In search of the ‘window of opportunity’ for car use reduction

The role of life events

Henrik Johansson Rehn

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To my parents,
Åsa & Kenth

Abstract

Daily travel by car often becomes habitual and forms part of established travel routines. Reducing overall car use has many benefits for public health and the environment at both local and global levels. The habitual nature of this behaviour has been proposed to constitute a significant psychological barrier to change, partly explaining the limited effectiveness of measures aimed at reducing car use. Strong habits imply a high degree of automaticity in decision-making, whereby behaviour is triggered by familiar cues in the external context rather than guided by deliberate processes. Life events, such as moving house or changing jobs, have therefore been suggested to open a 'window of opportunity' during which the influence of car use habits is temporarily weakened. As life events involve changes in people's otherwise stable daily contexts, the cue–response associations essential for maintaining habitual behaviours may be disrupted, paving the way for people's explicit intentions to be translated into action. Although theoretically promising, empirical evidence remains inconclusive as to whether life events can improve the effectiveness of interventions.

This thesis addresses the overarching research question of whether life events constitute a 'window of opportunity' for reducing car use. Overall, the findings from the three studies suggest that a life event in itself is insufficient to signal favourable psychological conditions for car use reduction. Instead, whether such an opportunity arises appears to depend on the specific individual and contextual conditions that coincide with the event. Based on the findings, the thesis develops an alternative theoretical account of how car use reduction may occur and suggests how measures to promote sustainable travel can be improved.

Sammanfattning

Dagliga resor med bil blir ofta vanemässiga och en del av vardagens rutiner. Samtidigt skulle en minskad bilanvändning på samhällsnivå medföra många vinster, såväl för folkhälsan som för den lokala och globala miljön. Det vanemässiga inslaget i människors bilanvändning har ansetts utgöra ett betydande psykologiskt hinder för förändring, vilket delvis kan förklara varför många åtgärder som syftat till att minska bilanvändningen haft begränsad effekt. Starka vanor innebär en hög grad av automatik i beslutsfattandet. Vanemässiga beteenden aktiveras av välbekanta "signaler" i omgivningen och inte som en följd av medvetna överväganden. Stora livshändelser, såsom att flytta eller byta arbete, har därför föreslagits öppna ett ”möjligheternas fönster” då inflytandet från vanor tillfälligt försvagas. Eftersom större livshändelser innebär förändringar i den stabila tillvaro som annars präglar människors vardag, kan associationen mellan omgivningens "signaler" och specifika beteenden rubbas, vilket gör det lättare för den som är motiverad att agera annorlunda från sina tidigare invanda mönster. Trots att denna idé är teoretiskt lovande, är det empiriska stödet för att interventioner som sammanfaller med livshändelser blir mer effektiva ännu tvetydigt.

Denna avhandling behandlar den övergripande forskningsfrågan om livshändelser utgör ett ”möjligheternas fönster” för minskad bilanvändning. Sammantaget tyder resultaten från tre studier på att en livshändelse i sig inte indikerar att människor är mer psykologiskt benägna att minska sin bilanvändning. Huruvida fördelaktiga psykologiska förutsättningar uppstår tycks i stället bero på de specifika individuella och kontextuella omständigheter som sammanfaller med livshändelsen. Med utgångspunkt i resultaten utvecklar avhandlingen en alternativ teoretisk förklaring till minskad bilanvändning. Den ger också förslag på hur åtgärder för att främja hållbart resande kan förbättras.

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APPENDED PAPERS

Paper 1: A framework of routine transitions in daily travel

Paper 2: Key events as signifiers for the 'window of opportunity' to reduce car use

Paper 3: Exploring the 'window of opportunity' for car use reduction with a configurational comparative method

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Henrik Johansson Rehn,
20/09/2026

1. Introduction

The overarching aim of this thesis is to examine whether life events constitute a 'window of opportunity' for reducing car use. It comprises three independent but interrelated studies, each addressing this question from a different angle. Beyond presenting the studies, the thesis aims to articulate their shared contribution and discuss implications for policy, theory, and future research.

At first glance, the research question may appear narrow as it rests on several concepts necessary to comprehend before assessing its importance: What is meant by a 'window of opportunity'? How should life events be defined, and why might they create openings for reducing car use? This introduction addresses these questions by outlining the theoretical perspectives applied in the thesis and the empirical foundations on which it builds. Before doing so, it motivates why the question is worth asking in the first place.

Car use has been increasing for a long time and globally, this trend is expected to continue (Sen et al., 2026). In Sweden, the most rapid growth of car ownership occurred in the 1950s and 1960s (Statistics Sweden, 2021), and similar developments occurred also in other developed countries (Goodwin & Van Dender, 2013). Since around 2008, car use per adult has seen a plateau in many high-income countries, a trend known as the peak-car phenomenon (Bastian & Börjesson, 2015; Goodwin & Van Dender, 2013). Combined with urbanisation and increasing population density, rising car access and use help explain why people's daily travel distances have grown while the time spent travelling has remained rather stable over time. This aligns with the most frequently reported motive for car use across European countries: people perceive the car as the fastest mode of transport (European Commission: Directorate-General for Mobility and Transport et al., 2022). Car users also emphasise flexibility and independence (Gardner & Abraham, 2007) although other motives, such as status signalling or identity expression, influence their mode choice as well (Steg, 2005).

While car use generates practical benefits, its negative consequences are substantial. Globally, cars and vans accounted for approximately 10 percent of energy related CO_2 emissions and more than 25% of the world's oil consumption (International Energy Agency, 2026). Tailpipe emissions and wear particles from road traffic are associated with approximately 1400 premature deaths annually in Sweden (Gustafsson et al., 2022). When traffic accidents and the contribution to physical inactivity are also included, the overall health burden associated with car use increases further (Edholm et al., 2026; Patterson et al., 2020; World Health Organization, 2023). In urban areas, car ownership and use also becomes a spatial issue, as parking occupies large areas that could be allocated to other purposes (Creutzig et al., 2020).

However, above all, the issue of reducing car use has become tightly linked to contemporary climate change mitigation efforts. Transforming the transport system is crucial for Sweden and other countries aiming to reach emission reduction targets by 2045 or 2050 (Lindholm & Selin, 2025; Sen et al., 2026). A technological shift, primarily the replacement of combustion-engine cars with electric vehicles, is the dominant strategy. However, at the current pace, this transition is insufficient as a stand-alone solution. In Western Europe, the estimated average lifespan of passenger cars is about 18 years, although it varies considerably between countries (Held et al., 2021). Despite increasing uptake, electric vehicles still account for a minority of new passenger car sales in both the European Union and the global market (Sen et al., 2026). This implies that a large share of the vehicle fleet will continue emitting carbon dioxide well into the 2040s and 2050s if current trends persist. Electric cars have substantially lower lifetime emissions than conventional cars, but current battery production raises several ethical and ecological concerns (Mehdizadeh, 2025), and the environmental benefits beyond reducing carbon dioxide emissions remain limited (Chen et al., 2024). Taken together, these arguments suggest that behavioural change is essential to a broader societal transition toward sustainability, and that reducing entrenched car dependence is a necessary part of this shift (Jaramillo et al., 2022). However, how

such behavioural transitions can be effectively brought about remains an open question.

When referring to top-down change initiated by authorities or other actors, behavioural interventions are typically categorised into hard or soft measures, reflecting a continuum from compulsory regulations to voluntary incentives (Griffiths & West, 2015). Both hard and soft measures have their strengths and weaknesses. Hard measures are typically the most effective (Xiao et al., 2022), but because car use is deeply embedded in daily life and associated with freedom, opportunity, and flexible mobility, they carry political risks due to potential public resistance (OECD, 2021; Rye et al., 2025). Soft measures, by contrast, rely on less controversial tools such as information campaigns or financial incentives, but their effectiveness is generally limited (Bratt Börjesson & Eliasson, 2025; Semenescu et al., 2020). The most accessible targets for behavioural interventions are short car trips in urban areas, typically within five kilometres, where active travel and public transport are viable alternatives. Substituting these short trips can deliver meaningful local benefits, such as reduced congestion and improved air quality, but because they represent only a small share of total car-kilometres travelled, their impact on overall transport emissions is limited (Bratt Börjesson & Eliasson, 2025). However, at the individual level, reductions in car use or perceptions that a car is no longer needed have been shown to precede subsequent reductions in car ownership (Iacobucci, 2024; Laakso, 2017). Giving up a car, or choosing to live car-free, represents a personal decision with considerable environmental impact (Ivanova et al., 2020).

Evaluations of pro-environmental soft-measure interventions have consistently shown that reducing car use is among the least responsive behavioural domains (Bergquist et al., 2023). Several explanations for this resistance have been proposed. One is that, for many people, reducing car use represents a high-cost behavioural change because few alternatives can readily replace the practical functions of the car (Bratt Börjesson & Eliasson, 2025). Substituting car trips with active travel or public transport often entails longer travel times, reduced flexibility, or greater inconvenience. This stands

in contrast to behaviours such as reducing littering, where the required effort is minimal. Another explanation concerns frequent car users' biases against other modes. Their expectations of using alternatives, such as public transport, tend to be inaccurately negative. Empirical studies show that car-oriented travellers who temporarily switched to public transport evaluated the experience more positively than they had anticipated (Forward, 2019; Pedersen et al., 2011).

While these explanations highlight why many car users may lack motivation to change, even those who express openness to altering their behaviour face challenges. Beyond concrete life circumstances, such as needing to reach destinations that are difficult to access without a car, psychological barriers can impede change. Daily travel patterns easily become habitual as repeated actions are typically carried out with little deliberateness. As a result, individuals may overlook opportunities to replace trips that are practically feasible and for which they are, in principle, motivated to change (Verplanken & Whitmarsh, 2021; Wood & Rünger, 2016).

In sum, this thesis rests on an underlying premise that, irrespective of the policy instruments employed, informed policymaking is essential for navigating towards societal goals of sustainability. A deeper understanding of the psychological mechanisms that shape decisions and behaviours related to reducing car use provides a common basis for analysing change, whether it is prompted by hard, regulatory or structural measures, soft voluntary initiatives, or a combination of both. Identifying the determinants of change and the dynamics through which change unfolds is therefore key to designing effective policies and interventions, clarifying their intended targets and the behavioural and psychological effects they are likely to produce. Reducing car use in ways that are publicly acceptable remains challenging, which motivates the search for strategies that can improve the effectiveness of such interventions. In this context, life events and their potential psychological effects on people's mindsets have attracted increasing research attention.

2. Theoretical foundations

2.1 Life events and the mobility biography approach

Car use reduction, like any form of behavioural change, is embedded in a broader life context. The mobility biography approach offers a framework for understanding this context by recognising the many dimensions that shape how people travel and how their mobility evolves over the life course (Lanzendorf, 2003; Scheiner, 2018). Its central concern is to explain how mobility patterns develop, how they are affected by life circumstances, and how they in turn influence life development (Lanzendorf, 2003). For example, a new job located farther from home than a previous one will typically increase travel time and may prompt considerations about changing travel mode. Conversely, the anticipation of longer travel times may influence someone not to apply for a job if the perceived consequences for daily life feel too difficult to manage. This perspective, which views individuals' life trajectories and their evolving travel patterns as mutually shaping processes, underscores the temporal dependency of travel behaviour, as current life and travel decisions are influenced by the choices and circumstances of the past (Rau & Scheiner, 2020b).

Within the mobility biography approach, daily travel patterns are assumed to be relatively stable over extended periods. Although temporary deviations occur, the general expectation is that people maintain a stable status quo in their everyday mobility. Understanding how this stability is maintained, and under what conditions it changes, is one of its main purposes (Rau & Scheiner, 2020b). This includes examining how mobility is shaped by major life transitions from one life stage to another, such as leaving the parental home, forming a household, or having children. It also includes the influence of historical time and societal conditions, which for instance help explain differences between generations or cohorts (Scheiner, 2018).

Life events hold a central place in the mobility biography approach. Early work that adopted a biographical perspective on mobility proposed them as key indicators of breaking points where otherwise

stable travel patterns may shift (Lanzendorf, 2003; van der Waerden et al., 2003). Life events often bring about rapid changes in everyday circumstances. Some arise from life-course progressions that eventually require more substantial adjustments, for example when a relationship develops to the point where partners move in together or decide to have a child. Others are entirely external to the individual, such as accidents, illness, or unemployment. The term life events therefore refers to a wide range of experiences, yet within the mobility biography approach they are assumed to share certain defining features (Rau & Scheiner, 2020b).

Viewing travel behaviour change as part of broader life development naturally draws on several research traditions, which makes the mobility biography approach inherently interdisciplinary. Sociological, economic, and geographical perspectives have shaped this field alongside psychology (Rau & Scheiner, 2020a). The psychological contribution is to connect high-level accounts of mobility and life trajectories with the individual decision processes through which people respond to external circumstances and events (e.g., Chatterjee et al., 2012). Psychology provides tools for understanding variability across individuals, for example why people facing similar objective conditions may still choose different modes of transport.

The work leading to this thesis began in response to calls for further theoretical development within mobility biography research, as scholars had noted that combining concepts from multiple disciplines can introduce conflicting assumptions about the nature of behaviour and change (Rau & Scheiner, 2022; Scheiner, 2018). When addressing the question of whether life events can facilitate reductions in car use, it became clear that the psychological meaning of life events required clarification. Although several psychological theories have been used within the tradition, a unifying framework linking life events, psychological variables, and behaviour has been lacking. In other words, the connection between higher-level ideas about life development and more specific relationships between external events, internal psychological states, and individual

behaviour has not been sufficiently articulated to guide empirical work.

A central problem identified by other scholars is the absence of an explicit definition of life events. The term has often been used interchangeably with expressions such as key events, turning points, and life-course events. This lack of clarity has contributed to a conflation between external events occurring in people's lives and the psychological and behavioural responses that follow (Müggenburg et al., 2015). Because evaluating the potential of life events as a 'window of opportunity' for reducing car use requires a detailed understanding of how events relate to psychological processes and reactions, distinguishing life events from their psychological and behavioural consequences became a central part of the theoretical contribution in Study 1.

2.2 Habits and the 'window of opportunity'

Life events can influence travel behaviour in several ways. From a psychological perspective, their impact can be understood as consisting of both general and specific influences. The general influence concerns the effects that arise from the change in life circumstances itself. The specific influence concerns the concrete changes that life events bring, such as altered geographical distances when relocating or a new financial situation when becoming unemployed. The general influence is the one most closely linked to the idea that life events may constitute a 'window of opportunity' for favourable behavioural change (Verplanken & Wood, 2006). Because life events disrupt the otherwise stable context of everyday life, they are assumed to interrupt daily routines in ways that are described in habit theory and research (Verplanken & Whitmarsh, 2021). The notion of a 'window of opportunity' is therefore not unique to the mobility biography approach, but it fits naturally within it because the approach has used the concept of habits to explain the routinised and stable character of daily travel behaviour (Lanzendorf, 2003; Rau & Scheiner, 2022).

Habits can be defined in several ways, but their core feature concerns automaticity and a lack of deliberation in decision-making (Gardner et al., 2012). The concept relates to that of heuristics and can be viewed as a specific form of cognitive shortcut. Habits reduce the cognitive effort required to make decisions by simplifying the decision-making process and freeing mental resources for other tasks. They develop when behaviours become associated with external cues in a stable context and when repeating the same behaviour produces sufficiently successful outcomes (Aarts et al., 1997; Verplanken et al., 1997). Over time, repetition reduces the degree of deliberation involved in the decision, which means that strong habits are characterised by strong automaticity. In this thesis, habits refer to the automated decision rather than the repeated behaviour, since repeated behaviour can still be deliberate even when performed in stable contexts (Verplanken & Aarts, 1999).

From the perspective of habit theory, the idea of a 'window of opportunity' is explained by the way life events disrupt the association between contextual cues and behaviour (Wood et al., 2005). Contextual cues include not only the physical environment but also situational cues such as sequences of actions. For example, having a child may alter morning routines, time schedules, and responsibilities. Because habitual decisions rely on external cues, the removal or alteration of these cues forces individuals into a more deliberate mode of decision-making. This disruptive effect is sometimes referred to as the habit discontinuity hypothesis, which suggests that psychological variables operating at a more conscious level gain greater influence over behaviour (Verplanken et al., 2008). In this sense, the 'window of opportunity' refers to the opportunity to influence the determinants of deliberate decisions, and downstream the target behaviour, a path to influence which are otherwise blocked by habitual processes. Life events, despite their obvious differences in kind, are expected to have similar disruptive effects on people's otherwise stable daily context, motivating investigation of their psychological and behavioural effects.

It is important to note that the temporary weakening of habits due to disrupted cue–response associations is not the same as individuals

becoming more receptive to psychological interventions aimed at altering the determinants of deliberate decisions (Thronicker & Klinger, 2019). The possibility that life events may in fact reduce receptivity to such interventions is examined empirically in Study 2. The rationale behind this hypothesis is that life events may introduce cognitive, emotional, and practical demands, as they represent exceptional periods in life that impose extraordinary requirements. Under such circumstances, the car may be perceived as more necessary than before, because its practical utility can help meet immediate needs. This may counteract the idea of life events as a 'window of opportunity'. To address this question, it is necessary to investigate the relationship between life events and the determinants of deliberate decision-making outcomes.

2.3 Deliberate decision-making and drivers of car use reduction

In social and environmental psychology, several models address the determinants of behaviours that involve some degree of deliberation. This thesis draws on two complementary approaches developed to explain and predict such behaviours: an extended version of the Theory of Planned Behaviour and a stage-based model of change.

The Theory of Planned Behaviour (TPB) is one of the most widely applied frameworks for understanding behaviours that are, at least partly, under intentional control. The theory was formulated in its current form in the late 1980s and early 1990s and has since been used across a broad range of behavioural domains (Bosnjak et al., 2020). Its comprehensiveness has been discussed, and in research on pro-environmental behaviour it is common to extend the model with additional variables (e.g., Klöckner & Blöbaum, 2010). According to the theory, intentions are the most proximal antecedent of behaviour. Intentions reflect individuals' willingness to act and their readiness to invest effort in performing the behaviour. Stronger intentions are therefore expected to increase the likelihood of behavioural enactment (Ajzen, 1991). Although intentions require some degree of deliberation to predict future behaviour, the necessary degree of deliberateness has been discussed (Ajzen, 2011; Bamberg, Ajzen, et al., 2003), partly due to findings showing that past behaviour and

habit strength can moderate the intention–behaviour relationship (Ouellette & Wood, 1998). Strong habits tend to override weak intentions, whereas weaker habits allow intentions to guide behaviour when decisions are sufficiently deliberate (e.g., Gardner, 2009).

Intentions are shaped by attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991). In contrast to broader uses of the term attitudes, which may refer to evaluations of almost any object or idea (Albarracin & Shavitt, 2018), attitudes in the TPB concern evaluations of anticipated behavioural experiences and consequences. These evaluations include both affective and cognitive components, such as how one expects to feel when performing a behaviour and the perceived practical advantages or disadvantages associated with it (Ajzen, 2012).

Subjective norms refer to people's perceptions of social support and perceived social pressure to perform a behaviour. In the TPB, this construct ideally includes both an injunctive and a descriptive component (Ajzen, 2012). Injunctive norms capture perceived approval or disapproval from important others, such as family and friends, whereas descriptive norms reflect perceptions of how these people behave themselves. Early formulations of the TPB focused primarily on the injunctive component, but accumulating empirical evidence demonstrated that descriptive influences also play a meaningful role in shaping normative behaviour (Smith et al., 2012). As a result, the conceptualisation of subjective norms was broadened to incorporate both dimensions. This development has contributed to the increasing use of the broader term social norms in contemporary applications of the TPB (Ajzen, 2012), a convention that is followed throughout this thesis.

Perceived behavioural control consists of two dimensions: perceived ease of performing a behaviour and perceived autonomy in doing so (Ajzen, 2012). The concept was introduced when the Theory of Planned Behaviour was developed from the earlier Theory of Reasoned Action, extending the framework to account for individuals' perceptions of internal and external constraints (Madden et al., 1992). This addition broadened the theory's applicability by allowing

judgements about obstacles, such as limited alternatives to car use in rural areas or perceptions of unreliable public transport, to influence the formation of intentions. Perceived behavioural control is assumed to affect both intentions and the relationship between intentions and behaviour, and is therefore often modelled as a moderator in empirical research (see Figure 1). Measures of perceived behavioural control are expected to serve as a reasonable proxy for actual control, which, together with the degree of deliberateness, defines the contextual boundaries for when the TPB is applicable (Ajzen, 1991).

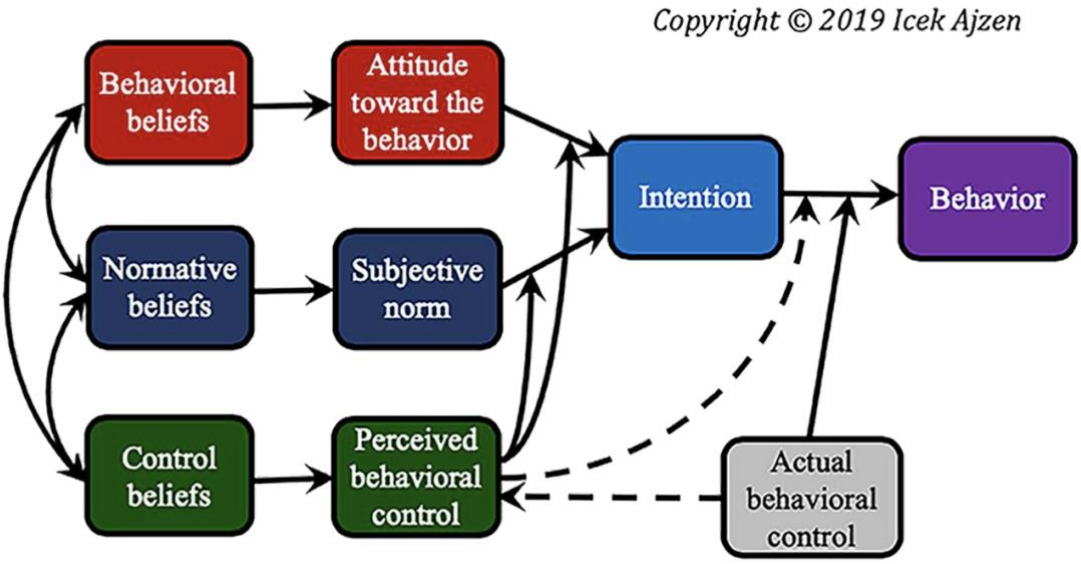

Figure 1. *Theory of planned behavior with background factors, by I. Ajzen, 2019, (https://people.umass.edu/aizen/tpb.background.html). Copyright by the author. Used with permission.*

In this thesis, attitudes, social norms, and perceived behavioural control are measured through direct overall evaluations. Within the TPB, these global evaluations are assumed to rest on underlying behavioural, normative, and control beliefs. Importantly, the theory holds that only salient beliefs, those that are readily accessible in mind, shape these evaluations, rather than an exhaustive or systematically deliberated set of considerations. These accessible thoughts and feelings, and the subjective importance attached to them, determine attitudes, social norms, and perceived behavioural

control (Ajzen, 1991). A key implication is that individuals who report similar overall evaluations may base them on qualitatively different belief structures. For example, positive attitudes toward reducing car use may reflect anticipated economic savings for some individuals, while for others they may stem from expectations of comfort, convenience, or health benefits. Because the TPB aggregates these lower-order beliefs into higher-order constructs, it remains largely agnostic about the specific external influences that make certain beliefs salient. The theory does not specify how contextual factors shape psychological determinants; rather, it predicts what to expect if these determinants are affected.

Although the Theory of Planned Behaviour is typically presented as a model in which attitudes, social norms, and perceived behavioural control predict intentions and behaviour (see Figure 1), the theory also acknowledges that behaviour feeds back into these determinants. Past experiences shape the beliefs that become salient in future decisions, meaning that behavioural performance can gradually modify attitudes, perceived norms, and perceptions of control (Ajzen, 2020). The extended version of the TPB used in this thesis includes personal norms as an additional determinant of intentions. For behaviours perceived as pro-environmental, moral considerations often play an important role (Nordlund & Garvill, 2002). Personal norms originate from Norm Activation Theory (Schwartz, 1977) and capture individuals' perceived moral obligation to act. They are assumed to be activated when people believe that a behaviour has consequences for others and when they ascribe responsibility to themselves for these consequences. Personal norms are related to injunctive norms, as moral expectations are partly internalised from social influences, and they are also linked to individuals' core values—enduring, abstract guiding principles that shape what people consider morally important (Stern et al., 1999).

Reducing car use involves abstaining from a behaviour and replacing it with alternatives such as cycling, public transport, or teleworking. It therefore shares features with other forms of behavioural change, such as quitting smoking or increasing physical activity. Reasoned action theories, used here to refer to intention-focused approaches

including extensions of the TPB, were developed to explain behaviour rather than behavioural change per se. In contrast, stage-based models, such as the one applied in Studies 1 and 2, are explicitly designed to describe how behavioural change unfolds over time. We used a modification of Bamberg's Self-Regulated Behaviour Change model (Bamberg, 2007, 2013), previously applied in work by Olsson and Friman with colleagues (Friman et al., 2019; Olsson et al., 2018). Although stage-based models differ in detail, they typically share several core assumptions. First, behavioural change is conceptualised as a progression through qualitatively distinct motivational stages. Second, motivation is expected to fluctuate, and individuals may move both forward and backward between stages. Third, interventions are assumed to be more effective when tailored to the motivational stage an individual currently occupies (Keller et al., 2019; Klöckner, 2014; Prochaska et al., 1988).

The model used in this thesis consists of five stages. In the Predecisional Denial stage, individuals are satisfied with their current car use and see no reason to reduce it. In the Predecisional Inhibition stage, individuals express a desire to reduce their car use but consider it impossible. The Preactional stage includes those who aim to reduce their car use but have not yet specified when or how. In the Actional stage, individuals know which trips they intend to replace but have not yet begun. The final, Postactional stage includes those who have started to reduce their car use and intend to continue.

The Self-Regulated Behaviour Change model is related to reasoned action theories in that it draws on similar psychological determinants of intention and behaviour to formulate hypotheses about what enables transitions between stages (Bamberg, 2013). Although the two approaches are interlinked, they differ in several important respects. Stage-based models conceptualise motivation for behavioural change as a set of qualitatively distinct stages, whereas reasoned-action approaches treat motivational factors as quantitative variables that vary in degree rather than in kind. How to define stages, justify their distinctiveness, and determine the appropriate number of stages are recurring discussions in the literature on stage-based models (Keller et al., 2019). One of the earliest and most

influential examples, the Transtheoretical Model of Change (Prochaska & Velicer, 1997; Prochaska et al., 1988) developed in health psychology, has been criticised for dividing stages in ways that appear arbitrary; for instance, by incorporating specific timeframes for when individuals intend to act (Brug et al., 2005; West, 2005).

Bamberg's Self-Regulated Behaviour Change model was developed to address these limitations. Its structure is grounded in conceptual distinctions between goal intentions, behavioural intentions, and implementation intentions, as outlined in the Model of Action Phases (Gollwitzer, 1990). These distinctions define the transition points between stages. Goal intentions reflect recognising that a behavioural change is desirable and committing to pursuing it. Behavioural intentions concern choosing among several possible ways of realising the goal. Implementation intentions involve formulating a concrete plan specifying how and when the behaviour will be changed. For example, an individual may form a goal intention to reduce car use, a behavioural intention to replace commuting by car with cycling during the summer, and an implementation intention to begin cycling next week if the weather permits. Progression through the stages therefore reflects completing the stage-specific tasks associated with these different forms of intention.

Critics of stage-based models have argued that their added value is limited because stage classifications often correlate considerably with measures of intentions, thereby reducing the practical distinction between stages (Armitage & Arden, 2002). Nevertheless, empirical studies have supported both the structure and several assumptions of the Self-Regulated Behaviour Change model (Keller et al., 2019; Klöckner, 2014). Changes in the types of intentions specified by the model have been observed to precede transitions between stages, and individuals typically move one stage upward or downward, consistent with the assumption that the model captures temporal sequences in a behavioural change process. Evidence also suggests that stage transitions require distinct psychological shifts (Bamberg, 2013; Keller et al., 2019). Feelings of moral obligation and anticipated positive emotions from changing behaviour have been linked to the formation of goal intentions, whereas practical knowledge and

concrete planning facilitate implementation intentions. These findings support the model's claim that interventions may be more effective when tailored to individuals' current stage, a strategy that has received empirical support, although further research is warranted (Keller et al., 2019). Scholars have also argued that stage-based models are valuable for capturing subtler effects of interventions that are overlooked when outcomes are assessed only in terms of short-term behaviour shifts. By recognising motivational changes and stage transitions, these models highlight how interventions may exert delayed or indirect influences on behaviour change, effects that remain invisible when evaluations are restricted to dichotomous measures of whether change has occurred or not (Lowe et al., 2026).

Taken together, reasoned-action theories and the Self-Regulated Behaviour Change model offer complementary perspectives for investigating motivation and behavioural change. Concepts from the Theory of Planned Behaviour and the Norm-Activation Model have been used to support and examine the structure of the Self-Regulated Behaviour Change model, and combining the two types of approaches provides a productive way to integrate different theoretical perspectives when analysing the psychological processes underlying reductions in car use.

2.4 Empirical support for the 'window of opportunity'

The idea that life events may function as a 'window of opportunity' for reducing car use has been influential in both transport research and environmental psychology. It has motivated a series of studies examining whether such events create favourable conditions for adopting more sustainable travel patterns (e.g., Verplanken et al., 2008; Walker et al., 2014; Whittle et al., 2022). The central premise is that the success of behaviour-change efforts depends not only on what strategies people use, but also on when these strategies are applied (Verplanken & Whitmarsh, 2021; Verplanken & Wood, 2006). Correspondingly, the effectiveness of interventions may vary depending on people's momentary receptiveness to change. Life events have been proposed as periods during which this receptiveness

could be elevated, based on the assumption that they often involve contextual changes that disrupt established routines and require adjustments in daily practices (Rau & Scheiner, 2022; Verplanken & Wood, 2006).

Several empirical findings support individual components of this hypothesis. Daily car use is typically habitual, as shown in basic research on habit formation and in studies using travel behaviour as an applied context for examining automaticity in everyday decisions (Aarts et al., 1997; Verplanken et al., 1997). Consistent with the mobility biography approach, travel patterns tend to be stable over extended periods, and life events have been associated with changes in these patterns (Clark et al., 2015; Oakil et al., 2014). Other studies have reported that life events can weaken habit strength when measured as automaticity (Walker et al., 2014), and that this weakening is related to the degree of contextual change (Wood et al., 2005), an observation that aligns with assumptions in habit theory. In addition, the habit discontinuity hypothesis has received support: determinants associated with deliberate decision-making, such as values and attitudes, tend to show stronger associations with behaviour when habits are temporarily disrupted (Thomas et al., 2016; Verplanken et al., 2008). Several studies have demonstrated that habits moderate the intention–behaviour relationship (Gardner, 2009; Gardner et al., 2020; Ouellette & Wood, 1998).

Although these findings support many of the individual relationships required for the idea of life events as a 'window of opportunity' to hold, the final empirical link remains uncertain. Intervention studies designed to leverage life events have produced mixed results. Some report stronger effects among individuals who recently experienced a life event. For example, in a field experiment by Thøgersen and Møller (2008), a free public transport trial was found to be effective primarily among participants who had recently moved or changed jobs (Thøgersen, 2012). Similarly, Bamberg and colleagues observed stronger impacts of a travel behaviour intervention among individuals who had recently relocated to Stuttgart compared with a control group (Bamberg, 2006; Bamberg, Rölle, et al., 2003).

However, other studies have not replicated these patterns. Some report no additional benefits of targeting individuals who recently experienced life events (Schäfer et al., 2011), and others find that willingness to participate in interventions depends on the mobility relevance of the life event. In such cases, contrary to the assumption that life events generally increase openness to behavioural change, certain events may even reduce interest in participating (Thronicker & Klinger, 2019). Overall, the number of studies with robust designs directly testing the added value of life events remains limited. Importantly, a meta-analysis by Semenescu et al. (2020) comparing interventions that explicitly targeted life events with those that did not found no evidence that life-event-based strategies were more effective.

Taken together, the literature provides support for several theoretical assumptions underlying the idea of life events as a 'window of opportunity', but the empirical evidence for their added value in applied interventions is inconsistent. This suggests that while life events may influence travel behaviour, their role as uniquely favourable moments for promoting car use reduction remains uncertain.

3. Aims and objectives

The overall aim of the thesis is to examine whether life events constitute a 'window of opportunity' for reducing car use. This aim departs from the observation that, if the theoretically promising idea of leveraging life events is to be realised, a clearer understanding is needed of how life events relate to decision-making processes and behavioural change. All three studies included in the thesis address this overarching aim, each from a distinct and more focused perspective.

Study 1 approached this aim from a theoretical standpoint. Its objective was to integrate established psychological theories and concepts into the broader mobility biography framework and to provide guidance for research that seeks to combine these perspectives. While the mobility biography approach offers a life-course perspective that highlights temporal dependencies in travel behaviour, it has lacked a clear articulation of how psychological mechanisms, beyond the recognition of habits, fit within this perspective. Clarifying the role of psychological concepts within the approach was therefore expected to strengthen its coherence and applicability in empirical research.

Study 2 built directly on Study 1 and aimed to empirically examine the effects of life events on determinants associated with deliberate decision-making. Previous research on habit disruption has supported the idea that life events may create favourable conditions for sustainable travel, yet intervention studies have provided limited evidence that combining interventions with life events increases their effectiveness. This discrepancy raised the possibility that life events may introduce previously unrecognised psychological barriers to sustainable travel, such as reduced motivation to lower car use. Study 2 therefore compared car users who had experienced a life event in the past year with those who had not. It also compared subgroups based on whether they had changed their travel routines, focusing particularly on differences in motivation to reduce car use and the factors that might explain these differences.

Study 3 aimed to evaluate the theoretical approach underpinning the idea of life events as a 'window of opportunity' for sustainable travel. More specifically, it examined the assumption that habit theory and reasoned action models can jointly explain when and why car use reductions occur. Although this assumption has received support in previous research, the evidence largely derives from group-level associations. Intervention studies attempting to utilise this theoretical combination by timing interventions to coincide with life events have had mixed success. A central concern motivating Study 3 was therefore whether patterns within individual cases were consistent with the causal relationships proposed by the theoretical account. In line with broader calls to examine the applicability of psychological theory (Steg & Vlek, 2009), the study therefore investigated whether configurations of conditions derived from the combined theoretical approach displayed empirical sufficiency for car use reduction at the individual case level.

4. Method

4.1 Design, measures, and data collection

Study 1 and Study 2 employed cross-sectional survey designs, whereas Study 3 used a panel design with repeated measures collected over two consecutive years. All studies relied on online survey data and an overview of their characteristics is provided in Table 1. Data collection was administrated by two professional polling organizations: Epinion (Study 1) and the Laboratory of Opinion Research (LORE) at the University of Gothenburg (Study 2 and Study 3). Participants were recruited from the respective organizations' established panels.

Across all three studies, the questionnaires were similar in length and typically required 6–15 minutes to complete. The surveys were deliberately kept short to reduce response burden, an important consideration for minimizing attrition in longitudinal data collection where comparisons across waves depend on retaining the same respondents. Most psychological constructs were therefore measured with one or two items. While longer scales could have improved measurement precision, they would also have increased respondent burden and the risk of missing data. Using a minimal number of items for well-established and conceptually simple constructs was judged to offer the best balance between measurement quality and maintaining sample retention across waves.

The surveys' included measures were based on established guidelines and aligned with approaches commonly used in previous research. For the Theory of Planned Behaviour variables, no standardised multi-item scales exist for attitudes, social norms, perceived behavioural control, or intentions. Instead, researchers are advised to construct behaviour-specific items tailored to the context under investigation (Ajzen, 2020), and this approach was followed here. Personal norms were measured in a similar manner, consistent with prior work (De Groot & Steg, 2009; Klöckner & Matthies, 2009).

Motivation for car use reduction was operationalised using a stage-based model of change. As no standardised multi-item

instrument for assessing stage membership had been established, the measure followed the single-item, forced-choice approach commonly used in previous applications of the model (Keller et al., 2019). Participants were asked to select the statement that best matched their current perceptions of reducing car use, with each statement corresponding to a specific stage in the model, in line with previous work (Friman et al., 2019; Olsson et al., 2018).

To report life events, participants selected the events they had experienced from a predefined list, which also included an open-ended option for reporting other events in free text. Routine changes were measured with a single item assessing the degree of change participants had experienced in their daily travel routines. When applicable, the item was adapted to ask specifically about routine changes resulting from life events, or more generally about routine changes during the past 12 months without further specification. Participants' level of car use was assessed with a single item asking how frequently they used a car for daily travel.

Habits were measured using the Self-Report Automaticity Index (SRAI), which captures the automaticity component of the broader Self-Report Habit Index (SRHI; Verplanken & Orbell, 2003). Although automaticity is a non-reflective process that might seem difficult to assess through self-report, previous research has shown that self-reported automaticity corresponds well with behavioural indicators of habit strength (Gardner et al., 2012). Measuring automaticity in daily travel was chosen over other proxies for habit, such as past behaviour, because it directly targets the habitual decision-making process, which is central to the conceptual meaning of habit in this thesis.

4.2 Ethical considerations

The studies in the thesis were conducted as part of a research project funded by the Swedish Energy Agency [Grant No. 50504–1] and approved by the Swedish Ethical Review Authority [Dnr 2021-03762]. Although such data are not reported in this thesis, ethical approval was required because the broader research project included the collection of sensitive personal data, including information related to participants' physical and mental health.

Research data have been stored on secure servers at Karlstad University, with access restricted to authorized members of the research team. In accordance with the ethical approval and Swedish regulations on research ethics and personal data protection, the underlying research data cannot be made openly available.

Participation was voluntary, with the possibility to withdraw at any time, and all respondents were informed of this before providing consent. The overall risk of harm or discomfort was judged to be low. Travel-related questions are generally non-sensitive, and while some items may have reminded participants of potentially aversive life events, the benefits of the project were considered to outweigh such minor risks.

	Aim and objective	Design	Time of data collection	Data analysis	Sample	Descriptives
Study 1	Development and exploration of theoretical framework	Cross-sectional	Fall 2021	ANOVA	N = 785 Residents in Karlstad and Stockholm regions, Sweden	Women: 49% Age 18 - 88, mean = 49 Education University ≥3 years: 44%
Study 2	Life event's effects on deliberate decision-making	Cross-sectional	Spring 2022	PLS-SEM and t-tests	N = 720 Residents in Sweden	Women: 41% Age 18-54, ≤39 years: 54% Education, University ≥3 years: 64%
Study 3	Applicability of combining habit theory and reasoned action models	Repeated measures / longitudinal	Spring 2023 and 2024	CNA	N = 149 Residents in central Swedish cities	Women: 44% Age 18-55, Mean = 38 Education, University ≥3 years: 74%

Table 1. *Overview of the included studies. Note: Abbreviations; ANOVA–Analysis of variance, PLS-SEM–Partial least squares structural equation modelling, CNA–Coincidence analysis.*

4.3 Analytical approaches

The project employed both traditional, variable-oriented statistical approaches and a case-based configurational approach. Study 1 primarily focused on theoretical development, supplemented by empirical group comparisons using Analysis of Variance (ANOVA). Study 2 also relied on group comparisons, applying t-tests to compare means and Partial Least Squares Structural Equation Modelling (PLS-SEM) to estimate and compare models explaining motivation for car use reduction. Study 3 applied Coincidence Analysis (CNA) (Baumgartner & Ambühl, 2020), a member of the configurational comparative methods (CCM) family, utilized to investigate theoretical notions about decisive combinations of psychological and contextual conditions at the individual case level.

ANOVAs and t-tests are basic statistical tools appropriate for examining mean differences between groups. Structural equation models (SEM), of which PLS-SEM is a sub-category, are more advanced techniques typically applied when relationships between multiple variables are complex, and some variables function simultaneously as exogenous and endogenous. SEM approaches are especially suitable for theory-driven modelling with psychological constructs because they incorporate measurement models of latent variables (Hair et al., 2022; Kline, 2023). This allows researchers to treat survey responses as imperfect indicators of underlying phenomena, estimate latent scores, and model relationships between constructs with improved reliability.

PLS-SEM estimates latent variables through an iterative algorithm that updates construct scores based on both their indicators (the measurement model) and their adjacent constructs (the structural model). During this process, indicators of the same construct may receive different weights, reflecting their relative contribution to maximizing explained variance in the model's endogenous variables (Henseler et al., 2012). In other words, indicators that help the model better predict key outcomes exert greater influence on the estimated latent variable scores. This weighting procedure is one reason PLS-SEM is commonly recommended for more exploratory

applications, as indicator relevance is allowed to be determined empirically (Hair et al., 2019).

CCMs are typically viewed as neither purely qualitative nor purely quantitative methods, but as approaches that combine elements of both traditions. Like qualitative approaches, CCMs require the active role of the researcher and rely on comparing cases with the aim of inferring how the interplay of multiple conditions may be sufficient for outcomes to occur. At the same time, these comparisons are carried out using algorithmic procedures grounded in Boolean algebra, which enable systematic analysis with larger samples in a manner typical of quantitative research (Ragin, 1987). The algorithms use the cases' configurations of conditions, i.e., combinations of attributes, to identify the lowest common denominator when single conditions or combinations of conditions are consistently observed to coincide with the outcome. The goal of the computation is to retain only those conditions that the data support as decisive, necessary parts of such combinations[1] (Baumgartner & Ambühl, 2020; Ragin, 1987).

A key analytical step preceding the computational analysis in CCM is calibration. Here, the researcher uses theoretical reasoning, domain expertise, and empirical considerations such as data distributions to define qualitatively distinct conditions. In CCM, conditions refer to meaningful states of variables that are either present or absent within individual cases. For example, a case either does or does not exhibit *strong* intentions or *weak* habits. Causal interpretations in CCM are based on observed set relations. A condition or combination of conditions is considered sufficient when it forms a consistent subset of the set of outcome cases (Schneider & Wagemann, 2012). In other words, when a group of cases sharing a specific single condition or conjunction of conditions consistently also exhibit the outcome, that condition or conjunction is supported in the data as sufficient for the outcome to occur.

[1] A comprehensive introduction to CCM is provided in Study 3.

Including both statistical, variable oriented approaches and a case oriented configurational method adds methodological diversity to the project. The distinct logic underpinning these approaches corresponds to complementary perspectives on how causal relationships can be understood and discovered (cf., Woodside, 2013). Importantly, no data analytical technique can itself determine causal relationships. They uncover patterns in the data, and whether causal inferences are justified depends on several criteria, such as the extent to which a study design controls for potentially confounding external influences and the strength of corresponding theoretical expectations. However, the types of causal relationships that a data analytical technique can uncover, if reflected in observed data patterns, differ between methods.

PLS-SEM and related regression based techniques aim to estimate the net effects of variables on their outcomes. They uncover potentially causal relationships at the sample level by quantifying the independent contribution of each variable to its outcome. In doing so, they typically assume that these relationships are symmetric and consistent, such as expressed in terms of how much an increase in variable X corresponds to an increase in variable Y (Rasoolimanesh et al., 2021; Woodside, 2013). In contrast, CCMs are designed to uncover causal complexity (Misangyi et al., 2017). This includes causal conjunction, referring to outcomes shaped by multiple conditions acting together, and equifinality, referring to different causal paths leading to the same outcome.

Together, the two methodological approaches are suitable for answering different aspects of the thesis's overarching research question and contribute distinct insights. The variable oriented methods employed in Studies 1 and 2 have, like statistical methods in general, their strength in their essential purpose of drawing inferences about populations from observed relationships in a sample and quantifying the uncertainty of these inferences. Considering that the research question is motivated by the negative consequences of car use on a societal scale and the need for more effective interventions, the utility of statistical insights is easily motivated. However, variables reduce individual cases to positions along a

continuum, whereas real individuals possess all their attributes simultaneously and respond to external influences in context. As recognised in the CCM literature, significant relationships observed at the sample level may not apply uniformly across all cases, and factors that do not correlate at the sample level may still be causally relevant when they operate only in combination with other conditions (Baumgartner, 2009). Retaining more case specific information allows CCMs to capture greater complexity in what determines outcomes. Although CCMs do not provide the depth of qualitative interviews, this limitation is offset by their ability to conduct systematic comparisons across a relatively large number of cases, increasing the generalisability of findings (Ragin, 1987).

The notion of life events as a 'window of opportunity' builds on theoretical assumptions that multiple conditions must combine for change to occur and that different causal paths may lead to similar outcomes. In the Theory of Planned Behaviour, intentions guide behaviour when decision processes are sufficiently deliberate and when perceived and actual behavioural control are present. Lacking any of these conditions may be enough to prevent change. Life events, however, can suppress habitual responses and create alternative pathways to reducing car use. In this context, CCMs complement variable oriented approaches by examining how theoretically important variables unfold as combinations of conditions that may reveal causal mechanisms more closely aligned with individual level processes.

5. Results

5.1 Summary of Study 1

Study 1 developed a theoretical framework clarifying the function and position of psychological concepts and theories within the mobility biography approach. The work began by distinguishing two terms that are often conflated in existing literature (Müggenburg et al., 2015). Life events were defined as significant and unusual events taking place in individual's private life or professional career but lacking a direct connection with travel, while key events denote any triggers of travel behaviour change. These definitions are used consistently throughout the thesis.

Due to the mobility biography literature explaining periods of stability to daily travel behaviours using the habit concept, the paper argues for improved theoretical stringency within the approach if periods of changes to daily travel behaviours also build on the habit concept. By introducing the Framework of RoUtIne Transitions in daily travel (FRUIT), life events-evoked changes in daily travel patterns are explained through a process of two phases, based on habit disruption and formation. Routine transitions can hence be described as a process bridging two periods of the life course holding habitually driven stability in daily travel patterns.

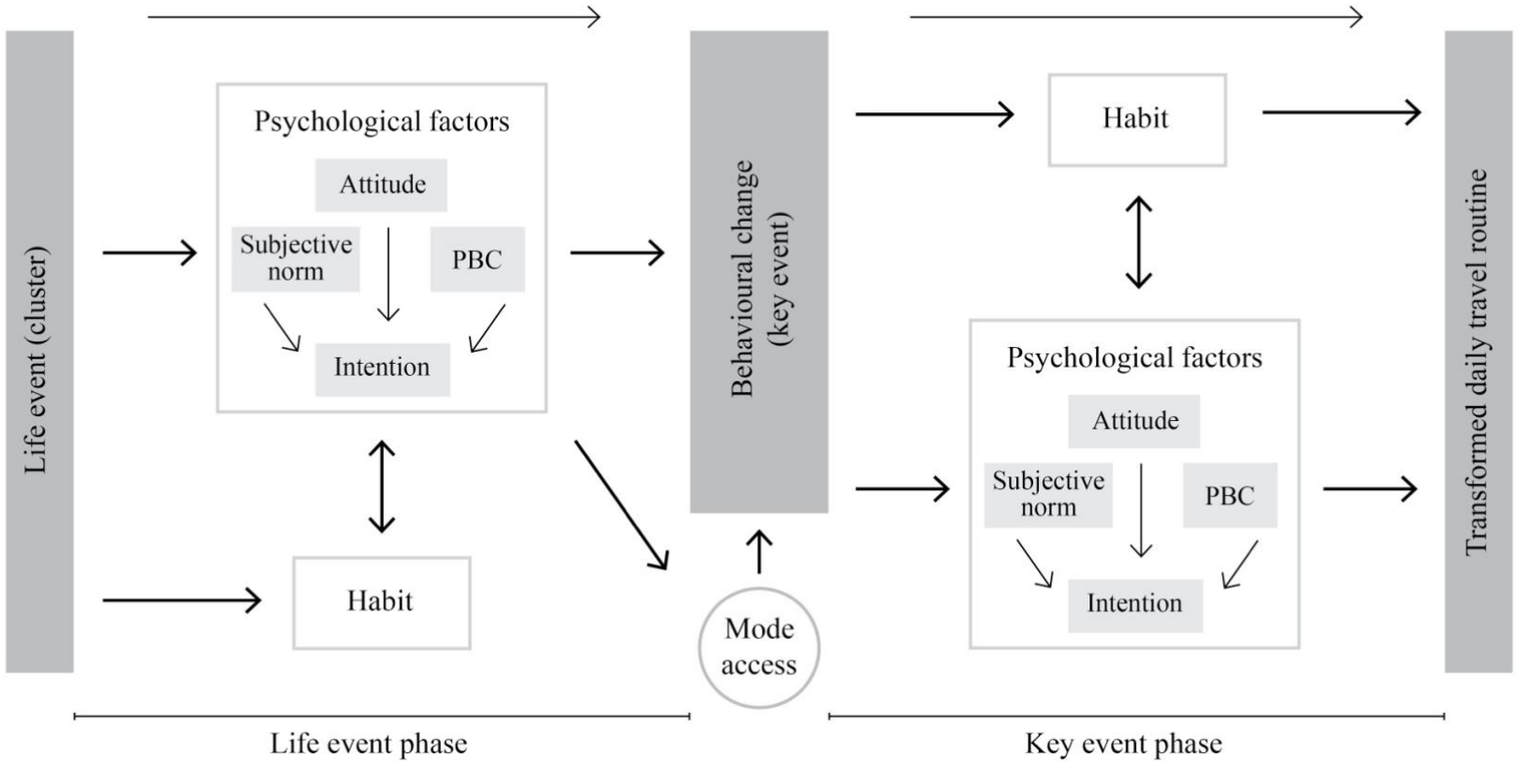

Figure 2. *The Framework of RoUtIne Transitions in daily travel (FRUIT). Note: Reproduced from "A framework of routine transitions in daily travel" by H. Johansson Rehn, L. E. Olsson, and M. Friman, 2024, Transportation Research Part A: Policy and Practice, 179, Article 103891 (http://doi.org/10.1016/j.tra.2023.103891). Copyright 2023 by the authors. Licensed under CC BY 4.0 (https://creativecommons.org/licenses/by/4.0/).*

In the first phase called the “life event phase”, a life event has triggered a weakening of the travel habits which implies that the behaviour is under increased control of deliberate decision-making. When using the framework, a researcher can include any psychological concept or model associated with deliberate decision-making. In Figure 2, this is illustrated with the concepts included in the Theory of Planned Behaviour (Ajzen, 1991). As the name of the life event phase indicates, the life event has not (yet) affected travel behaviour. If the individual makes changes to their travel behaviour due to the life event, the second “key event phase” begins. When the new behaviour is repeated, the process of habit formation applies, and simultaneously with habit strengthening, the importance of deliberate decision-making declines. The label of “key event phase” denotes that the life event also turned into a key event and thus, life development can be considered to cause a ripple effect which affected also the individual's mobility.

To illustrate how the basic structure of FRUIT can be applied in empirical research, we analysed differences between four groups of car users using ANOVA: those who had not experienced life events, those whose life events did not alter travel routines, those whose life events led to minor changes, and those reporting major changes in travel routines. Significant differences emerged across these groups, with post-hoc analyses showing the clearest contrasts between participants without life event experiences and those reporting most substantial changes to their travel routines. The latter group scored higher on attitudes, norms, and perceived behavioural control related to reducing their car use. These findings suggest that individuals who had extensively altered their travel routines following life events occupy a more favourable position for interventions aimed at promoting sustainable travel.

5.2 Summary of Study 2

This study examined (1) differences in the factors explaining motivation to reduce car use and (2) differences in car use levels, habit strength, and motivational variables concerning car use reduction. Three sets of comparisons were conducted. First, participants who had experienced life events during the past year were compared with a reference group with participants who had not. Informed by FRUIT, the life event group was then divided into those who reported their life events did not alter their travel routines (non-key events) and those reporting their life events did (key events). In parallel, participants without life event experiences were divided into those who had reported changes in their travel routines during the past year and those who had not. This procedure served as a control condition, allowing assessment of whether observed differences were specific to life event experiences or related to routine changes more generally.

The results showed no statistically significant differences between the life event group and the reference group in levels of habits, car use, or motivational variables. Similarly, the PLS-SEM models revealed comparable structures across groups, with attitudes, personal norms, and habit strength showing direct effects on motivation to reduce car use. In contrast, clear differences emerged when comparing participants who reported their life events had become key events with those whose life events had not. The former group reported stronger motivation to reduce car use and weaker habits. PLS-SEM analyses indicated that routine changes were associated with weaker habits and, indirectly, with stronger motivation. Comparable patterns were observed among participants without life events: those who had altered their routines also showed weaker habits and stronger motivation.

Taken together, the findings suggest that favourable psychological preconditions for reducing car use are linked primarily to changes in travel routines, especially when these changes are extensive. This indicates that the ‘window of opportunity’ is more closely associated

with changes in routines and the key events that trigger them than with life events per se.

5.3 Summary of Study 3

Study 3 examined whether a combined approach based on reasoned action models and habit theory can account for reductions in car use, while explicitly addressing the boundary condition of this approach: that people possess actual control over their behaviour. To ensure this condition was met, the study focused on individuals living in larger Swedish city centres, where realistic alternatives to car use are available. Car use reduction, and stability in psychological variables, was assessed by comparisons of measures between the two years of data collection.

A central feature of the study was the use of Coincidence Analysis (CNA), which requires translating continuous psychological measures into clear categories before identifying patterns across cases. This process, known as calibration, involved setting meaningful thresholds that distinguished and defined, for example, strong intentions from *very* strong intentions. These thresholds were based on the scale structure and theoretical reasoning, and they determined how each participant was classified in the analysis. Calibration is important because it shapes how cases are compared and how combinations of conditions are identified as potential explanations for car use reduction and intentions.

The findings suggest that strong attitudes alone were sufficient for strong intentions, corresponding to mean scores of 5 or above on a 7-point scale. However, configurations sufficient for very strong intentions, corresponding to mean scores of 6 or above, involved multiple motivational determinants. Thus, strong intentions for car use reduction may have relatively simple causal explanations, whereas very strong intentions appear to have more complex explanations involving the joint presence of several factors. Car use reduction outcomes were partly explained by the combined framework of habit theory and reasoned action models, but the identified sufficient configurations covered only a minority of car use

reduction cases. Specifically, the findings support two configurations as sufficient for car use reduction: very strong and stable intentions combined with weak habits, and very strong and stable intentions combined with very high and stable perceived behavioural control and life event experiences.

Inspection of the individual cases revealed that many participants who reduced their car use did not hold strong or very strong intentions one year earlier. This indicates that while the combined theoretical approach may explain a subset of cases, most reductions in car use are better accounted for by other perspectives, such as spontaneous adaptations to external influences.

6. Discussion

Life events as a potential 'window of opportunity' for car use reduction remain a compelling and theoretically grounded idea. The combined empirical contributions of the three studies lend support to this notion while also adding important nuances to the existing literature and theoretical reasoning. In summary, the findings did not support treating the occurrence of a life event itself as indicating the presence of a 'window of opportunity'; however, when life events lead people to alter their travel routines or coincide with specific psychological conditions, they may indeed signal such opportunities. This discussion synthesises and further elaborates on the insights and theoretical reasoning developed in the three individual papers.

6.1 Empirical synthesis and implications for policy and practice

Revisiting the premises of this thesis, investigating whether life events constitute a 'window of opportunity' for car use reduction was argued to inform the development of more effective and feasible interventions and policies to tackle today's extensive car use. The idea of life events as a 'window of opportunity' is appealing from a practical perspective, as life events have been thought to function as observable signifiers of favourable but unobservable mental conditions that are otherwise difficult to identify. Evidence that people are increasingly open-minded or motivated to travel more sustainably would motivate the design of policies and interventions aimed at leveraging such psychological momentum. However, the joint contribution of the three studies does not support treating life events as uniform signals of opportunities for car use reduction. Rather, the studies indicate that the association between life events and a 'window of opportunity' depends on more specific contextual and individual circumstances that may, but do not necessarily, co-occur with life events. The practical significance of life events as a category informing policy and practice is therefore questionable, although life events may, for specific individuals, bring circumstances that facilitate car use reduction.

The main practical implication of this thesis is a suggestion for a strategic shift from viewing a 'window of opportunity' as a means of

breaking and changing car use habits to recognising the opportunity to *consolidate and enhance* newly adopted alternatives to the car. This argument finds support in all three studies included in the thesis and has appeared in various forms in each of them, alongside study-specific recommendations. It is important to note that the thesis has not empirically tested which strategic perspective is the most effective or efficient, for example by comparing intervention effects based on the two approaches. Rather, the need for a strategic shift is inferred from the empirical findings, and more research is necessary to scrutinise its applicability.

The suggested shift in perspective on what a 'window of opportunity' might be should be considered in light of the current mixed empirical evidence for treating life events as utilisable moments for promoting sustainable travel, as examined in Section 2.4. Alongside contributing new insights into why the current evidence does not consistently support an additional effect of timing interventions to coincide with life events, the thesis also provides guidance on how a strategy aimed at breaking and changing car use behaviour could be improved. Hence, the rationale for shifting the view of a 'window of opportunity' towards an increased focus on maintaining and stimulating the continued use of modes other than the car does not rule out that measures aimed at breaking and changing car use may be warranted in some contexts.

The argument for a strategic shift towards focusing less on changing car users' mode choices and more on enhancing the use of other, more sustainable modes is predominantly inferred from two empirical results. First, changes in travel routines, particularly extensive changes, were associated with psychological conditions that may facilitate car use reduction in Studies 1 and 2. In contrast, Study 2 showed that participants who had experienced life events were neither more motivated to reduce their car use nor did they reflect more on their daily travel decisions (i.e., display weaker habits) compared with participants who did not report life events. A strength of considering Studies 1 and 2 together is that an association between routine changes and motivational factors related to car use reduction was observed in two different samples. With the reservation that this

may be a spurious finding caused by an unknown common-method effect, such as one related to how the surveys were designed, its occurrence in two different samples strengthens confidence that this association truly exists in the Swedish population of car users.

These findings support an increased focus on enhancing people's experiences during periods when they adopt new behaviours; for example, when they purchase a public transport travel card for the first time, rather than focusing on breaking car users' behaviours when they experience life events. Notably, the validity of this argument is conditioned by assumptions concerning the measures of routine change used in Studies 1 and 2. The measure of routine change relied on self-report, and participants' perceived degree of routine change is assumed to correspond fairly well to actual differences in behaviour. A related issue is that the measure did not capture which behaviours participants had altered in their travel routines, although it is reasonable to assume that some participants adopted or increased their use of modes such as cycling or public transport. Hence, stimulating the continued or increased use of alternatives to car use may help prevent desirable behavioural changes that benefit individual health and the environment from being merely temporary.

In Studies 1 and 2, the associations between routine change and motivational factors were generally weak, although not negligible, as indicated by the effect sizes. Nevertheless, those who had altered their travel routines more extensively tended to have more favourable psychological preconditions for reducing their car use. The practical relevance of this general tendency is therefore likely to be greatest when measures are implemented on a large scale. The growing availability of mobility services alongside public transport, including shared mobility and micromobility services (Coenegrachts et al., 2024), may make it easier to identify people at potential moments of routine change, for example when they register as new users. Future research should examine the potential benefits of focusing on this group, for instance by enhancing users' early experiences or providing targeted introductory offers. It should also investigate whether and

under what conditions the use of these services substitutes for car journeys and leads to sustained reductions in car use.

The second empirical observation supporting the strategic shift is based on the findings of Study 3. The idea of life events as a 'window of opportunity' is closely tied to a theoretical understanding of the dynamic between deliberate and automatic decision-making, in which habitual behaviours are preceded by automatic decisions that may impede people from acting in accordance with their explicit motivations and intentions. Study 3 found that car use reductions occurred relatively infrequently and that, when they did occur, intention-focused explanations of these reductions were, at best, supported for only a minority of cases. Prioritising strategies aimed at reinforcing observable behaviours may therefore be more promising. Car use reductions appear most frequently to arise through mechanisms not explained by the current psychological framework intended to guide intervention design, making reliance on that framework an uncertain strategy. This line of reasoning is especially relevant when soft measures requiring a significant degree of voluntariness are considered. It is also conditioned by the operationalisation of car use reduction in Study 3, which was based on self-reported car use over a one-year period. Hence, the theoretical approach to car use reduction investigated in Study 3 may be more accurate when short-term changes are concerned.

In sum, the presented implications for policy and practice are based on conclusions drawn closely from the empirical analyses. The suggestion of a shift in perspective, away from assuming life events to be favourable moments for breaking habitual car use and towards encouraging the continuation of alternatives, is derived from (1) the studies' lack of evidence that life events are sufficient to provide such opportunities and (2) the observation that car use reductions occurred relatively independently of the psychological concepts and theoretical underpinnings on which the notion of life events as a 'window of opportunity' relies.

A noteworthy circumstance that may qualify the practical implications presented is the historical timing of data collection in

Study 2. Swedish society was undergoing a transformative period of adjustment following the lifting of pandemic restrictions. This may have meant that people in 'stable' life phases, who had not experienced life events, were unusually unstable and were affected, for instance, by changes to work-from-home policies. If routine changes affect habit strength and motivation, it is possible that future comparisons between people who have experienced life events and counterparts undergoing more stable life phases will reveal greater differences in psychological variables between these groups. Although the practical utilisation of any such differences would still require solid theoretical reasoning, observing them would place life events in a somewhat more positive light regarding their usefulness as a category for stratifying target groups for interventions.

6.2 Theoretical implications: Mechanisms underlying the 'window of opportunity'

We now leave the inferences most closely connected to the practical use of the studies' empirical observations and focus instead on the theoretical implications of the results for the current understanding of life events as a 'window of opportunity' for car use reduction. The aim of this section is to discuss possible explanations for *why* the thesis's empirical findings did not support a link between life events themselves and psychological prerequisites favourable to car use reduction, and to develop an alternative theoretical account that aligns with the thesis's findings.

To recall, the recurring argument for why life events are promising moments for influencing behaviour is their assumed disruptive effect on habits, which have been identified as an otherwise potent psychological barrier to interventions that rely on people forming intentions to perform alternative actions. The traditional emphasis on removing contextual cues was developed partly in response to the observed ineffectiveness of informational campaigns and people's failure to maintain positive lifestyle changes over time (Verplanken & Wood, 2006). Understanding habit formation as people 'outsourcing' parts of their decision-making to external cues helped explain why they return to old behavioural patterns despite being motivated to act differently. Life events typically bring changes to people's daily

contexts, which, in turn, increase the likelihood that external cues necessary for habitual responses to persist are removed. This removal forces people into a more deliberative mindset regarding how to achieve specific goals, such as how to travel to fulfil daily needs and wants, because these decisions can no longer rely on previous cue–response associations.

The thesis's overall findings raise questions about the applicability of this line of reasoning. One interpretation is that removing habit-dependent contextual cues is a less powerful mechanism for disrupting habits than other influences. Compared with people who do not experience life events, those who move house, change jobs, have a child, or experience one or several similar events should reasonably also experience greater contextual disruption in their lives. However, Study 2 did not show a significant difference between these two groups in habit strength, operationalised as the degree of automaticity in daily travel decision-making. In contrast to Study 1, the inclusion of a reference group in Study 2 weakens the possibility that reported routine changes reflect differences in the degree of contextual disruption, which could otherwise have explained the results when only the life-event group was observed. Hence, the similarity between the life-event and non-life-event groups regarding habit strength in Study 2 is difficult to reconcile with the assumption that the removal of contextual cues is the driving mechanism of habit disruption.

The observed association between the extent of travel routine changes and weaker habits may reflect a habit-disruptive mechanism that is more significant than the removal of contextual cues. In contrast to the practical significance of this relationship, which is independent of its causal or non-causal nature as long as routine changes consistently signal psychologically favourable conditions, its theoretical implications require a discussion of potential causes. Due to Study 2's cross-sectional design and the limitations of controlling for confounding factors in observational studies, causal inferences cannot be drawn with certainty. It is, for instance, possible that people who are more multimodal in their daily travel do not form habits as strong as those of monomodal travellers and perceive their travel routines as

having changed more extensively. However, a direct causal interpretation of the association would be rather self-explanatory: changed routines require participants to have altered some of their travel behaviours, and new behaviours require repetition over time before maximum habit strength is established.

Taken together, these findings suggest that actual alterations in people's travel behaviours may be more important than the occurrence of a life event in determining whether a 'window of opportunity' arises through increased deliberation over daily travel decisions. However, this interpretation raises a further question. If the habitual nature of car use is assumed to be an important barrier to change, the removal of the contextual cues that sustain the habit provides a possible explanation for why established behaviour changes. If habit disruption is instead attributed to an alteration in the travel routine itself, however, the cause of that initial alteration remains unexplained. The spontaneous pathway proposed in Study 3 offers one possible response to this explanatory gap.

In this context, *spontaneous* does not imply that behavioural changes are random, entirely unintentional, or occur without cognitive processing. Rather, it refers to car use reductions that are not preceded by a strong and stable general intention to reduce car use but emerge as context-responsive adaptations to changes in people's practical or social circumstances. Such adaptations may still involve situation-specific intentions to act differently. However, these intentions arise as part of the response to changed circumstances rather than from a previously established motivation to reduce car use. The spontaneous pathway may therefore be understood more precisely as a context-responsive pathway in which external circumstances hold greater explanatory importance than prior motivation to change.

More recent research syntheses and theoretical discussions concerning the role of habits in maintaining behaviour change provide one possible mechanism for such adaptations. Gardner et al. (2024) argue that habits may control behaviour when intentions towards the same behaviour are weak, but that strong and stable

counter-habitual intentions may override habitual control when accompanied by sufficient self-control. An important distinction is therefore that a weak intention to perform a habitual behaviour is not equivalent to a strong intention to perform a competing behaviour. Empirical studies examining situations in which intentions and habits genuinely conflict remain relatively scarce, and findings across observational and laboratory settings have been mixed (Gardner et al., 2020; Gardner et al., 2024). Nevertheless, this research indicates that removing contextual cues is not the only mechanism through which habitual responses may cease to control behaviour.

Overriding habits through counter-habitual intentions provides a potential mechanism for understanding changes in travel routines when the familiar cues associated with car use remain largely intact. As recognised in the mobility biography literature, people's mobility decisions stand in a reciprocal but unequal relationship to developments in their personal lives (Lanzendorf, 2003). Car use may increase or decrease as a side effect of pursuing other goals rather than as the result of an explicit ambition to change travel behaviour. Someone may, for instance, replace commuting by car with cycling despite preferring to drive because their partner has a greater need for the household car. Conversely, someone may shift from public transport to the car, not because the train has been cancelled or is perceived as unsatisfactory, but because a ten-minute timetable adjustment creates a more stressful morning. In such situations, many of the familiar contextual cues may remain, but people's broader life circumstances have changed the feasibility or relative advantages of different travel options. Forming a counter-habitual intention may then become necessary to adapt to changed needs, wants, or expectations.

That people adjust their travel behaviour in response to specific external circumstances is recognised in the transportation literature (Larouche et al., 2020; Verplanken et al., 2018; Whitmarsh et al., 2025). Scholars have, for instance, highlighted the dependence of travel decisions on relationships with important others, including how partners organise their joint mobility needs (Scheiner & Rau, 2020), as well as the new travel opportunities that may arise for

parents as their children grow older and become increasingly independent (Doody et al., 2022; McCarthy et al., 2021). These types of changes may be smaller and more gradual than conventional life events but still alter which travel behaviours are practically suitable. In contrast to the theoretical account of life events as a 'window of opportunity', where the psychological consequences of major contextual changes have been articulated, the psychological processes through which such minor changes influence travel behaviour have received less theoretical attention.

Reasoned-action approaches acknowledge that external circumstances may influence behaviour by affecting people's behavioural- and normative beliefs, perceived behavioural control, and intentions. However, they primarily specify relationships between psychological variables and between those variables and behaviour. They provide less detail about how particular changes in the external environment are appraised as they arise and rapidly reorganise everyday behaviour. Consequently, applying models such as the Theory of Planned Behaviour may identify whether a person intends to reduce their car use but may be less informative about how a change in practical circumstances produces a situation-specific behavioural response when no such intention was present beforehand.

The spontaneous pathway outlined in Study 3 was a theoretical response to this limitation. Within the proposed pathway, an external change does not necessarily remove the cues that previously triggered car use. Instead, it changes the relative feasibility, necessity, or practical advantages of the available travel options. People then adapt their behaviour in relation to other goals, potentially by forming a situation-specific counter-habitual intention or by accepting a change that they did not previously prefer. If the changed circumstances persist, this response may be repeated even in the absence of a stable general intention to reduce car use. Repetition may subsequently allow the alternative behaviour to become integrated into the person's travel routines. The proposed sequence is therefore one in which changed practical or social circumstances produce a context-specific

appraisal, which generates an adaptive behavioural response and, through repetition, potentially establishes a new routine.

This account recognises that car use reductions may occur not because people are motivated to reduce car use in the traditional sense, but because they accept the reduction, become convinced of its necessity or practical advantages, or develop motivation that is highly conditioned by a specific situation. General motivation to reduce car use may subsequently strengthen as people gain experience of the alternative behaviour, but it is not assumed to be the initial cause of the change. The pathway consequently differs from an intentional pathway in which a strong and relatively stable motivation to reduce car use precedes the behavioural change.

The distinction between the two pathways is nevertheless not absolute. In a proximal sense, even context-responsive changes may involve an intention immediately before the behaviour is performed. The spontaneous pathway is therefore not incompatible with reasoned-action theories, as an intention may still be involved. Its distinctiveness lies instead in the source, timing, and explanatory function of that intention. Within reasoned-action approaches, intention represents a motivational antecedent formed through attitudes, norms, and perceived behavioural control and is expected to predict subsequent behaviour. Within the spontaneous pathway, the relevant intention arises rapidly in response to changed practical circumstances and functions primarily as a cognitive step between those circumstances and the behavioural response. The main explanatory weight is therefore placed on the external change and the person's adaptation to it rather than on a pre-existing intention to reduce car use. Such rapidly arising intentions may also be less informative for explaining or predicting behaviour over an extended period because their short-lived and situation-specific nature makes them difficult to capture through measurements taken before or after the circumstances in which they arise.

The intentional and spontaneous pathways should not be understood as mutually exclusive explanations. The intentional pathway applies when car use reduction is preceded by strong and relatively stable

motivation and when people have sufficient control and deliberate mindset to act against habitual tendencies. In the spontaneous pathway, changes in practical or social circumstances alter the feasibility or advantages of different travel options, while motivation and intention emerge as part of the resulting adaptation. The pathways may also converge over time if an initially context-responsive change becomes more deliberately maintained or develops into a new habitual routine.

Study 3 did not directly observe the complete causal sequence proposed for the spontaneous pathway, and cases not explained by the tested configurations cannot automatically be assumed to have followed it. The pathway should therefore be understood as a theoretically derived explanation consistent with the findings rather than as a causal mechanism established within the thesis. Nevertheless, distinguishing between an intentional pathway initiated by prior motivation and a context-responsive pathway initiated by changed circumstances provides a more explicit account of how a 'window of opportunity' may arise even when a life event has not removed the contextual cues supporting habitual car use.

6.3 Looking back to look forward: Reassessing initial assumptions and future research directions

The starting point for addressing the overarching research question of this thesis included several theoretical assumptions and operational decisions that influenced how the research was conducted and how the findings could be interpreted. Such decisions were necessary to translate the broad idea of life events as a 'window of opportunity' into researchable questions. Revisiting them provides an opportunity to clarify why they were initially considered legitimate, what their consequences were, and how the combined findings may inform future theoretical and methodological developments.

Throughout the thesis, life events have predominantly been treated as a uniform category despite the evident differences between specific types of events. This decision followed from the theoretical level at which life events have generally been discussed. In both habit research and the mobility biography literature, life events are

commonly assumed to have a general capacity to disrupt established routines and initiate behavioural reconsideration. Treating life events as one category therefore did not depend on an assumption that moving house, changing jobs, and having a child produce identical practical consequences. Rather, it enabled an examination of the more general proposition that experiencing a significant change in one's personal or professional life has psychological and behavioural implications beyond the specific content of the event.

To the best of my knowledge, similarly general psychological effects associated with individual types of life events have not been theorised. Empirical studies have instead shown that specific life events are associated with increased or decreased probabilities of particular travel outcomes, such as changes in the use of different modes (Whitmarsh et al., 2025). However, these associations are also dependent on the individual and contextual circumstances accompanying the event. The effect of relocation on car use may, for instance, depend on the characteristics of the neighbourhood to which a person moves (Stolze et al., 2026), as well as whether distances to important destinations increase or decrease (Prillwitz et al., 2007). Consequently, separating life events into predefined categories would not necessarily resolve their heterogeneity. Considerable variation may remain within each category because events bearing the same label can produce very different changes in people's everyday lives.

Studying life events as a collective category was therefore motivated by a psychological hypothesis concerning their proposed general disruptive function. The findings nevertheless indicate that the occurrence of an event provides limited information unless the concrete changes associated with it are also considered. This does not make the initial categorisation irrelevant, since it enabled the general proposition to be examined. However, it suggests that future research should place greater emphasis on the particular social, spatial, temporal, and practical changes accompanying an event rather than relying primarily on the label assigned to it (cf. Scheffler et al., 2026a, 2026b).

What should be included within the definition of a life event is also not self-evident. The mobility biography approach provided guidance by directing attention towards personally significant turning points in private life and professional careers (Müggenburg et al., 2015). In this thesis, life events were defined as 'significant and unusual events taking place in an individual's private life or professional career but lacking a direct connection to travel'. This definition helped distinguish general life-course developments from changes occurring directly within the transport system. However, from a psychological perspective, other major external events could also plausibly produce the mechanisms attributed to life events. Disruptive mobility-related events, such as road closures, railway strikes, or substantial changes in infrastructure, may alter practical circumstances at least as directly as many events in people's private or professional lives. The findings therefore raise questions about whether the personal orientation of the life-event concept marks a theoretically important boundary or primarily reflects the terminology and research traditions from which the concept originates.

The distinction between life events and key events was introduced during the development of the Framework of RoUtIne Transitions in Daily Travel (FRUIT) to clarify some of the conceptual ambiguity surrounding the life-event concept. Life events were separated from key events, defined as events that trigger changes in travel behaviour. An external occurrence, such as having one's bicycle stolen, may become a key event for one person but not for another, depending on whether it results in an alteration of travel behaviour. Key events are therefore not a distinct category of external events identifiable solely from their objective characteristics. Instead, the term assigns a retrospective status to an event based on the behavioural response associated with it.

FRUIT represents a concrete theoretical contribution of the thesis and was developed in response to the lack of clarity regarding the role of psychological theories within the mobility biography approach. The framework conceptualises routine transitions as processes connecting two periods of relatively stable and habitual travel. The combined findings suggest that this theoretical contribution remains useful but

may benefit from further adjustment. In particular, the framework does not necessarily need to assign life events a unique position as the starting point of routine transitions. Other external circumstances, including minor events, may also precede alterations in travel behaviour. The distinction between conditions preceding change and processes through which new behaviours become established can therefore be retained while allowing for a broader range of events to trigger changes.

Reasoned-action models, habit theory, and stage-based models represented a well-established and theoretically justified starting point for the thesis. These approaches are commonly used in travel research to understand the psychological factors involved in decision-making and behaviour change, and their combination provided a basis for examining why life events might create favourable conditions for car use reduction. The findings, particularly those of Study 3, unexpectedly indicated their limited applicability. This pointed towards the need for theoretical approaches that give greater attention to people's context-responsive adaptations and to changes that are not preceded by strong and stable intentions. The spontaneous pathway developed in the previous section represents one possible direction for this theoretical development.

Alongside these theoretical contributions, the thesis makes a methodological contribution through the introduction and application of configurational comparative methods (CCMs), and Coincidence Analysis (CNA) in particular, to the field of environmental psychology. As noted by Borsboom et al. (2003), psychological theories typically describe how individuals function, whereas the statistical methods commonly used to test these theories identify patterns at an aggregated group level. CNA and other case-based methods applying configurational logic provide complementary tools for addressing this discrepancy. Their emphasis on the effects of combined causes and their recognition of equifinal pathways to the same outcome are two important features that can generate new insights and perspectives, while also providing useful tools for theory evaluation. To understand how psychological factors function in combination with specific life circumstances, CCMs may help reveal

context-dependent psychological mechanisms that remain masked in correlational quantitative analyses.

Looking back, the initial theoretical assumptions and operational decisions provided a coherent basis for formulating and examining the thesis's overarching research question. The findings did not support all assumptions equally, but this does not diminish their role in enabling the theoretical proposition to be scrutinised. Instead, the results clarify where the initial explanations appear applicable and where further development is needed. FRUIT provides a theoretical structure for understanding routine transitions, while the application of CCMs demonstrates a methodological approach for investigating context-sensitive combinations and alternative pathways. Together, these contributions direct future research beyond asking whether life events generally constitute a 'window of opportunity' and towards examining which changes, under which individual and contextual circumstances, initiate and sustain transitions in daily travel.

6.4 Limitations

In addition to the limitations acknowledged in the method section and those discussed in relation to specific findings, several general limitations of the project should be considered.

One concerns an assumption regarding when decision-making about daily travel takes place. The thesis approached decision-making primarily in terms of the individual psychological processes involved when people decide how to travel in daily life. However, this approach may not capture the moments at which the most consequential decisions are made. In multi-person households, a life event may substantially affect travel routines and increase awareness of travel choices, while the relevant deliberation takes place through negotiations among household members or when individuals develop broader strategies for organising their daily lives. Once such strategies have been established, day-to-day travel decisions may remain highly automatic, relying not only on habits but also on heuristics or decision rules formed through earlier reflective processes. Consequently, automaticity in daily mode choices does not necessarily indicate an absence of deliberation, as the decisive reflection may have occurred

previously or at the household rather than the individual level. This limits the extent to which the approach applied in the thesis captures decision-making across different temporal and social levels.

Several contextual limitations should also be acknowledged. The data were collected during or shortly after the COVID-19 pandemic, a period marked by substantial and atypical disruptions to daily life and travel patterns. Furthermore, all three studies were conducted in a Swedish context characterised by relatively high levels of public transport provision, cycling infrastructure, and policy attention to sustainable mobility. These features may influence both the likelihood of routine changes and the feasibility of reducing car use. Although Studies 1 and 2 included comparatively large samples, the samples were not fully representative of the general population, and highly educated individuals were overrepresented. The geographically restricted urban sample in Study 3 further limits the transferability of its findings to areas in which alternatives to the car are less available. Together, these circumstances restrict the temporal, geographical, and social generalisability of the findings.

Another limitation concerns the exclusive reliance on self-reported survey data. Although this approach is appropriate for capturing psychological constructs and subjective experiences, it is vulnerable to recall bias, social desirability, common-method effects, and inaccuracies in reported travel behaviour. These concerns are particularly relevant because life events, routine changes, and the perceived effects of life events on those routines were reported retrospectively. Combining surveys with objective measures, such as GPS tracking, would have allowed more precise assessments of behavioural changes over time.

7. Conclusions

This thesis examined whether life events constitute a ‘window of opportunity’ for reducing car use. The findings show that although life events can coincide with favourable psychological conditions for change, routine change itself, regardless of its origin, plays a more central role. They further suggest that reductions in car use often occur through spontaneous, context-driven adjustments rather than deliberate planning. The thesis contributes theoretically by clarifying the role of psychological mechanisms within the mobility biography approach. Empirically, it shows that more extensive alterations in travel routines were associated with more favourable psychological preconditions for reducing car use. Methodologically, the thesis introduces configurational comparative methods to identify combinations of conditions linked to behavioural change. Together, these insights suggest that sustainable mobility policies may be most effective when they support emerging alternative routines and remain responsive to contextual opportunities, rather than relying on predefined life-event-based interventions.

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In search of the ‘window of opportunity’ for car use reduction

Reducing overall car use in society has many benefits, but achieving this goal has proved difficult. In the search for measures that are both effective and acceptable to the public, the notion of a ‘window of opportunity’ has gained attention in the behaviour change literature. The effectiveness of interventions may depend not only on their design and the incentives they provide, but also on their timing in people’s lives. Perhaps there are periods when people are more receptive to external influences, more motivated, and more open to using other modes of travel.

Based on theoretical reasoning and previous research on habits and decision-making, life events have been proposed as such favourable moments. When life changes, travel behaviour often changes as well, for example when people move home, start a new job, have a child, or retire. Changes in daily circumstances may prompt people to reconsider how they travel. This reflection may help them recognise the benefits of available alternatives that they previously overlooked when their travel choices were guided by their established routines.

This thesis investigates this idea and asks whether life events truly constitute a ‘window of opportunity’ for reducing car use.

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