



Transport mode choice in South East Asia: Investigating the relationship between transport users' perception and travel behaviour in Johor Bahru, Malaysia



Leanne Yong Le Loo^a, Jonathan Corcoran^{a,*}, Derlie Mateo-Babiano^a, Renee Zahnow^b

^a School of Geography, Planning and Environmental Management, The University of Queensland, Brisbane 4072, Australia

^b School of Social Science, The University of Queensland, Brisbane 4072, Australia

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ABSTRACT

The worldwide increase in private car dependency poses a set of significant environmental, economic and social sustainability challenges that continue to undermine the urban quality of life. Rapid motorisation, particularly in South East Asia (SEA), has emerged as a global concern given the region's cumulative population, rate of industrialisation, and large-scale urbanisation. Thus, there is a compelling need to enhance our understanding of the underlying dynamics of how people perceive and use transportation such that transport planning is better placed to address the current, unsustainable travel patterns in SEA. Despite this need, there has been relatively limited SEA-based research that has endeavoured to examine travel perceptions and transport mode choice from a non-instrumental perspective. This research redresses this deficit by investigating the relationship between transport users' perceptions and travel behaviours within SEA, with a particular focus on psychosocial drivers of transport mode choice interfaced with more traditional instrumental measures.

Spatially stratified survey data have been collected in a case study area, Johor Bahru, Malaysia, comprising users from different transport user groups. Employing regression modelling, drivers of individual's travel behaviour are examined. Results highlight the merit in recognising the role of non-instrumental motives alongside instrumental motives to explain transport mode choice. We conclude by highlighting that transport mode choices are motivated by a range of locational, socio-demographic, psychological and cultural determinants. The current research has contributed to a better understanding of transport mode choice in Johor Bahru and provides a foundation for future SEA-based travel behaviour research. Studies in this area can inform more sustainable travel behaviour in the SEA region.

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1. Introduction

The turn of the 21st century has seen a global transformation of urban transport patterns. This worldwide transformation is most prominently characterised by very high private car dependency and its accompanying traffic congestion (Barter and Kenworthy, 2009). Within the notion of encouraging more sustainable travel behaviour, the growing levels of private car dependency have posed a set of significant environmental, economic and social sustainability challenges, increasingly threatening the urban quality of life (Gärling and Steg, 2007; Townsend, 2003).

Car dependency has been most profound in the West, particularly in the United States, Australia, and to a lesser extent in Europe

(Townsend, 2003). Nonetheless, motorisation is also growing rapidly in many Asian cities, most notable is the dramatic surge in private motorcycle ownership (Barter, 1999). Although the rates of growth are still relatively low compared to most Western cities, the challenges posed by the increasing motorisation already require prompt attention. This call becomes even more urgent when considering that the process and context of change in Asian cities is quite distinct from the experience of highly industrialised, more automobile-dependent Western cities (Morichi, 2005; Townsend, 2003). Much of the motorisation that is experienced in rapidly developing South East Asia (SEA) is a result of policies that encourage automobile ownership and the internationalisation of the automobile industry (Marcotullio and Lee, 2003). Along with rapid urbanisation, industrialisation, and economic growth (Barter and Kenworthy, 2009; Beaverstock et al., 1999; Morikawa et al., 2003), a lack of understanding by the public sector on the role played by the informal transport sector in the overall transportation system

* Corresponding author.

E-mail addresses: yong.loo@uqconnect.edu.au (L.Y.L. Loo), jj.corcoran@uq.edu.au (J. Corcoran), i.mateobabiano@uq.edu.au (D. Mateo-Babiano), r.zahnow@uq.edu.au (R. Zahnow).

further compounds these transport challenges (Dimitriou and Gakenheimer, 2011; Cervero and Golub, 2007). A marked rise in the ownership and use of cars (plus motorcycle) has persisted over the last three decades across most SEA cities. This has undermined the modal share of sustainable transport options including formal and informal public transport, cycling and walking (Senbil et al., 2007; Sperling and Claussen, 2004; Townsend, 2003).

Given the rate of urbanisation in Asia (the most rapidly urbanising region worldwide at 1.57 per annum) (United Nations, 2012) and the large SEA population, more than half a billion people or approximately 8.3% of global population (Jones, 2013), motorisation in these cities has caused global environmental concerns, particularly in regards to the depletion of non-renewable fossil fuel resources and greenhouse gas emissions which threaten sustainability at a global scale (Townsend, 2003; Van and Fujii, 2011). More recently, many SEA countries have begun to develop transport strategies with a focus on raising public awareness and acceptance of sustainable transport options (Pardo, 2006; Van and Fujii, 2011). To ensure the success of these strategies, developed to address current, unsustainable patterns of travel in SEA, we must enhance our understanding of the underlying dynamics of public and private transport use (Soehodho et al., 2012; Van and Fujii, 2011). In particular, a detailed understanding of the differences in users' travel behaviours and possible explanations for these differences is essential for accurate travel demand modelling and forecasting, which in turn facilitate policy-making that best suits the travel needs of different members within the society (Collins and Chambers, 2005).

While a number of studies have examined travel demand and behaviour, this scholarship is predominantly Western-based (e.g., Bergstad et al., 2011; Giuliano and Narayan, 2003; Lois and López-Sáez, 2009; Steg, 2005). The majority of SEA-based research has focussed on travel perception from a functional and instrumental perspective (e.g., Morikawa et al., 2003; Soehodho et al., 2012; Sutomo et al., 2003). Due to differences in the degree of development and the cultural diversity of Western and Eastern regions, travel-related attitudes and behaviours are largely non-generalisable (Townsend, 2003; Van and Fujii, 2011). In this light, there is a need to specifically study and understand the context-specific motivations for travel behaviour that exist in

SEA cities in order to offer more informed insights for the policy makers in these areas. This research addresses the relative deficit of SEA-based literature on travel perceptions from a non-instrumental perspective by investigating the relationship between transport users' perceptions and travel behaviours in the SEA region with a focus on psychosocial drivers of transport mode choice interfaced with more traditional instrumental measures. As such, this study significantly contributes to scholarly literature by revealing new insights on the role of non-instrumental variables to enhance our understanding on SEA-based travel behaviour. This information is critical to transport planning and policy in Southeast Asia and beyond.

The remainder of this paper is structured as follows: Section 2 discusses the theoretical underpinning of the study; Section 3 outlines the methodological approach employed in this research; Section 4 reports the results of the study while Section 5 discusses the findings and presents a set of recommendations for future research directions, particularly for SEA-based studies.

2. Theoretical background

2.1. Underpinning theories

Two underpinning theories, Ajzen's Theory of Planned Behaviour (TPB) (1991) and Dittmar's Material Possession Theory (MPT) (1992), are drawn on as relevant frameworks to systematically explain the various dimensions of travel behaviour and transport mode choice. Ajzen's TPB asserts that people's behavioural intent depends on their attitudes, subjective norms and perceived behavioural control. It further posits that various motivational drivers influence an individual's perception of a particular behaviour and the intention to perform that behaviour. These motivational drivers may include instrumental and social motives as conceptualised by Dittmar's MPT (1992). For this study's purpose, to be able to explain individual mode choice, an individual's attitude or overall evaluation of a particular behaviour depends on expectancy beliefs about the likelihood of specific behavioural consequences occurring and the desirability of these consequences. The relationship between these two theoretical perspectives, TPB and MPT, is visually presented in Fig. 1. Scholarly work on identifying the psychological

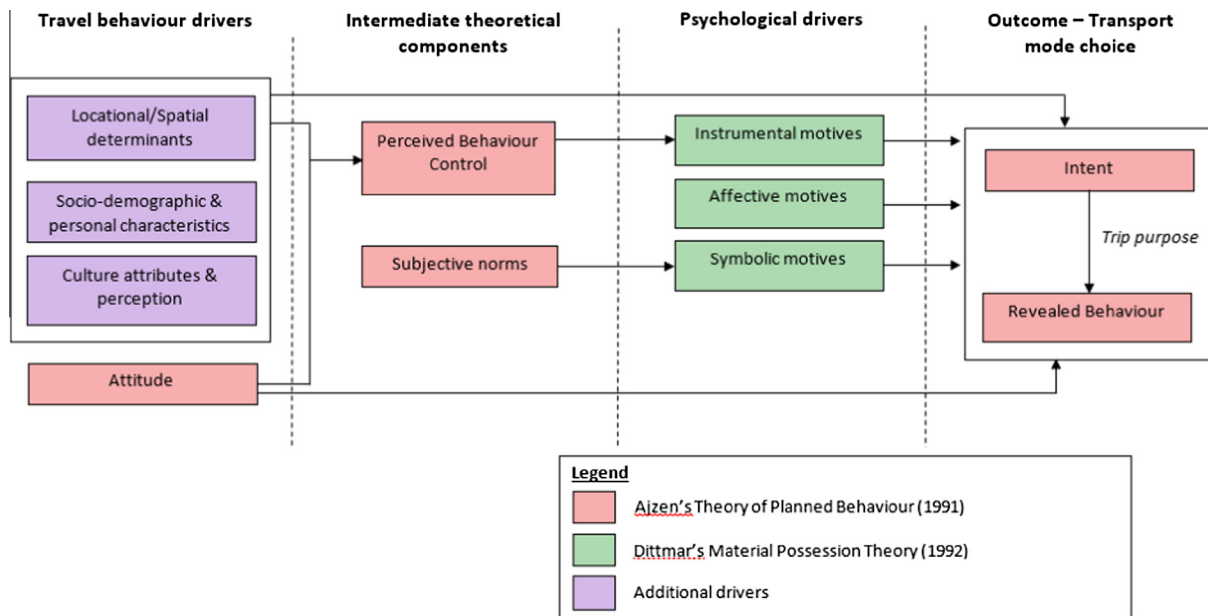


Fig. 1. Theoretical model of transport mode choice and travel behaviour representing Ajzen's Theory of Planned Behaviour (1991) and Dittmar's Material Possession Theory (1992).

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