they can be used to research a wide range of different travel behaviors and aspects of choice. For example, qualitative survey methods are particularly useful for exploring hitherto uncharted territory, or to help improve the design of quantitative survey instruments or to explore the causal factors behind people's behaviors and the dynamic aspects of people's decision processes.

We also identified that people's attitudes and perceptions are strongly related to a variety of social and contextual factors. Social factors might include people's personal circumstances, work and home-based responsibilities, values, habits, social norms, lifestyle choices, as well as intentions, expectations and feeling of control. These type of influences on people's travel choices have already been comprehensively explored by social psychologists and have been widely explored and debated within transport literatures (Triandis, 1977; Ajzen, 1991; Steg *et al.*, 2001). The contextual factors influencing people attitudes towards different travel choices has also been a popular topic of research, including consideration of urban form and land use factors, the quality and efficiency of the transport system and the availability of alternative choices (Ortúzar and Wilumnsen, 2011). The literatures have also paid considerable attention to how people attitudes can be influenced through awareness-raising, social marketing and

other interventions in order to change their travel behaviors (Nordlund and Garvill, 2003; Scheiner and Holz-Rau, 2007; Ory and Mokhtarian, 2009). A major identified issue in relation to this is the extent to which people's behaviors are actually influenced by their attitudes and whether changing people's attitudes will necessarily lead to an associated change in their travel choices (e.g. Anable *et al.*, 2006).

3. Measuring attitudes towards different travel choices and experiences

In the second session of the workshop we predominantly focused on the challenges associated with surveying people's attitudes to transport and identifying best practices in this respect. We discussed the rationale for wishing to measure attitudes and identified the following key reasons:

1. To understand what factors influence people's travel choices and behaviors
2. To change their transport related preferences and behaviors
3. To predict how people will respond to different interventions
4. To measure changes in attitudes for different population segments over time and space and in relation to new and emerging trends
5. To improve the explanatory power of our models
6. To provide policymakers with the metrics they need to set benchmarks against which to monitor behavioral outcomes

Attitudes have traditionally been measured through Likert scales, but the limitations of this approach are increasingly recognized. First, the use of a theoretical framework to represent the conduct of individuals in the context of their trip making is still an on-going challenge. **Beck and Rose** consider the introduction of a Best-Worst (BW) measurement scale of measurement to replace the less reliable Likert scale in testing people's attitudes to different public transit options. The authors apply BW as a measurement tool for evaluating attitudes towards public transit systems, using a function of 'belief' and 'importance'. In this way, these two attitudinal dimensions can be collected simultaneously without adding too much respondent burden, whilst still being capable of estimating true attitudes in a much better way within choice and preference models. Although it may be possible to isolate some behavioral factors for a better understanding of their role on conduct within controlled experiments, a restricted model can fail in really detecting those factors leading people's decisions when studying real behaviors. Exploratory analysis using real data to identify those factors guiding decisions is needed. From a policy standpoint, the wrong decision could be made due to misleading data and/or if some correlations between variables are missed.

In their paper, **Susilo et al.** discuss the complexity of quantifying travelers' journey experiences in meaningful ways. The methodological challenge here is related not only to the intrinsic complexity of the 'experience' concept itself, but also to the interests of different key stakeholders and other interested parties. The authors used multi-stage design that involved the identification of a number of journey experience variables, the use of questionnaires to reduce their dimensionality, and the collection of stakeholders' opinions on these issues. In particular, although complex, the exercise with stakeholders prove to be especially interesting given the diversity of their views and interests, which lead to further improvements on the study's theoretical and methodological framework.

A second key issue is how attitudes are measured and the potential biases within that measurement process. For instance, 'affect', which is related to the emotional appeal of an object, can often be confused with 'attitude', which is related to the importance and value assigned to it. Similarly, 'attitude' is in turn a function of 'belief' and 'importance'. Finally, a similar issue happens with 'habit', as a non-reasoned behavior. The measurement of a repeatedly observed conduct does not constitute habit, but there is evidence that a non-reasoned action guides decisions (see Aarts *et al.* 1998 for a further discussion of this).

Thirdly, contextual conditions have an influence on people's conduct. For instance, the decision to use public transport might be due to the intrinsic importance a person gives to this facility but it might also be mediated by environmental concerns, such as fear of crime and personal security issues, socialization needs, and so on. A study by **Tudela and Carrasco** used non-normative measurements of personal satisfaction and wellbeing as proxy measures for social exclusion in a Chilean study. Their survey design captured the level of experience and previous knowledge to perform certain travel activities as well as people's self-perceived existence of barriers in the activity

and transport system to perform their daily routine. They also included an array of personality and wellbeing measurements, since their argument is that a measurement of social exclusion needs to be controlled for within the individual subjective component.

Some of the main observations that arose from discussion of these papers were that there is still a need to further explore underlying socio-psychological theories relating to attitudes and their associations with preferences, social norms emotions, habits, agency, etc. and to find ways to incorporate the diversity of these conceptual framings within choice models. There is an opportunity for attitudinal questions to become a mainstream set of questions in travel household surveys and a potential for data fusion with other surveys (e.g., British Attitudes Survey, Australian TOPS, Puget 10-panel). We also recognized a potential role for linguists and psychologists to help improve the design of attitudinal questions within travel surveys. A final question remained as to how far it is possible to quantify intangible aspects of people's travel choices, such as their attitudes and perceptions and the role of qualitative methods in this respect, which was the main focus of our subsequent discussions.

4. Qualitative methodologies to explore people perceptions and travel experiences

One of the most important contribution of this part of the workshop was to illustrate how qualitative approaches can be used to explore questions that simply cannot be answered using more traditional quantitative approaches. A second and related issue is how to build truly 'mixed-method' survey instruments in transport that would make both methods complementary. A remaining identified challenge is how to avoid making qualitative approaches ancillary to quantitative measurements. Two distinct approaches to qualitative survey methods were identified in this respect.

4.1. Qualitative methods for quantitative analysis

Qualitative methods can be useful as a part of the whole empirical process, i.e. in the initial framing of concepts, to understand the issues and to design appropriate measurements. They can also be used to validate and interpret our quantitative analytical results and to communicate them in meaningful ways to policy makers and the general public. A popular example of this approach is the use of focus groups and in-depth interviews in the design of stated-preferences surveys (Ortúzar and Willumsen, 2011). Similar approaches have also been used to operationalize qualitative statements and subjective measures within decision choice models.

4.2. Qualitative methods for deeper behavioral understandings

As has been widely noted within the social science literatures, qualitative survey designs are most useful for providing rich contextual subjective information about people feeling, emotions and perceptions. They can be used to examine people's social practices or for understanding their behavioral responses to different stimuli. They are also useful for unpacking complexity and identifying processes. The evidence from such studies can be used to provide narratives and messages that can be easily communicated to politicians and other decision-makers. A wide array of methodological approaches are available that go beyond focus groups and in-depth interviews more commonly used by transport researchers, such as mobile ethnographies, participative-GIS and action research (see Lucas, 2011).

There were only three papers focusing on the use of qualitative survey methods presented at the conference. This could maybe be taken as an indication that there is still insufficient dialogue between social scientists and mainstream transport studies. It was felt that some further efforts to actively seek to bridge this methodological divide could prove fruitful in future ISCTSC transport survey methods conferences. In many ways, the exploration of these seemingly disparate research questions under the same workshop banner served to underline the most significant challenge for social scientific methods within transport studies generally and for travel survey methods specifically. This resides in how to bridge the gap between social scientific and technologically driven approaches, which could potentially be mutually reinforcing but are all too often fragmented and divided to the point of and miscommunication and subsequent dysfunctional misunderstanding.

In their paper **Carrasco et al.**, discussed the use of qualitative approaches to better understand the dynamics of people's social networks in the context of their travel behaviors. More specifically, they demonstrated how 'name

generator' techniques – usually used to quantify personal networks characteristics – have some flaws when used to account for the dynamics of social relations. In this way, qualitative interviews help to disentangle instrument biases (i.e., recall issues on naming some social contacts) with respect to dynamics of the self-perceived personal networks.

Another application of a mix qualitative and quantitative approach was presented by **Järvi et al.**, who used a two-staged study to build a transport policy tool to inform policies to reduce CO₂ emissions in Finland. In the first stage, the authors employ Delphi techniques with policymakers combined with cluster and content analysis to delineate different future visions for carbon reduction measures. The second part of their study used this qualitative instrument to calculate pathways to reach CO₂ emission targets using different scenarios that provide different plausible futures. The authors explored not only probable but also desirable future visions, opening up the discussion on the policy packages and actions to reach the visions previously built.

Finally, **Sharples** presented a mixed methods approach to compare the use of social media surveys and qualitative interviews for measuring motorists' attitudes to road reduction measures. Her experience shows the advantages and disadvantages of using social media as a method to complement more thematically focused qualitative surveys.

It was identified that discussion of the findings of qualitative studies is often not presented within the more traditional transport survey methods journals and so may drop off the radar of mainstream transport researchers. As such one of the recommendations from our workshop discussions was to encourage more debate and knowledge sharing between quantitative and qualitative transport researchers with mutual interests in understanding the influence of social and psychological factors on people's travel choices. It is also important to give guidelines to policy makers on the contribution of qualitative data and to find 'champions' within government who recognize the value of qualitative enquiries and issues as the norm within travel surveys. It would also be useful to specifically invite experts from relevant fields (e.g. geography, sociology, social psychology) as speakers at future ISCTSC conferences to present their cutting edge methodologies.

5. Towards mixed methods approaches for understanding attitudes, perceptions and travel choices

From the last ISCTSC 2013 conference, Clifton (2013) reported on the struggles of the “*ongoing dialogue in the field of travel behavior and elsewhere concerning issues of interdisciplinary engagement, mixed methods of inquiry, social equity and social-psychological factors.*” and identified five areas for future progress:

1. Methodological approaches need to be guided by clearly set research objectives
2. The way we ask questions matters. Our research should be sensitive to context, even if it is not central to the research question
3. Information about the social context can also be useful in quantitative studies using more traditional survey methods
4. Mixed method approaches offer the most potential for a complete understanding of people's travel choices
5. There is a lot more work needed in order to define and measure 'the social context of transport', as well as on how to go about it.

From this workshop we have identified that two key challenges remain for the development of truly balanced approaches that combine quantitative and qualitative methods:

1. How to demonstrate that qualitative approaches can be used to explore questions that simply cannot be answered using more traditional quantitative approaches?
2. How to avoid making qualitative approaches ancillary to quantitative measurements?

We would recommend that some further attention be given to these questions in future ISCTSC conferences.

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Appendix A. Papers presented during the workshop

Implementing a behavioural pilot survey for the stage-based study of the whole journey traveller experience. Authors: Yusak Susilo, Oded Cats, Marco Diana, Gabriela Rodica Hrin and Andree Woodcock.
 The Best of Times and the Worst of Times: A New Measure of Attitudes Towards Public Transport Experiences. Authors: Matthew Beck and John Rose.
 Measuring social exclusion using a non normative approach. Authors: Alejandro Tudela and Juan Antonio Carrasco.

Appendix B. Posters associated with the workshop

Spatial and temporal dynamics on personal networks: Some methodological and theoretical challenges to study their embedded social travel behaviour. Authors: Juan Antonio Carrasco, Daniel Sandoval, Oscar Chavez and Beatriz Cid-Aguayo.
 A transport policy tool for reduction of CO2 emissions in Finland - Visions, scenarios and pathways using pluralistic back-casting method. Authors: Tuuli Järvi, Anu Tuominen, Petri Tapio and Vilja Varho.
 Supporting a retrospective qualitative survey with social media. Rosemary Sharples.
 The implementation of information-based mobility management measures in a smartphone travel survey. Conceptual and methodological issues related with its design. Authors: João de Abreu E Silva, Francisco Pereira, Fang Zhao, Christopher Zegras and Moshe Ben-Akiva.
 Putting attitudes towards public transport in context: the influence of situational factors on the results of Likert and Best-Worst surveys. Authors: Geoffrey Clifton, Matthew Beck and John Rose.

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