



Critical Review

Mobility biographies: A review of achievements and challenges of the mobility biographies approach and a framework for further research



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ABSTRACT

In transport research, important changes in an individual's life, so-called key events, are of particular interest because changes in one's environment and surrounding context weaken routines, and a 'window of opportunity' opens up for behavioural change. In the framework of the mobility biographies approach, several studies have been undertaken to improve understanding of travel behaviour change in the last decade. This paper critically and systematically reviews emerging results from mobility biographies research, focusing on key events which potentially induce contextual and travel behaviour changes. The first step was to identify 25 of the most important studies for this approach and their related concepts. Next, notions other than key events in the literature are discussed and a theoretical framework for the longitudinal interaction of four dimensions of key events and other factors for travel behaviour change are identified: (i) life events in private and professional careers, (ii) adaptation of long-term mobility decisions, (iii) exogenous interventions, and (iv) other long-term processes which are not key events (e.g. socialisation). Furthermore, the understanding of key events, methodological challenges and further research gaps are critically discussed in this review.

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1. Introduction

Since at least the 1990s, public and scientific interest in travel behaviour change programs has increased dramatically. For example, technological options alone (e.g. cleaner fuels, new technologies) will have limited impact for mitigating climate gas emissions from the transport sector if worldwide travel demand continues to grow at its current rate. Although some authors observe peak travel and the stabilisation of travel distances in industrialised countries (Millard-Ball and Schipper, 2011), globally the motorisation rate and motorised distances travelled continue to grow. Thus, it is frequently argued that transport climate change policies are expected to fail if no adequate travel demand management options are presented (Bongardt et al., 2013; IPCC, 2014; Schwanen et al., 2011).

However, for successful travel demand management policies, an improved understanding of individual travel behaviour is crucial. Although we have observed significant progress in travel behaviour research over recent decades, we still claim that there is a lack of a sound theoretical framework for behavioural change. While the human activity approach and, closely related, the key

methodologies of econometric choice and simulation modelling still dominate travel behaviour research, relatively little work has been devoted to the development of an encompassing theoretical research framework. Disciplines focused on mathematical and econometric modelling usually tend to combine strong modelling assumptions, like *homo economicus*, and rational decision-making with only a limited number of spatial or socio-economic characteristics of choice situations for explaining travel behaviour. Thus, some important elements of decision-making, like habits and their formation, and underlying rationales are frequently neglected. Furthermore, the development of an advanced social theory of travel behaviour and its change is missing in this econometric context. Moreover, in most cases, models and related theories are limited to cross-sectional data sets and, thus, neglect the temporal and longitudinal dimensions of decision-making. In order to overcome these shortcomings of traditional theories, over the last decade several researchers have proposed a more comprehensive framework for travel behaviour research – frequently labelled as the “mobility biographies approach”. Studies stemming from a broad variety of disciplines attempt to understand and explain everyday travel behaviour as a routine activity – changing due to key events such as residential relocation, the birth of a child or exogenous interventions (e.g. Klöckner, 2005; van der Waerden et al., 2003; Lanzendorf, 2003; Scheiner, 2007).

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In the last decade, several studies have analysed key events as a factor for travel behaviour change. It is therefore the objective of this paper to critically review existing theoretical and empirical studies relevant to the mobility biographies approach and to draw conclusions about the further theoretical development of this branch of research. To this end, we systematically reviewed published scientific work on the subject. As a first step of this review, we identified the 25 articles and studies most relevant to the mobility biographies approach and the related analysis of key events. We looked at (i) the notion and theoretical understanding of key events in these studies, (ii) the specific key events and travel behaviour indicators analysed, (iii) the data employed and (iv) important outcomes. From this review of studies, we developed a theoretical framework encompassing all types of key events in the studies selected and suggested a categorisation for these key events. Furthermore, we critically reviewed the understanding and methodological background of key events in the studies available and drew conclusions on the ongoing challenges faced by the approach. We therefore believe this framework to be helpful for guiding further research.

The paper is structured as follows. We first summarise the theoretical background of mobility biographies from the literature and, simultaneously, discuss the various alternative notions of key events we found in the studies analysed (Section 2). Next, we discuss the studies we found most important for this review of existing work, explaining the theoretical framework we suggest for the further development of this approach (Section 3). Then we critically review the future challenges facing the mobility biographies approach and, in particular, claim that the key events concept requires specification and methodological improvement, indicating further research gaps (Section 4). We end with some conclusions reflecting on the contribution of our framework to future research (Section 5).

2. Theoretical framework: the mobility biographies

In mobility research, the life course approach was originally introduced to explain long-term mobility decisions, such as residential relocation and migration (e.g. Mulder and Wagner, 1993; see Mortimer and Shanahan, 2003 for an overview). Later, short-term mobility decisions, such as travel mode decisions, were also considered using the life-span perspective (Scheiner and Holz-Rau, 2013a). The mobility biographies approach was developed to investigate travel behaviour stability and change over time by acknowledging the importance of routines. The concept posits the existence of key events in different life course trajectories that are relevant for mobility behaviour. Key events may influence and change travel behaviour to an important degree, and are followed by a period of relative stability until a new, relevant event occurs (Lanzendorf, 2003). Various aspects can impact on mobility behaviour such as trip frequency, covered distances, activity spaces and mode use, as well as mobility-related long-term decisions (like residential relocation, the purchase of a car, bicycle or season ticket) (Scheiner, 2007).

Although several studies based on the mobility biographies approach have been published, to our knowledge only two, Lanzendorf (2003) and Scheiner (2007), consider key events and their effects on mobility behaviour in a broader theoretical framework. Lanzendorf (2003) developed his framework based on the life-style concept by Salomon (1983) and distinguishes between three domains of individual longitudinal trajectories: (i) the life-style domain, (ii) the accessibility domain and (iii) the mobility domain. The life-style domain combines events in the context of demography, household composition, profession and leisure on an individual level. Events include characteristics such as changes

in household composition or the birth of a child. The professional domain includes key events such as beginning, ending or changing a job. Children's activities, hobbies or other spare-time activities form the dimension of leisure. Lanzendorf (2003) argues that changes in the life-style domain often lead to consequences in the accessibility domain. The birth of a child might make it necessary to move to a larger apartment. As a consequence, residential location and distances to places of daily activities (e.g. job, recreation) change. Furthermore, this may impact on the availability and choice of travel mode as a consequence of changed needs and conditions. This reflects the domain of mobility, which refers to long-term decisions such as a car purchase or subscribing to a season ticket for public transport (PT). External factors in the spatial environment, such as road closures (Fuji et al., 2001) or the levying of a toll (Eliasson, 2014), are other examples of influences on the accessibility of locations. Changes in the domains can be a result of one another and are thus not hierarchical.

Scheiner (2007) divides mobility biographies and key events, which he postulates to be relevant in the context of mobility, slightly differently from Lanzendorf. He places them into three life domains: (i) events that belong to the household and family biography such as leaving home, the birth of a child, divorce and changes in household size; (ii) the employment biography comprising completion of training, changing of jobs, changes in income and retirement; (iii) the residential biography with residential relocations and other changes in the environment. Scheiner also recognises interrelations between the domains, but does not elaborate on them theoretically.

The interdisciplinary potential of the mobility biographies approach should be noted here. Drawing and relying on findings from sociology, psychology and geography, it allows for an integrated assessment of spatial contexts and accessibility, interacting with social, individual and subjective factors to analyse and understand the evolution of travel behaviour change over time. Thus, it offers the opportunity to improve understanding of the various factors affecting travel behaviour change, and, ultimately, to design efficient and well-accepted policy intervention instruments.

In the mobility biographies approach triggers of behavioural change are called key events. However, in other publications these events are named and defined differently. Most common in the field of travel behaviour research are the terms "key event" (Lanzendorf, 2003, 2010; Scheiner, 2007; van der Waerden et al., 2003), (mode-related) "life (course) event" (De Groot et al., 2011; Klöckner, 2005; Schäfer et al., 2012), "disruptive event" (Marsden and Docherty, 2013), "life-cycle event" (Sharmeen et al., 2014), "turning point" (Beige and Axhausen, 2012) or simply "event" (Beige and Axhausen, 2008). Van der Waerden et al. (2003, p. 2) define key events as "major event[s] in a personal life that will trigger a process of reconsidering current behaviour" such as reaching the legal age for a driver's license and therefore considering using the car in the future. They distinguish such events from the so-called "critical incidents", which they define as "an event that has a major impact on one's attitude such as the involvement in an accident", and which usually and contrary to a key event, occur unexpectedly. Other authors have a broader understanding of key events. Klöckner (2005), for example, defines mode-related life events as all events in one's life course that, first, have a subjective connection to mode choice, second, can be limited in terms of time or at least have a certain starting point, and, third, have outstanding importance because of their rarity or uniqueness. Describing a disruptive event as impacting on the supply of transport or the costs of its use, Marsden and Docherty (2013) locate this kind of event on an aggregated level rather than on an individual one. Thus, common to these events is that either the context changes due to events beyond individual control, or that the individual changes the context him- or herself through intentional life events.

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