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Junyi Zhang
Editor

Life-Oriented Behavioral Research for Urban Policy

Springer

Chapter 1

Life-oriented Approach

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Abstract

This chapter first emphasizes the importance of understanding human behavior for urban policymaking and discusses the motivations of proposing the core approach in this book, i.e., the life-oriented approach. Second, it describes the life-oriented approach, which argues that interdependencies are essential to understand various life choices. Third, this chapter summarizes the contents of each chapter included in this book.

Keywords: life-oriented approach, cross-sectoral approach, decision-making process of public policy, human behavior, quality of life, interdependencies, life choices, inter-behavioral analysis

1. Introduction

Human activities have resulted in various changes to the land, water, and air as well as the society throughout several million years (Wolman, 1993). Such changes involve many urban issues, such as urban sprawl, excessive land use, traffic congestion and accidents, housing issues, health issues, air pollution, and wastes. Currently, more than half of human beings are living in urban areas across the whole world. People pursue happiness. Many people believe that cities provide more opportunities to them for enjoying their life than rural areas do, and living in cities makes them experience a happier life. However, such belief is not always consistent with the reality in actual life. Accordingly, urban policies need to address the above issues for not only protecting natural environment, but also improving people's quality of life (QOL) (e.g., life satisfaction and happiness).

Various life choices (or consumption in life) affect the QOL, which has been investigated with respect to various life domains, such as residence, neighborhood, health, education, work, family life, leisure and recreation, finance, and travel behavior (e.g., Zhang and Xiong, 2015). People usually perform different life choices under various constraints (e.g., money, time, and capability), and accordingly, they have to trade off between life choices, resulting in various interdependencies. In this sense, it is not desirable to incorporate different life choices separately in policymaking. Generally, the decision-making process of public policy consists of four stages: (1) agenda formation, (2) policy adoption, (3) policy implementation, and (4) policy review (Fawcett et al., 1988). No matter how important an issue related to a specific life choice may be, if its importance cannot not be recognized at the stage of agenda formation together with other issues, policies for resolving the issue cannot be made.

Urban policy decisions usually involve stakeholders from different vertically divided sectors. To date, criticisms of unsuccessful cross-sectoral policies have been directed at the lack of better institutional governance (e.g., Stead, 2008; Cole et al., 2010). However, I would like to argue that the lack of interdisciplinary approaches, including the life-oriented approach proposed in this book, is more serious. As argued by Shafir (2013), the success or failure of public policy heavily depends on the understanding of human behavior. Policy resources are limited. Policy makers in different sectors need to know whether their sector-oriented policies improve a certain aspect of the QOL, but worsen other QOL aspects, if they do not collaborate with each other. In many case, collaboration between governmental sectors may generate synergic effects. Therefore, it is important for policy makers and other stakeholders to communicate with each other based on a common language.

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As shown in the Shafir's (2013) book, economics, especially, behavioral economics has been the dominating discipline to provide behavioral foundation for public policy. Economics (or behavioral economics) can provide convincing behavioral evidence on the understanding of a single life choice. Unfortunately, it seems that interrelated life choices are not the interest of economists (or behavioral economists), or at least economists (or behavioral economists) have not made enough effort to develop frameworks for analysis of interrelated life choices.

Motivated by the above-mentioned practical issues and research gap in literature, this book presents the life-oriented approach, which is an interdisciplinary approach and expected to serve as a common language for supporting cross-sectoral policy decisions.

2. The Life-oriented Approach

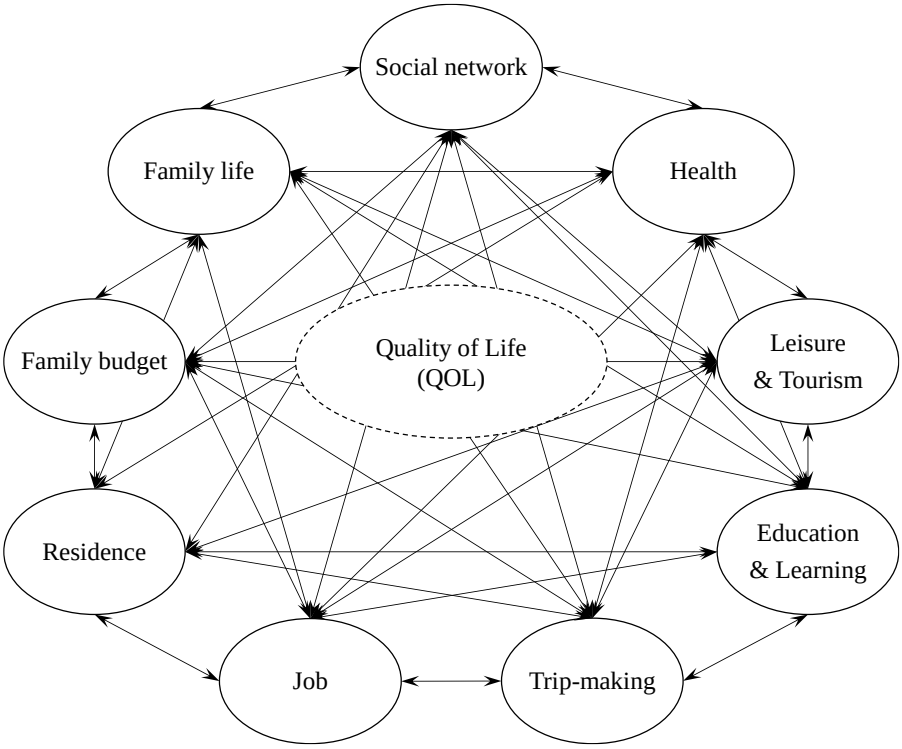

Fig. 1.1 An image of interdependencies across life choices.

Needless to say, the life-oriented approach also argues that understanding human behavior is essential to urban policymaking. More importantly, it argues that people's decisions on various life choices are interdependent. Such interdependencies are essential to understand human behavior. A specific life choice may result from and/or affect other life choices. Figure 1.1 conceptually illustrates this argument. Note that the life domains shown are just some examples to classify the various life choices. As stated by Zhang (2015), there are various domain-generic and domain-specific reasons for such interdependencies. Improving the QOL, meeting various life needs, and sharing household resources (e.g., income, time, and living space) are some examples of common reasons across life domains. Health concerns are a part of domain-specific reasons why residential and travel behavior and health promotion behavior may be interrelated. Environmental concerns are another example of domain-specific reasons why residential and travel behavior and in-home energy consumption behavior may not be independent of each other. Various life choices also affect QOL. Better job may allow people to earn more money, which is essential to QOL. Good habits of performing physical exercise regularly and eating healthier foods usually result in good health conditions, which are a core element of health-related QOL. To many people, living in a good house is a symbol of social status, which is also indispensable for QOL. Especially, Chapter 2 of this book presents empirical evidence on interdependencies across life domains and effects of life choices on QOL. Interdependencies across life domains revealed in Chapter 2 can be

illustrated in Figure 1.2, showing an extremely complicated pattern of interdependencies. Readers can find more evidence from both literature review and empirical studies in other chapters.

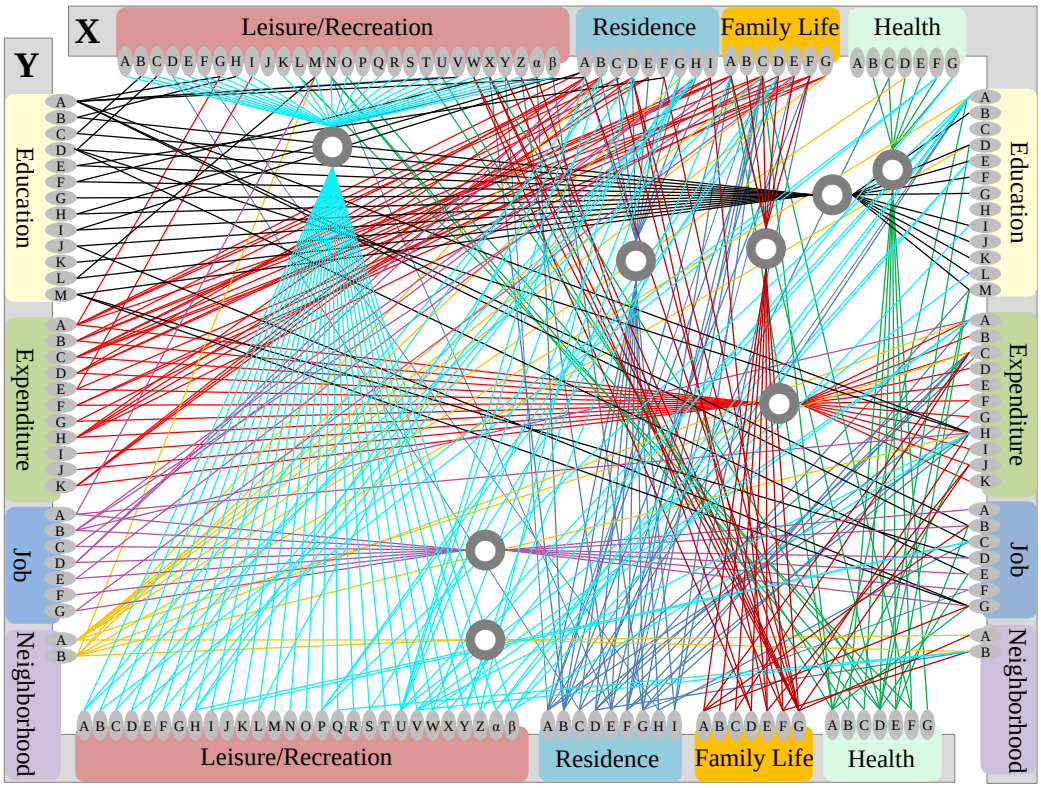

Fig. 1.2 Revealed relationships between 80+ life choice variables (Data collected in Japan in 2010)

Behaviorally, the ignorance of and inability to understand a specific life choice by considering the influence of other life choices may lead to a biased estimation of that specific life choice and behavioral changes in response to policies affecting it. In this sense, understanding of a specific life choice should not be constrained by the boundary of any single discipline. The ignorance of and inability to understand interdependent life choices may result in a failure of consensus building for policy decisions. Behavioral interdependencies between life choices suggest the necessity of cross-sectoral policies for QOL improvements. The life-oriented approach aims to serve as a common decision support method for various public policies and as a platform for negotiations across sectors and stakeholders.

3. Outlines of Chapters

This book consists of 18 chapters, including this chapter. Chapters 2 ~ 18 provide an extensive review of existing studies in various disciplines and present rich insights for future research.

First, *Chapter 2* provides empirical evidence on the existence of interdependencies across an extensive set of life choice variables based on data from a cross-sectional survey, a panel survey, and a life history survey implemented in Japan in 2010 and 2014. It examines the interdependencies from both static and dynamic perspectives. It further investigates relationships between QOL and life choices. Especially, evidence on cross-domain interdependencies and future expectations has long-lasting reference values.

Second, *Chapter 3* focuses on the concept of lifestyle, which is usually defined by subjective factors (e.g., values and attitudes) and/or objective factors (including various life choices), and illustrates how this concept has been defined and analyzed in several major research disciplines. Related to the lifestyle, existing literature has often targeted ownership and usage of cars and various in-home appliances as well as residential behavior. In these two decades, information and communication technologies (ICTs) have become indispensable in many people's daily life and shaped their lifestyles in

a different way from other technologies. In addition, many people prefer healthy lifestyles, in which not only daily activities but also non-daily activities (especially tourism) play important roles. With these considerations, *Chapter 4* investigates car dependence in people's life, where new evidence on the decline in young people's car ownership and usage is presented based on a longitudinal dataset of household expenditure in Japan, together with descriptions about shared mobility, life-oriented studies, social exclusion, and behavioral changes. *Chapter 5* examines ownership and usage of cars and various in-home appliances as well as residential location choices from the perspective of energy consumption, where an efficiency analysis is conducted for clarifying minimum energy consumption for a household, ABC factors (i.e., attitude, belief, and consciousness) and self-selection issues are emphasized, and an integrated dynamic energy consumption modeling system is introduced. *Chapter 6* explores the association between ICT and people's life in terms of lifestyles, impacts of ICT on society and long-term decisions, urban form, travel behavior, shared mobility services, and the future of cities as well as autonomous vehicles (AVs). *Chapter 7* describes health-oriented behavioral research by focusing on lifestyle habits, travel behavior (commuter paradox, active travel, etc.), park use, residential environments, and urban infrastructure, where health-related QOL is captured in terms of not only physical aspects, but also mental and social aspects; the famous stage of change model and the global movement of healthy cities are introduced. *Chapter 8* treats life-oriented tourism behavior research by classifying tourism behavior into the following dimensions: information search and use, the social aspect, resources, the spatial aspect, activity participation and the temporal aspect. Literature review is given with respect to each dimension, followed by review about integrated tourism behavior models, relationship between tourism behavior and other life choices, tourism and quality of life, and determinants of tourism behavior. Importance of qualitative research in the future is emphasized.

Third, several typical behavioral issues related to urban policies are targeted in Chapters 9 – 12. *Chapter 9* deals with women's labor participation, where literature review is given with respect to women's labor participation associated with land use, transport, health, family, and leisure life as well as QOL, followed by a case study in Japan based on a recursive multiequation system. Focusing on the elderly mobility, *Chapter 10* describes hierarchy of travel needs; discusses interdependencies between mobility and other life domains, mobility and well-being; argues the importance of measuring freedom to achieve and the components of mobility; and re-assesses policy goals on mobility of the elderly. *Chapter 11* looks at risky behaviors in life, especially focusing on young people. It first describes risky behaviors in daily life and then review major theories (Heinrich's domino model, problem behavior theory, social development model for representing antisocial behavior, life history theory, lifetime utility theory). It further illustrates young people's risky driving by reviewing studies on driving tasks; risk homeostasis theory; applications of theory of planned behavior; influences of family, peers, and passengers on young people's risky driving behavior; avoidance driving; mood during driving and driving purpose; driving and nightlife; and self-driving cars and young people. *Chapter 12* examines how people adapt their life to natural disasters by taking Bangladesh as a case study area. General literature review is given with respect to adaptation behaviors in terms of intercity travel and general life adaptations, followed by descriptions about a stated preference based case studies in the context of floods and cyclones.

Fourth, several major methodological issues related to life choices are explored, including general biographical research (*Chapter 13*), a new modeling method to represent various mobility decisions over the life course (*Chapter 14*), multi-dimensional household timing decisions in daily life (*Chapter 15*), theories of behavioral change (*Chapter 16*) and an application to explore migration in association with other life choices (*Chapter 17*). Concretely speaking, *Chapter 13* describes the concept of mobility biographies (especially focusing on habits, domains of the life course, and transitions and key events in the life course), highlights mobility socialization and linked lives, argues that the importance of context, and discusses consequences for research. *Chapter 14* supports the lifetime utility theory and applies the concept of multilinear utility to capture biographical interactions between residential, car ownership, household structure, and employment/education mobilities. An operational model is derived and its effectiveness is confirmed based on data from a life history survey collected in Japan in 2010. *Chapter 15* deals with time use from the perspective of timing decisions, which have been an ill-defined issue in literature. It applied the concept of timing utility to represent household timing decision model with coupling constraints, first-order sequential correlations, nonnegative timing and sequencing constraints, where activities are distinguished between shared and nonshared activities

and both observed and unobserved interdependencies are endogenously represented. *Chapter 16* highlights life trajectories and choice models and especially describes promising individual-level modeling approaches for modeling lifecycle decisions and lifecycle driven behavioral changes, including discrete choice models with lifetime utility and social dynamics, attitudinal models, technology acceptance model, norm activation model, and value belief norm theory. Even though migration behavior is targeted, in fact, *Chapter 17* presents an example how to capture behavioral changes across life domains. It argues that a behavioral change in one life domain may not only result from socio-psychological factors (e.g., behavioral intention, attitude, social norm, and perceived behavioral control) related to that domain, but also occur conditional on behavioral changes in other life domains.

Finally, *Chapter 18* further discusses future research directions to promote the life-oriented approach for supporting various urban policies.

4. Summary

Urban policy serves for improving people's QOL. Both academic literature and actual policy practices suggest that such improvements rely heavily on better collaboration of different sectors. The life-oriented approach has various advantages for supporting urban policy over existing behaviorally oriented approaches. Such advantages are illustrated in each chapter. The life-oriented approach also has various unresolved research issues, which are discussed in each chapter as well. The life-oriented approach attempts to break the boundaries of various existing disciplines about human behavior research from a much broader perspective. The contents of the remaining chapters suggest that such cross-boundary efforts are not only important, but also feasible. Studies based on the life-oriented approach could be motivated by not only policy decisions, but also purely behavioral research. Policy makers may learn how to make cross-sectional policies by drawing on insights from such an interdisciplinary research, while researchers may learn how to resolve their single-discipline research issues by borrowing ideas from other disciplines in an integrated and consistent way

This book introduces the life-oriented approach in a comprehensive and consistent way. It not only provides extensive literature review on interdependencies across various life choices in a variety of disciplines, but also presents new insights from new survey data based on new research methods. This book further illustrates inter-behavioral analysis frameworks with respect to various life domains based on case studies in different countries, along with a rich set of future research directions.

References

Cole R, Burke M, Leslie E, Donald M, Owen N (2010) Perceptions of representatives of public, private, and community sector institutions of the barriers and enablers for physically active transport. Transport Policy 17:496–504

Fawcett SB, Bernstein BS, Czyzewski MJ, Greene BF, Hannah GT, Iwata BA, Jason LA, Mathews RM, Morris EK, Otis-Wilborn A, Seekins T, Winett RA (1988) Behavior analysis and public policy. The Behavior Analyst 11(1):11–25

Shafir E (2013) The Behavioral Foundations of Public Policy. Princeton University Press, Princeton and Oxford.

Stead D (2008) Institutional aspects of integrating transport, environment and health policies. Transport Policy 15:139–148

Wolman, MG (1993) Population, land use, and environment: A long history. In: Jolly CL, Torrey BB (eds), Population and Land Use in Developing Countries. Committee on Population, Commission on Behavioral and Social Sciences and Education, National Research Council. Washington, DC: National Academies Press.

Zhang J, Xiong Y (2015) Effects of multifaceted consumption on happiness in life: A case study in Japan based on an integrated approach. International Review of Economics 62(2):143–162

Zhang, J. (2015) The life-oriented approach and travel behavior research. A discussion paper for the Workshop "Life-Oriented Approach for Transportation Studies" at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19-23 (to be published in the Conference Proceedings as a book)

Chapter 2

Empirical Evidence of Behavioral Interdependencies across Life Choices

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Abstract

This chapter presents empirical evidence of behavioral interdependencies across more than 80 life choice variables, based on data collected from a cross-sectional survey, a panel survey, and a life history survey in Japan, respectively. Similar analyses are further conducted with respect to more than 20 indicators of life satisfaction and happiness, as a whole life and by life domain. Very complex patterns of cross-domain and within-domain interdependencies are revealed by using statistical modeling approaches. This is the first study in literature to clarify behavioral interdependencies across life choices from such a comprehensive way. Analyses also suggest a variety of research issues for promoting the life-oriented approach.

Keywords: life-oriented approach, life choices, life domain, happiness, life satisfaction, state dependence, future expectation, life history survey, panel survey, Japan

References

Abou–Zeid M, Witter R, Bierlaire M, Kaufmann V, Ben–Akiva M (2012) Happiness travel mode switching: Findings from a Swiss public transportation experiment, Transport Policy 19(1):93–104

Alexopoulos EC, Palatsidi V, Tigani X, Darviri C (2014) Exploring stress levels, job satisfaction, and quality of life in a sample of police officers in Greece. Safety and Health at Work 5(4):210-215

Allen TD, Herst DE, Bruck CS, Sutton M (2000) Consequences associated with work–to–family conflict: A review agenda for future research. Journal of occupational health psychology 5(2):278

Andereck KL, Valentine KM, Vogt CA, Knopf RC (2007) A Cross–cultural analysis of tourism and quality of life perceptions. Journal of Sustainable Tourism 15(5):483–502

Bowling A (1995) Measuring Disease: A Review of Disease–Specific Quality of Life Measurement Scales. Open University Press

Brajša–Žganec A, Merkaš M, Šverko I (2011) Quality of life and leisure activities: How do leisure activities contribute to subjective well–being? Social Indicators Research 102(1):81–91

Campbell A (1976) Subjective measures of well–being. The American Psychologist 31(2):117–124

Campbell A (1981) The Sense of Well–Being in America: Recent Patterns and Trends. McGraw-Hill

Cambir A, Vasile V (2015) Material dimension of life quality social inclusion. Procedia Economics and Finance 32:932–939

Cantril H (1965) The pattern of human concerns. New Brunswick: Rutgers University Press

Cao X (2016) How does neighborhood design affect life satisfaction? Evidence from Twin Cities. Travel Behaviour and Society 5:68–76

Cao X, Ettema D (2014) Satisfaction with travel and residential self-selection: How do preferences moderate the impact of the Hiawatha Light Rail Transit line? Journal of Transport and Land Use 7(3):93-108

Cao X, Mokhtarian PL, Handy S (2013) Examining the impacts of residential self–selection on travel behavior: A focus on empirical findings. Transport Review 29(3):359–395

Chen CC, Huang WJ, Petrick JF (2016) Holiday recovery experiences tourism satisfaction life satisfaction–Is there a relationship?. Tourism Management 53:140–147

Chen J, Chen C, Timmermans HJP (2008) Accessibility trade–offs in household residential location choice decisions. Transportation Research Record 2077(1):71–79

Clark AE, Frijters P, Shields MA (2008) Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. Journal of Economic literature 46(1):95–144

Cooklin AR, Westrupp EM, Strazdins L, Giallo R, Martin A, Nicholson JM (2014) Fathers at work work–family conflict, work–family enrichment and parenting in an Australian cohort. Journal of Family Issues (10.1177/0192513X14553054).
Cooklin AR, Westrupp EM, Strazdins L, Giallo R, Martin A, Nicholson JM (2015a) Mothers' work–family conflict and enrichment: Associations with parenting quality and couple relationship. Child: Care, Health and Development 41(2):266–277
Cooklin AR, Giallo R, Strazdins L, Martin A, Leach LS, Nicholson JM (2015b) What matters for working fathers? Job characteristics work–family conflict enrichment fathers' postpartum mental health in an Australian cohort, Social Science and Medicine 146:214–222
Coulmas F, Conrad H, Vogt G, Schad–Seifert A (2008) The Demographic Challenge: A Handbook about Japan. Brill
Cummins RA (1996) The domains of life satisfaction: An attempt to order chaos. Social Indicators Research 38:303–328
Curl A, Thompson CW, Aspinall P (2015) The effectiveness of 'shared space' residential street interventions on self–reported activity levels and quality of life for older people. Landscape and Urban Planning 139:117–125
De Holler AE, Staatsen BA (2003) Health environment and quality of life: An epidemiological perspective on urban development. Landscape and Urban Planning 65(1):53–62
Delmelle EC, Haslauer E, Prinz T (2013) Social satisfaction commuting neighborhoods. Journal of Transport Geography 30:110–116
De Vos J (2015) The influence of land use and mobility policy on travel behavior: A comparative case study of Flanders and the Netherlands. Journal of Transport and Land Use 8(1):171–190
De Vos J, Schwanen T, van Acker V, Witlox F (2013) Travel subjective well–being: A Focus on findings methods and future research needs. Transport Reviews 33(4):421–442
Diener E (1984) Subjective well–being. Psychological Bulletin 95(3):542–575
Diener ED, Emmons RA, Larsen RJ, Griffin S (1985) The satisfaction with life scale. Journal of Personality Assessment 49(1):71–75
Diener E, Seligman ME (2002) Very happy people. Psychological Science 13(1):81–84
Diener E, Suh E (1997) Measuring quality of life: Economic social subjective indicators. Social Indicators Research 40(1–2):189–216
Diener E (2000) Subjective well–being: The science of happiness and a proposal for a national index. The American Psychologist 55(1):34–43
Diener E (2009) The science of well–being: The collected works of Ed Diener. Social Indicators Research Series 37. Springer Science Business Media, Springer Netherlands
Dolnicar S, Yanamram V, Cliff K (2012) The contribution of vacations to quality of life. Annals of Tourism Research 39(1):59–83
Dutt AK (2008) The dependence effect consumption on happiness: Galbraith revisited. Review of Political Economy 20(4):527–550
Easterlin RA, (2001) Income and happiness: Towards a unified theory. The Economic Journal 111(473):465–484
El Din HS, Shalaby A, Farouh HE, Elariane SA (2013) Principles of urban quality of life for a neighborhood. HBRC Journal 9(1):86–92
Ettema D, Gärling T, Olsson LE, Friman M (2010) Out–of–home activities daily travel and subjective well–being. Transportation Research Part A: Policy and Practice 44(9):723–732
Fabrigar LR, Porter RD, Norris ME (2010) Some things you should know about structural equation modeling but never thought to ask. Journal of Consumer Psychology 20(2):221–225
Fichera E, Savage D (2015) Income and health in Tanzania: An instrumental variable approach. World Development 66:500–515
Frisvold D, Golberstein E (2011) School quality and the education–health relationship: Evidence from Blacks in segregated schools. Journal of Health Economics 30(6):1232–1245
Gilbert D, Abdullah J (2004) Holidaytaking and the sense of well–being. Annals of Tourism Research 31(1):103–121
Glatzer W (2012) Cross–national comparisons of quality of life in developed nations including the impact of globalization. In: Land KC, Michalos, AC, Sirgy MJ (eds), Handbook of Social Indicators and Quality of Life Research, Springer Netherlands, 381–398
Golob TF (2003) Structural equation modeling for travel behavior research. Transportation Research Part B: Methodological 37(1):1–25
González CS, Gómez N, Navarro V, Cairós M, Quirce C, Toledo P, Marrero–Gordillo N (2016) Learning healthy lifestyles through active videogames motor games and the gamification of educational activities. Computers in Human Behavior 55:529–551
Greenhaus JH, Collins KM, Shaw JD (2003) The relation between work–family balance and quality of life. Journal of Vocational Behavior 63(3):510–531

Headey B, Muffels R, Wooden M (2008) Money does not buy happiness: Or does it? A reassessment based on the combined effects of wealth income and consumption. Social Indicators Research 87(1):65–82
Heal LW, Chadsey–Rusch J (1985) The lifestyle satisfaction scale: Assessing individuals' satisfaction with residence, community setting, and associated services. Applied Research in Mental Retardation 6(4):475–490
Higgins C, Duxbury L, Lee C (1994) Impact of life–cycle stage and gender on the ability to balance work and family responsibilities. Family Relations 43(2):144–150
Honold J, Beyer R, Lakes T, ver Meer E (2012) Multiple environmental burdens and neighborhood–related health of city residents. Journal of Environmental Psychology 32(4):305–317
Hooper D, Coughlan J, Mullen M (2008) Structural equation modelling: Guidelines for determining model fit. Electronic Journal of Business Research Methods 6(1):53–60
Huang Q, Sverke M (2007) Women's occupational career patterns over 27 years: Relations to family of original life careers and wellness. Journal of Vocational Behavior 70(2):369–397
Inoguchi T, Fujii S (2009) The quality of life in Japan. Social Indicators Research 92(2):227–262
Janssens D, Wets G, Brijs T, Vanhoof K, Arentze T, Timmermans H (2006) Integrating Bayesian networks and decision trees in a sequential rule–based transportation model. European Journal of operational research 175(1):16–34
Kahn RL, Juster FT (2002) Well-Being: Concepts and Measures. Journal of Social Issues 58(4):627–644
Kaplan GA, Shema SJ, Leite CMA (2008) Socioeconomic determinants of psychological well–being: the role of income, income change and income sources during the course of 29 years. Annals of Epidemiology 18(7):531–537
Kass G (1980) An exploratory technique for investigating large quantities of categorical data. Applied Statistics 29(2):119–127
Keene D, Bader M, Ailshire J (2013) Length of residence and social integration: The contingent effects of neighborhood poverty. Health and Place 21:171–178
Khalil HAEE (2012) Enhancing quality of life through strategic urban planning. Sustainable Cities and Society 5:77–86
Knox PL (1975) Social Well-Being: A Spatial Perspective. Oxford University Press, Oxford
Lamont D, Kenyon S, Lyons G (2013) Dyslexia and mobility–related social exclusion: The role of travel information provision. Journal of Transport Geography 26:147–157
Lee JH, Goulias KG (2014) Examining differences and commonalities of life cycle stages in daily contacts and activity–travel time allocation. Compendium of Papers CD-ROM, The 93rd Annual Meeting of Transportation Research Board. Washington, D.C., January 12-16
Lei P, Xu L, Nwaru BI, Long Q, Wu Z (2015) Social networks and health-related quality of life among Chinese old adults in urban areas: Results from 4th National Household Health Survey. Public health 131:27–39
Leung L, Lee PS (2005) Multiple determinants of life quality: The roles of Internet activities use of new media social support and leisure activities. Telematics and Informatics 22(3):161–180
Lin JH, Wong JY, Ho CH (2013) Promoting frontline employees' quality of life: Leisure benefit systems and work–to–leisure conflicts. Tourism Management 36:178–187
Lotfi S, Solaimani K (2009) An assessment of urban quality of life by using analytic hierarchy process approach (case study: comparative study of quality of life in the North of Iran). Journal of Social Sciences 5(2):123–133
Maia ML, Lucas K, Marinho G, Santos E, de Lima JH (2016) Access to the Brazilian City—From the perspectives of low-income residents in Recife. Journal of Transport Geography (in press)
McDonagh J (2006) Transport policy instruments and transport–related social exclusion in rural Republic of Irel. Journal of Transport Geography 14(5):355–366
McLanahan SS, Sorensen AB (1985) Life course dynamics: Trajectories and transitions 1968–1980. In G, H, Elder (eds): Life events and psychological well–being over the life course 217–238. Ithaca: Cornell University Press
Michel JS, Kotrba LM, Mitchelson JK, Clark MA, Baltes BB (2011) Antecedents of work–family conflict: A meta–analytic review. Journal of Organizational Behavior 32(5):689–725
Michel JS, Mitchelson JK, Kotrba LM, LeBreton JM, Baltes BB (2009) A comparative test of work–family conflict models and critical examination of work–family linkages. Journal of Vocational Behavior 74(2):199–218
Milner A, Krnjacki L, Butterworth P, LaMontagne AD (2016) The role of social support in protecting mental health when employed and unemployed: A longitudinal fixed–effects analysis using 12 annual waves of the HILDA cohort. Social Science and Medicine 153:20–26
Mittal A (2007) Bayesian Network Technologies: Applications and Graphical Models. IGI Global
Morgan MG, Henrion M, Small M (1990) Uncertainty: A Guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis. Cambridge University Press, New York
Myers DG, Diener E (1995) Who is happy? Psychological Science 6(1):10–19
Myers DG, Diener E (1996) The pursuit of happiness. Scientific American 274(5):70–72.

Nomaguchi KM, Milkie MA, Bianchi SM (2005) Time strains and psychological well–being: Do dual–earner mothers and fathers differ?. Journal of Family Issues 26(6):756–792
Nordbakke S, Schwanen T (2013) Wellbeing and mobility: A theoretical framework and literature review focusing on older people. Mobilities 9(1):104–129
Oakil ATM (2015) Securing or sacrificing access to a car: Gender difference in the effects of life events. Travel Behaviour and Society 3:1–7
Plagnol AC, Scott J (2011) What matters for well–being: Individual perceptions of quality of life before and after important life events. Applied Research in Quality of Life 6(2):115–137
Powdthavee N (2009) What happens to people before and after disability? Focusing effects lead effects and adaptation in different areas of life. Social Science and Medicine 69(12):1834–1844
Ritsema van Eck J, Burghouwt G, Dijst M, (2005) Lifestyles spatial configurations and quality of life in daily travel: An explorative simulation study. Journal of Transport Geography 13(2):123–134
Salvatore N, Munoz Sastre MT (2001) Appraisal of life; "area" versus "dimension" conceptualizations. Social Indicators Research 53(3):229–255
Schalock RL (1996) Reconsidering the conceptualization and measurement of quality of life. Quality of Life 1(9):123–139
Scheiner J (2014) Gendered key events in the life course: Effects on changes in travel mode choice over time. Journal of Transport Geography 37:47–60
Schoenduwe R, Mueller MG, Peters A, Lanzendorf M (2015) Analysing mobility biographies with the life course calendar : A retrospective survey methodology for longitudinal data collection. Journal of Transport Geography 42:98–109
Sharmeen F, Arentze T, Timmermans H (2014) An analysis of the dynamics of activity and travel needs in response to social network evolution and life–cycle events : A structural equation model. Transportation Research Part A 59:159–171
Sirgy M, Rahtz DR, Cicic M, Underwood R (2000) A method for assessing residents' satisfaction with community–based services: A quality–of–life perspective. Social Indicators Research 49(3):279–316
Sirgy M (2010) Toward a quality–of–life theory of leisure travel satisfaction. Journal of Travel Research 49:246–260
Strazdins L, OBrien LV, Lucas N, Rodgers B (2013) Combining work and family: Rewards or risks or children's mental health? Social Science and Medicine 87:99–107
Sturm R, Cohen DA (2004) Suburban sprawl and physical and mental health. Public Health 118(7):488–496
Sugimoto Y (2010) Introduction to Japanese Society. Cambridge University Press
Takamiya M, Yamamoto K, Watanabe T, (2010) Modeling and estimation of travel behaviors using Bayesian network. Intelligent Decision Technologies 4(4):297–305
Tang TLP (2007) Income and quality of life: Does the love of money make a difference? Journal of Business Ethics 72(4):375–393
Taylor SJ, Bogdan R (1990) Quality of life and the individual's perspective. In: Schalock RL (ed), Quality of Life: Perspectives and Issues, Washington D.C.: American Association of Mental Retardation 27–40
Tefft N (2012) Mental health and employment: The SAD story. Economics and Human Biology 10(3):242–255
Tercan E (2015) An examination of leisure participation family assessment and life satisfaction in university students. Procedia–Social and Behavioral Sciences 186:58–63
Tsai SY, Lee PL, Lin JW, Lee CN (2016) Cross–sectional and longitudinal associations between sleep and health–related quality of life in pregnant women: A prospective observational study. International Journal of Nursing Studies 56:45–53
Uysal M, Perdue R, Sirgy MJ (2012) Handbook of Tourism and Quality–of–life Research: Enhancing the Lives of Tourists and Residents of Host Communities. Springer Science and Business Media
Uysal M, Sirgy MJ, Woo E, Kim HL (2016) Quality of life and well–being research in tourism. Tourism Management 53:244–261
Vallée J, Cadot E, Grillo F, Parizot I, Chauvin P (2010) The combined effects of activity space and neighbourhood of residence on participation in preventive health–care activities: The case of cervical screening in the Paris metropolitan area (France). Health and Place 16(5):838–852
Van Acker V, Van Wee B, Witlox F (2010) When transport geography meets social psychology: Toward a conceptual model of travel behavior. Transport Reviews 30(2):219–240
Van Acker V (2015) Defining, measuring, and using the lifestyle concept in modal choice research. Transportation Research Record 2495:74–82
Van Praag BM, Frijters P, Ferrer-i-Carbonell A (2003) The anatomy of subjective well-being. Journal of Economic Behavior and Organization 51(1):29–49
Veenhoven R (2012a) Evidence based pursuit of happiness: what should we know, do we know and can we get to know?. EHERO White Paper (Available: https://personal.eur.nl/veenhoven/Pub2010s/2012j-full.pdf; Accessed July 1, 2016)

Veenhoven R (2012b) Average happiness in 149 nations 2000–2009: How much people enjoy their life–as–a–whole on scale 0 to 10, World database of happiness, Erasmus University Rotterdam, The Netherlands

Verhoeven M, Arentze TA, Timmermans HJP, Van der Waerden PJHJ (2007) Examining temporal effects of lifecycle events on transport mode choice decision. The International Journal of Urban Sciences 11(1):1–13

Verhoeven M (2010) Modelling Life Trajectories and Mode Choice Using Bayesian Belief Networks. Doctoral Dissertation, Eindhoven University of Technology, The Netherlands

Wang D, Li SM (2004) Housing preferences in a transitional housing system: The case of Beijing China. Environment and Planning A 36(1):69–88

Wilson I, McDermott H, Munir F (2016) The role of working hours work environment and physical leisure activity on the need for recovery following a day's work among UK white–water raft guides: A within–subjects multilevel approach. Psychology of Sport and Exercise 23:123–131

Winters JV (2011) Human capital higher education institutions quality of life. Regional Science and Urban Economics 41(5):446–454

Zhao P, Lu B (2010) Exploring job accessibility in the transformation context: An institutionalist approach and its application in Beijing. Journal of Transport Geography 18(3):393–401

Zhang J (2009) Subjective well–being and activity–travel behavior analysis: Applying day reconstruction method to explore affective experience during travel. Proceedings of the 14th International Conference of Hong Kong Society for Transportation Studies, Hong Kong, December 10-12. (2): 439–449 (Invited paper)

Zhang J, Tsuchiya Y, Fujiwara A, Chikaraishi M (2011) Citizens' life decisions and behavior survey: proposal and application to the evaluation of quality of life. Proceedings of Infrastructure Planning 43 (CD–ROM) (in Japanese)

Zhang J (2014) Revisiting residential self–selection issues: A life–oriented approach. Journal of Transport and Land Use 7(3):29–45

Zhang, J. (2015) The life-oriented approach and travel behavior research. A discussion paper for the Workshop "Life-Oriented Approach for Transportation Studies" at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19-23 (to be published in the Conference Proceedings as a book)

Zhang J, Yu B, Chikaraishi M (2014) Interdependences between household residential and car ownership behavior: A life history analysis. Journal of Transport Geography 34:165–174

Zimmermann S (2014) The Pursuit of subjective well–being through specific consumption choice. Available at SSRN: http://ssrn.com/abstract=2484660 or http://dx.doi.org/10.2139/ssrn.2484660

Chapter 3

Lifestyles and Life Choices

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Abstract

This chapter focuses on lifestyles and life choices. Although there is not a formally agreed definition of it, the 'lifestyle' concept – derived from sociology – might be useful in life choice studies. It highlights the importance of 'soft' factors next to the traditional 'hard' factors (e.g., demographic, socioeconomic and spatial characteristics) while explaining life choices. This chapter first provides a structured overview of the 'lifestyle' concept in terms of definitions and measurement methods. Two broad perspectives exists: (1) a mechanistic lifestyle approach considering a behavioral typology of activity and time use patterns, and (2) a sociographic lifestyle approach focusing on a behavioral orientations – values, attitudes and preferences – and a latent factor motivating behavior patterns. The second part of this chapter reviews how the 'lifestyle' concept has been used in life choice studies so far. It specifically focuses on applications in the research domains of demography and family studies, geography and urban studies, and transportation. Both perspectives are used interchangeably without little evaluation of the usefulness of various formal lifestyle classification systems. Moreover, most life choice studies consider 'lifestyles' as static and given, and not as something dynamic that might change over time. This calls for a more longitudinal perspective on the interaction between lifestyles and life choices. Other avenues for further research include the integration with a social network and a geographical perspective.

Keywords: lifestyles, life choices, mechanistic and sociographic approaches, dynamics, interactions, sociology, demography, family studies, geography, urban studies, transportation

References

Anderson EA, Spruill JW (1993) The dual–career commuter family – a life–style on the move. Marriage and Family Review 19:131–147

Anderson J, Erskine K (2014) Tropophilia: a study of people place and lifestyle. Travel Mobilities 9:130–145

Arranz Becker O, Lois D (2010) Selection alignment and their interplay: Origins of lifestyle homogamy in couple relationships. Journal of Marriage and Family 72:1234–1248

Bagley MN, Mokhtarian PL (2002) The impact of residential neigborhood type in travel behavior: A structural equation modeling approach. Annals of Regional Science 36:279–297

Begg DJ, Langley JD, Williams SM (1999) A longitudinal study of lifestyle factors as predictors of injuries and crashes among young adults. Accident Analysis and Prevention 31:1–11

Ben–Akiva M (1973) Structure of Passenger Travel Demand Models. Doctoral Dissertation, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology Cambridge

Benson M (2011) The movement beyond (lifestyle) migration: Mobile practices and the constitution of a better way of life. Mobilities 6:221–235

Bina M, Graziano F, Bonino S (2006) Risky driving and lifestyles in adolescence. Accident Analysis and Prevention 38:472–481

Bootsma H, Camstra R, de Feijter H, Mol A (1993) Leefstijl: Een dynamische levensorientatie (Lifestyle: a dynamic life orientiation). Rooilijn 26:32–37

Bourdieu P (1979) La Distinction Critique Sociale du Jugement Ed de Minuit, Paris

Brun J, Fagnani J (1994) Life–styles and locational choices – Trade–offs and compromises A case–study of middle–class couples living in the Ile–de–France region. Urban Studies 31:921–934

Cathelat B (1993) Socio–styles the new lifestyle classification system for identifying and targeting costumers and markets. Routledge London

Chliaoutakis JE, Darviri C, Demakakos PT (1999) The impact of young drivers' lifestyle on their road traffic accident risk in greater Athens area. Accident Analysis and Prevention 31:771–780
Chliaoutakis JE, Koukouli S, Lajunen T, Tzamalouka G (2005) Lifestyle traits as predictors of driving behaviour in urban areas of Greece. Transportation Research Part F – Traffic Psychology and Behaviour 8:413–428
Cockerham WC, Abel T, Lüschen G (1993) Max Weber formal rationality and health lifestyles. The Sociological Quarterly 34:413–428
Cohen SA, Duncan T, Thulemark M (2015) Lifestyle mobilities: The crossroads of travel leisure and migration. Mobilities 10:155–172
Collantes GO, Mokhtarian PL (2007) Subjective assessments of personal mobility: What makes the difference between a little and a lot? Transport Policy 14:181–192
Cooper J, Ryley T, Smith A (2001) Contemporary lifestyles and the implications for sustainable development policy: Lessons from the UK's most car dependent city. Belfast Cities 18:103–113
Decurtins L, Niklowitz M, Meyer PC (1997) Life styles after the breakup consequences of different life styles for fathers after divorce on the social network and health in comparison with married fathers. System Familie 10:166–173
Deka D (2015) Relationship between households' housing and transportation expenditures examination from lifestyle perspective. Transportation Research Record: Journal of the Transportation Research Board 2531:26–35
Elchardus M, Smits W (2005) De levensloop van jongvolwassenen (The life course of adolescents). Research group TOR, Sociology Department, Free University Brussels, Brussels
Ewing R, Cervero R (2010) Travel and the built environment: A meta–analysis. Journal of the American Planning Association 76:265–294
Fan YL, Khattak A (2012) Time use patterns lifestyles and sustainability of nonwork travel behavior. International Journal of Sustainable Transportation 6:26–47
Ferge S (1972) Social differentiation in leisure activity choices. In: Szalai A (ed), The Use of Time: Daily Activities of Urban and Suburban Population in Twelve Countries. Mouton Den Haag, 213–227
Ganzeboom H (1988) Leefstijlen in Nederland: Een verkennende studie (Lifestyles in the Netherlands: An Exploratory Study). Sociaal Cultureel Planbureau Rijswijk
Gillan J, Wachs M (1976) Lifestyles and transportation needs of elderly in Los Angeles. Transportation 5:45–61
Glickman I, Ishaq R, Katoshevski–Cavari R, Shiftan Y (2015) Integrating activity–based travel–demand models with land–use and other long–term lifestyle decisions. Journal of Transport and Land Use 8:71–93
Gnardellis C, Tzamalouka G, Papadakaki M, Chliaoutakis JE (2008) An investigation of the effect of sleepiness drowsy driving and lifestyle on vehicle crashes. Transportation Research Part F 11:270–281
Gregersen NP, Berg HY (1994) Life–style and accidents among young drivers. Accident Analysis and Prevention 26:297–303
Handy S (2005) Critical assessment of the literature on the relationships among transportation, land use and physical activity. TRB Special Report 282 "Does the Built Environment Influence Physical Activity? Examining the Evidence"
Helbrecht I (1995) Differentiation of lifestyles: New challenges to social geography in urban research. Geographische Zeitschrift 83:222–237
Hildebrand ED (2003) Dimensions in elderly travel behaviour: A simplified activity–based model using lifestyle clusters. Transportation 30:285–306
Hradil S (1987) Sozialstrukturanalyse in einer fortgeschrittenen Gesellschaft. Leske and Budrich, Opladen
Huete R, Mantecon A, Estevez J (2013) Challenges in lifestyle migration research: Reflections and findings about the Spanish crisis. Mobilities 8:331–348
Jendrek MP (1993) Grandparents who parent their grandchildren – Effects on life–style. Journal of Marriage and the Family 55:609–621
Kalmijn M, Bernasco W (2001) Joint and separated lifestyles in couple relationships. Journal of Marriage and Family 63:639–654
Kitamura R (2009) Life–style and travel demand. Transportation 36:679–710
Krizek K (2006) Lifestyles residential location decisions and pedestrian and transit activity. Transportation Research Record 1981:171–178
Krizek K, Waddell P (2002) Analysis of lifestyle choices – Neighborhood type travel patterns and activity participation. Transportation Research Record 1807:119–128
Lanzendorf M (2002) Mobility styles and travel behaviour. An application of a lifestyle approach to leisure travel. Transportation Research Record 1807:163–173
Lin HZ, Lo HP, Chen XJ (2009) Lifestyle classifications with and without activity–travel patterns. Transportation Research Part A 43:626–638
Lois D (2008) Influences of lifestyle features on the transition into first marriage. Zeitschrift für Familienforschung 20:11–33

McDowell LM (1997) The new service class: housing consumption and lifestyle among London bankers in the 1990s. Environment and Planning A 29:2061–2078
Mitchell A (1983) The Nine American Lifestyles. Warner, New York
Mokhtarian PL, Cao XY (2008) Examining the impacts of residential self–selection on travel behaviour: A focus on methodologies. Transportation Research B 42:204–228
Møller M, Haustein S (2013) Keep on cruising: Changes in lifestyle and driving style among male drivers between the age of 18 and 23. Transportation Research Part F 20:59–69
Munters QJ (1992) Bestaan leefstijlen (nog) wel? (Do lifestyles (still) exist?). Sociologische Gids 39:179–185
Nwegbu MU, Echezona RI (2010) Socio–cultural dimensions of ICT use among the youths and influences on family lifestyles. Journal of Home Economics Research 12:138–147
Okeke EN, Ekomaru CI, Ihekoronye CN (2011) Globalization and changing patterns of family lifestyle: Implication for home economics. Journal of Home Economics Research 14:67–75
Ono M (2015) Commoditization of lifestyle migration: Japanese retirees in Malaysia. Mobilities 10:609–627
Paden SL, Buehler C (1995) Coping with the dual–income life–style. Journal of Marriage and the Family 57:101–110
Renzaho AMN, Green J, Mellor D, Swinburn B (2011) Parenting family functioning and lifestyle in a new culture: The case of African migrants in Melbourne, Victoria, Australia. Child and Family Social Work 16:228–240
Richter R (2002) Lifestyle and social structure Process of individualization in Eastern European countries. Revija za Sociologiju 33:169–180
Rickly JM (2016) Lifestyle mobilities: A politics of lifestyle rock climbing. Mobilities 11:243–263
Ross RB (1975) Measuring the influence of soft variables in travel behaviour. Traffic Quarterly 29:333–346
Rossel J, Hoelscher M (2012) Life styles and residential choice. Kölner Zeitschrift für Soziologie und Sozialpsychologie 64:303–327
Rubin RH (2001) Alternative lifestyles revisited or whatever happened to swingers group marriages and communes? Journal of Family Issues 22:711–726
Salomon I (1980) Life Style as a Factor in Explaining Travel Behavior. Doctoral Dissertation, Department of Civil Engineering, Massachusetts Institute of Technology
Salomon I, Ben–Akiva M (1983) The use of the life–style concept in travel demand models. Environment and Planning A 15:623–638
Scheiner J (2006) Housing and action space: what role is played by lifestyle life situation and spatial structure. Geographische Zeitschrift 94:43–62
Scheiner J (2010) Social inequalities in travel behaviour: trip distances in the context of residential self–selection and lifestyles. Journal of Transport Geography 18:679–690
Schneewind KA (1997) Marriage yes children no – a lifestyle with a future? System Familie 10:160–165
Schulze G (1992) Die Erlebnisgesellschaft Kultursoziologie der Gegenwart. Campus Verlag, New York
Sheller M, Urry J (2006) The new mobilities paradigm. Environment and Planning A 38:207–226
Sobel ME (1983) Lifestyle and Social Structure; Concepts, Definitions, Analysis. Academic Press, New York
Sztompka P (2000) The turn toward soft variables in sociological theory. In: Sztompka P (ed), Trust: A Sociological Theory, Cambridge University Press, Cambridge, 1–17
Talvitie A (1997) Things planners believe in and things they deny. Transportation 24:1–31
Thorpe H (2012) Transnational mobilities in snowboarding culture: Travel tourism and lifestyle migration. Mobilities 7:317–345
Tomlinson M (1998) Lifestyle and social class. European Sociological Review 19:97–111
Torkington K (2012) Place and lifestyle migration: The discursive construction of 'glocal' place–identity. Mobilities 7:71–92
Ukwueze FN (2011) Influence of online communities on family lifestyles. Journal of Home Economics Research 14:273–280
Van Acker V (2016) Lifestyle and modal choices: defining measuring and using the 'lifestyle' concept. Transportation Research Record 2495:74–82
Van Acker V, Mokhtarian PL, Witlox F (2011) Going soft: on how subjective variables explain modal choices for leisure travel. European Journal of Transport and Infrastructure Research 11:115–146
Van Acker V, Mokhtarian PL, Witlox F (2014) Car availability explained by the structural relationships between lifestyles residential location and underlying residential and travel attitudes. Transport Policy 35:88–99
Van der Wouden R, Kulberg J (2002) Stijloefeningen Leefstijlen in onderzoek en praktijk (Stylistic exercise Lifestyles in research and practice). S and RO Stedenbouw and Ruimtelijke Ordening, 12–20
Van Wee B (2002) Land use and transport: research and policy challenges. Journal of Transport Geography 10:259–271
Wachs N (1979) Transportation for the Elderly – Changing Lifestyles Changing Needs. University of California Press, Berkeley
Weber M (1922) Wirtschaft und Gesellschaft. Mohr, Tübingen

Chapter 4

The Car-dependent Life

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Abstract

This chapter focuses on car dependence in people's life. The authors first describe a new phenomenon about the decline in young people's car ownership and usage by providing additional facts and insights based on literature review and a case study in Japan. Especially, the case study in Japan uses data from a longitudinal national household expenditure survey and confirmed that car ownership and usage decisions in Japan are more or less associated with decisions about other household expenditures. Second, recent research on shared mobility is reviewed from the perspective of smart use of cars. Third, existing studies on cars from the life-oriented consideration are described by looking at shopping behavior (both store-shopping and online shopping) and general purchasing behavior as well as electric vehicle ownership and usage. As for electric vehicles, the influence of lifestyle is explored. Fourth, car ownership and usage for an inclusive society are discussed, where low-income persons, children, and the elderly are focused on. Fifth, behavioral changes toward less dependence on car from a long-term perspective are illustrated. Finally, discussions on car dependence from the life-oriented perspective are given.

Keywords: car dependency, monetary expenditure, lifestyles, young people, shared mobility, behavioral change, inclusive society, travel time budget, positive utility of travel time

References

Ahmed ZU, Ghingold M, Dahari Z (2007) Malaysian shopping mall behavior: An exploratory study Asia Pacific Journal of Marketing and Logistics 19:331–348

Ajzen I (1985) From intentions to actions: A theory of planned behavior. In: Kuhi J, Beckmann J (eds), Action-control: From Cognition to Behavior, Springer, New York, 11–39

Andrews FJ, Rich S, Stockdale R, Shelley J (2014) Parents' experiences of raising pre-school aged children in an outer-Melbourne growth corridor. Health and Place 27:220–228

Axsen J, Bailey J, Castro MA (2015) Preference and lifestyle heterogeneity among potential plug-in electric vehicle buyers. Energy Economics 50:190–201

Axsen J, Orlebar C, Skippon S (2013) Social influence and consumer preference formation for pro-environmental technology: The case of a UK workplace electric-vehicle study. Ecological Economics 95:96–107

Babin BJ, Darden WR (1995) Consumer self-regulation in a retail environment. Journal of Retailing 71(1):7–70

Babin BJ, Darden WR, Griffin M (1994) Work and/or fun: Measuring hedonic and utilitarian shopping value. Journal of Consumer Research 20(4):644–656

Ballús-Armet I, Shaheen SA, Clonts K, Weinzimmer D (2014) Peer-to-peer carsharing exploring public perception and market characteristics in the San Francisco Bay Area. California Transportation Research Record 2416:27–36

Baum CL (2009) The effects of vehicle ownership on employment. Journal of Urban Economics 66(3):151–163

Belgiawan PF, Schmöcker JD, Abou-Zeid M, Walker J, Lee TC, Ettema D, Fujii S (2014) Car ownership motivations among undergraduate students in China, Indonesia, Japan, Lebanon, Netherlands, Taiwan, and USA. Transportation 41(6):1227–1244

Blomqvist LH, Siren A (2003) Deconstructing a gender difference: driving cessation and personal driving history of older women. Journal of Safety Research 34:383–388

Burger M, Chiperi F, Kang X, Veenhoven R (2015) Consumption and happiness: A review of research. The Keynote Paper for the Workshop “Life-Oriented Approach for Transportation Studies” at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19–23 (to be published in the Conference Proceedings as a book)
Burkhardt J, Millard-Ball A (2006) Who's attracted to car-sharing? Transportation Research Record 1986:98–105
Carse A, Goodman A, Mackett RL, Panter J, Ogilvie D (2013) The factors influencing car use in a cycle-friendly city: The case of Cambridge. Journal of Transport Geography 28(100):67–74
Caulfield B, Farrell S, McMahon B (2010) Examining individuals preferences for hybrid electric and alternatively fueled vehicles. Transport Policy 17:381–387
Cermakova J (2001) The influence of income differentiation on the structure of household expenditures. Czech Journal of Economics and Finance (Finance A Uver) 51(1):33–45
Cervero R, Sandoval OS, Landis J (2002) Transportation as a stimulus of welfare-to-work: Private versus public mobility. Journal of Planning Education and Research 22(1):50–63
Chatterjee K, Andrews G, Ricci M, Parkhurst G (2013) Qualitative Insights into the effect on travel behavior of joining a carshare. Transportation Research Record 2359:76–84
Chen TD, Wang Y, Kockelman KM (2015) Where are the electric vehicles? A spatial model for vehicle-choice count data. Journal of Transport Geography 43:181–188
Chikaraishi M (2016) Mobility of the elderly. In: Zhang J (ed), Life-oriented Behavioral Research for Urban Policy, Springer, Chapter 10
Chikaraishi M, Fujiwara A, Zhang J, Axhausen KW, Zumkeller D (2011) Changes in variations of travel time expenditure: Some methodological considerations and empirical results from German Mobility Panel. Transportation Research Record 2230:121–131
Clark B, Chatterjee K, Melia S (2016) Changes in level of household car ownership: The role of life events and spatial context. Transportation 43(4):565–599
Cooper J, Ryley T, Smyth A (2001) Contemporary lifestyles and the implications for sustainable development policy: lessons from the UK's most car dependent city, Belfast. Cities 18(2):103–113
Corfman KP, Gupta S (1993) Mathematical models of group choice and negotiations. In: Eliashberg J, Lilien GL (eds), Handbooks in Operations Research and Management Science, Vol5: Marketing, North-Holland, Amsterdam, 83–142
Dargay J (2002) Determinants of car ownership in rural and urban areas: a pseudo-panel analysis. Transportation Research Part E 38(5):351–366
Davies J, Kurani KS (2010) Recharging behavior of households' plug-in hybrid electric vehicles observed variation in use of conversions of 5-kw-h blended plug-in hybrid electric vehicle. Transportation Research Record 2191:75–83
Davis B, Dutzik T, Baxandall P (2012) Transportation and the New Generation: Why Young People are Driving Less and What It Means for Transportation Policy. Frontier Group — US PIRG Education Fund
Debrezion G, Pels E, Rietveld P (2007) The impact of railway stations on residential and commercial property value: A meta-analysis. The Journal of Real Estate Finance and Economics 35(2):161–180
Delbosc A (2012) The role of well-being in transport policy. Transport Policy 23:25–33
Delbosc A, Currie G (2013) Causes of youth licensing decline: A synthesis of evidence. Transport Reviews 33:271–290
Delbosc A, Currie G (2014) Using discussion forums to explore attitudes toward cars and licensing among young, Australians. Transport Policy 31:27–34
Delbosc A, Vella-Brodrick D (2015) The role of transport in supporting the autonomy of young adults. Transportation Research Part F 33:97–105
Dennis C, Morgan A, Wright LT, Jayawardhena C (2010) The influences of social e-shopping in enhancing young women's online shopping behavior. Journal of Customer Behaviour 9:151–174
Diep VCS, Sweeney JC (2008) Shopping trip value: Do stores and products matter? Journal of Retailing and Consumer Services 15:399–409
Du H, Mulley C (2007) The short-term land value impacts of urban rail transit: Quantitative evidence from Sunderland, UK. Land Use Policy 24(1):223–233
Eakins J (2015) Household car ownership in Ireland across time: An analysis of the effects of expansion and contraction in the Irish economy. International Journal of Transport Economics 42(3):315–342
Erkip F (2003) The shopping mall as an emergent public space in Turkey. Environment and Planning A 35:1073–1094
Fujioka K, Ishigami T, Takahashi K (2012) Macro-analysis of travel behavior of youth in the Tokyo Metropolitan Area, with a focus on the life stages of women. IATSS Review 37(2):31–38
Gagliardi C, Spazzafumo L, Marcellini F, Mollenkopf H, Ruoppila I, Tacken M, Szémann Z (2007) The outdoor mobility and leisure activities of older people in five European countries. Ageing and Society 27:683–700

Gatersleben B (2011) The car as a material possession: Exploring the link between materialism and car ownership and use In: Lucas C, Blumemberg E, Weinberger R (eds), Auto Motives: Understanding Car Use Behaviours, Emerald, Bingley, 137–148
Gautier PA, Zenou Y (2010) Car ownership and the labor market of ethnic minorities. Journal of Urban Economics 67(3):392–403
Goodwin P, Dargay J, Hanly M (2004) Elasticities of road traffic and fuel consumption with respect to price and income: A review. Transport Reviews 24(3): 275–292
Goodwin P, Van Dender K (2013) 'Peak car' — Themes and issues. Transport Reviews 33:243–254
Douglas MJ, Watkins SJ, Gorman DR, Higgins M (2011) Are cars the new tobacco? Journal of Public Health 33(2):160–169
Graham DJ, Glaister S (2004) Road traffic demand elasticity estimates: A review. Transport Reviews 24:261–274
Grimal R, Collet R, Madre JL (2013) Is the stagnation of individual car travel a general phenomenon in France? A time-series analysis by zone of residence and standard of living. Transport Reviews 33(3):291–309
Hampshire RC, Gaites C (2011) Peer-to-peer carsharing market analysis and potential growth. Transportation Research Record 2217:119–126
Hensher DA, Stopher PR (1979) Behavioral travel demand modelling. Croom Helm, London
Hidrue MK, Parsons GR, Kempton W, Gardner MP (2011) Willingness to pay for electric vehicles and their attributes. Resource and Energy Economics 33:686–705
Hinde S, Dixon J (2005) Changing the obesogenic environment: Insights from a cultural economy of car reliance. Transportation Research Part D: Transport and Environment 10: 31–53
Hjorthol R, Fyhri A (2009) Do organized leisure activities for children encourage car-use? Transportation Research Part A 43(2):209–218
Hjorthol RJ, Levin L, Siren A (2010) Mobility in different generations of older persons: The development of daily travel in different cohorts in Denmark, Norway and Sweden. Journal of Transport Geography 18:624–633
Ho C, Mulley C (2015) Intra-household interactions in transport research: A review. Transport Review 35(1):33–55
Hojer M, Mattsson LG (2000) Determinism and backcasting in future studies. Futures 2:613–634
IEA (International Energy Agency) (2011) Technology roadmap: Electric and plug-in hybrid electric vehicles (EV/PHEV). (Available: http://wwwieaorg/publications/freepublications/publication/EV_PHEV_Roadmappdf; Accessed February 25, 2016)
Japan Juku Association (2006) Safety guidelines for children to attend cram school (Available: http://wwwjjaorjp/children/data/0603gl-allpdf; Accessed February 25, 2016) (in Japanese)
Jones MA, Reynolds KE, Arnold MJ (2006) Hedonic and utilitarian shopping value: Investigating differential effects on retail outcomes. Journal of Business Research 59(9):974–981
Jones P (1990) Development in Dynamic and Activity-Based Approaches to Travel Analysis. Gower, Aldcrshot
Jones P (2011) Conceptualising car 'dependence' In: Lucas C, Blumemberg E, Weinberger R (eds), Auto Motives: Understanding Car Use Behaviours, Emerald, Bingley, 39–61
Jung KO (2009) A study of the decision of an individual household on the housing size using Korea expenditure survey data. The Journal of Korean Public Policy 11(2):29–151
Kelly JA, Fu M (2014) Sustainable school commuting - understanding choices and identifying opportunities: A case study in Dublin, Ireland. Journal of Transport Geography 34:221–230
Kent JL (2014) Carsharing as active transport: What are the potential health benefits? Journal of Transport and Health 1(1):54–62
Kent JL, Dowling R (2013) Puncturing automobility? Carsharing practices. Journal of Transport Geography 32:86–92
Kim C, Parent O (2016) Modeling individual travel behaviors based on intra-household interactions. Regional Science and Urban Economics 57:1–11
Kim K (2015) Can carsharing meet the mobility needs for the low-income neighborhoods? Lessons from carsharing usage patterns in New York City. Transportation Research Part A 77:249–260
Kuhnimhof T, Armoogum J, Buehler R, Dargay J, Denstadli JM, Yamamoto T (2012) Men shape a downward trend in car use among young adults—Evidence from six industrialized countries. Transport Reviews 32:761–779
Kuhnimhof T, Zumkeller D, Chlond B (2013) Who made peak car, and how? A breakdown of trends over four decades in four countries. Transport Reviews 33:325–342
Kuwano M, Tsukai M, Matsubara T (2013) The influence of social conformity in promoting electric vehicle sales. In: Roorda MJ, Miller EJ (eds), Travel Behaviour Research: Current Foundations, Future Prospects, Lulu Press, Toronto, 369–386
Liao FH, Farber S, Ewing R (2015) Compact development and preference heterogeneity in residential location choice behaviour: A latent class analysis. Urban Studies 52(2):314–337

Long J, Harre N, Atkinson QD (2015) Social clustering in high school transport choices. Journal of Environmental Psychology 41:155–165
Lord S, Despres C, Ramadier T (2011) When mobility makes sense: A qualitative and longitudinal study of the daily mobility of the elderly. Journal of Environmental Psychology 31(1):52–61
Lucas C, Blumemberg E, Weinberger R (2011) Auto motives: Understanding car use behaviours. Emerald, Bingley
Lyons G, Urry J (2005) Travel time use in the information age. Transportation Research Part A 39:257–276
Macintyre S, Maciver S, Sooman A (1993) Area, class and health: Should we be focusing on places or people? Journal of Social Policy 22:213–234
Mackett R (2002) Increasing car dependency of children: Should we be worried? Proceedings of the Institution of Civil Engineers – Municipal Engineer 151(1):29–38
Madina C, Zamora I, Zabala E (2016) Methodology for assessing electric vehicle charging infrastructure business models. Energy Policy 89:284–293
Matthews H, Taylor M, Percy-Smith B, Limb M (2000) The unacceptable Flaneur: The shopping mall as a teenage hangout. Childhood 7:279–294
Medda F (2012) Land value capture finance for transport accessibility: A review. Journal of Transport Geography 25:154–161
Mercado R, Paez A (2009) Determinants of distance traveled with a focus on the elderly: A multilevel analysis in the Hamilton CMA, Canada. Journal of Transport Geography 17(1):65–76
Metz D (2004) Travel time constraints in transport policy. Proceedings of the Institution of Civil Engineers - Transport 157(2):99–105
Metz D (2010) Saturation of demand for daily travel. Transport Reviews 30:659–674
Mitropoulos LK, Prevedouros PD (2014) Multicriterion sustainability assessment in transportation: Private cars, carsharing, and transit buses. Transportation Research Record 2403:52–61
Mokhtarian PL, Salomon I (2001) How derived is the demand for travel? Some conceptual and measurement considerations. Transportation Research A 35:695–719
Morrissey P, Weldon P, O'Mahony M (2016) Future standard and fast charging infrastructure planning: An analysis of electric vehicle charging behavior. Energy Policy 89:257–270
Nasrudin N, Nor ARM (2013) Travelling to school: transportation selection by parents and awareness towards sustainable transportation. Procedia Environmental Sciences 17:392–400
Nishimura H (2012) Sociological perspectives on youth and automobiles with special reference to contemporary Japan. IATSS Review 37(2):21–30
Nordelof A, Messagie M, Tillman AM, Soderman ML, Van Mierlo J (2016) Environmental impacts of hybrid, plug-in hybrid, and battery electric vehicles-what can we learn from life cycle assessment? International Journal of Life Cycle Assessment 21(1):134–135
Oakil ATM, Ettema D, Arentze T, Timmermans HJP (2014) Changing household car ownership level and life cycle events: An action in anticipation or an action on occurrence. Transportation 41(4):889–904
OECD (2015) ITF Transport Outlook 2015. OECD publishing, Paris
Ong PM (2002) Car ownership and welfare-to-work. Journal of Policy Analysis and Management 21(2):239–252
Prettenthaler FE, Steininger KW (1999) From ownership to service use lifestyle: The potential of car sharing. Ecological Economics 28:443–453
Rabbit P, Carmichael A, Jones S, Holland C (1996) When and Why Older Drivers Give Up Driving. AA Foundation for Road Safety Research, Manchester, UK
Ramsay SE, Whincup PH, Morris RW, Lennon LT, Wannamethee SG (2008) Extent of social inequalities in disability in the elderly: Results from a population-based study of British men. Annals of Epidemiology 18(12):896–903
Redmond LS, Mokhtarian PL (2001) The positive utility of the commute: Modeling ideal commute time and relative desired commute amount. Transportation 28:179–205
Roosen J, Marneffe W, Vereeck L (2015) A review of comparative vehicle cost analysis. Transport Reviews 35(6):720–748
Schaefers T (2013) Exploring carsharing usage motives: A hierarchical means-end chain analysis. Transportation Research Part A 47:69–77
Shaheen SA, Cohen AP (2013) Carsharing and personal vehicle services: Worldwide market developments and emerging trends. International Journal of Sustainable Transportation 7(1):5–34
Shaheen SA, Martin E (2010) Demand for carsharing systems in Beijing, China: An exploratory study. International Journal of Sustainable Transportation 4(1):41–55
Siren A, Hakamies-Blomqvist L (2004) Private car as the grand equaliser? Demographic factors and mobility in Finnish men and women aged 65+. Transportation Research Part F 7(2):107–118
Smith GD, Shipley MJ, Rose G (1990) Magnitude and causes of socioeconomic differentials in mortality: further evidence from the Whitehall Study. Journal of Epidemiology and Community Health 44(4):265–270

Sperling D, Gordon D (2009) Two Billion Cars: Driving Towards Sustainability. Oxford University Press, Oxford
Stanley JR, Vella-Brodrick D (2009) The usefulness of social exclusion to inform social policy in transport. Transport Policy 16(3):90–96
Stanley JR (2011) Social exclusion. In: Currie G (ed), New Perspectives and Methods in Transport and Social Exclusion Research, Emerald, Bingley, 27–43
Sun XH, Yamamoto T, Morikawa T (2015) Charge timing choice behavior of battery electric vehicle users. Transportation Research Part D 37:97–107
Szalai A (1972) The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries, Mouton Publications, The Hague
Tsekeris T (2012) Disaggregate analysis of gasoline consumption demand of Greek households. Inzinerine Ekonomika-Engineering Economics 23(1):41–49
Van den Berg P, Arentze T, Timmermans H (2011) Estimating social travel demand of senior citizens in the Netherlands. Journal of Transport Geography 19(2):323–331
Vanderbeck RM, Johnson J, James H (2000) "That's the only place where you can hang out": Urban young people and the space of the mall. Urban Geography 21:5–25
Van Goeverden CD, de Boer E (2013) School travel behaviour in the Netherlands and Flanders. Transport Policy 26:73–84
Van Wee B, Rietveld P, Meurs H (2006) Is average daily travel time expenditure constant? In search of explanations for an increase in average travel time. Journal of Transport Geography 14:109–122
Veenhoven R (2014) World Database of Happiness: Archive of research findings on subjective enjoyment of life Erasmus University Rotterdam (Available at: http://worlddatabaseofhappinesseurnl)
Verma M, Malayath M, Verma A (2015) Analysis of aspiration for owning a car among youths in a city of a developing country, India. Proceedings of the Third Conference of Transportation Research Group of India (3rd CTRG), Kolkata, India, December 17-20 (CD-ROM)
Vessali KV (1996) Land use impacts of rapid transit: A review of the empirical literature. Berkeley Planning Journal 11(1):71–105
Vilhelmson B (1990) Vår dagliga rörlighet — om resandets utveckling, fördelning och gränser TFB-rapport 1990:16 Stockholm: Transportforskningsberedningen, 1990
Vilhelmson B (2007) The use of the car—Mobility dependencies of urban everyday life. In: Garling T, Steg L (eds), Threats from Car Traffic to the Quality of Urban Life: Problems, Causes, and Solutions, Elsevier, Oxford, 145–164.
Wang Y, Potoglou D, Orford S, Gong Y (2015) Bus stop, property price and land value tax: A multilevel hedonic analysis with quantile calibration. Land Use Policy 42:381–391
Woodjack J, Dahlia G, Andy L, Thomas ST, Gil T, Michael AN (2012) Consumer perceptions and use of driving distance of electric vehicles: Changes over time through lifestyle learning process. Transportation Research Record 2287:1–8
Yotsumoto M (2012) Loss of interest among youth toward automobiles: Analysis of the present state and the possibility of a break through. IATSS Review 37(2):39–47
Young S, Caisey V (2010) Mind shift, mode shift: A lifestyle approach to reducing car ownership and use based on behavioural economics and social marketing. Perspectives in Public Health 130(3):36–142
Yu B, Zhang J, Fujiwara A (2011) Representing in-home and out-of-home energy consumption behavior in Beijing. Energy policy 39(7):4168–4177
Yu B, Zhang J, Fujiwara A (2012) Analysis of the residential location choice and household energy consumption behavior by incorporating multiple self-selection effects. Energy Policy 46:319–334
Yu B, Zhang J, Fujiwara A (2013a) Evaluating the direct and indirect rebound effects in household energy consumption behavior: A case study of Beijing. Energy Policy 57(C):441–453
Yu B, Zhang J, Fujiwara A (2013b) A household time-use and energy-consumption model with multiple behavioral interactions and zero consumption. Environment and Planning B: Planning and Design 40(2):330–349
Yu B, Zhang J, Fujiwara A (2013c) Rebound effects caused by the improvement of vehicle energy efficiency: An analysis based on a SP-off-RP survey. Transportation Research Part D: Transport and Environment 24(0):62–68
Zahavi Y (1973) The TT-relationship: A unified approach to transportation planning. Traffic Engineering and Control 15N (n/5):205–212
Zahavi Y, Ryan JM (1980) Stability of travel components over time. Transportation Research Record 750:19–26
Zhang J (2009) A model of pedestrian time and monetary consumption behavior at city center In: Timmermans, HJP (ed), Pedestrian Behaviour: Models, Data Collection and Applications, Emerald, Bingley, 157–193
Zhang J (2014) Revisiting the residential self-selection issues: A life-oriented approach. Journal of Land Use and Transport 7(3):29–45

Zhang, J. (2015) The life-oriented approach and travel behavior research. A discussion paper for the Workshop "Life-Oriented Approach for Transportation Studies" at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19-23 (to be published in the Conference Proceedings as a book)

Zhang J, Kuwano M, Lee BJ, Fujiwara A (2009a) Modeling household discrete choice behavior incorporating heterogeneous group decision-making mechanisms. Transportation Research Part B 43:230–250

Zhang J, Uno M, Fujiwara A (2009b) Cause-effect structure analysis of influential factors related to affective experience of using transit systems based on Day Reconstruction Method. Proceedings of Infrastructure Planning, 39 (CD-ROM) (in Japanese)

Zhang J, Timmermans HJP, Borgers A (2002) A utility-maximizing model of household time use for independent, shared and allocated activities incorporating group decision mechanisms. Transportation Research Record 1807:1–8

Zhang J, Timmermans HJP, Borgers A (2005) A model of household task allocation and time use. Transportation Research Part B 39:81–95

Zhang J, Xiong Y (2015) Effects of multifaceted consumption on happiness in life: A case study in Japan based on an integrated approach. International Review of Economics 62:143–162

Zhang J, Xiong Y, Jiang Y, Tanaka N, Ohmori N, Taniguchi A (2016) Behavioral changes in migration associated with job, residence, and family life. In: Zhang J (ed), Life-oriented Behavioral Research for Urban Policy, Chapter 17. Springer.

Zhang J, Yu B, Chikaraishi M (2014) Interdependences between household residential and car ownership behavior: A life history analysis. Journal of Transport Geography 34:165–174

Zumkeller D (2009) The dynamics of change – latest results from the German Mobility Panel, Paper Presented at the 12th International Conference on Travel Behaviour Research, Jaipur, India, December 13-18 (CD-ROM)

Chapter 5

Household Energy Consumption Behavior

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Abstract

This chapter deals with not only household car ownership and usage, but also ownership and usage of in-home electric and electronic appliances from the perspective of energy consumption. Household energy consumption is an outcome of a series of life choices including end-use ownership, end-use efficiency, end-use usage, time use, expenditure allocation, residential location choice, employment choice, and household structure decisions. It is related to all life domains and also has externalities such as impacts on health. Life-oriented methodology that considers the potential interactions between household energy consumption and other life choices would be more appropriate to investigate this issue. To that end, this chapter sheds light on three fundamental questions related to household energy consumption: (1) how much is the minimum energy demand for households in the context of their life choices? (2) how do factors of attitude, belief and consciousness work on residential choice and household energy consumption? (3) how can household energy demand be actively managed by designing life choice-oriented interdisciplinary policies? In this chapter, the externality of household energy use on health is discussed as well.

Keywords: in-home and out-of-home energy consumption, integrated behavior model, energy demand management system, waste energy, re-bound effects, self-selection effects, health

REFERENCES

Abrahamse W, Steg L, Vlek C, Rothengatter T (2005) A review of intervention studies aimed at household energy conservation. Journal of environmental psychology 25(3):273–291

Al–mulali U (2016) Exploring the bi–directional long run relationship between energy consumption and life quality. Renewable and Sustainable Energy Reviews 54:824–837

Baxter LW, Feldman SL, Schinnar AP, Wirtshafter RM (1986) An efficiency analysis of household energy use. Energy Economics 8(2):62–73

Bin S, Dowlatabadi H (2005) Consumer lifestyle approach to US energy use and the related CO2 emissions. Energy Policy 33(2):197–208

Bolderdijk JW, Steg L, Geller ES, Lehman P, Postmes T (2013) Comparing the effectiveness of monetary versus moral motives in environmental campaigning. Nature Climate Change 3(4):413–416

Brand C, Goodman A, Rutter H, Song Y, Ogilvie D (2013) Associations of individual household and environmental characteristics with carbon dioxide emissions from motorised passenger travel. Applied Energy 104(0):158–169

Bruce N, Perez–Padilla R, Albalak R (2000) Indoor air pollution in developing countries: a major environmental and public health challenge. Bulletin of the World Health Organization 78(9):1078–1092

Cao XJ, Mokhtarian PL, Handy SL (2009) The relationship between the built environment and nonwork travel: A case study of Northern California. Transportation Research Part A 43(5):548–559

Chung W (2011) Review of building energy–use performance benchmarking methodologies. Applied Energy 88(5):1470–1479

Cole–Hunter T, Morawska L, Stewart I, Jayaratne R, Solomon C (2012) Inhaled particle counts on bicycle commute routes of low and high proximity to motorised traffic. Atmospheric Environment 61:197–203
Czajkowski M, Kądziela T, Hanley N (2014) We want to sort! Assessing households' preferences for sorting waste. Resource and Energy Economics 36(1):290–306
Delgado–Saborit JM (2012) Use of real–time sensors to characterise human exposures to combustion related pollutants. Journal of Environmental Monitoring 14(7):1824–1837
Ellegård K, Palm J (2011) Visualizing energy consumption activities as a tool for making everyday life more sustainable. Applied Energy 88(5):1920–1926
Emeakaroha A, Ang CS, Yan Y, Hopthrow T (2014) Integrating persuasive technology with energy delegates for energy conservation and carbon emission reduction in a university campus. Energy 76(0):357–374
Fernández C, Koop G, Steel MF (2005) Alternative efficiency measures for multiple–output production. Journal of Econometrics 126(2):411–444
Ferrara I, Serret Y (2008) Household Behaviour and the Environment Reviewing the Evidence. Organization for Economic Cooperation and Development: Paris France, 153–180
Filippini M, Hunt LC (2012) US residential energy demand and energy efficiency: A stochastic demand frontier approach. Energy Economics 34(5):1484–1491
Fortes P, Pereira R, Pereira A, Seixas J (2014) Integrated technological–economic modeling platform for energy and climate policy analysis. Energy 73(0):716–730
Gadenne D, Sharma B, Kerr D, Smith T (2011) The influence of consumers' environmental beliefs and attitudes on energy saving behaviours. Energy Policy 39(12):7684–7694
Gaspar R, Antunes D (2011) Energy efficiency and appliance purchases in Europe: Consumer profiles and choice determinants. Energy Policy 39(11):7335–7346
Gomi K, Ochi Y, Matsuoka Y (2011) A systematic quantitative backcasting on low–carbon society policy in case of Kyoto city. Technological Forecasting and Social Change 78(5):852–871
Han S, Zhuang F, He Q, Shi Z, Ao X (2014) Energy model for rumor propagation on social networks. Physica A: Statistical Mechanics and its Applications 394(0):99–109
Holden E, Linnerud K (2010) Environmental attitudes and household consumption: an ambiguous relationship. International Journal of Sustainable Development 13(3):217–231
Hubacek K, Guan D, Barrett J, Wiedmann T (2009) Environmental implications of urbanization and lifestyle change in China: Ecological and water footprints. Journal of Cleaner Production 17(14):1241–1248
IEA (2014) Energy efficiency indicators: Fundamentals on statistics international energy agency, Paris. https://wwwieaorg/publications/freepublications/publication/IEA_EnergyEfficiencyIndicatorsFundamentalsonStatisticspdf
IEA (2015) World energy outlook special report 2015: energy and climate change international energy agency, paris. https://wwwieaorg/publications/freepublications/publication/WEO2015SpecialReportonEnergyandClimateChangepdf
Jain RK, Gulbinas R, Taylor JE, Culligan PJ (2013) Can social influence drive energy savings? Detecting the impact of social influence on the energy consumption behavior of networked users exposed to normative eco–feedback. Energy and Buildings 66(0):119–127
Jalali MM, Kazemi A (2015) Demand side management in a smart grid with multiple electricity suppliers. Energy 81(0):766–776
Khansari N, Mostashari A, Mansouri M (2014) Conceptual Modeling of the Impact of Smart Cities on Household Energy Consumption. Procedia Computer Science 28(0):81–86
Lutzenhiser L (1992) A cultural model of household energy consumption. Energy 17(1):47–60
Lutzenhiser L (1993) Social and behavioral aspects of energy use. Annual Review of Energy and the Environment 18(1):247–289
Martinsson J, Lundqvist LJ, Sundström A (2011) Energy saving in Swedish households The (relative) importance of environmental attitudes. Energy Policy 39(9):5182–5191
Mokhtarian PL, Cao X (2008) Examining the impacts of residential self–selection on travel behavior: A focus on methodologies. Transportation Research Part B: Methodological 42(3):204–228
Nässén J (2014) Determinants of greenhouse gas emissions from Swedish private consumption: Time–series and cross–sectional analyses. Energy 66(0):98–106
Ohler AM, Billger SM (2014) Does environmental concern change the tragedy of the commons? Factors affecting energy saving behaviors and electricity usage. Ecological Economics 107(0):1–12
Ozaki R, Sevastyanova K (2011) Going hybrid: An analysis of consumer purchase motivations. Energy Policy 39(5):2217–2227
Rahut DB, Das S, De Groote H, Behera B (2014) Determinants of household energy use in Bhutan. Energy 69(0):661–672

Sapci O, Considine T (2014) The link between environmental attitudes and energy consumption behavior. Journal of Behavioral and Experimental Economics 52(0):29–34
Schaffrin A, Reibling N (2015) Household energy and climate mitigation policies: Investigating energy practices in the housing sector. Energy Policy 77:1–10
Steg L, Bolderdijk JW, Keizer K, Perlaviciute G (2014) An integrated framework for encouraging pro–environmental behaviour: The role of values situational factors and goals. Journal of Environmental Psychology 38:104–115
Steinle S, Reis S, Sabel CE, Semple S, Twigg MM, Braban CF, Leeson SR, Heal MR, Harrison D, Lin C, Wu H (2015) Personal exposure monitoring of PM25 in indoor and outdoor microenvironments. Science of The Total Environment 508:383–394
Tsushima S, Tanabe S–i, Utsumi K (2015) Workers' awareness and indoor environmental quality in electricity–saving offices. Building and Environment 88:10–19
Van Wee B (2009) Self–Selection: A Key to a Better Understanding of Location Choices Travel Behaviour and Transport Externalities? Transport reviews 29(3):279–292
Veenhoven R (2014) Findings on happiness and consumption. World Database of Happiness Erasmus, University Rotterdam. (http://worlddatabaseofhappinesseurnl/hap_cor/desc_topicphp?tid=6265; Assessed March, 2016)
Wang Q, Poh KL (2014) A survey of integrated decision analysis in energy and environmental modeling Energy 77(0):691–702
Wang Y (2010) The analysis of the impacts of energy consumption on environment and public health in China. Energy 35(11):4473–4479
Wang Y, Sun M, Yang X, Yuan X (2015) Public awareness and willingness to pay for tackling smog pollution in China: a case study. Journal of Cleaner Production 112(2):1627–1634
Weber C, Perrels A (2000) Modelling lifestyle effects on energy demand and related emissions. Energy Policy 28(8):549–566
Wei YM, Liu LC, Fan Y, Wu G (2007) The impact of lifestyle on energy use and CO 2 emission: an empirical analysis of China's residents. Energy policy 35(1):247–257
WHO (2013) Indoor air quality guidelines: household fuel combustion. World Health Organization. http://wwwwhoint/indoorair/guidelines/hhfc/en/
Widén J, Lundh M, Vassileva I, Dahlquist E, Ellegård K, Wäckelgård E (2009) Constructing load profiles for household electricity and hot water from time–use data—Modelling approach and validation. Energy and Buildings 41(7):753–768
Yu B, Tian Y, Zhang J (2015) A dynamic active energy demand management system for evaluating the effect of policy scheme on household energy consumption behavior. Energy 91:491–506
Yu B, Zhang J, Fujiwara A (2011) Representing in–home and out–of–home energy consumption behavior in Beijing. Energy policy 39(7):4168–4177
Yu B, Zhang J, Fujiwara A (2012) Analysis of the residential location choice and household energy consumption behavior by incorporating multiple self–selection effects. Energy Policy 46:319–334
Yu B, Zhang J, Fujiwara A (2013a) Evaluating the direct and indirect rebound effects in household energy consumption behavior: A case study of Beijing. Energy Policy 57(C):441–453
Yu B, Zhang J, Fujiwara A (2013b) A household time–use and energy–consumption model with multiple behavioral interactions and zero consumption. Environment and Planning B 40(2):330–349
Yu B, Zhang J, Fujiwara A (2013c) Rebound effects caused by the improvement of vehicle energy efficiency: An analysis based on a SP–off–RP survey. Transportation Research Part D 24(0):62–68
Zaman K, bin Abdullah A, Khan A, bin Mohd Nasir MR, Hamzah TAAT, Hussain S (2016) Dynamic linkages among energy consumption environment health and wealth in BRICS countries: Green growth key to sustainable development. Renewable and Sustainable Energy Reviews 56:1263–1271
Zhang J (2014) Revisiting residential self–selection issues: A life–oriented approach. Journal of Transport and Land Use 7(3):29–45
Zhang J, Xiong Y (2015) Effects of multifaceted consumption on happiness in life: A case study in Japan based on an integrated approach. International Review of Economics 62(2):143–162
Zhang K, Batterman SA (2009) Time allocation shifts and pollutant exposure due to traffic congestion: An analysis using the national human activity pattern survey. Science of the total environment 407(21):5493–5500

Chapter 6

ICT-dependent Life and Its Impacts on Mobility

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Abstract

The rapid development of information and communication technology (ICT) is revolutionizing people's lives in many ways. Among their numerous impacts, ICT solutions allow for more flexibility in individuals' schedules, and provide new alternatives for the organization of work, social and recreational activities. Several types of relationships are possible between the adoption of ICT and travel behavior, leading to the *eventual complementarity with, substitution of, modification of, or neutrality* with travel. Modern technologies play an important role in affecting individuals' long- and medium-term decisions as well as numerous daily choices. The application of information and communication technologies is also behind the introduction of new shared mobility services that were barely imaginable only a few years ago. These services expand the set of travel options available to individuals. The effects of the availability and adoption of these technologies on individual behaviors are still largely unclear. They will likely cause long-lasting impacts on travel patterns, vehicle ownership, and life organization.

Keywords: information and communication technology, lifestyles, mobility, travel behavior, shared mobility services, complementarity, substitution, modification, neutrality, urban form, connected and autonomous vehicles

REFERENCES

Audirac I (2005) Information technology and urban form, challenges to smart growth. International Regional Science Review: 28(2):119–145

Buck D, Buehler R, Happ P, Rawls B, Chung P, Borecki N (2013) Are bikeshare users different from regular cyclists? A first look at short-term users, annual members, and area cyclists in the Washington, DC, region. Transportation Research Record 2387:112–119

Cairncross F (2001) The Death of Distance: How the Communications Revolution is Changing Our Lives, Harvard Business School Press

Cervero R, Tsai Y (2004) City CarShare in San Francisco, California: second-year travel demand and car ownership impacts. Transportation Research Record 1887:117–127

Chatterjee K, Andrews G, Ricci M, Parkhurst G (2013) Qualitative insights into the effect on travel behavior of joining a carshare. Transportation Research Record 2359:76–84

Choo S, Mokhtarian PL (2005) Do telecommunications affect passenger travel or vice versa? Structural equation models of aggregate US time series data using composite indexes. Transportation Research Record 1926(1):224–232

Circella G, Fulton L, Alemi F, Berliner RM, Tiedeman K, Mokhtarian PL, Handy S. (2016) What Affects Millennials Mobility? PART I: Investigating the Role of Environmental Concerns, Lifestyles, Mobility-Related Attitudes and Adoption of Technology of Young Adults in California. National Center for Sustainable Transportation, May 2016.

Circella G, Mokhtarian PL (forthcoming) Impact of information communication technology on transportation. In: Hanson S, Giuliano G (eds), Geography of Urban Transportation. New York, The Guilford Press

Couclelis H (2004) Pizza over the Internet: e-commerce, the fragmentation of activity and the tyranny of the region. Entrepreneurship & Regional Development 16(1):41–54

Dekker R, Engbersen G, Faber M (2015) The use of online media in migration networks. Population, Space and

Place 22(6):539–551
Denstadli JM, Julsrud TE, Hjorthol RJ (2012) Videoconferencing as a mode of communication: a comparative study of the use of videoconferencing and face-to-face meetings. Journal of Business and Technical Communication 26(1):65–91
Dong Z, Mokhtarian PL, Circella G, Allison JR (2015) The estimation of changes in rail ridership through an onboard survey: did free Wi-Fi make a difference to Amtrak's Capitol Corridor service?, Transportation 42(1):123–142
Downs A (2005) Still Stuck in Traffic: Coping with Peak-Hour Traffic Congestion. Brookings Institution Press.
Ewing R, Cervero R (2010) Travel and the built environment: a meta-analysis. Journal of the American Planning Association 76(3):265–294
Fagnant DJ, Kockelman K (2015) Preparing a nation for autonomous vehicles: opportunities, barriers and policy recommendations. Transportation Research Part A 77:167–181
Greenblatt JB, Shaheen S (2015) Automated vehicles, on-demand mobility, and environmental impacts. Current Sustainable/Renewable Energy Reports 2(3):74–81
Hallock L, Inglis J (2015) The Innovative Transportation Index: The Cities Where New Technologies and Tools Can Reduce Your Need to Own a Car. Frontier Group. U.S. PIEG Education Fund, February 2015.
Helminen V, Ristimäki M (2007) Relationships between commuting distance, frequency and telework in Finland. Journal of Transport Geography: 15(5):331–342
Hubers C, Schwanen T, Dijst M (2008) ICT and temporal fragmentation of activities: an analytical framework and initial empirical findings. Tijdschrift voor economische en sociale geografie 99(5):528–546
Janelle DG, Gillespie A (2004) Space–time constructs for linking information and communication technologies with issues in sustainable transportation. Transport Reviews 24(6):665–677
Kellerman A (2009) The end of spatial reorganization? Urban landscapes of personal mobilities in the information age. Journal of Urban Technology 16(1):47–61
Komito L (2011) Social media and migration: virtual community 2.0. Journal of the American Society for Information Science and Technology 62(6):1075–1086
Malokin A, Circella G, Mokhtarian PL (2015) How do activities conducted while commuting influence mode choice? Testing public transportation advantage and autonomous vehicle scenarios. Compendium of Papers CD-ROM, the 94th Annual Meeting of the Transportation Research Board, Washington D.C., January 11-15
Martin E, Shaheen S (2011) The impact of carsharing on public transit and non-motorized travel: An exploration of North American carsharing survey data. Energies 4(11):2094–2114
Martin EW, Shaheen SA (2014) Evaluating public transit modal shift dynamics in response to bikesharing: a tale of two US cities. Journal of Transport Geography 41:315–324
Mascheroni G (2007) Global nomads' network and mobile sociality: Exploring new media uses on the move. Information, Community and Society 10(4):527–546
Mishra GS, Clewlow RR, Mokhtarian PL, Widaman KF (2015) The effect of carsharing on vehicle holdings and travel behavior: A propensity score and causal mediation analysis of the San Francisco Bay Area. Research in Transportation Economics 52:46–55
Mokhtarian PL (2009) If telecommunication is such a good substitute for travel, why does congestion continue to get worse?, Transportation Letters 1(1):1–17
Mokhtarian PL, Collantes GO, Gertz C (2004) Telecommuting, residential location, and commute-distance traveled: evidence from State of California employees. Environment and Planning A 36:1877–1897
Mokhtarian P L, Salomon I, Choo S (2005) Measuring the measurable: Why can't we agree on the number of telecommuters in the US?, Quality and Quantity 39(4):423–452
Mokhtarian PL, Tal G (2013) Impacts of ICT on travel behavior: A tapestry of relationships. In: Rodrigue J-P, Notteboom T, Shaw J (eds), The Sage Handbook of Transport Studies. London, Sage Publications, 241–260
Nijkamp P, Salomon I (1989) Future spatial impacts of telecommunications. Transportation Planning and Technology 13(4):275–287
O'Brien R (1992) Global Financial Integration: The End of Geography. Council on Foreign Relations Press
Rayle L, Shaheen S, Chan N, Dai D, Cervero R (2014) App-Based, On-Demand Ride Services: Comparing Taxi and Ridesourcing Trips and User Characteristics in San Francisco. University of California Transportation Center UCTC-FR-2014-08, University of California, Berkeley.
Robinson JP, Martin S (2010) IT use and declining social capital? More cold water from the General Social Survey (GSS) and the American Time-Use Survey (ATUS). Social Science Computer Review 28(1):45–63
Salomon I (1998) Technological change and social forecasting: the case of telecommuting as a travel substitute, Transportation Research Part C 6(1):17–45
Sassen S (2000) New frontiers facing urban sociology at the Millennium. The British Journal of Sociology 51(1):143–159
Schwanen T, Kwan M-P (2008) The Internet, mobile phone and space-time constraints. Geoforum 39(3):1362–1377

Shaheen S, Chan AN, Bansal A, Cohen A (2015) Shared Mobility: A Sustainability and Technology Workshop: Definition, Industry Development and Early Understanding. University of California, Berkeley.
Shaheen SA, Martin EW, Cohen AP, Chan ND, Pogodzinsk M (2014) Public Bikesharing in North America During a Period of Rapid Expansion: Understanding Business Models, Industry Trends & User Impacts. MTI Report 12–29
Stevenson B (2009) The Internet and Job Search. NBER Chapters, 67–86
Taylor B, Chin R, Melanie C, Dill J, Hoel L, Manville M, Polzin S (2015) Special Report 319: Between Public and Private Mobility: Examining the Rise of Technology-Enabled Transportation Services. Transportation Research Board: Committee for Review of Innovative Urban Mobility Services
Tranos E, Reggiani A, Nijkamp P (2013) Accessibility of cities in the digital economy. Cities 30:59–67
Vilhelmson B, Thulin E (2013) Does the Internet encourage people to move? Investigating Swedish young adults' internal migration experiences and plans. Geoforum 47:209–216
Wachs M (2013) Turning cities inside out: transportation and the resurgence of downtowns in North America. Transportation 40(6):1159–1172
Watkins KE, Ferris B, Borning A, Rutherford GS, Layton D (2011) Where is my bus? Impact of mobile real-time information on the perceived and actual wait time of transit riders. Transportation Research Part A 45(8):839–848
White NR, White PB (2007) Home and away: Tourists in a connected world. Annals of Tourism Research 34(1):88–104
Yankow JJ (2003) Migration, job change, and wage growth: A new perspective on the pecuniary return to geographic mobility. Journal of Regional Science 43(3):483–516

Chapter 7

Health-related Life Choices

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Abstract

Health has been of growing interest for professionals in a variety of disciplines, including engineers and urban planners among many others. Urban and transport policies may be interlinked with health at many levels, directly or indirectly, because connections between life choices and health may be bidirectional. A healthy life means a balanced condition of not only physical health, but also mental and social health. However, existing studies have mainly focused on the physical health and ignored the mental and social aspects in people's health-related quality of life (QOL). Therefore, this chapter makes a review of health behavior and health-related QOL with respect to health lifestyle habits, health promotion activities, active and non-active travel behavior (active travel refers to walking, bicycling and partially refers to use of transit systems), park usage, residential environment, and urban infrastructure. Lifestyle habits are reviewed by focusing on smoking, alcohol drinking, eating, sleeping, social contacts, and commuting, etc. Various future research issues are finally discussed.

Keywords: physical health, mental health, social health, lifestyle habits, stage of change model, commuter paradox, active travel, residential environment, infrastructure, healthy city

References

Ainsworth BE, Haskell WL, Whitt MC, Irwin ML, Swartz AM, Strath SJ, O'Brien WL, Bassett DRJ, Schmitz KH, Emplaincourt PO, Jacobs DRJ, Leon AS (2000) Compendium of physical activities: An update of activity codes and MET intensities. Medicine and Science in Sports and Exercise 32(9):S498–S504

American Planning Association (APA) (2003) How cities use parks to Improve Public Health. American Planning Association. Chicago, United States. Retrieved from: http://imaginecities.com/test/wp-content/uploads/2014/02/physicalactivitycities.pdf (Accessed May 13, 2016)

Baum F (1999) Social capital and health: Implications for health in rural Australia. In: Leaping the Boundary Fence: Using Evidence and Collaboration to Build Healthier Communities. Proceedings of the 5th National Rural Health Conference, Adelaide, S.A., Australia, March 14-17

Bedimo-Rung AL, Mowen AJ, Cohen DA (2005) The significance of parks to physical activity and public health: A conceptual model. American Journal of Preventive Medicine 28(2S2):159–168

Berry MS, Repke MA, Nickerson NP, Conway LG III, Odum AL, Jordan KE (2015) Making time for nature: visual exposure to natural environments lengthens subjective time perception and reduces impulsivity. PLoS ONE 10(11):e0141030.

Black C (2008) Working for a Healthier Tomorrow. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209782/hwwb-working-for-a-healthier-tomorrow.pdf (Accessed June 2, 2016)

Breslow L (1999) From disease prevention to health promotion. Journal of the American Medical Association 281(11):1030–1033

Brownson RC, Ballew P, Dieffenderfer B, Haire-Joshu D, Heath GW, Kreuter MW, Myers BA (2007) Evidence-based interventions to promote physical activity: What contributes to dissemination by state health departments. American Journal of Preventive Medicine 33(1):S66–S73

Calogiuri G, Chroni S (2014) The impact of the natural environment on the promotion of active living: an integrative systematic review. BMC Public Health 14:873

Caspersen CJ, Pereira MA, Curran KM (2000) Changes in physical activity patterns in the United States, by sex and cross-sectional age. Medicine and Science in Sports and Exercise 32(9):1601–1609

Christian TJ (2009) Opportunity costs surrounding exercise and dietary behaviors: quantifying trade-offs between

commuting time and health-related activities. Available at SSRN: http://ssrncom/abstract=1490117
City of London Corporation (2014) Best practice in promoting employee health and wellbeing in the city of London retrieved from: https://wwwcityoflondongovuk/business/economic-research-and-information/research-publications/Documents/Research-2014/employee-health-and-wellbeing-in-the-city-of-London-final pdf (Accessed May 5, 2016)
Cohen DA, McKenzie TL, Sehgal A, Williamson S, Golinelli D, Lurie N (2007) Contribution of public parks to physical activity. American Journal of Public Health 97(3):509–514
Crabtree S (2010) Wellbeing lower among workers with long commutes retrieved from: http://wwwgallupcom/poll/142142/wellbeing-lower-among-workers-long-commutesaspx (Accessed February 12, 2016)
Croucher K, Wallace A, Duffy S (2012) The influence of land use mix, density and urban design on health: A critical literature review. The University of York, UK retrieved from: http://wwwgcphcouk/assets/0000/3519/Review_of_infleunce_of_land_use_mix_density_and_urban_design_on_health_finalpdf (Accessed May 5, 2016)
Diez Roux AV (2001) Investigating neighborhood and area effects on health. American Journal of Public Health 91(11):1783–1789
Dora C (2013) Health – a measure of performance for Urban Transport. World Health Organization. Presentation file retrieved from: http://www.uncrd.or.jp/content/documents/23228EST-P6_WHO.pdf (Accessed May 13, 2016)
Dora C, Haines A, Balbus J, Fletcher E, Adair-Rohani H, Alabaster G, Hossain R, de Onis M, Branca F, Neira, M (2015) Indicators linking health and sustainability in the post-2015 development agenda. The Lancet 385(9965):380–391
Eakin EG, Brown WJ, Marshall AL, Mummery K, Larsen E (2004) Physical activity promotion in primary care: Bridging the gap between research and practice. American Journal of Preventive Medicine 27(4):297–303
Freudenberg N (2000) Health promotion: A review of current practice and future prospects in the United States. Annual Review of Public Health 21:473–503
Frumkin H (2003) Healthy places: Exploring the evidence. American Journal of Public Health 93(9):1451–1456
Frumkin H, Frank L, Jackson R (2004) Urban Sprawl and Public Health. Designing, Planning and Building for Healthy Communities, Island Press, Washington, DC
Gee GC, Takeuchi DT (2004) Traffic stress, vehicular burden and well-being: A multilevel analysis. Social Science and Medicine 59(2):405–414
Gies E (2006) The Health Benefits of Parks: How Parks Help Keep Americans and Their Communities Fit and Healthy. The Trust for Public Land (https://wwwtplorg/sites/default/files/cloudtplorg/pubs/benefits_HealthBenefitsReportpdf; Accessed May 5, 2016)
Goetzel RZ (2009) Perspective: Do prevention or treatment services save money? The wrong debate. Health Affairs 28(1):37–41
Grosvenor MB, Smolin LA (2012) Visualizing Nutrition: Everyday Choices. Hoboken, NJ: Wiley.
Hancock T (1993) Health, human development and the community ecosystem: Three ecological models. Health Promotion International 8(1): 41-47
Hancock T., Duhl L (1998) The Parameters of a Healthy City. Promoting Health in the Urban Context. Copenhagen, World Health Organization Regional Office for Europe. WHO Healthy Cities Papers, No. 1
Huinink J, Feldhaus M (2012) Fertility and commuting behaviour in Germany. Comparative Population Studies – Zeitschrift für Bevölkerungswissenschaft 37(3-4):491–516
Isenberg JP, Quisenberry N (2002) Play: Essential for all children a position paper of the association for childhood education international (wwwimaginationplaygroundcom//Play-essential-for-all-childrendoc (Accessed February 4, 2016)
Jimmy G, Martin, BW (2005) Implementation and effectiveness of a primary care based physical activity counselling scheme. Patient Education and Counseling 56(3):323–331
Jones C (2014) Four ways the built environment affects mental health Article for the web site Urbanist Link: http://urbanistco/four-ways-the-built-environment-affects-mental-health/ (Accessed December 14, 2015)
Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P (2002) The effectiveness of interventions to increase physical activity - A systematic review. American Journal of Preventive Medicine 22(4):73–107
Krenichyn K (2006) The only place to go and be in the city: Women talk about exercise, being outdoors, and the meanings of a large urban park. Health and Place 12:631–643
Kuo FE, Sullivan, WC (2001) Environment and crime in the inner city. Environment and Behavior 33(3):343–367
Lee ACK, Maheswaran, R (2011) The health benefits of urban green spaces: A review of the evidence. Journal of Public Health 33(2):212–222
Lopez-Zetina J, Lee H, Friis R (2006) The link between obesity and the built environment Evidence from an ecological analysis of obesity and vehicle miles of travel in California. Health and Place 12(4):656–664

Lowrey A (2011) Your commute is killing you web article for slate (http://primaryslatecom/articles/ business/moneybox/2011/05/your_commute_is_killing_youhtml (Accessed January 24, 2016)
Lundeen S (1992) Health needs of a suburban community: A nursing assessment approach. Journal of Community Health Nursing 9(4):235–244
Maas J, Verheij RA, Groenewegen PP, de Vries S, Spreeuwenberg P (2006) Green space, urbanity, and health: how strong is the relation? Journal of Epidemiology and Community Health 60(7):587-592
Maller C, Townsend M, Leger LS, Henderson-Wilson C, Pryor A, Prosser L, Moore M (2009) Healthy parks, healthy people : The health benefits of contact with nature in a park context. The George Wright Forum 26(2):51–83 Retrieved from: http://wwwgeorgewrightorg/262mallerpdf (Accessed May 5, 2016)
Matheson EM, King DE, Everett, CJ (2012) Healthy lifestyle habits and mortality in overweight and obese individuals. The Journal of the American Board of Family Medicine 25(1):9–15
Mattisson K, Håkansson C, Jakobsson K (2015) Relationships between commuting and social capital among men and women in southern Sweden. Environment and Behavior 47(7):734-753
Melis G, Gelormino E, Marra G, Ferracin E, Costa, G (2015) The effects of the urban built environment on mental health: A cohort study in a large northern Italian city. International Journal of Environmental Research and Public Health 12(11):14898–14915
Melis G (2016) Public transport and urban density affect urban mental health link: http://wwwurbandesignmentalhealthcom/blog/public-transport-and-urban-density-affect-urban-mental-health-says-italian-study (Accessed February 5, 2016)
Novaco RW, Stokols D, Milanesi L (1990) Objective and subjective dimensions of travel impedance as determinants of commuting stress. American Journal of Community Psychology 18(2):231–257
Novaco RW, Kliewer W, Broquet A (1991) Home environmental consequences of commute travel impedance. Environmental Ecological Psychology 19(6):881–909
OCFP (2005) The Health Impacts of Urban Sprawl. Ontario College of Family Physicians. Toronto, Ontario, Canada. Retrieved from: http://ocfp.on.ca/docs/committee-documents/urban-sprawl---volume-4---social-and-mental-health.pdf?sfvrsn=5 (Accessed May 13, 2016)
Owen N, Glanz K, Sallis JF, Kelder SH (2006) Evidence-based approaches to dissemination and diffusion of physical activity interventions. American Journal of Preventive Medicine 31(4):S35–S44
Paumgarten N (2007) There and back again (retrieved from: http://wwwnewyorkercom/magazine/ 2007/04/16/there-and-back-again; Accessed January 26, 2016)
Pearson DG, Craig T (2014) The great outdoors? Exploring the mental health benefits of natural environments. Frontiers in Psychology 5:1178
Perez Barbosa D, Zhang J, Seya H (2016) Effects of the residential environment on health in Japan linked with travel behavior. International Journal of Environmental Research and Public Health 13(2).
Pinto BM, Goldstein MG, Ashba J, Sciamanna CN, Jette A (2005) Randomized controlled trial of physical activity counseling for older primary care patients. American Journal of Preventive Medicine 29(4):247–255
Platkin C (2013) Critical life choices to live healthier and have a better diet (http://wwwdietdetectivecom/7-critical-life-choices-live-healthier-and-have-better-diet-0/ (Accessed February 20, 2016)
Putnam RD (2000) Bowling Alone: The Collapse and Revival of American Community. New York: Simon Schuster
Rabin BA, Brownson RC, Kerner JF, Glasgow RE (2006) Methodologic challenges in disseminating evidence-based interventions to promote physical activity. American Journal of Preventive Medicine 31(4):S24–S34
Rainham D, McDowell I, Krewski D, Sawada M (2010) Conceptualizing the healthscape: Contributions of time geography, location technologies and spatial ecology to place and health research. Social Science and Medicine 70(5):668–676
Sciamanna CN, Goldstein MG, Marcus BH, Lawrence K, Pinto BM (2004) Accuracy of recall of exercise counseling among primary care patients. Preventive Medicine 39(6):1063–1067
Smolin LA, Grosvenor MB (2005) Eating Right: An Introduction to Human Nutrition. New York: Chelsea House Publishers
Solecki WD, Welch JM (1995) Urban parks: green spaces or green walls? Landscape and Urban Planning 32(2):93–106
Steptoe A, Perkins-Porras L, McKay K, Rink E, Hilton S, Cappuccio F (2003) Primary care-behavioural counselling to increase consumption of fruit and vegetables in low income adults: Randomised trial. Primary Care Bmj 326(7394):1–6
Sturm R, Cohen DA (2004) Suburban sprawl and physical and mental health. Public Health 118(7):488–496
Stutzer A, Frey BS (2008) Stress that doesn't pay: the commuting paradox. Scandinavian Journal of Economics 110(2):339–366
Takano T, Nakamura K, Watanabe M (2002) Urban residential environments and senior citizens' longevity in

megacity areas: The importance of walkable green spaces. Journal of Epidemiology and Community Health 56(12):913–918

The Harvard University (undated) environmental barriers to activity (http://wwwhsphharvardedu/ obesity-prevention-source/obesity-causes/physical-activity-environment/; Accessed February 15, 2016)

U.S. Department of Health and Human Services (2000) Healthy people 2010: Understanding and improving health. The second Edition. Washington, DC: U.S. Government Printing Office.

USDA (2005). Dietary Guidelines for Americans 2005, Chapter 9: Alcoholic Beverages. The sixth Edition, U.S. Department of Health and Human Services and U.S. Department of Agriculture, Washington, DC: U.S. Government Printing Office. Link: http://health.gov/dietaryguidelines/dga2005/document/ pdf/dga2005.pdf (Accessed May 6, 2016).

Van Den Berg P, Kemperman A, de Kleijn B, Borgers A (2015) Locations that support social activity participation of the aging population. International Journal of Environmental Research and Public Health, 12(9):10432–10449

Waddell, G., & Burton, A. K. (2006). Is Work Good for your Health and Well-Being? The Stationery Office, United Kingdom.

World Health Organization (1948) WHO Definition of Health. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

World Health Organization (2000) Regional Guidelines for Developing a Healthy Cities Project. Manila: WHO/WPRO

World Health Organization (2010) Global Recommendations on Physical Activity for Health. Geneva (Available from: http://apps.who.int/iris/bitstream/10665/44399/1/9789241599979_eng.pdf; Accessed May 31, 2016)

World Health Organization (2011) Healthy Urbanization: Regional Framework for Scaling Up and Expanding Healthy Cities in the Western Pacific 2011-2015 (http://www.wpro.who.int/health_ promotion/healthy_urbanization_regional_framework_2011_2015.pdf; Accessed May 5, 2016)

Zeratsky K (2014) Healthy lifestyle: nutrition and healthy eating (http://wwwmayoclinicorg/healthy-lifestyle/nutrition-and-healthy-eating/expert-blog/physical-activity-habits/bgp-20085745; Accessed May 5, 2016)

Zhang, J. (2015) The life-oriented approach and travel behavior research. A discussion paper for the Workshop "Life-Oriented Approach for Transportation Studies" at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19-23 (to be published in the Conference Proceedings as a book)

Chapter 8

Life-oriented Tourism Behavior Research

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Abstract

Tourism as an extension of people's daily life is becoming prevalent in today's society. However, understanding tourists is still a demanding and changeable task, and the preference structures and decision patterns of different tourists are complex. Research on tourism behavior can help address these issues. In recent decades, research on tourism behavior has attracted considerable attention and has become a cornerstone of tourism market strategy and action. Tourism is not a transient behavior, but is repeated over time and is interrelated with daily life. To understand tourists' lifestyle and decision-making processes, long-term observations of tourism behavior are needed. A life-oriented approach cannot ignore tourism behavior because it is an important part of life. This chapter analyzes recent research on tourism behavior, summarizes the pertinent concepts, characteristics, determinants, and shortcomings in existing studies on tourism behavior, and suggests directions for future research.

Keywords: tourism behavior, spatial and temporal choices, social influence, integrated behavior model, generation theory, medical tourism, health, quality of life, qualitative research

References

Alegre J, Mateo S, Pou L (2011) A latent class approach to tourists' length of stay. Tourism Management 32:555–563

Alegre J, Mateo S, Pou L (2013) Tourism participation and expenditure by Spanish households: The effects of the economic crisis and unemployment. Tourism Management 39:37–49

Alexandra V (2013) Consumer behavior in tourism and the influencing factors of the decision making process. Revista Economica 65(2):186–198

Alinejad ME, Razaghi Z (2012) Culture and its role in tourism development. Life Science Journal - ACTA Zhengzhou University, Overseas Edition 9(3):1593–1597

Ankomah PK, Crompton JL, Baker D (1996) Influence of cognitive distance in vocation choice. Annals of Tourism Research 23(1):138–150

Ashworth G, Page SJ (2011) Urban tourism research: Recent progress and current paradoxes. Tourism Management 32(1):1–15

Baloglu S (2001) An investigation of a loyalty typology and the multidestination loyalty of international travelers. Tourism Analysis 6(1):41–52

Baloglu S, Mangaloglu M (2001) Tourism destination images of Turkey Egypt Greece and Italy as perceived by US-based tour operators and travel agents. Tourism Management 22:1–9

Bansal HS, Voyer PA (2000) Word-of-mouth processes within a services purchase decision context. Journal of service research 3(2):166–177

Becken S, Gnoth J (2004) Tourist consumption systems among overseas visitors: reporting on American German and Australian visitors to New Zealand. Tourism Management 25:375–385

Becker GS (1965) A theory of the allocation of time. Economic Journal 75:493–517

Beldona S (2005) Cohort analysis of online travel information search behavior: 1995-2000. Journal of Travel Research 44(2):135–142

Bizirgianni I, Dionysopoulou P (2013) The influence of tourist trends of youth tourism through social media (SM)

and information and communication technologies (ICTs). Procedia-Social and Behavioral Sciences 73:652–660
Boelhouwer J, Stoop I (1999) Measuring well-being in the Netherlands. Social Indicators Research 48:51–75
Boulding W, Kalra A, Staelin R, Zeithaml VA (1993) A dynamic process model of service quality: From expectations to behavioral intentions. Journal of Marketing Research 30:7–27
Bratfisch O (1969) A further study of the relation between subjective distance and emotional involvement. Acta Psychologica 29:244–255
Buhalis D (1998) Strategic use of information technologies in the tourism industry. Tourism Management 19(5):409–421
Bui HT, Wilkins HC, Lee YS (2013) The 'imagined West' of young independent travelers from Asia. Annals of Leisure Research 16(2):130–148
Card J, Cole S, Humphrey A (2006) A comparison of the accessibility and attitudinal barriers model: Travel providers and travelers with physical disabilities. Asia Pacific Journal of Tourism Research 11:161–175
Carrera PM, Bridges JFP (2006) Globalization and healthcare: Understanding health and medical tourism. Expert Review of Pharmacoeconomics and Outcomes Research 6(4):447–454
Chen SC, Shoemaker S (2014) Age and cohort effects: The American senior tourism market. Annals of Tourism Research 48:58–75
Chen C, Huang W, Petrick J (2016) Holiday recovery experiences tourism satisfaction and life satisfaction - Is there a relationship? Tourism Management 53:140–147
Chen CF, Tsai DC (2007) How destination image and evaluative factors affect behavioral intentions? Tourism management 28(4):1115–1122
Chi CGQ, Qu H (2008) Examining the structural relationships of destination image tourist satisfaction and destination loyalty: An integrated approach. Tourism management 29(4):624–636
Chung JY, Chen CC, Lin YH (2015) Cross-strait tourism and generational cohorts. Journal of Travel Research
Clark T (1990) International marketing and national character: A review and proposal for an integrative theory. Journal of Marketing 54(4):66–79
Clawson M, Knetsch JL (1966) Economics of Outdoor Recreation Baltimore: The John Hopkins Press
Codrington G (2008) Detailed introduction to generational theory Available at: wwwtomorrowtodayukcom Retrieved 10 May 2016
Codrington G (2011) Detailed introduction to generational theory in Asia. Tomorrow Today, 1–22
Coghlan A (2015) Tourism and health: Using positive psychology principles to maximise participants' wellbeing outcomes - a design concept for charity challenge tourism. Journal of Sustainable Tourism 23 (3):382–400
Cohen E (1979) A phenomenology of tourist experiences. Sociology 13:179–201
Cohen E (2004) Backpacking: Diversity and change. In: Richards G, Wilson J (eds) The Global Nomad: Backpacker Travel in Theory and Practice, Clevedon: Channel View Publications, 43–59
Cohen E, Avieli N (2004) Food in tourism: Attraction and impediment. Annals of Tourism Research 31(4):755–778
Connell J (2006) Medical tourism: sea sun sand and surgery. Tourism Management 27:1093–1100
Connell J (2013) Contemporary medical tourism: Conceptualisation culture and commodification. Tourism Management 34:1–13
Cooper C (1981) Spatial and temporal patterns of tourist behavior. Regional Studies 15:359–371
Correia A, Santos C, Barros C (2007) Tourism in Latin America: A choice analysis. Annals of Tourism Research 34:610–629
Cosenza RM, Davis DL (1981) Family vacation decision making over the family life cycle: A decision and influence structure analysis. Journal of Travel Research 17:17–23
Crouch GI, Louviere JJ (2001) A review of choice modeling research in tourism hospitality and leisure. In: Mazanec JA, Crouch GI, Brent Ritchie JR, Woodside AG, (eds), Consumer Psychology of Tourism Hospitality and Leisure, Volume 2, CABI Publishing, 67–86
Davis HL (1976) Decision making within the household. Journal of Consumer Research 2:241–260.
De Mello M, Pack A, Sinclair T (2002) A system of equations model of UK tourism demand in neighbouring countries. Applied Economics 34(4):509–521
Decrop A, Snelders D (2005) A grounded typology of vacation decision-making. Tourism Management 26(2):121–132
Del Bosque IR, San Martín H (2008) Tourist satisfaction: A cognitive-affective model. Annals of Tourism Research 35(2):551–573
Dellaert BGC, Ettema DF, Lindh C (1998) Multi-faceted tourist travel decisions: A constraint-based conceptual framework to describe tourists' sequential choices of travel components. Tourism Management 19(4):313–320
Deng J, King B, Bauer T (2002) Evaluating natural attractions for tourism. Annals of Tourism Research 29(2):422–438
Dimanche F (1994) Cross-cultural tourism marketing research: An assessment and recommendations for future studies. In: Uysal M (ed), Global Tourist Behavior, Binghamton NY: The Haworth Press,123–134

Dolnicar S, Lazarevski K, Yanamandram V (2013) Quality of life and tourism: A conceptual framework and novel segmentation base. Journal of Business Research 66:724–729
Dolnicar S, Yanamandram V, Cliff K (2012) The contribution of vacations to quality of life. Annals of Tourism Research 39:59–83
Eden D (1990) Acute and chronic job stress strain and vacation relief. Organizational Behavior and Human Decision Processes 45:175–193
Engel JF, Blackwell RD, Miniard PW (1995) Consumer behavior. The 8th Edition Florida: The Dryden Press
Fennel DA (1996) A tourist space-time budget in the Shetland Islands. Annals of Tourism Research 23(4):811–829
Fondness D, Murray B (1997) Tourist information search. Annals of Tourism Research 24(3):503–523
Frew EA, Shaw RN (1999) The relationship between personality gender and tourism behavior. Tourism Management 20(2):193–202
Frochot I, Morrison AM (2000) Benefit segmentation: A review of its applications to travel and tourism research. Journal of Travel and Tourism Marketing 9(4):21–45
Fujiwara A, Zhang J (2005) Development of car tourists' scheduling model for 1-day tour. Transportation Research Record 1921:100–111
Fukuda D, Morichi S (2002) Recreation demand model as a mixture of interrelated travel behaviors. Journal of the Eastern Asia Society for Transportation Studies 4:47–62
Furr HL, Bonn MA, Hausman A (2001) A generational and geographical analysis of Internet travel-service usage. Tourism Analysis 6(2):139–147
Gallet CA, Braun BM (2001) Gradual switching regression estimates of tourism demand. Annals of Tourism Research 28(2):503–507
Gartner WC, Bachri T (1994) Tour operators' role in the tourism distribution system: An Indonesian case study. Journal of International Consumer Marketing 6(3/4):161–179
Getz D, Page SJ (2016) Progress and prospects for event tourism research. Tourism Management 52:593–631
Gilbert D, Abdullah J (2004) Holidaytaking and the sense of well-being. Annals of Tourism Research 31:103–121
Gitelson R, Kerstetter D (1994) The influence of friends and relatives in travel decision-making. Journal of Travel and Tourism Marketing 3(3):59–68
Glinos IA, Baeten R, Helble M, Maarse H (2010) A typology of cross-border patient mobility. Health and Place 16:1145–1155
Gokovali U, Bahar O, Kozak M (2007) Determinants of length of stay: A practical use of survival analysis. Tourism Management 28:736–746
Goodrich G, Goodrich J (1987) Health care tourism – an exploratory study. Tourism Management 8(3):217–222
Goossens C (2000) Tourism information and pleasure motivation. Annals of Tourism Research 27(2):301–321
Grigolon A, Borgers A, Kemperman A, Timmermans HJP (2014) Vacation length choice: A dynamic mixed multinomial logit model. Tourism Management 41:158–167
Gursoy D, McCleary KW (2004) An integrative model of tourists' information search behavior. Annals of Tourism Research 31(2):353–373
Gustavo NS (2010) A 21st century approach to health tourism spas: The case of Portugal. Journal of Hospitality and Tourism Management 17:127–135
Hagerstrand T (1970) What about people in regional science? Paper of the Regional Science Association 23:7–21
Haider W, Ewing G (1990) A model of tourist choices of hypothetical Caribbean destinations. Leisure Sciences 12(1):33–47
Hall CM, Mitchell R (2000) Wine tourism in the Mediterranean: A tool for restructuring and development. Thunderbird International Business Review 42(4):445–465
Hallem Y, Barth I (2011) Customer-perceived value of medical tourism: An exploratory study — the case of cosmetic surgery in Tunisia. Journal of Hospitality and Tourism Management 18:121–129
Han H (2015) Travelers' pro-environmental behavior in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. Tourism Management 47:164–177
Huang L, Tsai HT (2003) The study of senior traveler behavior in Taiwan. Tourism Management 24(5):561–574
Hudson S, Ritchie JRB (2001) Cross-cultural tourist behavior: An analysis of tourist attitudes towards the environment. Journal of Travel and Tourism Marketing 10(2-3):1–22
Hunt SD (1976) The nature and scope of marketing. Journal of Marketing 40(3):17–28
Huybers T (2003a) Modelling short-break holiday destination choices. Tourism Economics 9(4):389–405
Huybers T (2003b) Domestic tourism destination choices - A choice modelling analysis. International Journal of Tourism Research 5:445–459
Jafari J (2005) Bridging out nesting afield: Powering a new platform. Journal of Tourism Studies 16(2):1–5
Jang SCS, Feng R (2007) Temporal destination revisit intention: The effects of novelty seeking and satisfaction. Tourism management 28(2):580–590
Johns N, Gyimóthy S (2002) Market segmentation and the prediction of tourist behavior: The case of Bornholm Denmark. Journal of Travel Research 40(3):316–327

Kastenholz E, Eusebio C, Figueiredo E (2015) Contributions of tourism to social inclusion of persons with disability. Disability and Society 30(8):1259–1281
Kemperman A, Borgers A, Timmermans HJP (2009) Tourist shopping behavior in a historic downtown area. Tourism Management 30:208–218
Khadaroo J, Seetanah B (2008) The role of transport infrastructure in international tourism development: A gravity model approach. Tourism Management 29(5):831–840
Khadaroo J, Seetanah B (2007) Transport infrastructure and tourism development. Annals of Tourism Research 34(4):1021–1032
Kim H, Woo E, Uysal M (2015) Tourism experience and quality of life among elderly tourists. Tourism Management 46:465–476
King RL, Woodside AG (2001) Qualitative comparative analysis of travel and tourism purchase-consumption systems. In: Mazanec JA, Crouch GI, Brent Ritchie JR, Woodside AG (eds): Consumer Psychology of Tourism Hospitality and Leisure, Volume 2, CABI Publishing, 87–105
Kozak M (2002) Comparative analysis of tourist motivations by nationality and destinations. Tourism management 23(3):221–232
Kozak M (2001) A critical review of approaches to measure satisfaction with tourist destinations. In: Mazanec JA Crouch GI Brent Ritchie JR Woodside AG (eds): Consumer Psychology of Tourism Hospitality and Leisure, Volume 2, CABI Publishing, 303–320
Kozak M, Decrop A (2009) Handbook of tourist behavior. Theory and Practice, Routledge
Lam T, Hsu CHC (2006) Predicting behavior intention of choosing a travel destination. Tourism Management 27:589–599
Law R, Leung K, Wong J (2004) The impact of the internet on travel agencies. International Journal of Contemporary Hospitality Management 16(2):100–107
Lee SH, Sparks B (2007) Cultural influences on travel lifestyle: A comparison of Korean Australians and Koreans in Korea. Tourism Management 28(2):505–518
Lee JH (2015) The influence of well-being lifestyle on green health tourism motivation and visit attitude in Gangwon area. Journal of Hotel and Resort 14(2):279–297
Lee S, Tideswell C (2005) Understanding attitudes towards leisure travel and the constraints faced by senior Koreans. Journal of Vacation Marketing 11:249–263
Leggat P, Kedjarune U (2009) Dental health 'dental tourism' and travelers. Travel Medicine and Infectious Disease 7:123–124
Lehto XY, Jang SC, Achana FT, O'Leary JT (2008) Exploring tourism experience sought: A cohort comparison of Baby Boomers and the Silent Generation. Journal of Vacation Marketing 14(3):237–252
Lepp A, Gibson H (2008) Sensation seeking and tourism: Tourist role perception of risk and destination choice. Tourism Management 29(4):740–750
Li X, Li XR, Hudson S (2013a) The application of generational theory to tourism consumer behavior: An American perspective. Tourism Management 37:147–164
Li G, Law R, Vu HQ, Rong J (2013b) Discovering the hotel selection preferences of Hong Kong inbound travelers using the Choquet Integral. Tourism Management 36:321–330
Li G, Law R, Vu HQ, Rong J, Zhao XR (2015) Identifying emerging hotel preferences using Emerging Pattern Mining technique. Tourism Management 46:311–321
Lin J, Wong J, Ho C (2013) Promoting frontline employees' quality of life: Leisure benefit systems and work-to-leisure conflict. Tourism Management 36:178–187
Litvin SW, Goldsmith RE, Pan B (2008) Electronic word-of-mouth in hospitality and tourism management. Tourism management 29(3):458–468
Lockyer T (2005) Understanding the dynamics of the hotel accommodation purchase decision. International Journal of Contemporary Hospitality Management 17(6):481–492
López-Mosquera N, Sánchez M (2012) Theory of planned behavior and the value-belief-norm theory explaining willingness to pay for a suburban park. Journal of Environmental Management 113:251–262
Lunt N, Smith R, Exworthy M, Green ST, Horsfall D, Mannion R (2011) Medical tourism: treatments markets and health system implications: a scoping review Paris: Organization for Economic Co-operation and Development
Martin D, Woodside AG (2008) Grounded theory of international tourism behavior. Journal of Travel and Tourism Marketing 24(4):245–258
Martinez-Garcia E, Raya J (2008) Length of stay for low-cost tourism. Tourism Management 29:1064–1075
Mazzarol T, Soutar GN (2002) "Push-pull" factors influencing international student destination choice International. Journal of Educational Management 16(2):82–90
McNamara TP (1986) Mental representations of spatial relations. Cognitive Psychology 18:87–121
Mechinda P, Serirat S, Anuwichanont J, Gulid N (2010) An examination of tourists' loyalty towards medical tourism in Pattaya Thailand. International Business and Economics Research Journal 9(1):55–70
Mehmetoglu M, Altinay L (2006) Examination of grounded theory analysis with an application to hospitality

research. International Journal of Hospitality Management 25:12–33
Miller D, Merrilees B, Coghlan A (2015) Sustainable urban tourism: Understanding and developing visitor pro-environmental behaviours. Journal of Sustainable Tourism 23(1):26–46
Moghimehfar F, Nasr-Esfahani MH (2011) Decisive factors in medical tourism destination choice: A case study of Isfahan Iran and fertility treatments. Tourism Management 32:1431–1434
Molz JG (2013) Social networking technologies and the moral economy of alternative tourism: The case of couchsurfing org. Annals of tourism research 43:210–230
Money RB, Crotts JC (2003) The effect of uncertainty avoidance on information search planning and purchases of international travel vacations. Tourism Management 24:191–202
Moretti E (2011) Social learning and peer effects in consumption: Evidence from movie sales. Review of Economic Studies 78:356–393
Morley C (1994) Experimental destination choice analysis. Annals of Tourism Research 21(4):780–791
Moutinho L (1987) Consumer behavior in tourism European. Journal of Marketing 21(10):3–44
Nawijn J (2011) Determinants of daily happiness on vacation. Journal of Travel Research 50:559–566
Neal J, Sirgy M, Uysal M (1999) The role of satisfaction with leisure travel/ tourism services and experiences in satisfaction with leisure life and overall life. Journal of Business Research 44:153–164
Neal J, Uysal M, Sirgy M (2007) The effect of tourism services on travelers' quality of life. Journal of Travel Research 46:154–163
Nichols CM, Snepenger DJ (1988) Family decision making and tourism behavior and attitudes. Journal of Travel Research 26(4):2–6
Nicolau J (2011) Differentiated price loss aversion in destination choice: The effect of tourists' cultural interest. Tourism Management 32:1186–1195
Nicolau J (2012) Asymmetric tourist response to price: Loss aversion segmentation. Journal of Travel Research 51:568–576
Nicolau J, Mas F (2006) The influence of distance and prices on the choice of tourist destinations: The moderating role of motivations. Tourism Management 27:982–996
Nicolau J, Mas F (2008) Sequential choice behavior: Going on vacation and type of destination. Tourism Management 29:1023–1034
Nolan D (1976) Tourist's use and evaluation of travel information. Journal of Travel Research 14(2):6–8
Nuntsu N, Tassiopoulos D, Haydam N (2004) The bed and breakfast market of Buffalo City (BC) South Africa: Present status constraints and success factors. Tourism Management 25(4):515–522
Oppermann M (1995) Travel life cycle. Annals of Tourism Research 22(3):535552
Page SJ, Innes A, Cutler C (2015) Developing dementia-friendly tourism destinations: An exploratory analysis. Journal of Travel Research 54(4):467–481
Pan TJ, Cheng WC (2014) Chinese medical tourists – Their perceptions of Taiwan. Tourism Management 44:108–112
Park DB, Yoon YS (2009) Segmentation by motivation in rural tourism: A Korean case study. Tourism Management 30(1):99–108
Pearce DG (1988) Tourist time-budget Annals of Tourism Research 15(1):106–121
Pennington-Gray L, Blair S (2009) Nature-based tourism in North America: Is generation Y the major cause of increased participation. In: Benckendorff P, Moscardo G, Pendergast D (eds), Tourism and Generation Y, CABI Publishing, 73–84
Pennington-Gray L, Fridgen JD, Stynes D (2003) Cohort segmentation: An application to tourism. Leisure Sciences 25(4):341–361
Perdue R (1986) Traders and nontraders in recreational destination choice. Journal of Leisure Research 18(1):12–25
Phithakkitnukoon S, Horanont T, Witayangkurn A, Siri R, Sekimoto Y, Shibasaki R (2015) Understanding tourist behavior using large-scale mobile sensing approach: A case study of mobile phone users in Japan. Pervasive and Mobile Computing 18:18–39
Pizam A, Jeong GH, Reichel A, Van Boemmel H, Lusson JM, Steynberg L, State-Costache O, Volo S, Kroesbacher C, Kucerova J, Montmany N (2004) The relationship between risk-taking sensation-seeking and the tourist behavior of young adults: A cross-cultural study. Journal of Travel Research 42(3):251–260
Pizam A, Jeong GH (1996) Cross-cultural tourist behavior: Perceptions of Korean tour-guides. Tourism Management 17(4):277–286
Pizam A, Sussmann S (1995) Does nationality affect tourist behavior? Annals of Tourism Research 22(4):901–917
Pilcher J (1994) Mannheim's sociology of generations: An undervalued legacy. British Journal of Sociology 45(3):481–495
Pols J, Kroon H (2007) The importance of holiday trips for people with chronic mental health problems. Psychiatric Services 58:262–265
Poon A (1993) Tourism, Technology and Competitive Strategies. Oxon, UK: CABI Publishing

Poria Y, Butler R, Airey D (2003The core of heritage tourism. Annals of tourism research 30(1):238–254
Powell LM, Tauras JA, Ross H (2005) The importance of peer effects cigarette prices and tobacco control policies for youth smoking behavior. Journal of Health Economics 24:950–968
Prayag G, Disegna M, Cohen SA, Yan H (2015) Segmenting markets by bagged clustering young Chinese travelers to Western Europe. Journal of Travel Research 54(2):234–250
Prayag G, Hosany S, Muskat B, Chiappa GD (2015) Understanding the relationships between tourists' emotional experiences perceived overall image satisfaction and intention to recommend. Journal of Travel Research (in press)
Prideaux B (2000) The role of the transport system in destination development. Tourism management 21(1):53–63
Priskin J (2001) Assessment of natural resources for nature-based tourism: the case of the Central Coast Region of Western Australia. Tourism Management 22(6):637–648
Rayman-Bacchus L, Molina A (2001) Internet-based tourism services: Business issues and trends. Futures 33:589–605
Rice R, Frone M, McFarlin D (1992) Work-nonwork conflict and the perceived quality of life. Journal of Organizational Behavior 13:155–168
Richards G (1999) Vacations and the quality of life: Patterns and structures. Journal of Business Research 44:189–198
Richards G (2008) Youth Travel Matters: Understanding the Global Phenomenon of Youth Travel. World Tourism Organization (WTO)
Runnels V, Carrera PM (2012) Why do patients engage in medical tourism? Maturitas 73:300–304
Sands J (1981) The relationship of stressful life events to intellectual functioning in women over 65. International Journal of Aging and Human Development 74:11–22
Scalon T (1993) Value desire and quality of life. In: Nussbaum M, Sen A (eds), The Quality of Life, New York: Oxford University Press, Chapter 15
Schroeder H, Louviere J (1999) Stated choice models for predicting the impact of user fees at public recreation sites. Journal of Leisure Research 31(3):300–324
Seddighi HR, Theocharous AL (2002) A model of tourism destination choice: A theoretical and empirical analysis. Tourism Management 23:475–487
Sharpley R (2014) The consumption of tourism. In: Sharpley R, Telfer DJ (eds), Tourism and Development: Concepts and Issues. The Second Edition, Channel View Publications, 358–366
Shoemaker S (2000) Segmenting the market: 10 years later. Journal of Travel Research 39(1):11–26
Sigala M, Christou E, Gretzel U (2012) Social Media in Travel Tourism and Hospitality: Theory Practice and Cases Surrey. UK: Ashgate Publishing
Sirakaya E, Woodside AG (2005) Building and testing theories of decision making by travelers. Tourism Management 26(6):815–832
Sirgy M (2010) Toward a quality-of-life theory of leisure travel satisfaction. Journal of Travel Research 49:246–260
Sirgy M, Joseph P, Kruger S, Lee D, Yu G (2011) How does a travel trip affect tourists' life satisfaction? Journal of Travel Research 50:261–275
Smith M, Kelly C (2006) Wellness tourism. Tourism Recreation Research 31(1):1–4
Snepenger DJ, Meged K, Snelling M, Worrall K (1990) Information search strategies by destination-naive tourists. Journal of Travel Research 29(2):13–16
Sohrabi B, Vanani IR Tahmasebipur K, Fazli S (2012) An exploratory analysis of hotel selection factors: A comprehensive survey of Tehran hotels. International Journal of Hospitality Management 31(1):96–106
Song HJ, You GJ, Reisinger Y, Lee CK, Lee SK (2014) Behavioral intention of visitors to an oriental medicine festival: An extended model of goal directed behavior. Tourism Management 42:101–113
Song HY, Witt SF (2000) Tourism Demand Modeling and Forecasting: Modern Econometric Approaches. Amsterdam: Pergamon
Sparks B, Pan G W (2009) Chinese outbound tourists: Understanding their attitudes, constraints and use of information sources. Tourism Management 30(4):483–494
Strauss-Blasche G, Ekmekcioglu C, Marktl W (2002) Moderating effects of vacation on reactions to work and domestic stress. Leisure Sciences 24:237–249
Sung J, Woo JM, Kim W, Lim SK, Chung EJ (2012) The effect of cognitive behavior therapy-based "forest therapy" program on blood pressure salivary cortisol level and quality of life in elderly hypertensive patients. Clinical and Experimental Hypertension 34(1):1–7
Swarbrooke J, Horner S (2007) Consumer behaviour in tourism. Routledge
Thompson J, Bunderson J (2001) Work-nonwork conflict and the phenomenology of time: Beyond the balance metaphor. Work and Occupations 28:17–39
Thornton PR, Shaw G, Williams AM (1997) Tourist group holiday decision-making and behaviour: The influence of children. Tourism Management 18(5):287–297

Thrane C (2012) Analyzing tourists' length of stay at destinations with survival models: A constructive critique based on a case study. Tourism Management 33:126–132
Ting CS, Chiu LK, Kayat K (2015) Travel lifestyles and outbound tourism intentions of young Malaysians. American Journal of Tourism Management 4(2):40–42
Travel Industry Association (2006) Travel across the Generations. Washington DC: Travel Industry Association.
Trenberth L, Dewe P, Walkey F (1999) Leisure and its role as a strategy for coping with work stress. International Journal of Stress Management 6:89–103
Tsai CTS, Wang YC (2016) Experiential value in branding food tourism. Journal of Destination Marketing and Management (in press)
Tuulentie S, Heimtun B (2014) New rural residents or working tourists? Place attachment of mobile tourism workers in Finnish Lapland and Northern Norway Scandinavian. Journal of Hospitality and Tourism 14 (4):367–384
Um S, Crompton JL (1990) Attitude determinants in tourism destination choice. Annals of tourism research 17(3):432–448
Uriely N, Yonay Y, Simchai D (2002) Backpacking experiences: A type and form analysis. Annals of Tourism Research 29(2):520–538
Van Raaij WF, Crotts JC (1994) Introduction: The economic psychology of travel and tourism. Journal of Travel and Tourism Marketing 3(3):1–19
Van Raaij WF, Francken DA (1984) Vocation destinations activities and satisfactions. Annals of Tourism Research 11(1):101–112
Vogt JW (1976) Wandering: Youth and travel behavior. Annals of Tourism Research 4(1):25–41
Vogt CA, Fesenmaier DR (1998) Expanding the functional information search model. Annals of Tourism Research 25(3):551–578
Voigt C, Laing JH (2010) Journey into parenthood: Commodification of reproduction as a new tourism niche market. Journal of Travel and Tourism Marketing 27(3):252–268
Wang D, Xiang Z, Fesenmaier DR (2016) Smartphone use in everyday life and travel. Journal of Travel Research 55(1):52–63
Wansink B, Van Ittersum K (2004) Stopping decisions of travelers. Tourism Management 25:319–330
Westbrook RA (1987) Product/consumption-based affective responses and post purchase processes. Journal of Marketing Research 24(3):258–270
Westbrook RA, Newman JW (1978) An analysis of shopper dissatisfaction for major household appliances. Journal of Marketing Research 15:456–466
Westbrook RA, Oliver RL (1991) The dimensionality of consumption emotion patterns and consumer satisfaction. Journal of Consumer Research 18:84–91
Westman M, Eden D (1997) Effects of a respite from work on burnout: Vacation relief and fade out. Journal of Applied Psychology 82:516–527
Woo E, Kim H, Uysal M (2016) A measure of quality of life in elderly tourists. Applied Research in Quality of Life 11:65–82
Woodside A, Dubelaar C (2002) A general theory of tourism consumption systems: A conceptual framework and an empirical exploration. Journal of Travel Research 41(2):120–132
Woodside AG, MacDonald R (1994) General system framework of customer choice processes of tourism services. In: Gasser R Weiermair K (eds), Spoilt for Choice 30–59
Wu L, Zhang J, Chikaraishi M (2013a) Representing the influence of multiple social interactions on monthly tourism participation behavior. Tourism Management 36:480–489
Wu L, Zhang J, Fujiwara A (2013b) Tourism participation and expenditure behaviour: Analysis using a Scobit based discrete–continuous choice model. Annals of Tourism Research 40:1–17
Wu L, Zhang J, Fujiwara A (2009) A model of heterogeneously nested structure of tourists' destination and travel party choices. Proceedings of the 15th APTA (Asia Pacific Tourism Association) Annual Conference, Incheon, July 9-12 (CD-ROM)
Wu L, Zhang J, Fujiwara A (2011a) Representing tourists' heterogeneous choices of destination and travel party with an integrated latent class and nested logit model. Tourism Management 32(6):1407–1413
Wu L, Zhang J, Fujiwara A (2011b) Representing tourist's time use behavior based on a multiple discrete-continuous extreme value model. Journal of the Eastern Asia Society for Transportation Studies 9:796–809
Wu L, Zhang J, Fujiwara A (2012a) A tourist's multi-destination choice model with future dependency. Asia Pacific Journal of Tourism Research 17(2):121–132
Wu L, Zhang J, Fujiwara A (2012b) Dynamic analysis of Japanese tourists' three stage choices: Tourism participation destination choice and travel mode choice. Transportation Research Record 2322:91–101
Wu L, Zhang J, Fujiwara A, Chikaraishi M (2012c) Analysis of tourism generation incorporating the influence of constraints based on a Scobit model. Asian Transport Studies 2:19–33

Xiang Z, Gretzel U (2010) Role of social media in online travel information search. Tourism Management 31(2):179–188
Xiang Z, Woeber K, Fesenmaier DR (2008) Representation of the online tourism domain in search engines. Journal of Travel Research 47(2):137–150
Ye Q, Law R, Gu B, Chen W (2011) The influence of user-generated content on traveler behavior: An empirical investigation on the effects of e-word-of-mouth to hotel online bookings. Computers in Human Behavior 27(2):634–639
Yoo KH, Gretzel U (2011) Influence of personality on travel-related consumer-generated media creation. Computers in Human Behavior 27(2):609–621
Yoon Y, Uysal M (2005) An examination of the effects of motivation and satisfaction on destination loyalty: A structural model. Tourism Management 26(1):45–56
You X, O'leary JT (2000) Age and cohort effects: An examination of older Japanese travelers. Journal of Travel and Tourism Marketing 9(1-2):21–42
Yu JY, Ko TG (2012) A cross-cultural study of perceptions of medical tourism among Chinese Japanese and Korean tourists in Korea. Tourism Management 33(1):80–88
Zalatan A (1998) Wives' involvement in tourism decision processes. Annals of Tourism Research 25(4):890–903
Zeithaml VA, Berry LL, Parasuraman A (1996) The behavioral consequences of service quality. Journal of Marketing 60:31–46
Zhang J, Fujiwara A, Sawara J (2006) Multi-dimensional timing decisions: A case study in tourism behavior analysis. Tourism Analysis 11:319–330
Zhang J, Hakoda Y, Fujiwara A (2008) Modeling of touring behavior along the Asian Highway incorporating inter-alternative similarities: A comparative analysis between Japanese and Korean tourists. Infrastructure Planning Review 25:783–792 (in Japanese)
Zhang J, Timmermans HJP, Borgers A, Wang D (2004) Modeling traveler choice behavior using the concepts of relative utility and relative interest. Transportation Research Part B 38:215–234
Zhang J, Zhang H, Wu L, Fujiwara A (2009) Representing tourists' context-sensitive time use and expenditure behavior. Proceedings of the 15th APTA (Asia Pacific Tourism Association) Annual Conference, Incheon, July 9-12 (CD-ROM)
Zimmermann CA (1982) The life cycle concept as a tool for travel research. Transportation 11:51–69

Chapter 9
Influence of Land Use and Transport Policies on Women's Labor Participation and Life Choices

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Abstract

Across the whole world, gender inequality issues are serious, mainly because of traditional thinking about the role specification within a household. Within the context of urban policy, relevant studies are very limited. This chapter argues that women's labor participation should be further promoted for not only achieving gender equality, but also realizing sustainable economic development. Based on an extensive literature review, a case study in Japan was conducted by considering women's family responsibilities (especially, childcare), associated work–family conflict, time-related work–leisure conflict, and stress-related work–health conflict jointly. To examine women's decisions on labor participation associated with other life choices, a recursive multiequation system is used. Applying such a modeling system have several advantages: (1) to identify the barriers to women's labor participation in Japan after controlling for the effects of land use, transport, and life cycle stages; (2) to clarify the factors for women's good quality of family life, leisure life, health life, and quality of life as a whole; and (3) to provide cross-sectoral policy implications for women's labor participation and promotion of quality of life and work–life balance.

Keywords: women, childcare, labor participation, life choices, conflicts in life, land use, transport, family life, leisure, health, life cycle stages, quality of life, Japan, casual modeling

References

Allen TD, Finkelstein LM (2014) Work–family conflict among members of full-time dual-earner couples: An examination of family life stage gender and age. Journal of occupational health psychology 19(3):376

Bania N, Leete L, Coulton C (2008) Job access employment and earnings: Outcomes for welfare leavers in a US urban labour market. Urban Studies 45(11):2179-2202

Bonin H, Euwals R (2005) Why are labor force participation rates of East German women so high? Applied Economics Quarterly 51(4):359

Brajša-Žganec A, Merkaš M, Šverko I (2011) Quality of life and leisure activities: How do leisure activities contribute to subjective well-being? Social Indicators Research 102(1):81–91

Bunel M, L'Horty Y, Petit P (2016) Discrimination based on place of residence and access to employment. Urban Studies 53(2):267–286

Bünning M, Pollmann-Schult M (2015) Family policies and fathers' working hours: cross-national differences in the paternal labour supply. Work Employment and Society

Buzzanell PM, Waymer D, Paz Tagle M, Liu M (2007) Different transitions into working motherhood: Discourses of Asian Hispanic and African American women. Journal of Family Communication 7(3):195–220

Camp JK, Trzcinski E, Resko S (2016) Family and labor market policies in Germany. In: Connerley ML, Wu J (eds), Handbook on Well-Being of Working Women, Springer Netherlands, 449–472

Carlson DS, Grzywacz JG, Ferguson M, Hunter EM, Clinch CR, Arcury TA (2011) Health and turnover of working mothers after childbirth via the work–family interface: An analysis across time. Journal of Applied Psychology 96(5):1045

Charlesworth S, Strazdins L, O'Brien L, Sims S (2011) Parents' jobs in Australia: Work hours polarisation and the consequences for job quality and gender equality. Australian Journal of Labour Economics 14(1):35

Clark WA, Maas R (2015) Interpreting migration through the prism of reasons for moves. Population Space and Place 21(1):54–67

Combs GM, Milosevic I (2016) Workplace discrimination and the wellbeing of minority women: overview prospects and implications. In: Connerley ML, Wu J (eds), Handbook on Well-Being of Working Women, Springer Netherlands, 17–31
Cooklin AR, Dinh H, Strazdins L, Westrupp E, Leach LS, Nicholson JM (2016) Change and stability in work–family conflict and mothers' and fathers' mental health: Longitudinal evidence from an Australian cohort. Social Science and Medicine 155:24-34
Craig L, Sawrikar P (2009) Work and family: How does the (gender) balance change as children grow? Gender Work and Organization 16(6):684–709
Crouter AC, Bumpus MF (2001) Linking parents' work stress to children's and adolescents' psychological adjustment. Current Directions in Psychological Science 10(5):156–159
Curl A, Thompson CW, Aspinall P (2015) The effectiveness of 'shared space'residential street interventions on self-reported activity levels and quality of life for older people. Landscape and Urban Planning 139:117–125
De Vries JD, Claessens BJ, van Hooff ML, Geurts SA, van den Bossche SN, Kompier MA (2016) Disentangling longitudinal relations between physical activity work-related fatigue and task demands. International archives of occupational and environmental health 89(1):89–101
Di Paolo A, Matas A, Raymond JL (2016) Job accessibility employment and job-education mismatch in the metropolitan area of Barcelona. Papers in Regional Science (in press)
Dujardin C, Selod H, Thomas I (2008) Residential segregation and unemployment: the case of Brussels. Urban Studies 45(1):89–113
Duxbury LE, Higgins CA (2001) Work-life balance in the new millennium: where are we?; where do we need to go?. CPRN Discussion Paper No. W|12, Ottawa: Canadian Policy Research Network
Eby LT, Casper WJ, Lockwood A, Bordeaux C, Brinley A (2005) Work and family research in IO/OB: Content analysis and review of the literature (1980–2002). Journal of vocational behavior 66(1):124–197
Edgington DW (2012) Japan's Shrinking Regions in the 21st Century: Contemporary Responses to Depopulation and Socioeconomic Decline. Regional Studies 46(9):1275–1276
Ek E, Koiranen M, Raatikka VP, Jarvelin MR, Taanila A (2008) Psychosocial factors as mediators between migration and subjective well-being among young Finnish adults. Social Science and Medicine 66:1545–1556
Erickson JJ, Martinengo G, Hill EJ (2010) Putting work and family experiences in context: Differences by family life stage. Human Relations 63(7):955–979
Ettema D, Gärling T, Eriksson L, Friman M, Olsson LE, Fujii S (2011) Satisfaction with travel and subjective well-being: Development and test of a measurement tool. Transportation Research Part F 14(3):167–175
Fujino H, Sumiyoshi C, Sumiyoshi T, Yasuda Y, Yamamori H, Ohi K, Fujimoto M, Hashimoto R, Takeda M, Imura O (2016) Predicting employment status and subjective quality of life in patients with schizophrenia. Schizophrenia Research: Cognition 3:20–25
Galster GC (2012) The mechanism(s) of neighbourhood effects: Theory evidence and policy implications. In: Van Ham M, Manley D, Bailey N, Simpson L, Maclennan D (eds), Neighbourhood Effects Research: New Perspectives, Springer Netherlands, 23–56
Gobillon L, Selod H, Zenou Y (2007) The mechanisms of spatial mismatch. Urban Studies 44(12):2401–2427
Gobillon L, Wolff F C (2011) Housing and location choices of retiring households: Evidence from France. Urban Studies 48(2):331–347
Goodman WB, Crouter AC (2009) Longitudinal Associations between Maternal Work Stress Negative Work‐Family Spillover and Depressive Symptoms. Family Relations 58(3):245–258
Grogan L, Koka K (2010) Young children and women's labour force participation in Russia, 1992–20041. Economics of Transition 18(4):715–739
Hare D (2016) What accounts for the decline in labor force participation among married women in urban China, 1991–2011? China Economic Review 38: 251–266
Hellerstein JK, Neumark D (2011) Employment in Black Urban Labor Markets: Problems and Solutions (No. w16986). National Bureau of Economic Research
Howe A, O'Connor K (1982) Travel to work and labor force participation of men and women in an Australian metropolitan area. The Professional Geographer 34(1):50–64
Huang YQ, Jiang LW (2009) Housing inequality in transitional Beijing. International Journal of Urban and Regional Research 33(4):936–956
Ihlanfeldt KR, Sjoquist DL (1998) The spatial mismatch hypothesis: a review of recent studies and their implications for welfare reform. Housing policy debate 9(4):849–892
Ihlanfeldt KR (2006) A primer on spatial mismatch within urban labor markets. In: Arnott RJ, McMillen DP (eds), A Companion to Urban Economics, Blackwell Publishing, 404–417
Kain JF (1986) The Influence of Race and Income on Racial Segregation and Housing Policy. Housing Desegregation and Federal Policy
Kim MJ, Hazel M J (2005) Current determinants of residential location choices: An empirical study in the greater Columbus metropolitan region. In: Levinson DM, Krizek KJ (eds), Access to Destinations, Emerald, 149–170

Klinger T, Lanzendorf M (2012) Built environment or attitudes – what affects travel behavior of new residents? Presented at the 13th International Conference on Travel Behavior Research Toronto, Canada, July 15–19
Korsu E, Wenglenski S (2010) Job accessibility residential segregation and risk of long-term unemployment in the Paris region. Urban Studies 47(11):2279–2324
Kortum K, Paleti R, Bhat CR, Pendyala RM (2012) Joint model of residential relocation choice and underlying causal factors. Transportation Research Record 2303(1):28–37
Kuh D, Ben-Shlomo Y, Lynch J, Hallqvist J, Power C (2003) Life course epidemiology. Journal of Epidemiology and Community Health 57(10):778–783
Kumagai F (2015) Demographic changes in Japan. In: Kumagai F (ed), Family Issues on Marriage Divorce and Older Adults in Japan, Springer Singapore, 11–38
Lin JH, Wong JY, Ho CH (2013) Promoting frontline employees' quality of life: Leisure benefit systems and work-to-leisure conflicts. Tourism Management 36:178–187
Li Y, Liu Y, Long H, Cui W (2014) Community-based rural residential land consolidation and allocation can help to revitalize hollowed villages in traditional agricultural areas of China: Evidence from Dancheng County Henan Province. Land Use Policy 39:188–198
Lu QC, Zhang J, Rahman ABM (2016) People's location change adaptation to flood and cyclone in Bangladesh. Compendium of Papers CD-ROM, the 95th Annual Meeting of Transportation Research Board, Washington, D.C., January 10-14
Maddala GS (1983) Limited–dependent and Qualitative Variables in Econometrics. Cambridge MA: Cambridge University Press
Matas A, Raymond JL, Roig JL (2010) Job accessibility and female employment probability: The cases of Barcelona and Madrid. Urban Studies 47(4):769–787
Mehdizadeh N (2013a) Beyond cultural stereotypes: Educated mothers' experiences of work and welfare in Iran. Critical Social Policy 33(2):243–265
Mehdizadeh N (2013b) Measures to promote work family reconciliation in the MENA region: Parental leave child care and good practices. Expert Group Meeting Doha, Qatar, June 2-3
Mehdizadeh N (2016) Work-family balance and the well-being of educated women in Iran. In: Connerley ML, Wu J (ed), Handbook on Well-Being of Working Women, Springer Netherlands, 703–716
Muilu T, Rusanen J (2003) Rural young people in regional development-the case of Finland in 1970-2000. Journal of Rural Studies 19(3):295–307
Mulder CH, Cooke TJ (2009) Family ties and residential locations. Population Space and Place 15(4):299–304
Myers DG, Diener E (1996) The pursuit of happiness. Scientific American 274(5):70–72
Nohe C, Meier LL, Sonntag K, Michel A (2015) The chicken or the egg? A meta-analysis of panel studies of the relationship between work–family conflict and strain. Journal of Applied Psychology 100(2):522–536
Noor NM (1999) Roles and women's well-being: Some preliminary findings from Malaysia. Sex Roles 41:123–145
Noor NM (2006) Malaysian women's state of well-being: empirical validation of a conceptual model. The Journal of Social Psychology 146(1):95–115
Oeda Y, Asada K, Sumi T (2012) The study on daily combined activities of regular medical treatment and shopping for people who live in depopulated area. Procedia - Social and Behavioral Sciences 43:277–283
O'Neill J, Hibbard MR, Broivn M, Jaffe M, Sliwinski M, Vandergoot D, Weiss M J (1998) The effect of employment on quality of life and community integration after traumatic brain injury. The Journal of Head Trauma Rehabilitation 13(4):68–79
Oshio T, Tsutsumi A, Inoue A (2016) The association between job stress and leisure-time physical inactivity adjusted for individual attributes: Evidence from a Japanese occupational cohort survey. Scandinavian Journal of Work Environment and Health 42(3):228–236
Öun I (2012) Work-family conflict in the Nordic countries: A comparative analysis. Journal of Comparative Family Studies 43(2):165–184
Paradowska M, Platje J (2016) Key Challenges Facing the European Transport Labour Market. Discourse in Social Market Economy, Discourse 2016-3 (Available: http://www.ordnungspolitisches-portal.com/Diskurse/Diskurse_2016-03.pdf; Accessed June 15, 2016)
Parke RD (2004) Development in the family. Annual Review of Psychology 55:365–399
Pastore F, Verashchagina A (2008) The determinants of female labour supply in Belarus. Available at SSRN 1136178
Plagnol AC, Scott J (2011) What matters for well-being: Individual perceptions of quality of life before and after important life events. Applied Research in Quality of Life 6(2):115–137
Prillwitz J, Harms S, Lanzendorf M (2007) Interactions between residential relocations life course events and daily commute distances. Transportation Research Record 2021(1):64–69
Rantanen J, Kinnunen U, Pulkkinen L, Kokko K (2012) Developmental trajectories of work–family conflict for Finnish workers in midlife. Journal of Occupational Health Psychology 17(3):290–303

Sanchez TW, Shen Q, Peng ZR (2004) Transit mobility jobs access and low-income labour participation in US metropolitan areas. Urban Studies 41(7):1313–1331
Sandell SH (1977) Women and the economics of family migration. Review of Economics and Statistics 59(4):406–414
Shihadeh ES (1991) The prevalence of husband-centered migration: employment consequences for married mothers. Journal of Marriage and the Family 53(2):432–444
Skinner N, Hutchinson C, Pocock B (2012) The big squeeze: Work life and care in 2012. Australian Work and Life Index 2012. Center for Work + Life, University of South Australia (Available: http://w3.unisa.edu.au/hawkeinstitute/cwl/documents/AWALI2012-National.pdf; Accessed June15, 2016)
Spitze G (1984) The effect of family migration on wives' employment: How long does it last? Social Science Quarterly 65(1):21–36
Steinberg C, Nakane M (2012) Can women save Japan? International Monetary Fund Report (Available: https://wwwimforg/external/pubs/ft/wp/2012/wp12248pdf; Accessed June15, 2016)
Stockdale A (2006) Migration: Pre-requisite for rural economic regeneration? Journal of Rural Studies 22(3):354–366
Tefft N (2012) Mental health and employment: The SAD story. Economics and Human Biology 10(3):242–255
Tsai SY, Lee PL, Lin JW, Lee CN (2016) Cross-sectional and longitudinal associations between sleep and health-related quality of life in pregnant women: A prospective observational study. International Journal of Nursing Studies 56:45–53
Tyndall J (2015) Waiting for the R train: Public transportation and employment. Urban Studies (in press)
Uysal M, Sirgy MJ, Woo E, Kim HL (2016) Quality of life and well-being research in tourism. Tourism Management 53:244–261
Westrupp EM, Strazdins L, Martin A, Cooklin A, Zubrick SR, Nicholson JM (2016) Maternal work–family conflict and psychological distress: reciprocal relationships over 8 years. Journal of Marriage and Family 78(1):107–126
Zahmatkesh M, Rad HS, Kahaki F, Azimi S (2015) Comparison of quality of life and job performance of teachers with chronic pain and normal. The AYER 3:180–185
Zenou Y (2008) Job search and mobility in developing countries Theory and policy implications. Journal of development economics 86(2):336–355
Zhang J (2014) Revisiting residential self-selection issues: A life-oriented approach. Journal of Transport and Land Use 7(3):29–45
Zhao P, Lu B (2010) Exploring job accessibility in the transformation context: an institutionalist approach and its application in Beijing. Journal of Transport Geography 18(3):393–401

Chapter 10

Mobility of the Elderly

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Abstract

This chapter briefly overviews studies on mobility of the elderly with a particular focus on its conceptualization, measurement, and evaluation. The role of mobility in the everyday life of the elderly is first explored through putting mobility discourses into a broader context. After clarifying hierarchy of travel needs, interdependencies between mobility and other life domains, and the linkage between mobility and well-being are discussed. Moreover, policy aspects related to mobility of the elderly are emphasized, aiming to draw on the potential conflicts that exist among different perspectives including social welfare, economy, and urban planning. Finally, this chapter points out the needs for conducting further cross-cutting empirical studies, establishing a clearer linkage between conceptual framework and empirical framework, developing a simple and standardized method to collectively show the importance of social aspects of transport, and exploring the potential changes in the role or position of the elderly in future.

Keywords: the elderly, mobility, achieved mobility, capability approach, hierarchy of travel needs, well-being, measure of achievement, measure of freedom to achieve, social exclusion

References

Abou–Zeid M, Ben–Akiva M (2011) The effect of social comparisons on commute well–being. Transportation Research Part A: Policy and Practice 45(4):345–361

Adams J (1999) The social implications of hypermobility. Proceedings of the Ottawa Workshop on Environmentally Sustainable Transport: The Economic and Social Implications of Sustainable Transportation

Alsnih R, Hensher DA (2003) The mobility and accessibility expectations of seniors in an aging population. Transportation Research Part A 37:903–916

Ball K, Owsley C, Sloane ME, Roenker DL, Bruni JR (1993) Visual attention problems as a predictor of vehicle crashes in older drivers. Investigative Ophthalmology and Visual Science 34(11):3110–3123

Banister D, Bowling A (2004) Quality of life for the elderly: the transport dimension. Transport Policy 11(2):105–115

Berkman LF (1995) The role of social relations in health promotion. Psychosomatic Medicine 57(3):245–254

Beyazit E (2011) Evaluating social justice in transport: Lessons to be learned from the capability approach. Transport Reviews 31(1):117–134

Blanchard RA, Myers AM, Porter MM (2010) Correspondence between self–reported and objective measures of driving exposure and patterns in older drivers. Accident Analysis and Prevention 42(2):523–529

Broome K, Worrall L, Fleming J, Boldy D (2012) Evaluation of flexible route bus transport for older people. Transport Policy 22:85–91

Burkhardt J (1999) Mobility changes: their nature effects and meaning for elders who reduce or cease driving. Transportation Research Record: Journal of the Transportation Research Board 1671:11–18

Burkhardt J, Berger A, Creedon M, McGavock A (1998) Mobility and independence: Changes and challenges for loder drivers. National Academic Press, Washington DC

Cabinet Office in Japan (2009) White paper on the aging society cabinet office in Japan

Callahan JJ, Diamond LD, Giele JZ, Morris R (1980) Responsibility of families for their severely disabled elders health care. Financing Review 1(3):29–48

Chikaraishi M, Fujiwara A, Kuwano M, Zhang J (2013) Functionings enhanced by social networks in elders activity participations: The capability approach. Compendium of Papers CD-ROM, the 92nd Annual Meeting of the Transportation Research Board, Washington D.C., January 13-17

Chikaraishi M, Stanley J, Fujiwara A, Zhang J (forthcoming) Social exclusion and transport in an aging and shrinking society. In: Zhang J, Feng CM (eds.), Routledge Handbook of Transport in Asia, Routledge
Chikaraishi M, Zhang J, Fujiwara A (2012) Effects of nursing care on time use behaviour: a comparative analysis in Japan. Transportmetrica 8(3):181–208
Cohen S (2004) Social relationships and health. American psychologist 59(8):676
Comim F (2008) Measuring capabilities. In: Comin F, Qizilbash M, Alkire S (eds.), The Capability Approach: Concepts Measures and Applications, Cambridge University Press, Cambridge, 157–200
Curran J, Blackburn RA (2001) Older people and the enterprise society: Age and self–employment propensities. Work Employment and Society 15(04):889–902
Currie G, Stanley J (2008) Investigating links between social capital and public transport. Transport Reviews 28(4):529–547
Davey JA (2006) Older people and transport: coping without a car. Ageing and Society 27(01):49–56
Dewit DJ, Wister AV, Burch TK (1988) Physical distance and social contact between elders and their adult children. Research on Aging 10(1):56–80
Eby DW, Silverstein NM, Molnar LJ, LeBlanc D, Adler G (2012) Driving behaviors in early stage dementia: A study using in–vehicle technology. Accident Analysis and Prevention 49(0):330–337
Eitoku Y, Mizokami S (2010) An evaluation method of transportation policies by the quality of mobility index based on capability approach. Asian Transport Studies 1(1):77–89
Ettema D, Gärling T, Olsson LE, Friman M (2010) Out–of–home activities daily travel and subjective well–being. Transportation Research Part A: Policy and Practice 44(9):723–732
Evans EL (2001) Influences on mobility among non–driving older Americans. Transportation Research Record Circular E–C026:151–168
Farrington JH (2007) The new narrative of accessibility: its potential contribution to discourses in (transport) geography Journal of Transport Geography 15(5):319–330
Fobker S, Grotz R (2006) Everyday mobility of elderly people in different urban settings: The example of the city of Bonn, Germany. Urban Studies 43(1):99–118
Gasper D (2007) What is the capability approach?: Its core rationale partners and dangers. The Journal of Socio–Economics 36(3):335–359
George LK, Gwyther LP (1986) Caregiver Weil–Being: A multidimensional examination of family caregivers of demented adults. The Gerontologist 26(3):253–259
Hakamies–Blomqvist L (1998) Older drivers accident risk: Conceptual and methodological issues. Accident Analysis and Prevention 30(3):293–297
Hao Y (2008) Productive activities and psychological well–being among older adults. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences 63(2):S64–S72
Johnson CL, Catalano DJ (1981) Childless elderly and their family supports. The Gerontologist 21(6):610–618
Katz S, Branch LG, Branson MH, Papsidero JA, Beck JC, Greer DS (1983) Active life expectancy. New England Journal of Medicine 309(20):1218–1224
Keay L, Jasti S, Munoz B, Turano KA, Munro CA, Duncan DD, Baldwin K, Bandeen–Roche KJ, Gower EW, West SK (2009) Urban and rural differences in older drivers failure to stop at stop signs. Accident Analysis and Prevention 41(5):995–1000
Kenyon S, Lyons G, Rafferty J (2002) Transport and social exclusion: Investigating the possibility of promoting inclusion through virtual mobility. Journal of Transport Geography 10:207–219
Kim S (2011a) Assessing mobility in an aging society: Personal and built environment factors associated with older peoples subjective transportation deficiency in the US Transportation Research Part F 14:422–429
Kim S (2011b) Intra–regional residential movement of the elderly: Testing a suburban–to–urban migration hypothesis. Annals of Regional Science 46:1–17
Kuhnimhof T, Armoogum J, Buehler R, Dargay J, Denstadli JM, Yamamoto T (2012) Men shape a downward trend in car use among young adults—evidence from six industrialized countries. Transport Reviews 32(6):761–779
Lelli S (2008) Operationalising Sen's capability approach: The influence of the selected technique. In: Comim F (ed), The Capability approach: Concepts, Measures and Application, Cambridge University Press, 310–361
Lubitz J, Cai L, Kramarow E, Lentzner H (2003) Health life expectancy and health care spending among the elderly. New England Journal of Medicine 349(11):1048–1055
Lucas K (2011) Transport and social exclusion: Where are we now? Transport Policy 20: 105–113
Marottoli RA, de Leon CFM Glass TA, Williams CS, Cooney LM, Berkman LF (2000) Consequences of driving cessation: Decreased out–of–home activity levels. Journal of Gerontology B 55(6):334–340
Marottoli RA, Mendes de Leon CF, Glass TA, Williams CS, Cooney LM, Jr Berkman LF, Tinetti ME (1997) Driving cessation and increased depressive symptoms: Prospective evidence from the New Haven EPESE. Journal of the American Geriatrics Society 45(2):202–206.

Matthews ML, Moran AR (1986) Age differences in male drivers perception of accident risk: The role of perceived driving ability. Accident Analysis and Prevention 18(4):299–313
Metz D (2003) Transport policy for an ageing population. Transport Reviews 23(4):375–386
Metz DH (2000) Mobility of older people and their quality of life. Transport Policy 7(2):149–152
Misra R, Alexy B, Panigrahi B (1996) The relationships among self–esteem exercise and self–rated health in older women. Journal of Women and Aging 8(1):81–94
Mizokami S, Kawashima H, Nagata C, Yaguchi T (2014) Intervention research for quality of life improvement through the use of personal mobility mode in an aging society. Asian Transport Studies 3(1):95–107
Mokhtarian PL, Salomon I (2001) How derived is the demand for travel ? Some conceptual and measurement considerations. Transportation Research 35:695–719
Musselwhite C, Haddad H (2010) Mobility accessibility and quality of later life. Quality in Ageing and Older Adults 11(1):25–37
NHTSA and ASA (2007) Driving well: Promoting older driver safety and mobility in your community. US DOT/NHTSA Pub National Highway. Traffic Safety Administration, US Department of Transportation and American Society of Aging
Nordbakke S (2013) Capabilities for mobility among urban older women: Barriers strategies and options. Journal of Transport Geography 26:166–174
Nordbakke S, Schwanen T (2014) Well–being and mobility: A theoretical framework and literature review focusing on older people. Mobilities 9(1):104–129
Nordbakke S, Schwanen T (2015) Transport unmet activity needs and wellbeing in later life: Exploring the links. Transportation 42(6):1129–1151
Odenheimer GL, Beaudet M, Jette AM, Albert MS, Grande L, Minaker KL (1994) Performance–based driving evaluation of the elderly driver: Safety reliability and validity. Journal of Gerontology 49(4):M153–M159
Owsley C, Ball K, McGwin JrG, Sloane ME, Roenker DL, White MF, Overley ET (1998) Visual processing impairment and risk of motor vehicle crash among older adults. JAMA 279(14):1083–1088.
Owsley C, Ball K, Sloane ME, Roenker DL, Bruni JR (1991) Visual/cognitive correlates of vehicle accidents in older drivers. Psychology and Aging 6(3):403–415
Papadopoulos F, Tsakloglou P (2008) Social exclusion in the EU: A capability approach. In Comim F, Qizilbash M, Alkire S (eds.), The Capability Approach: Concepts measures and applications. Cambridge University Press, 242–267
Patterson I, Carpenter G (1994) Participation in leisure activities after the death of a spouse. Leisure Sciences 16(2):105–117
Preston J, Rajé F (2007) Accessibility mobility and transport–related social exclusion. Journal of Transport Geography 15:151–160
Raid el Mabsout R (2011) The Capability Approach: From Ethical Foundations to Empirical Operationalization. Radboud University, Nijmegen Radboud University Nijmegen
Rimmo PA, Hakamies–Blomqvist L (2002) Older drivers' aberrant driving behaviour, impaired activity, and health as reasons for self-imposed driving limitations. Transportation Research Part F 5(1):47–62
Robeyns I (2005) The capability approach: A theoretical survey. Journal of Human Development 6(1):93–117
Rosenbloom S (2004) Mobility of the elderly transportation in an aging society: A decade of experience. Technical Papers and Reports from a Conference, Bethesda, Maryland, November 7–9, 1999, 3–21
Rosenbloom S (2009) Meeting transportation needs in an aging–friendly community Generations. Journal of American Society on Aging 33(2):33–43
Ross LA, Clay OJ, Edwards JD, Ball KK, Wadley VG, Vance DE, Cissell GM, Roenker DL, Joyce JJ (2009) Do older drivers at–risk for crashes modify their driving over time? The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 64B(2):163–170
Rowe JW, Kahn RL (1997) Successful aging. The Gerontologist 37(4):433–440
Ryan J, Wretstrand A, Schmidt SM (2015) Exploring public transport as an element of older persons mobility: A Capability A:roach perspective. Journal of Transport Geography 48:105–114
Schmöcker JD, Quddus M, Noland R, Bell M (2005) Estimating trip generation of elderly and disabled people: Analysis of London data. Transportation Research Record 1924:9–18
Schmöcker JD, Quddus MA, Noland RB, Bell MGH (2008) Mode choice of older and disabled people: a case study of shopping trips in London. Journal of Transport Geography 16(4):257–267
Schulz R, Beach SR (1999) Caregiving as a risk factor for mortality: The caregiver health effects study. The Journal of the American Medical Association 282(23):2215–2219
Sen A (1985) Commodities and Capabilities. Oxford University Press
Sen A (2009) The Idea of Justice, Penguin.
SEU SEU (2003) Making the Connections: Transport and Social Exclusion. Final Report, ODPM, London
Siegrist J, von dem Knesebeck O, Pollack CE (2004) Social productivity and well–being of older people: A sociological exploration. Social Theory and Health 2(1):1–17

Sisk RJ (2000) Caregiver burden and health promotion. International Journal of Nursing Studies 37(1):37–43
Smith N, Hirsch D, Davis A (2012) Accessibility and capability: the minimum transport needs and costs of rural households. Journal of Transport Geography 21:93–101
Speare A, Meyer JW (1988) Types of elderly residential mobility and their determinants. Journal of Gerontology 43(3):S74–S81
Spinney JEL, Scott DM, Newbold KB (2009) Transport mobility benefits and quality of life: A time–use perspective of elderly Canadians. Transport Policy 16:1–11
Stanley J, Hensher DA, Stanley J, Currie G, Greene WH, Vella–brodrick D (2011a) Social exclusion and the value of mobility. Journal of Transport Economics and Policy 45(2):197–222
Stanley JK, Hensher DA, Stanley JR, Vella–Brodrick D (2011b) Mobility social exclusion and well–being: Exploring the links. Transportation Research Part A 45(8):789–801
Stanley JR (2011) Social Exclusion. In: Currie G (ed), New Perspectives and Methods in Transport and Social Exclusion Research, Emerald UK, 27–43
Taketa A, Komatsu Y, Yokomizo I (2011) The situation of and problems faced by people with the disadvantage of shopping in hilly and mountainous areas. Journal of Rural Problems 183:255–259
Trinder E, Hay A, Dignan J, Else P, Skorupski J (1991) Concepts of equity fairness and justice in British transport legislation 1960–88. Environment and Planning C 9(1):31–50
Urry J (2000) Sociologies beyond Societies: Mobilities for the Twenty–First Century. Routledge, New York
Whelan M, Langford J, Oxley J, Koppel S, Charlton J (2006) The Elderly and Mobility: A Review of the literature report (No 255), Accident Research Centre, Monash University
Wiles J (2003) Daily geographies of caregivers: Mobility routine scale. Social Science and Medicine 57(7):1307–1325

Chapter 11

Risky Behaviors in Life: A Focus on Young People

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Abstract

This chapter describes risky behaviors in daily life, especially focusing on young people. Driving while intoxicated, speeding, and illegal drug use are examples of risky behaviors, which often compromise health, quality of life, or life itself. People perform some risky behaviors consciously while they do others unconsciously. This chapter first depicts some typical theories of risky behaviors, including Heinrich's domino model, problem behavior theory, social development model, life history theory, and lifetime utility theory. Next, it illustrates young people's risky driving by reviewing risk homeostasis theory, applications of theory of planned behavior, influences of social networks and other persons, avoidance driving, mood during driving and driving purpose, driving and nightlife, and self-driving cars. Literature review suggests that there are some common factors (not only psychological factors, but also life choices and various habits formed in daily life) affecting different types of risky behaviors, suggesting that risky behaviors tend to covary and effects of one risky behavior may spill over to influence other risky behaviors. These imply that measures to prevent a risky behavior should jointly target multiple risky behaviors based on an integrated approach over a long period.

Keywords: young people, problem behavior, social development model, life history theory, risky driving behavior, avoidance driving, self-driving cars, influences of family and peers

References

Ajzen I (1988) Attitudes, personality, and behavior. Chicago, IL: Dorsey

Ajzen I (1991) The theory of planned behavior. Organizational Behavior and Human Decision Processes 50:179–211

Aizen I (2011) The theory of planned behavior: reactions and reflections. Psychology & Health 26(9):1113–1127

Allen JP, Brown BB (2008) Adolescents, peers, and motor vehicles: the perfect storm? American Journal of Preventive Medicine 35:S289–S293

American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders (The 5th Edition). Washington, DC: American Psychiatric Association.

Anderson JM, Kalra N, Stanley KD, Sorensen P, Samaras C, Oluwatola OA (2014) Autonomous Vehicle Technology: A Guide for Policymakers. RAND Corporation (Available: http://www.rand.org/content/dam/rand/pubs/research_reports/RR400/RR443-2/RAND_RR443-2.pdf; Accessed May 29, 2016)

Baron SW, Forde DR, Kay FM (2007) Self-control, risky lifestyles, and situation: the role of opportunity and context in the general theory. Journal of Criminal Justice 35(2):119–136

Basch CE, DeCicco IM, Malfetti JL (1989) A focus group study on decision processes of young drivers: reasons that may support a decision to drink and drive. Health Education Quarterly 16:389–396

Beck KH, Shattuck T, Raleigh R (2001a) Parental predictors of teen driving risk. American Journal of Health Behavior 25(1):10–20

Beck KH, Shattuck T, Raleigh R (2001b) A comparison of teen perceptions and parental reports of influence on driving risk. American Journal of Health Behavior 25(4):376–387

Becoña Iglesias E, López-Durán A, Fernández Del Río E, Martínez Pradeda Ú, Osorio López J, Fraga Ares J, Arrojo Romero M, López Crecente F, Domínguez González MN (2011) Drunkenness, driving and sexual relations in young cocaine and ecstasy users. Adicciones 23(3):205–218

Belgiawan PF, Schmocker J-D, Abou-Zeid M, Walker J, Lee T-C, Ettema DF, Fujii S (2014) Car ownership motivations among undergraduate students in China, Indonesia, Japan, Lebanon, Netherlands, Taiwan, and USA. Transportation 41(6):1227–1244

Bianchi A, Summala H (2004) The "genetics" of driving behavior: parents' driving style predicts their children's driving style. Accident Analysis & Prevention 36:655–659

Bina M, Graziano F, Bonino S (2006) Risky driving and lifestyles in adolescence. Accident Analysis & Prevention 38(3):472–481

Bingham CR, Shope JT, Raghunathan T (2006) Patterns of traffic offenses from adolescent licensure into early young adulthood. Journal of Adolescent Health 39(1):35–42

Bolderdijk JW, Knockaert J, Steg EM, Verhoef ET (2011) Effects of Pay-As-You-Drive vehicle insurance on young drivers' speed choice: Results of a Dutch field experiment. Accident Analysis & Prevention 43:1181–1186

Bowen M (1978) Family therapy in clinical practice. Jason Aronson, New York, London

Brijs K, Brijs T, Sann S, Trinh TA, Wets G, Ruiter RAC (2014) Psychological determinants of motorcycle helmet use among young adults in Cambodia. Transportation Research Part F 26:273–290

Buckley L, Chapman RL (2016) Characteristics of adolescents who intervene to stop the risky and dangerous behavior of their friends. Accident Analysis & Prevention 88:187–193

Calafat A, Blay N, Juan M, Adrover D, Bellis MA, Hughes K, Stocco P, Siamou I, Mendes F, Bohrn K (2009) Traffic risk behaviors at nightlife: drinking, taking drugs, driving, and use of public transport by young people. Traffic Injury Prevention 10(2):162– 69

Calafat A, Adrover-Roig D, Blay N, Juan M, Bellis M, Hughes K, Mendes F, Kokkevi A (2009b) Which young people accept a lift from a drunk or drugged driver?. Accident Analysis & Prevention 41(4):703–709

Calafat A, Blay NT, Hughes K, Bellis M, Juan M, Duch M, Kokkevi A (2011) Nightlife young risk behaviours in Mediterranean versus other European cities: are stereotypes true?. European Journal of Public Health 21 (3):311–315

Castanier C, Deroche T, Woodman T (2013) Theory of planned behavior and road violations: the moderating influence of perceived behavioural control. Transportation Research Part F 18:148–158

Casley SV, Jardim AS, Quartulli AM (2013) A Study of Public Acceptance of Autonomous Cars. Worcester Polytechnic Institute, Bachelor Thesis.

Catalano RF, Kosterman R, Hawkins JD, Newcomb MD, Abbott RD (1996) Modeling the etiology of adolescent substance use: a test of the social development model. Journal of Drug Issues 26(2):429–455

Cestac J, Paran F, Delhomme P (2011) Young drivers' sensation seeking, subjective norms, and perceived behavioral control and their roles in predicting speeding intention: how risk-taking motivations evolve with gender and driving experience. Safety Science 49(3):424－432

Chan DCN, Wu AMS, Hung EPW (2010) Invulnerability and the intention to drink and drive: An application of the theory of planned behavior. Accident Analysis & Prevention 42:1549–1555

Chorlton K, Conner M, Jamson S (2012) Identifying the psychological determinants of risky riding: An application of an extended theory of planned behaviour. Accident Analysis & Prevention 49:142–153

Chung YS (2015) Seemingly irrational driving behavior model: the effect of habit strength and anticipated affective reactions. Accident Analysis & Prevention 82:79–89

Chung EK, Choe B, Lee JE, Lee JI, Sohn YW (2014) Effects of an adult passenger on young adult drivers' driving speed: roles of an adult passenger's presence and driving tips from the passenger. Accident Analysis & Prevention 67:14–20

Chung YS, Wong JT (2012) Beyond general behavioral theories: structural discrepancy in young motorcyclist's risky driving behavior and its policy implications. Accident Analysis & Prevention 49:165–176

Cieslik M, Simpson D (2013) Key Concepts in Youth Studies. Sage: London.

Cristea M, Paran F, Delhomme P (2013) Extending the theory of planned behavior: the role of behavioral options and additional factors in predicting speed behavior. Transportation Research Part F: Traffic Psychology and Behaviour 21:122–132

Dahlen ER, Martin RC, Ragan K, Kuhlman MM, 2005. Driving anger, sensation seeking, impulsiveness, and boredom proneness in the prediction of unsafe driving. Accident Analysis & Prevention 37(2):341–348

DeJoy DM (1989) The optimism bias and traffic accident risk perception. Accident Analysis & Prevention 21:333–340

Desrichard O, Roché S, Bègue L (2007) The theory of planned behavior as mediator of the effect of parental supervision: a study of intentions to violate driving rules in a representative sample of adolescents. Journal of Safety Research 38(4):447–452

Diener E (1994) Assessing subjective well-being: progress and opportunities. Social Indicators Research 31(2):103–157
Diener E (2009) The Science of Well-Being. New York: Springer
Diene E, Lucas R (1999) Personality and subjective well-being. In: Kahneman D, Diener E, Schwarz N (eds), Well-being: The Foundations of Hedonic Psychology, New York: Russell-Sage, 213–229
Donovan JE (1993) Young adult drinking-driving: behavioral and psychosocial correlates. Journal of Studies on Alcohol 54(5):600–613
Dunkel CS, Decker M (2010) Convergent validity of measures of life-history strategy. Personality and Individual Differences 48:681–684
Elliott DS (1994) Serious violent offenders: Onset, developmental course, and termination: the American Society of Criminology 1993 Presidential Address. Criminology 32:1–21
Feinberg ME, Ridenour TA, Greenberg MT (2007) Aggregating indices of risk and protection for adolescent behavior problems: the communities that care youth survey. Journal of Adolescent Health 40:506–513
Feinberg ME, Sakuma K-L, Hostetler M, McHale SM (2013) Enhancing sibling relationships to prevent adolescent problem behaviors: theory, design and feasibility of siblings are pecial. Evaluation and Program Planning 36:97–106
Ferguson SA, Williams AF, Chapline JF, Reinfurt DW, De Leonardis DM (2001) Relationship of parent driving records to the driving records of their children. Accident Analysis & Prevention 33:229–234
Fleiter JJ, Lennon A, Watson B (2010) How do other people influence your driving speed? Exploring the 'who' and the 'how' of social influences on speeding from a qualitative perspective. Transportation Research Part F 13 (1):49–62
Fleiter JJ, Watson B (2005) The speed paradox: the misalignment between driver attitudes and speeding behavior. Proceedings of the Australasian Road Safety Reserch, Policy and Education Conference, Wellington, New Zealand, November14-16
Friedman A (2013) Adverse events and risky behaviors: evidence from adolescents. Job Market Paper, Harvard University (http://scholar.harvard.edu/files/afriedman/files/jmp_abbyfriedman.pdf; Accessed January 31, 2016)
Gardner W (1993) A life-span rational-choice theory of risk taking. In: Bell NJ, Bell RW (eds), Adolescent Risk Taking, Sage Publications, 66–83
Gauld CS, Lewis I, White KM (2014) Concealed texting while driving: what are young people's beliefs about this risky behaviour?. Safety Science 65:63–69
Gheorghiu A, Delhomme P, Felonneau ML (2015) Peer pressure and risk taking in young drivers' speeding behavior. Transportation Research Part F: Traffic Psychology and Behaviour 35:101–111
Gnardellis C, Tzamalouka G, Papadakaki M, Chliaoutakis JE (2008) An investigation of the effect of sleepiness, drowsy driving, and lifestyle on vehicle crashes. Transportation Research Part F 11(4):270–281
Guttman N (2013) "My son is reliable": young drivers' parents' optimism and views on the norms of parental involvement in youth driving. Journal of Adolescent Research 28 (2):241–268
Guppy A (1993) Subjective probability of accident and apprehension in relation to self-other bias, age, and reported behavior. Accident Analysis & Prevention 25:375–382
Gwyther H, Holland C (2015) An intervention encouraging planned self-regulation and goal setting in drivers across the lifespan: Testing an extended theory of planned behaviour. Journal of Transport & Health 2 (2):289–301
Hanna EZ, Yi H, Dufour MC, Whitmore CC (2001) The relationship of early-onset regular smoking to alcohol use, depression, illicit drug use, and other risky behaviors during early adolescence: results from the youth supplement to the Third National Health and Nutrition Examination Survey. Journal of Substance Abuse 13:265–282
Harre N (2000) Risk evaluation, driving, and adolescents: a typology. Developmental Review 20 (2):206–226
Hatfield J, Fernandes R, Soames Job RF (2014) Trill and adventure seeking as a modifier of the relationship of perceived risk with risky driving among young drivers. Accident Analysis & Prevention 62:223– 229
Hawkins JD, Weis JG (1985) The social development model: an integrated approach to delinquency prevention. Journal of Primary Prevention 6:73–97
Heinrich HW (1931) Industrial accident prevention: a scientific approach. New York: McGraw-Hill
Hsieh H-F, Heinze JE, Aiyer SM, Stoddard SA, Wang J-L, Zimmerman MA (2015) Cross-domain influences on youth risky driving behaviors: a developmental cascade analysis. Journal of Applied Developmental Psychology 38:11–21
Horvath C, Lewis I, Watson B (2012) The beliefs which motivate young male and female drivers to speed: a comparison of low and high intenders. Accident Analysis & Prevention 45:334–351
Hoyes TW, Dorn L, Desmond PA, Taylor R (1996) Risk homeostasis theory, utility and accident loss in a simulated driving task. Safety Science 22:49–62

Huang P, Winston FK (2011) Young drivers. In: Porter BE (ed.), Handbook of Traffic Psychology, New York: Academic Press, 315–338
Jessor R, Jessor SL (1977) Problem Behavior and Psychological Development: A Longitudinal Study of Youth. New York: Academic Press
Jessor R (1991) Risk behavior in adolescence: a psychosocial framework for understanding and action. Journal of Adolescent Health 12(8):597–605
Jiang Y, Zhang J, Chikaraishi M, Seya H, Fujiwara A (2015) Driving speed control behavior and safety on expressways under smart phone app based traffic safety information provision. Presented at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19-23
Kabiru CW, Elung'ata P, Mojola SA, Beguy D (2014) Adverse life events and delinquent behavior among Kenyan adolescents: a cross-sectional study on the protective role of parental monitoring, religiosity, and self-esteem. Child and Adolescent Psychiatry and Mental Health 8:24
Kahneman D, Krueger AB, Schkade DA, Schwarz N, Stone AA (2004) A survey method for characterizing daily life experience: the day reconstruction method. Science 306 (5702):1776–1780
Kaplan HS, Gangestad SG (2005) Life history theory and evolutionary psychology. In: Buss DM (ed), The Handbook of Evolutionarily Psychology, New York: Wiley, 528−551
Kuin H, Masthoff E, Kramer M, Scherder E (2015) The role of risky decision-making in aggression: a systematic review. Aggression and Violent Behavior 25:159–172
Lam LT (2015) Parental mental health and internet addiction in adolescents. Addictive Behaviors 42:20–23
Lane SD, Cherek DR (2000) Analysis of risk taking in adults with a history of high risk behavior. Drug and Alcohol Dependence 60:179–187
Lantz PM, Jacobson PD, Warner KE, Wasserman J, Larson B (2000) Investing in youth tobacco control: a review of smoking prevention and control strategies. Tobacco Control 9(1):47–63
Leandro M (2012) Young drivers and speed selection: a model guided by the theory of planned behavior. Transportation Research Part F 15 (3):219–232
Le Bas GA, Hughes MA, Stout JC, (2015) Utility of self-report and performance-based measures of risk for predicting driving behavior in young people. Personality and Individual Differences 86:184–188
Lenihan F (2007) Computer addiction — a sceptical view: invited commentary on: lost online. Advances in Psychiatric Treatment 13:31
Liourta E, Empelen PV (2008) The importance of self-regulatory and goal-conflicting process in the avoidance of drunk driving among Greek young drivers. Accident Analysis & Prevention 40:1191–1199
LoBello A (2015) The implications of self-driving cars on insurance. Bryant University. (Available: http://digitalcommons.bryant.edu/cgi/viewcontent.cgi?article=1020&context=honors_mathematics; Accessed February 13, 2016)
Marcila I, Bergeron J, Audet T (2001) Motivational factors underlying the intention to drink and drive in young male drivers. Journal of Safety Research 32:363–376
Mason MJ, Tanner JF, Piacentini M, Freeman D, Anastasia T, Batat W, Boland W, Canbulut M, Drenten J, Hamby A, Rangan P, Yang Z (2013) Advancing a participatory approach for youth risk behavior: foundations, distinctions, and research directions. Journal of Business Research 66:1235–1241
McDonald MM, Donnellan MB, Navarrete CD (2012) A life history approach to understanding the dark triad. Personality and Individual Differences 52 (5):601–605
Mehta PH, Beer J (2010) Neural mechanisms of the testosterone-aggression relation: the role of orbitofrontal cortex. Journal of Cognitive Neuroscience 22 (10):2357–2368
Melkman E (2015) Risk and protective factors for problem behaviors among youth in residential care. Children and Youth Services Review 51:117–124
Miller KE (2008) Energy drinks, race, and problem behaviors among college students. Journal of Adolescent Health 43 (5):490–497
Miller G, Taubman-Ben-Ari O (2010) Driving styles among young novice drivers—the contribution of parental driving styles and personal characteristics. Accident Analysis & Prevention 42 (2):558–570
Moan IS (2013) Whether or not to ride with an intoxicated driver: predicting intentions using an extended version of the theory of planned behaviour. Transportation Research Part F 20:193–205
Moan IS, Rise J (2011) Predicting intentions not to "drink and drive" using an extended version of the theory of planned behaviour. Accident Analysis & Prevention 43 (4):1378–1384
Moore S (2011) Understanding and managing anti-social behaviour on public transport through value change: the considerate travel campaign. Transport Policy 18 (1):53–59
Motak L, Cabaude C, Bouge J-C, Huet N (2014) Comparison of driving avoidance and self-regulatory patterns in younger and older drivers. Transportation Research Part F 26:18–27
Naumann R, Dellinger AM, Krenow M (2011) Driving self-restriction in high-risk conditions: how do older drivers compare to others? Journal of Safety Research 42:67–71

O'Brien F, Gormley M, (2013) The contribution of inhibitory deficits to dangerous driving among young people. Accident Analysis & Prevention 51:238–242
Pergamit MR, Huang L, Lane J (2001) The long term impact of adolescent risky behaviors and family environment. Submitted to the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services (Available: https://aspe.hhs.gov/report/long-term-impact-adolescent-risky-behaviors-and-family-environment; Accessed February 2, 2016).
Pharo H, Sim C, Graham M, Gross J, Hayne H (2011) Risky business: executive function, personality, and reckless behavior during adolescence and emerging adulthood. Behavioral Neuroscience 125 (6):970–978
Pilkington P, Bird E, Gray S, Towner E, Weld S, McKibben M-A (2014) Understanding the social context of fatal road traffic collisions among young people: a qualitative analysis of narrative text in coroners' records. BMC Public Health, Vo. 14, Article Number: 78.
Pocuca N, Hides L, Zelenko O, Quek L-H, Stoyanov S, Tulloch K, Johnson D, Tjondronegoro D, Kavanagh DJ (2016) Initial prototype testing of ray's night out: a new mobile app targeting risky drinking in young people. Computers in Human Behavior 54:207–214
Prentice C, Cotte J (2015) Multiple Ps' effects on gambling, drinking and smoking: advancing theory and evidence. Journal of Business Research 68:2045–2048
Ramos P, Díez E, Pérez K, Rodriguez-Martos A, Brugal MT, Villalbí JR (2008) Young people's perceptions of traffic injury risks, prevention and enforcement measures: a qualitative study. Accident Analysis & Prevention 40 (4):1313–1319
Rhodes N, Pivik K, Sutton M (2015) Risky driving among young male drivers: the effects of mood and passengers. Transportation Research Part F 28:65–76
Rowe R, Andrews E, Harris PR, Armitage CJ, McKenna FP, Norman P (2016) Identifying beliefs underlying pre-drivers' intentions to take risks: an application of the theory of planned behaviour. Accident Analysis & Prevention 89:49–56
Scagnolaria S, Walker J, Maggia R (2015) Young drivers' night-time mobility preferences and attitude toward alcohol consumption: a hybrid choice model. Accident Analysis & Prevention 83:74–89
Schoettle B, Sivak M (2014) A survey of public opinion about autonomous and self-driving vehicles in the U.S., the U.K., and Australia. Report No. UMTRI-2014-21, Transportation Research Institute, The University of Michigan
Scott-Parker B, Watson B, King MJ, Hyde MK (2011) Mileage, car ownership, experience of punishment avoidance and the risky driving of young drivers. Traffic Injury Prevention 12(6):559-567
Scott-Parker B, Watson B, King MJ, Hyde MK (2014) "I drove after drinking alcohol" and other risk driving behaviours reported by young novice drivers. Accident Analysis & Prevention 70:65-73
Scott-Parker B, Watson B, King MJ, Hyde MK (2015a) "I would have lost the respect of my friends and family if they knew I had bent the road rules": parents, peers, and the perilous behaviour of young drivers. Transportation Research Part F 28:1–13
Scott-Parker B, King MJ, Watson B (2015b) The psychosocial purpose of driving and its relationship with the risky driving behaviour of young novice drivers. Transportation Research Part F 33:16–26
Sigurdardottir SB, Kaplan S, Moller M (2014) The motivation underlying adolescents' intended time-frame for driving licensure and car ownership: a socio-ecological approach. Transport Policy 36:19–25
Simons-Morton BG, Ouimet MC, Catalano RF (2008) Parenting and the young driver problem. American Journal of Preventive Medicine 35(3):S294-S303
Slovic P, Fischhoff B (1982) Targeting risks, Risk Analysis 2(4):227–234
Somers A, Weeratunga K (2015) Automated Vehicles: Are We Ready? Internal Report on Potential Implications for Main Roads Western Australia (Available: https://www.mainroads.wa.gov.au/Documents/ Automated%20Vehicle%20Report.RCN-D15% 5E2381741.PDF; Access May 29, 2016)
Stearns SC (2004) The Evolution of Life Histories. New York: Oxford University Press
Steinberg L, Morris AS (2001) Adolescent development. Annual Review of Psychology: 52:83–110
Sterrett EM, Dymnicki AB, Henry D, Byck GR, Bolland J, Mustanski B (2014) Predictors of co-occurring risk behavior trajectories among economically disadvantaged African-American youth: contextual and individual factors. Journal of Adolescent Health 55:380–387
Stewart AE, Peter CCS (2004) Driving and risking avoidance following motor vehicle crashes in a non-clinical sample: psychometric properties of a new measure. Behavioral Research and Therapy 42:859-879
Stradling SG (2011) Travel Mode Choice. In: Porter BE (ed), Handbook of Traffic Psychology. Elsevier, Amsterdam.
Taubman-Ben-Ari O, Katz-Ben-Ami L (2012) The contribution of family climate for road safety and social environment to the reported driving behavior of young drivers. Accidents Analysis and Prevention 47:1–10.
Trimpop RM (1994) The Psychology of Risk Taking Behavior. New York: North-Holland

United Nations Population Fund (2014) The power of 1.8 billion: Adolescents, youth and the transformation of the future (Available: https://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf; Accessed January 31, 2016)

Van Acker V (2016) Lifestyles and life choices. In: Zhang J (ed), Life-oriented Behavioral Research for Urban Policy, Springer, Chapter 3

Wang XT, Kruger DJ, Wilke A (2009). Life history variables and risk-taking propensity. Evolution and Human Behavior 30:77–84

Ward RB (2012) Revisiting Heinrich's law [online]. In: Chemeca 2012: Quality of Life Through Chemical Engineering: 23-26 September 2012, Wellington, New Zealand. Barton, A.C.T.: Engineers Australia, 2012:1179–1187

Weber EU, Blais AR, Betz NE (2002) A domain-specific risk attitude scale: measuring risk perceptions and risk behaviors. Journal of Behavioral Decision Making 15:263−290

Wenner CJ, Bianchi J, Figueredo AJ, Philippe Rushton J, Jacobs WJ (2013) Life history theory and social deviance: the mediating role of executive function. Intelligence 41:102–113

Wilde GJS (1982) The theory of risk homeostasis: Implications for safety and health. Risk Analysis 2 (4):209–925

Wilde GJS (1998) Risk homeostasis theory: an overview. Injury Prevention 4:89–91

WHO (World Health Organization), 2014. Health for the World's Adolescents. A Second Chance in the Second Decade <www.who.int/adolescent/second-decade>

WHO (World Health Organization) (2015) Global Status Report on Road Safety 2015

Young K (2010) Internet addiction over the decade: A personal look back. World Psychiatry 9: 91

Yu M, Nebbitt VE, Lombe M, Pitner RO, Salas-Wright CP (2012) Understanding tobacco use among urban African American adolescents living in public housing communities: A test of problem behavior theory. Addictive Behaviors 37:978–981

Zhang J, Jiang Y, Sasaki K, Tsubouchi M, Matsushita T, Kawai T, Fujiwara A (2014) A GPS-enabled smart phone app with simplified diagnosis functions of driving safety and warning information provision. Proceedings of The 21st World Congress of Intelligent Transport Systems, Detroit, USA, September 7-11, 2014

Chapter 12

Adaptation of Behavior to Overcome Natural Disasters

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Abstract

This chapter deals with how people adapt their lives to natural disasters, such as flood, cyclone, extreme weather events, earthquake, and sea level rise. With the changing global climate, the disasters would appear more frequently and seriously. However, it is still uncertain where the disasters will occur nearby personal daily activity areas, and how great the impacts on human life will be. Surprisingly, literature review suggests that relevant studies are very limited, especially in the context of developing countries. Targeting Bangladesh, one of the most vulnerable countries in the world to climate and the sixth most vulnerable to floods, this chapter describes three case studies on people's adaptation behaviors under the impacts of different flooding and cyclone scenarios in future by focusing on intercity travel behavior, job and residential location choice behavior, and tourism behavior respectively. Various findings are derived, which are useful to help identify the barriers to the adoption of adaptation measures, the roles of different stakeholders in implementing adaptation measures, and the directions of adaptation measures in the future.

Keywords: climate-related disasters, flood, cyclone, Bangladesh, adaptation behavior, residential behavior, intercity travel, tourism behavior, stated preference survey, discrete choice models

References

Adger WN, Huq S, Brown K, Hulme M (2003) Adaptation to climate change in the developing world. Progress in Development Studies 3 (3):179–195

Ahsan UA (2006) Bangladesh: climate change impacts and vulnerability - a synthesis. Climate Change Cell, Department of Environment, Government of Bangladesh

Ahmed F, Rose G, Jakob C (2013) Examining the impact of changes in weather on commuter cyclist's travel behavior. Compendium of Papers CD-ROM, the 92nd Annual Meeting of the Transportation Research Board, Washington D.C., January 13–17

Alam MJB, Hoque Alamgir M, Hoque Md M (2002) Assessment of Economic Loss Caused by Flood Damaged Transportation Network in Engineering Concerns of Floods a 1998 Perspective. Directorate of Advisory, Extension and Research Services, BUET, Dhaka, Bangladesh

Arentze T, Timmermans HJP (2007) Congestion pricing scenarios and change of job or residential location: results of a stated adaptation experiment. Journal of Transport Geography 15:56–61

Arndt C, Chinowsky P, Strzepek K, Thurlow J (2012) Climate change, growth and infrastructure investment: the case of Mozambique. Review of Development Economics 16 (3):463–475

Artur L, Hilhorst D (2012) Everyday realities of climate change adaptation in Moazambique. Global Environmental Change 22:529–536

Aultman-Hall L, Lane D, Lambert RR (2009) Assessing the impact of weather and season on pedestrian traffic volumes. Transportation Research Record 2140:35–43

Barnett J, Adger WN (2003) Climate dangers and atoll countries. Climatic Change 61:321–337

Begum RA, Sarkar MSK, Jaafar AH, Pereira JJ (2014) Toward conceptual frameworks for linking disaster risk reduction and climate change adaptation. International Journal of Disaster Risk Reduction 10 (A):362–373

Böcker L, Dijst M, Prillwitz J (2013a) Impact of everyday weather on individual daily travel behaviours in perspective: a literature review. Transport Reviews 33(1):71–91

Böcker L, Prillwitz J, Dijst M (2013b). Climate change impacts on mode choice and traveled distances: a

comparison of present with 2050 weather conditions for the Randstad Holland. Journal of Transport Geography 28:176–185
Chang Y, Lee M-A, Lee K-T, Shao K-T (2013) Adaptation of fisheries and mariculture management to extreme oceanic environmental changes and climate variability in Taiwan. Marine Policy 38:476–482
Choocharukul K, Van HT, Fujii S (2008) Psychological effects of travel behavioural preference of residential location choice. Transportation Research Part A 42:116–124
Conway D, Schipper ELF (2011) Adaptation to climate change in Africa: challenges and opportunities identified from Ethiopia. Global Environmental Change 21(1):227–237
Cools M, Creemers L (2013) The dual role of weather forecasts on changes in activity-travel behavior. Journal of Transport Geography 28:167–175
Cools M, Moons E, Creemers L, Wets G (2010) Changes in travel behavior response to weather conditions. Transportation Research Record 2157:22–28
Dasgupta S, Pandey K, Huq M, Khan ZH, Masud MS, Ahmed MMZ, Mukherjee N (2010) Climate proofing infrastructure in Bangladesh: the incremental cost of limiting inland monsoon flood damage. The WORLD BANK (Available from http://siteresources.worldbank.org/INTEAER/Resources/Inland.pdf; Accessed may 29, 2016)
Denstadli J, Jacobsen J, Lohmann M (2011) Tourist perceptions of summer weather in Scandinavia. Annals of Tourism Research 38:920–940
Ding W, Ren W, Li P, Hou X, Sun X, Li X, Xie J, Ding Y (2014) Evaluation of the livelihood vulnerability of pastoral households in Northern China to natural disasters and climate change. The Rangeland Journal 36(6):535–543
Doevenspeck M (2011) The thin line between choice and flight: Environment and migration in rural Benin. International Migration 49:50–68
Elias W, Albert G, Shiftan Y (2013) Travel behavior in the face of surface transportation terror attacks. Transport Policy 28:114–122
Ensor JE, Park SE, Hoddy ET, Ratner BD (2015) A rights-based perspective on adaptive capacity. Global Environmental Change 31:38–49
Eugenio-Martin J L, Campos-Soria J (2010) Climate in the region of origin and destination choice in outbound tourism demand. Tourism Management 31(6):744–753
Field CB, Barros V, Stocker TF, Qin D, Dokken DJ, Ebi KL, Mastrandrea MD, Mach KJ, Plattner G-K, Allen SK, Tignor M, Midgley PM (2012) IPCC, 2012: Managing the risks of extreme events and disasters to advance climate change adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK, 582 pp
GAR (2011) 2011 Global assessment report on disaster risk reduction: revealing risk, redefining development. United Nations International Strategy for Disaster Reduction (UNISDR)
Gómez Martín M B (2005). Weather, climate and tourism a geographical perspective. Annals of Tourism Research 32(3):571–591
Gössling S, Hall CM (2006) Uncertainties in predicting tourist flows under scenarios of climate change. Climatic Change 79(3–4):163–173
Gössling S, Scott D, Hall C M, Ceron JP, Dubois G (2012) Consumer behaviour and demand response of tourists to climate change. Annals of Tourism Research 39(1):36–58
Gray C (2011) Soil quality and human migration in Kenya and Uganda. Global Environmental Change 21:421–430
Grothmann T, Patt A (2005) Adaptive capacity and human cognition: the process of individual adaptation to climate change. Global Environmental Change 15:199–213
Habiba U, Shaw R, Takeuchi Y (2012) Farmer's perception and adaptation practices to cope with drought: perspectives from Northwestern Bangladesh. International Journal of Disaster Risk Reduction 1:72–84
Hess JJ, Malilay JN, Parkinson AJ (2008) Climate change: the importance of place. American Journal of Preventive Medicine 35:468–478
IPCC (2007) Summary for policymakers. In: Parry ML, Canziani OF, Palutikof JP, van der Linden PJ, Hanson CE (Eds.), Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK, 7–22
Jin J, Francisco H (2013) Sea-level rise adaptation measures in local communities of Zhejiang Province, China. Ocean & Coastal Management 71:187–194
Joarder MAM, Miller PW (2013) Factors affecting whether environmental migration is temporary or permanent: evidence from Bangladesh. Global Environmental Change 23:1511–1524
Johansson M, Nyberg L, Evers M, Hansson M (2013) Using education and social learning in capacity building – the IntECR concept. Disaster Prevention and Management 22(1):17–28
Jones L, Boyd E (2011) Exploring social barriers to adaptation: insights from western Nepal. Global

Environmental Change 21(4):1262–1274
Karim MF, Mimura N (2008) Impacts of climate change and sea-level rise on cyclonic storm surge floods in Bangladesh. Global Environmental Change 18:490–500
Keay K, Simmonds I (2005) The association of rainfall and other weather variables with road traffic volume in Melbourne, Australia. Accident Analysis and Prevention 37:109–124
Khattak AJ, Palma A (1997) The impact of adverse weather conditions on the propensity to change travel decisions: A survey of Brussels commuters. Transportation Research Part A 31(3):181–203
Klaiber HA (2014) Migration and household adaptation to climate: a review of empirical research. Energy Economics 46:539–547
Kniveton D, Smith C, Wood S (2011) Agent-based model simulations of future changes in migration flows for Burkina Faso. Global Environmental Change 215:34–40
Kotzee I, Reyers B (2016) Piloting a social-ecological index for measuring flood resilience: a composite index approach. Ecological Indicators 60:45–53
Law R (2006) The perceived impact of risks on travel decisions. International Journal of Tourism Research 8:289–300
Lee HS (2013) Estimation of extreme sea levels along the Bangladesh coast due to storm surge and sea level rise using EEMD and EVA. Journal of Geophysical Research: Oceans 118:4273–4285
Lepp A, Gibson H (2003) Tourist roles, perceived risk and international tourism. Annals of Tourism Research 30(3):606–624
Limb M, Spellman G (2001) Evaluating domestic tourists' attitudes to British weather. a qualitative approach. In Proceedings of the First International Workshop on Climate, Tourism and Recreation. Halkidiki, Greece, October 5–10
Ling FH, Tamura M, Yasuhara K, Ajima K, Trinh CV (2015) Reducing flood risks in rural households: survey of perception and adaptation in the Mekong delta. Climatic Change 132 (2):209–222
Loo BPY, Chow ASY (2011) Jobs-housing balance in an era of population decentralization: an analytical framework and a case study. Journal of Transport Geography 19:552–562
Lu QC, Peng ZR (2011) Vulnerability analysis of transportation network under the scenarios of sea level rise. Transportation Research Record 2263:174–181
Lu QC, Peng ZR, Du R (2012) Economic analysis of sea-level rise impacts and adaptation strategies in transportation. Transportation Research Record 2273:54–61
Lu QC, Zhang J, Peng ZR, Rahman ABMS (2014) Inter-city travel behaviour adaptation to flooding and climate change. Journal of Transport Geography 41(12):148–153
Mahmud T, Prowse M (2012) Corruption in cyclone preparedness and relief efforts in coastal Bangladesh: lessons for climate adaptation? Global Environmental Change 22:933–943
Moore WR (2010) The impact of climate change on Caribbean tourism demand. Current Issues in Tourism 13(5):495–505
Moreno A (2010) Mediterranean tourism and climate change: a survey-based study. Tourism Planning and Development 7:253–265
Mortreux C, Barnett J (2009) Climate change, migration and adaptation in Funafuti, Tuvalu. Global Environmental Change 19:105–112
Mozumder P, Flugman E, Randhir T (2011) Adaptation behavior in the face of global climate change: survey responses from experts and decision makers serving the Florida Keys. Ocean & Coastal Management 54 (1):37–44
National Research Council (2008) Potential Impacts of Climate Change on U.S. Transportation. Transportation Research Board Special Report 290. (http://onlinepubs.trb.org/onlinepubs/sr/sr290.pdf; Accessed March 1, 2016)
Nelson DI (2003) Health impact assessment of climate change in Bangladesh. Environmental Impact Assessment Review 23:323–341
Nicholls S (2006) Climate change, tourism and outdoor recreation in Europe. Managing Leisure 11:151–163
Nguyen KV, James H (2013) Measuring household resilience to floods: a case study in the Vietnamese Mekong River Delta. Ecology and Society, 18(3): Article Number: 13
Nurlaela S, Curtis C (2012) Modeling household residential location choice and travel behaviour and its relationship with public transport accessibility. Procedia-Social and Behavioural Sciences 54:56–64
Oluoko-Odingo AA (2011) Vulnerability and adaptation to food insecurity and poverty in Kenya. Annals of the Association of American Geographers 101(1):1–20
Osbahr H, Twyman C, Adger WN, Thomas DSG (2008) Effective livelihoods adaptation to climate change disturbance: scale dimensions of practice in Mozambique. Geoforum 39:1951–1964
Park K, Reisinger Y (2010) Differences in the perceived influence of natural disasters and travel risk on international travel. Tourism Geographies 12(1):1–24
Patt A, Schroter D (2008) Perceptions of climate risk in Mozambique: implications for the success of adaptation

strategies. Global Environmental Change 18:458–467
Perry A (2006) Will predicted climate change compromise the sustainability of mediterranean tourism? Journal of Sustainable Tourism 14(4):367–375
Peterson TC, McGuirk M, Houston TG, Horvitz AH, Wehner MF (2008) Climate Variability and Change with Implications for Transportation. Transportation Research Board Special Report 290 (onlinepubs.trb.org/onlinepubs/sr/sr290Many.pdf; Accessed March 1, 2016)
Phillips J (2003) Determinants of forecast use among communal farmers in Zimbabwe. In: O'Brien, K., Vogel, C. (Eds.), Coping with Climate Variability: The Use of Seasonal Climate Forecasts in Southern Africa. Ashgate, Aldershot, UK, 110–128
Ruiz Meza LE (2014) Adaptive capacity of small-scale coffee farmers to climate change impacts in the Soconusco region of Chiapas, Mexico. Climate and Development 7(2):100–109
Sahin O, Mohamed S (2013) A spatial temporal decision framework for adaptation to sea level rise. Environmental Modeling & Software 46:129–141
Saldana-Zorrilla SO, Sandberg K (2009) Impacts of climate-related disasters on human migration in Mexico: a spatial model. Climatic Change 96:97–118
Saneinejad S, Roorda MJ, Kennedy C (2012) Modeling the Impact of Weather Conditions on Active Transportation Travel Behavior. Transportation Research Part D 17:129–137
Schiermeier Q (2014) Holding back the tide. Nature 508:164–166
Schweikert A, Chinowsky P, Espinet A, Tarbert M (2014) Climate change and infrastructure impacts: comparing the impact on roads in ten countries through 2100. Procedia Engineering 78:306–316
Sermons MW, Koppelman FS (2001) Representing the differences between female and male commuting behaviour in residential location choice models. Journal of Transport Geography 9:101–110
Sundblad EL, Biel A, Garling T (2007) Cognitive and affective risk judgments related to climate change. Journal of Environmental Psychology 27:97–106
Thakur PK, Maiti S, Kingma NC, Hari Prasad V, Aggarwal SP, Bhardwaj A (2011) Estimation of structural vulnerability for flooding using geospatial tools in the rural area of Orissa, India. Natural Hazards 61(2):501–520
Transportation Research Board (2008) Potential Impacts of Climate Change on U.S. Transportation. Transportation Research Board Special Report 290 (Available: http://onlinepubs.trb.org/ onlinepubs/sr/sr290.pdf; Accessed May 29, 2016)
UNDP (2004) A Global report "reducing disaster risk: a challenge for development", New York. Printed by John S. Swift Co., USA
UNDP (2011) Human development report 2011: sustainability and equity - a better future for all. United Nations Development Programme (UNDP), New York
Van Berkum E, Weijermars W, Hagens A (2006) The impact of weather on urban travel demand in the Netherlands. Paper Presented at the EURO Working Group for Transportation Conference, Bari, Italy, 245–252
Viscusi WK, Chesson H (1999) Hopes and fears: the conflicting effects of risk ambiguity. Theory and Decision 47(2):153–178
Wang D, Chai Y (2009) The jobs-housing relationship and commuting in Beijing, China: the legacy of Danwei. Journal of Transport Geography 17:30–38
Walker B, Holling CS, Carpenter SR, Kinzig A (2004) Resilience, adaptability and transformability in social–ecological systems. Ecology and Society 9(2):5
Wolf J, Allice I, Bell T (2013) Values, climate change, and implications for adaptation: evidence from two communities in Labrador, Canada. Global Environmental Change 43:548–562
World Tourism Organisation (2003) Climate change and tourism. Proceedings of the First International Conference on Climate Change and Tourism. Djerba, Tunisia, April 9–11

Chapter 13

Mobility Biographies and Mobility Socialisation – New Approaches to an Old Research Field

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Abstract

This chapter investigates mobility biographies and mobility socialization, which are especially useful to capture long-term life choices. In the past decade, a research approach has been developed to better understand daily mobility by framing it in the context of individual life courses, their path dependencies and their social, economic and space-time links. This chapter briefly reviewed this approach and its origins. The concept of mobility biographies is introduced first, including a discussion of the role of routines (habits), life domains linked to mobility, and key events and transitions in the life course. A further step puts individual mobility biographies in a wider social context by referring to the concepts of socialization and linked lives. The importance of historical context for studying mobility biographies is briefly sketched. The chapter concludes with an outlook on future research.

Keywords: mobility socialisation, mobility biography, life events, habits, learning process, linked lives, travel behaviour, path dependence, transition, context, qualitative-hermeneutic approach

References

Aditjandra PT, Cao X, Mulley C (2016) Exploring changes in public transport use and walking following residential relocation: a British case study. Journal of Transport and Land Use 9(3):1-19

ARL (Akademie für Raumforschung und Landesplanung) (1992) Regionale und biographische Mobilität im Lebensverlauf. Forschungs- und Sitzungsberichte der Akademie für Raumforschung und Landesplanung 189, ARL, Hannover

Arránz Becker O (2013) Effects of similarity of life goals, values, and personality on relationship satisfaction and stability: findings from a two-wave panel study. Personal Relationships 20:443–461

Auld J, Zhang L (2013) Inter-personal interactions and constraints in travel behavior within households and social networks. Transportation 40:751–754

Axhausen KW (2002) A dynamic understanding of travel demand: a sketch. Arbeitsbericht Verkehrs- und Raumplanung des Instituts für Verkehrsplanung, Transporttechnik, Straßen- und Eisenbahnbau 119: ETH, Zürich

Axhausen KW, Frei A, Ohnmacht T (2006) Networks, biographies and travel: first empirical and methodological results. Paper presented at the 11th International Conference on Travel Behaviour Research, Kyoto, August 16–20

Bahrdt HP (1994) Schlüsselbegriffe der Soziologie. The Sixth Edition, C.H. Beck, München

Baslington H (2008) Travel socialization: a social theory of travel mode behavior. International Journal of Sustainable Transportation 2:91–114

Beige S (2008) Long-term and mid-term mobility decisions during the life course. Doctoral Dissertation, ETH Zürich, Institut für Verkehrsplanung und Transportsysteme (e-collection.library.ethz.ch/eserv/eth:30645/eth-30645-02.pdf: Accessed November 18, 2015).

Beige S, Axhausen KW (2012) Interdependencies between turning points in life and long-term mobility decisions. Transportation 39:857–872

Bhat CR, Srinivasan S, Axhausen KW (2005) An analysis of multiple interepisode durations using a unifying multivariate hazard model. Transportation Research Part B 39:797–823

Birg H, Flöthmann E-J, Heins F, Reiter I (1998) Migrationsanalyse. Empirische Längsschnitt- und Querschnittanalysen auf der Grundlage von Mikro- und Makromodellen für die Bundesrepublik Deutschland. Materialien des Instituts für Bevölkerungsforschung und Sozialpolitik 43, Universität, Bielefeld

Blaauboer M (2011) The impact of childhood experiences and family members outside the household on residential environment choices. Urban Studies 48:1635–1650
Bonham J, Wilson A (2012) Bicycling and the life course: the start-stop-start experiences of women cycling. International Journal of Sustainable Transportation 6:195–213
Buehler R, Hamre A (2015) The multimodal majority? driving, walking, cycling, and public transportation use among American adults. Transportation 42:1081–1101
Cao J, Cao X (2014) The impacts of LRT, neighbourhood characteristics, and self-selection on auto ownership: evidence from Minneapolis-St. Paul. Urban Studies 51:2068–2087
Cass N, Faulconbridge J (2015) Commuting practices: new insights into modal shift from theories of social practice. Transport Policy 45:1–14
Chatterjee K, Scheiner J (2015) Understanding changing travel behaviour over the life course: Contributions from biographical research. A resource paper for the Workshop "Life-Oriented Approach for Transportation Studies". Presented at IATBR (14th International Conference on Travel Behaviour Research), Windsor, UK, 19–23 July 2015
Chatterjee K, Sherwin H, Jain J, Christensen J, Marsh S (2013) A conceptual model to explain turning points in travel behaviour: application to bicycle use. Transportation Research Record 2322:82–90
Chi J (2016) Long- and short-run asymmetric responses of motor-vehicle travel to fuel price variations: New evidence from a nonlinear ARDL approach. Transport Policy (in press)
Chihuri S, Mielenz TJ, DiMaggio CJ, Betz ME, DiGuiseppi C, Jones VC, Li G (2015) Driving cessation and health outcomes in older adults: a longroad study. AAA Foundation for Traffic Safety, Washington, D.C
Chikaraishi M, Fujiwara A, Zhang J, Axhausen KW (2009) Exploring variation properties of departure time choice behavior using multilevel analysis approach. Transportation Research Record 2134:10–20
Clark B, Chatterjee K, Melia S (2016a) Changes in level of household car ownership: The role of life events and spatial context. Transportation 43(4):565–599
Clark B, Chatterjee K, Melia S (2016b) Changes to commute mode: the role of life events, spatial context and environmental attitude. Transportation Research Part A 89:89–105.
Clutton-Brock TH (1988) Reproductive success. Studies of Individual Variation in Contrasting Breeding Systems. University of Chicago, Chicago
Congleton C (2014) Strategic social interaction in travel mode choice: a case study of UC Davis campus travel. Compendium of Papers CD-ROM, The 93rd Annual Meeting of Transportation Research Board. Washington, D.C., January 12-16
Cooke TJ, Boyle P, Couch K, Feijten P (2009) A longitudinal analysis of family migration and the gender gap in earnings in the United States and Great Britain. Demography 46:147–167
Coulter R (2013) Wishful thinking and the abandonment of moving desires over the life course. Environment and Planning A 45:1944–1962
Curl AL, Stowe JD, Cooney TM, Proulx CM (2013) Giving up the keys: How driving cessation affects engagement in later life. The Gerontologist (doi:10.1093/geront/gnt037)
Dargay J (2001) The effect of income on car ownership: evidence of asymmetry. Transportation Research Part A 35:807–821
Dargay J, Hanly M (2007) Volatility of car ownership, commuting mode and time in the UK. Transportation Research Part A 41:934–948
Delbosc A (2016) Delay or forgo? A closer look at youth driver licensing trends in the United States and Australia. Transportation (in press)
Elder Jr, GH, Johnson MK, Crosnoe R (2006) The emergence and development of life course theory. In: Mortimer J, Shanahan MJ (eds.), Handbook of the Life Course, Springer, Berlin, 3–19
Esser H (1991) Alltagshandeln und Verstehen. Zum Verhältnis von erklärender und verstehender Soziologie am Beispiel von Alfred Schütz und "Rational Choice", Mohr Siebeck, Tübingen
Ettema D, Nieuwenhuis R (2015) Residential self-selection effects and TOD development: how does relocation motivation influence the effect of built environment? Compendium of Papers CD-ROM, the 94th Annual Meeting of the Transportation Research Board, Washington D.C., January 11-15
Feijten P, Hooimeijer P, Mulder CH (2008) Residential experience and residential environment choice over the life-course. Urban Studies 45:141–162
Filipp S-H (ed.) (1995) Kritische Lebensereignisse, Beltz, Weinheim
Flade A, Limbourg M (1997) Das Hineinwachsen in die motorisierte Gesellschaft, Institut für Wohnen und Umwelt, Darmstadt
Fortin NM (2005) Gender role attitudes and the labour-market outcomes of women across OECD countries. Oxford Review of Economic Policy 21:416–438
Frändberg L (2006) International mobility biographies: a means to capture the institutionalisation of long-distance travel? Current Issues in Tourism 9:320–334
Fujii S, Gärling T (2003) Development of script-based travel mode choice after forced change. Transportation

Research Part F 6:117–124
Gärling T, Axhausen KW (2003) Introduction: habitual travel choice. Transportation 30:1–11
Gerber K (2011) Räumliche Mobilität im Wandel: wanderungen im Lebenslauf und ihre Auswirkungen auf die Stadtentwicklung in Nordrhein-Westfalen, VS Verlag, Wiesbaden
Goodwin PB (1989) Family changes and public transport use 1984–1987. Transportation 16:121–154
Guell C, Panter J, Jones NR, Ogilvie D (2012) Towards a differentiated understanding of active travel behaviour: using social theory to explore everyday commuting. Social Science Medicine 75:233–239
Hägerstrand T (1970) What about people in regional science? Papers in Regional Science 24:7–21
Halfacree KH, Boyle PJ (1993) The challenge facing migration research: the case for a biographical approach. Progress in Human Geography 17:333–348
Handy S, Cao X, Mokhtarian P (2005) Correlation or causality between the built environment and travel behavior? evidence from Northern California. Transportation Research Part D 10:427–444
Hanson S, Hanson P (1980) Gender and urban activity patterns in Uppsala, Sweden. Geographical Review 70:291–299
Harms S, Lanzendorf M (2007) From university to working life: effects of an important biographic change on travel mode choice. Paper presented at the European Transport Conference, Leiden, Netherlands, 17–19 October, 2007
Haustein S, Klöckner CA, Blöbaum A (2009) Car use of young adults: the role of travel socialization. Transportation Research Part F 12:168–178
Heinen E, Chatterjee K (2015) The same mode again? an exploration of mode choice variability in Great Britain using the National Travel Survey. Transportation Research Part A 78:266–282
Heinen E, Ogilvie D (2016) Variability in baseline travel behaviour as a predictor of changes in commuting by active travel, car and public transport: a natural experimental study. Journal of Transport & Health 3:77-85.
Heinen E, Panter J, Mackett R, Ogilvie D (2015) Changes in mode of travel to work: A natural experimental study of new transport infrastructure. International Journal of Behavioral Nutrition and Physical Activity 2015, 12:81
Herkner W (1991) Lehrbuch sozialpsychologie. 5th edition, Hans Huber, Bern
Hesse M, Scheiner J (2009) Residential location, mobility and the city: mediating and reproducing social inequity. In: Ohnmacht T, Maksim H, Bergman M (eds): Mobilities and Inequality, Ashgate, Aldershot, 187–206
Holz-Rau C, Kutter E (1995) Verkehrsvermeidung – siedlungsstrukturelle und organisatorische Konzepte. Materialien zur Raumentwicklung 73, BfLR, Bonn
Holz-Rau C, Scheiner J, Schwarze B (2010) Wohnstandortinformation privater Haushalte: grundlagen und erfahrungen aus zwei modellstädten. Dortmunder Beiträge zur Raumplanung, Verkehr 9, IRPUD, Dortmund
Jones H, Chatterjee K, Gray S (2014) A biographical approach to studying individual change and continuity in walking and cycling over the life course. Journal of Transport Health 1:182–189
Kalter F (1994) Pendeln statt migration? die wahl und stabilität von wohnort-arbeitsort-kombinationen. Zeitschrift für Soziologie 23:460–476
Kasper B, Toepsch J, Schubert S (2009) Das patenticket. ein erfolgreiches forschungs- und umsetzungsprojekt zur gewinnung von kunden für den öpnv in der zielgruppe 60+. Nahverkehrspraxis 56:19–21
Kieschke U, Kieschke T, Schubert W (2010) Fahrerlaubnisentzug als kritisches Lebensereignis. Zeitschrift für Verkehrssicherheit 56:143–148
Klein NJ, Smart MJ (2015) Car today, gone tomorrow: The ephemeral car in low-income, immigrant and minority families. Transportation (in press)
Klinger T, Kenworthy JR, Lanzendorf M (2013) Dimensions of urban mobility cultures – a comparison of German cities. Journal of Transport Geography 31:18–29
Krämer-Badoni T, Kuhm K (2000) Mobilität. In: Häußermann H (ed): Großstadt. Soziologische Stichworte, 2nd ed, Leske+Budrich, Opladen, 162–173
Krizek KJ (2003) Residential relocation and changes in urban travel. does neighborhood-scale urban form matter? Journal of the American Planning Association 69:265–281
Kroesen M (2014) Modeling transitions between single- and multimodal travel patterns over time: application of latent class transition analysis. Compendium of Papers CD-ROM, the 93rd Annual Meeting of the Transportation Research Board, Washington D.C., January 12-16
Kroesen M (2015) Do partners influence each other's travel patterns? a new approach to study the role of social norms. Transportation Research Part A 78:489–505
Lanzendorf M (2003) Mobility biographies. A new perspective for understanding travel behaviour. Paper presented at the 10th International Conference on Travel Behaviour Research, Lucerne, August 10-15
Lanzendorf M (2010) Key events and their effect on mobility biographies: the case of childbirth. International Journal of Sustainable Transportation 4:272–292
Liefbroer AC, Elzinga CH (2012) Intergenerational transmission of behavioural patterns: how similar are parents' and children's demographic trajectories? Advances in Life Course Research 17:1–10
Martensson S (1979) On the formation of biographies in space-time environments. Lund Studies in Geography,

Series B, Human Geography, 47, Department of Geography, University, Lund
Merton R (1969) Lifetime portfolio selection under uncertainty: the continuous-time case. Review of Economics and Statistics 51:247–257
Michielin F, Mulder CH (2008) Family events and the residential mobility of couples. Environment and Planning A 40:2770–2790
Mienert M (2003) Entwicklungsaufgabe automobilität. psychische funktionen des pkw-führerscheins für jugendliche im übergang ins erwachsenenalter. Zeitschrift für Verkehrssicherheit 49, 26–48 and 75–99 and 127–139 and 155–161
Miles A, Moore N, Muir S (2013) Mobility biographies: studying transport and travel behaviour through life histories. In: Gerike R, Hülsmann F, Roller K (eds), Strategies for Sustainable Mobilities: Opportunities and Challenges, Ashgate, Farnham, 173–188
Mjahed LB, Frei C, Mahmassani HS (2015) Walking behavior: the role of childhood travel experience. Compendium of Papers CD-ROM, the 94th Annual Meeting of the Transportation Research Board, Washington D.C., January 11-15
Mortimer JT, Shanahan MJ (eds.) (2006) Handbook of the Life Course, Springer, Berlin
Müggenburg H, Busch-Geertsema A, Lanzendorf M (2015) A review of achievements and challenges of the mobility biographies approach and a framework for further research. Journal of Transport Geography 46:151–163
Mulder CH (1993) Migration dynamics: a life course approach. Thesis Publishers, Amsterdam
Mulder CH, Cooke TJ (2009) Guest editorial: family ties and residential locations. Population, Space and Place 15:299–304
Mulder CH, Ham M van (2005) Migration histories and occupational achievement. Population, Space and Place 11:173–186
Mussa M (1976) A study in macroeconomics. Studies in Monetary Economics 3. North Holland, Amsterdam, New York, Oxford
Myers SM (1999) Residential mobility as a way of life: Evidence of intergenerational similarities. Journal of Marriage and the Family 61:871–880
Oakil ATM (2013) Temporal dependence in life trajectories and mobility decisions. Doctoral Dissertation, Utrecht University, Faculty of Geosciences (dspace.library.uu.nl/bitstream/handle/1874/283970/Oakil.pdf: Accessed November 18, 2015)
Oakil ATM (2016) Securing or sacrificing access to a car: Gender difference in the effects of life events. Travel Behaviour and Society 3:1–7
Ottmann P (2009) Abbildung demographischer prozesse in verkehrsnachfrageprognosen mit hilfe von längsschnittdaten. Doctoral Dissertation, Fakultät Bauingenieur-, Geo- und Umweltwissenschaften, Universität Karlsruhe (www.ksp.kit.edu/download/1000019587: Accessed November 18, 2015)
Pailhé A, Solaz A (2008) Professional outcomes of internal migration by couples: evidence from France. Population, Space and Place 14:347–363
Pnevmatikou AM, Karlaftis MG, Kepaptsoglou K (2015) Metro service disruptions: how do people choose to travel? Transportation 42:933–949.
Prillwitz J, Harms S, Lanzendorf M (2006) Impact of life course events on car ownership. Transportation Research Record 1985:71–77
Rasouli S, Timmermans H, van der Waerden P (2015) Employment status transitions and shifts in daily activity-travel behavior with special focus on shopping duration. Transportation 42:919–931
Rau H, Manton R (2016) Life events and mobility milestones: Advances in mobility biography theory and research. Journal of Transport Geography 52:51-60.
Raz-Yurovich L (2013) Divorce penalty or divorce premium? A longitudinal analysis of the consequences of divorce for men's and women's economic activity. European Sociological Review 29:373–385
Rockwell RF, Barrowclough GF (1995) Effective population size and lifetime reproductive success. Conservation Biology 9:1225–1233
Rodriguez DA, Levine J, Weinstein A, Song J (2011) Can information promote transportation-friendly location decisions? a simulation experiment. Journal of Transport Geography 19:304–312
Sackmann R (2007) Lebenslaufanalyse und Biografieforschung, VS Verlag, Wiesbaden
Sackmann R, Wingens M (2001) Strukturen des Lebenslaufs: Übergang - Sequenz - Verlauf. Juventa, Weinheim, München
Salomon I (1983) Life styles – a broader perspective on travel behaviour. In: Carpenter S, Jones P (eds), Recent Advances in Travel Demand Analysis, Gower, Aldershot, 290–310
Samuelson PA (1969) Lifetime portfolio selection by dynamic stochastic programming. Review of Economics and Statistics 51:239–246
Sandow E (2014) Til work do us part: the social fallacy of long-distance commuting. Urban Studies 51:526–543
Sattlegger L, Rau H (2016) Carlessness in a car‐centric world: A reconstructive approach to qualitative mobility

biographies research. Journal of Transport Geography 53:22-31.
Scheiner J (2000) Eine stadt – zwei Alltagswelten? Ein Beitrag zur Aktionsraumforschung und Wahrnehmungsgeographie im vereinten Berlin. Abhandlungen Anthropogeographie 62, Reimer, Berlin
Scheiner J (2003) Housing mobility and travel behaviour: a process-oriented approach to spatial mobility. evidence from a new research field in Germany. Paper presented at the RGS-IBG International Annual Conference "Geography, Serving Society and the Environment", London, 3–5 September, 2003
Scheiner J (2005) Auswirkungen der Stadt- und Umlandwanderung auf Motorisierung und Verkehrsmittelnutzung: ein dynamisches Modell des Verkehrsverhaltens. Verkehrsforschung Online 1, 1–17
Scheiner J (2006) Does the car make elderly people happy and mobile? settlement structures, car availability and leisure mobility of the elderly. European Journal of Transport and Infrastructure Research 6:151–172
Scheiner J (2007) Mobility biographies: elements of a biographical theory of travel demand. Erdkunde 61:161–173
Scheiner J (2009) Sozialer Wandel, Raum und Mobilität. VS Verlag, Wiesbaden
Scheiner J (2012) A century of motorisation in urban and rural contexts: paths of motorisation in German cities. Erdkunde 66:313-328.
Scheiner J, Holz-Rau C (2013a) A comprehensive study of life course, cohort, and period effects on changes in travel mode use. Transportation Research Part A 47:167–181
Scheiner J, Holz-Rau C (2013b) Changes in travel mode choice after residential relocation: a contribution to mobility biographies. Transportation 40:431–458
Scheiner J (2014) The gendered complexity of daily life: effects of life-course events on changes in activity entropy and tour complexity over time. Travel Behaviour & Society 1:91–105
Schlich R, Schönfelder S, Hanson S, Axhausen KW (2004) Structures of leisure travel: temporal and spatial variability. In: Transport Reviews 24:219–237
Schneider NF, Limmer R, Ruckdeschel K (2002) Berufsmobilität und Lebensform. Sind berufliche Mobilitätserfordernisse in Zeiten der Globalisierung noch mit Familie vereinbar? Kohlhammer, Stuttgart
Schütz A (1932/1981) Der sinnhafte Aufbau der sozialen Welt, 2. ed., Suhrkamp, Frankfurt am Main
Sharmeen F, Arentze T, Timmermans H (2014) An analysis of the dynamics of activity and travel needs in response to social network evolution and life-cycle events: a structural equation model. Transportation Research Part A 59:159–171
Srinivasan K, Athuru S (2005) Analysis of within-household effects and between-household differences in maintenance activity allocation. Transportation 32:495–521
Stutzer A, Frey BS (2008) Stress that doesn't pay: the commuting paradox. The Scandinavian Journal of Economics 110:339–366
Susilo YO, Kitamura R (2005) Analysis of day-to-day variability in an individual's action space: exploration of 6-week Mobidrive travel diary data. Transportation Research Record 1902:124–133
Termida NA, Susilo YO, Franklin JP (2016) Observing dynamic behavioural responses due to the extension of a tram line by using panel survey. Transportation Research A 86:78-95.
Thøgersen J (2006) Understanding repetitive travel mode choices in a stable context: a panel study approach. Transportation Research Part A 40:621–638
Tully CJ, Baier D (2011) Mobilitätssozialisation. In: Schwedes O (ed), Verkehrspolitik, VS Verlag, Wiesbaden, 195–211
Van der Klis M (2009) Commuter partnerships. balancing home, family, and distant work. Doctoral Dissertation, Faculty of Social and Behavioural Sciences, University of Amsterdam (http://dare.uva.nl/document/2/64928: Accessed November 18, 2015)
Van der Waerden P, Timmermans H, Borgers A (2003) The influence of key events and critical incidents on transport mode choice switching behaviour: a descriptive analysis. Paper presented at the 10th International Conference on Travel Behaviour Research (IATBR), Lucerne, 10–15 August 2003
Van Wee B, Holwerda H, van Baren R (2002) Preferences for modes, residential location and travel behaviour: the relevance for land-use impacts on mobility. European Journal of Transport and Infrastructure Research 2:305–316
Wagner M (1989) Räumliche Mobilität im Lebensverlauf, Ferdinand Enke, Stuttgart.
Weber M (1921/1972) Wirtschaft und Gesellschaft. Grundriß der verstehenden Soziologie, 5. ed., J.C.B. Mohr, Tübingen
Weis C, Axhausen KW (2009) Induced travel demand: evidence from a pseudo panel data based structural equations model. Research in Transport Economics 25:8–18
Willekens FJ (1999) The life course: models and analysis. In: Van Wissen LJG, Dykstra PA (eds): Population issues, Kluwer, New York, 23–51
Yun M, van Herick D, Mokhtarian PL (2011) Nonwork travel behavior changes during temporary freeway closure: the Fix 1-5 project in Sacramento, California. Transportation Research Record 2231:1–9
Zhang J, Yu B, Chikaraishi M (2014) Interdependences between household residential and car ownership

behavior: a life history analysis. Journal of Transport Geography 34:165–174
Zumkeller D, Chlond B, Lipps O (1998) Konstanz / Variabilität des Verkehrsverhaltens bei gleichen Personen. Endbericht (BMV FE 70.595/1998), Institut für Verkehrswesen, Karlsruhe
Zwerts E, Janssens D, Wets G (2007) How the presence of children affects parents' travel behaviour. Compendium of Papers CD-ROM, the 86th Annual Meeting of the Transportation Research Board, Washington D.C., January 21-25

Chapter 14

Biographical Interactions over the Life Course: Car Ownership, Residential Choice, Household Structure, and Employment/Education

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Abstract

This chapter focuses on interdependent decisions on car ownership mobility, residential choice mobility, household structure mobility, and employment/education mobility over the life course. This study represents the above interdependencies based on a multilinear utility model and make an empirical study based on data from a web-based life history survey. Each of the four mobility domains is simply described as a set of episodes. Dependent variables in the model are the duration of each episode between two consecutive changes in each mobility domain. By using the multilinear utility functions, interepisode interactions within each mobility domain and interdomain interactions are simultaneously incorporated. The survey was conducted in 2010 and 1,000 households provided valid data, and may well be the first life history survey with such a large sample size and comprehensive coverage in the transportation literature. Estimation results show a competitive relationship between the duration of episodes in the same domain, while a synergistic relationship between the duration of episodes in different domains exists. Furthermore, the biographical interactions in the life course are found to be substantial, contributing almost 95% to total household utility, implying that mobility decisions are likely to be intertwined over the life course.

Keywords: biographical interactions, car ownership mobility, residential choice mobility, household structure mobility, employment/education mobility, cross-/within-domain interactions

References

Beige S, Axhausen KW (2008) Long-term and mid-term mobility decisions during the life course: experiences with a retrospective survey. IATSS Research 32(2):16–33

Belli RF (1998) The structure of autobiographical memory and the event history calendar: potential improvements in the quality of retrospective reports in surveys. Memory 6(4):383–406

Belli RF, Smith LM, Andreski PM, Agrawal S (2007) Methodological comparisons between CATI event history calendar and standardized conventional questionnaire instruments. Public Opinion Quarterly 71(4):603–622

Ben-Akiva M, Lerman SR (1991) Discrete Choice Analysis: Theory and Application to Travel Demand. Cambridge, MA, The MIT Press

Dargay J (2001) The effect of income on car ownership: evidence of asymmetry. Transportation Research Part A 35:807–821

Dargay J, Hanly M (2007) Volatility of car ownership, commuting mode and time in the UK. Transportation Research Part A 41(10):934–948

Dieleman F (2001) Modelling residential mobility: a review of recent trends in research. Journal of Housing and the Built Environment 16:249–265

Dieleman FM, Mulder CH (2002) The geography of residential choice. In: Aragonés JI, Francescato G, Gärling T (eds.): Residential Environments: Choice, Satisfaction, and Behavior. Westport, Connecticut: Bergin & Garvey, 35–54

Eliasson J, Mattsson L (2000) A Model for integrated analysis of household location and travel choices. Transportation Research Part A 34(5):375–394

Freedman D, Thornton A, Camburn D, Alwin D, Young-DeMarco L (1988) The life history calendar: a technique for collecting retrospective data. Sociological Methodology 18:37–68

Hollingworth BJ, Miller EJ (1996) Retrospective interviewing and its application in study of residential mobility. Transportation Research Record 1551:74–81
Kaiser B (2003) FRAME-Freizeitmobilität älterer Menschen. Paper presented at the Annual Meeting of the Working Group Transportation of the German Association of Geographers, Wuppertal, June 5–7
Lanzendorf M (2003) Mobility biographies: a new perspective for understanding travel behaviour. Paper presented at the 10th International Conference on Travel Behaviour Research, Lucerne, August 10–15
Lanzendorf M (2010) Key events and their effect on mobility biographies: the case of child birth. International Journal of Sustainable Transportation 4(5):272–292
Mayer KU, Tuma NB (1990) Event History Analysis in Life Course Research. University of Wisconsin Press, Madison
Mohammadian A, Miller EJ (2003) Dynamic modeling of household automobile transactions. Transportation Research Record 1831:98–105
Novaco RW, Stokols D, Milanesi LC (1990) Subjective and objective dimensions of travel impedance as determinants of commuting stress. American Journal of Community Psychology 18:231–257
Ommeren JNV, Rietveld P, Nijkamp P (1999) Job mobility, residential mobility and commuting: a search perspective. Journal of Urban Economics 46:230–253
Scheiner J (2006) Housing mobility and travel behaviour: a process-oriented approach to spatial mobility. evidence from a new research field in Germany. Journal of Transport Geography 14(4): 287–298
Scheiner J (2007) Mobility biographies: elements of a biographical theory of travel demand. Erdkunde 61(2):161–173
Stutzer A, Frey B (2008) Stress that doesn't pay: the commuting paradox. Scandinavian Journal of Economics 110(2):339–366
Van der Waerden P, Timmermans H, Borgers A (2003) The influence of key events and critical incidents on transport mode choice switching behaviour: a descriptive analysis. Paper presented at the 10th International Conference on Travel Behaviour Research (IATBR), Lucerne, August 10–15
Van Ommeren J, Rietveld P, Nijkamp P (2000) Job mobility, residential mobility and commuting: A theoretical analysis using search theory. Annals of Regional Science 34:213–232
Waddell P (2001) Towards a behavioral integration of land use and transportation modeling. In: Hensher D (ed) Travel Behavior Research: The Leading Edge. Pergamon, New York, 65–95
Wissen LJG, Dykstra PA (1999) Population Issues. An Interdisciplinary Focus, Kluwer Academic/Plenum Publishers, New York
Zhang J, Timmermans H, Borgers A (2002) A utility-maximizing model of household time use for independent, shared and allocated activities incorporating group decision mechanisms. Transportation Research Record 1807:1–8
Zhang J, Fujiwara A (2006) Representing household time allocation behavior by endogenously incorporating diverse intra-household interactions: a case study in the context of elderly couples. Transportation Research Part B 40:54–74

Chapter 15

Household Time Use Behavior Analysis: A Case Study of Multidimensional Timing Decisions

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Abstract

This chapter investigates household time use behavior by especially focusing on timing decisions on interdependent daily activities. Timing decisions on various life choices have been unsatisfactorily presented in literature. At best, such timing decisions have been presented based on survival analysis, which has various attractive statistical features, however, ignores decision-making mechanisms. This chapter argues that the utility of activity participation and trip-making behavior changes over time, and timing decisions within a given period of time interact across activities/trips and across household members. This study derives the optimal timing functions for both nonshared and shared activities/trips by different household members, where interdependencies among activities/trips over time and household's coupling constraints are endogenously represented. The applicability of the developed model is empirically examined. Behavioral implications of analysis results are finally discussed.

Keywords: time use, timing utility, coupling constraints, intrahousehold interaction, interdependencies among activities/trips, shared activities/trips, sequential correlation, sequencing constraints

References

Ashiru O, Polak JW, Noland RB (2003) The utility of schedules: a model of departure time and activity time allocation. Paper presented at the 10th International Conference on Travel Behaviour Research, Lucerne, August 10–15

Arentze T, Timmermans HJP (2000) Albatross: A Learning Based Transportation Oriented Simulation System. European Institute of Retailing and Services Studies

Arentze T, Timmermans HJP (2005) Albatross Version 2: A Learning-Based Transportation Oriented Simulation System. Eindhoven, The Netherlands: European Institute of Retailing and Services Studies

Becker GS (1965) A theory of the allocation of time. Economic Journal 75:493–517

Borgers A, Timmermans HJP (1993) Transport facilities and residential choice behaviour: a model of multi-person choice processes. Papers in Regional Science 72(1): 45–61

Davis HL (1976) Decision making within the household. Journal of Consumer Research 2:241–260

Doherty ST (2004) Rules for assessing activity scheduling survey respondents data quality. Compendium of Papers CD-ROM, the 83rd Annual Meeting of the Transportation Research Board, Washington D.C., January 11-15

Doherty ST, Papinski D (2004) Is it possible to automatically trace activity scheduling? Paper presented at the EIRASS Conference on Progress in Activity-based Analysis, Maastricht, the Netherlands, May 28–31

Ettema D, Timmermans HJP (2003) Modelling departure time choice in the context of activity scheduling behavior. Compendium of Papers CD-ROM, the 83rd Annual Meeting of the Transportation Research Board, Washington D.C., January 12-16

Fujiwara A, Kanda Y, Sugie Y, Okamura T (2001) The effectiveness of non-IIA models on time choice behavior analysis. Journal of the Eastern Asia Society for Transportation Studies 4(2):305–318

Fujiwara A, Zhang J (2005) Development of car tourists' scheduling model for 1-day tour. Transportation Research Record 1921:100–111

Garling T, Kalen T, Romanus J, Selart M, Vilhelmson B (1998) Computer simulation of household activity scheduling. Environment and Planning A 30:665–679

Gauthier AH, Gershuny J, Fisher K (2006) Multinational Time Use study: User's Guide and Documentation.

Version 2. The United Nations Economic Commission for Europe (UNECE) (Available: http://www.unece.org/fileadmin/DAM/stats/gender/timeuse/Downloads/MTUS_Users'Guide.pdf; Accessed May 29, 2016)
Gerike R, Gehlert T, Leisch F (2015) Time use in travel surveys and time use surveys – Two sides of the same coin? Transportation Research Part A 76:4–24
Hensher DA, Stopher PR (1979) Behavioral Travel Demand Modelling. Croom Helm, London
Joh CH, Arentze T, Timmermans HJP (2002) Modeling individuals' activity-travel rescheduling heuristics: theory and numerical experiments. Transportation Research Record 1807:16–25
Joh CH, Arentze T, Timmermans HJP (2003) A theory and simulation model of activity-travel rescheduling behavior. Selected Proceedings of the 9th World Conference on Transportation Research (CD–ROM)
Joh C-H, Arentze T, Timmermans HJP (2006) Characterisation and comparison of gender-specific utility functions of shopping duration episodes. Journal of Retailing and Consumer Services 13:249–259
Jones P (1990) Development in Dynamic and Activity-based Approaches to Travel Analysis. Gower, Aldcrshot
Kimberly F (2015) Metadata of Time Use Studies. Last updated 31 December 2014. Centre for Time Use Research, University of Oxford, United Kingdom. http://www.timeuse.org/information/studies/
Kitamura R, Fujii S (1998) Two computational process models of activity-travel choice. In: Garling T, Laitila T, Westin K (eds), Theoretical Foundations of Travel Choice Modeling, Elsevier, Oxford, 251–279
Koppelman FS, Wen CH (2000) The paired combinatorial logit model: properties, estimation and application. Transportation Research Part B 34:75–89
Lee B, Timmermans HJP (2007) A latent class accelerated hazard model of activity episode durations. Transportation Research Part B 41(4):426–447
Michelson WH (2006) Time Use: Expanding Explanation in the Social Sciences. Routledge: New York
Molin EJE, Oppewal H, Timmermans HJP (1997) Modeling group preferences using a decompositional preference approach. Group Decision and Negotiation 6:339–350
Pentland WE, Harvey AS, Lawton MP, McColl MA (2013) Time Use Research in the Social Sciences. Kluwer Academic Publishers: New York
Popkowski Leszczyc PTL, Timmermans HJP (2002) Unconditional and conditional competing risk models of activity duration and activity sequencing decisions: an empirical comparison. Journal of Geographic Systems 4:157–170
Timmermans HJP, Borgers A, van Dijk J, Oppewal H (1992) Residential choice behaviour of dual-earner households: a decompositional joint choice model. Environment and Planning A 24:517–533
Vovsha P, Gliebe J, Petersen E, Koppelman F (2004) Sequential and simultaneous choice structures for modeling intra-household interactions in regional travel models. In: Timmermans H.J.P. (ed), Progress in Activity- Based Analysis, Elsevier, 223–257
Zhang J, d Fujiwara A (2006) Representing household time allocation behavior by endogenously incorporating diverse intra-household interactions: a case study in the context of elderly couples. Transportation Research Part B 40(1):54–74
Zhang J, Sugie Y, Fujiwara A, Suto K (2004) A dynamic bi-ordered-probit model system to evaluate the effects of introducing flexible working hour system. Selected Proceedings of the 10th World Conference on Transport Research, Istanbul, Turkey, July 4–8 (CD-ROM)
Zhang J, Fujiwara A, Ishikawa N (2005a) Developing a new activity-trip scheduling model based on utility of timing incorporating timing constraints, censored timing and sequential correlation. Paper presented at the 84th Annual Meeting of the Transportation Research Board, Washington D.C., January 9–13
Zhang J, Timmermans HJP, Borgers A (2002) A utility-maximizing model of household time use for independent, shared and allocated activities incorporating group decision mechanisms, Transportation Research Record 1807:1–8
Zhang J, Timmermans HJP, Borgers A (2005b) A model of household task allocation and time use. Transportation Research Part B 39:81–95

Chapter 16

Models of Behavioral Change and Adaptation

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Abstract

This chapter explains and summarizes models of behavioral change and adaptation, which have received less application in the life choice analysis associated with urban policy. Related to various life choices, life trajectory events are major decisions with a relatively long-lasting impact, such as demographic events, job change and purchase of major resources such as a house and a car. These life trajectory events may co-vary over time and lead to dynamic changes in activity-travel repertoires. Such decision problems have hitherto been predominantly modeled in urban and transportation science using classic discrete choice models. However, because such decisions differ from daily choices, other modeling approaches may be more beneficial. The authors present discrete choice models with lifetime utility and social dynamics, attitudinal models, technology acceptance model, norm activation model, and value belief norm theory for modeling lifecycle decisions and/or lifecycle driven behavioral change.

Keywords: life trajectories, theory of innovation diffusion, lifetime utility, social dynamics, attitudinal model, technology acceptance model, norm activation model, value belief norm theory

REFERENCES

Avineri E. (2009) The fuzzy meaning of reference-based perceptions in travel choice modeling. Compendium of Papers CD-ROM, the 88th Annual Meeting of the Transportation Research Board, Washington D.C., January 11-15

Azjen I (1985) From intentions to actions: a theory of planned behavior. In: Kuh J, Beckman J (eds) Action Control: From Cognition to Behavior. New York, Springer Verlag

Azjen I (1991) The theory of planned behaviour. Organizational Behaviour and Human Decision Processes 50:179–211

Azjen I, Fishbein M (1980) Understanding attitudes and predicting social behavior. Englewood Cliff, NJ, Prentice Hall

Bagozzi Dholakali UM, Busuroy S (2003) How effortful decisions get enacted: the motivating role of decision processes, desires, and anticipated emotions. Journal of Behavioral Decision Making 16:273–295

Bamberg S, Möser G (2007) Twenty years after hines, hungerford, and tomera: a new meta-analysis of psycho-social determinants of pro-environmental behavior. Journal of Environmental Psychology 27:14–25

Bamberg S, Schmidt P (2003) Incentives, morality, or habit? predicting students' car use for university routes with the models of Ajzen, Schwartz and Triandis. Environment and Behavior 35:264–285

Bamberg S, Ajzen I, Schmidt P (2003a) Choice of travel mode in the theory of planned behaviour: the roles of past behaviour, habit and reasoned action. Basic and Applied Social Psychology 25(3):175–187

Bamberg S, Rolle D, Weber C (2003b) Does habitual car use not lead to more resistance to change of travel mode? Transportation, 30:97–108

Bandura A (1982) Self efficacy mechanism in human agency. American Psychologist 37:122–147

Beige S, Axhausen KW (2006) Long-term mobility decisions in the life course. Paper presented at the 6th Swiss Transport Research Conference, Ascona, March 15-17

Beige S, Axhausen KW (2008) Long-term and mid-term mobility decisions during the life course - experiences with a retrospective survey. IATSS Research 32:16-33

Beige S, Axhausen KW (2012) Interdependencies between turning points in life and long-term mobility decisions. Transportation 39:857–872

Ben-Akiva M, Lerman S (1985) Discrete Choice Analysis. MIT Press, Cambridge, Massachusetts, USA

Blume N, Durlauf SN (2003) Equilibrium concepts for social interaction models. International Game Theory

Review 5:193–209
Brock WA, Durlauf SN (2001) Discrete choice with social interactions. Review of Economic Studies 78:235–260
Chatterjee K, Ma K (2006) Behavioural responses to a new transport option – a dynamic analysis using a six-month panel survey. Proceedings of the 11th International Conference on Travel Behaviour Research, Kyoto, August 16-20 (CD–ROM)
Chen C, Chen X (2006) What it takes for people to change? a time question. Proceedings of the 11th International Conference on Travel Behaviour Research, Kyoto, August 16-20 (CD–ROM)
Chorus CG (2011) A new model of random regret minimization. European Journal of Transport and Infrastructure Research 10: 181–196
Chorus CG, Arentze TA, Timmermans HJP (2008) A random regret-minimization model of travel choice. Transportation Research Part B 42:1–18
Davis F (1985) A Technology Acceptance Model for Empirically Testing New End-User Information Systems. MIT Sloan School of Management, Cambridge, MA
Davis F (1989) Perceived usefulness, perceived ease of use, and user acceptance of new technology. MIS Quarterly 13:319-340
Davis F (1993) User acceptance of computer technology: system characteristics, user perceptions. International Journal of Man Machine Studies 38:475-487
Dugundji E (2013) Socio-Dynamic Discrete Choice: Theory and Application. Doctoral Dissertation, University of Amsterdam
Dugundji E, Walker J (2005) Discrete choice with social and spatial network interdependencies, Transportation Research Record 1921:70–78
Fishbein M, Azjen I (1975) Belief, Attitude, Intention and Behavior. Reading, MA, Addison-Wesley
Fujii S, Gärling T (2003) Application of attitude theory for improved predictive accuracy of stated preference methods in travel demand analysis. Transportation Research Part A 37:389–402
Fujii S, Gärling T (2005) Temporary structural change: a strategy to break car-use habit and promote public transport. In: Underwood G (ed.) Traffic and Transport Psychology. Amsterdam, Elsevier, 585–592
Fujii S, Gärling T (2006) Role and acquisition of car-use habit. In: Gärling T, Steg L (eds.) Threats to the Quality of Urban Life from Car Traffic: Problems, Causes, and Solutions. Amsterdam, Elsevier, 235–250
Fujii S, Gärling T, Kitamura R (2001) Changes in drivers' perceptions and use of public transport during a freeway closure: effects of temporary structural change on cooperation in a real-life social dilemma. Environment and Behavior 33:796–808
Fujii S, Kitamura R (2003) What does a one-month free bus ticket do to habitual drivers? An experimental analysis of habit and attitude change. Transportation 30:81–95
Fujii S, Taniguchi A (2005) Reducing family car use by providing travel advice or requesting behavioural plans: an experimental analysis of travel feedback programs. Transportation Research Part D 10:385–393
Fujii S, Taniguchi A (2007) Determinants of the effectiveness of travel feedback programs: a review of communicative mobility management measures for changing travel behavior in Japan. Transport Policy 13:339–348
Gärling T (2005) Changes in private car use in response to travel demand management. In: Underwood G (ed.) Traffic and Transport Psychology. Amsterdam, Elsevier, 551–571
Gärling T, Eek D, Loukopoulos P, Fujii S, Johansson-Stenman O, Kitamura R, Pendyala R, Vilhelmson B (2002) A conceptual analysis of the impact of travel demand management on private car use. Transport Policy 9:59–70
Garling T, Fujii S (2006) Travel behavior modification: theories, methods, and programs. Proceedings of the 11th International Conference on Travel Behaviour Research, Kyoto, August 16-20 (CD–ROM)
Gärling T, Fujii S, Boe O (2001) Empirical tests of a model of determinants of script-based driving choice. Transportation Research Part F 4:89–102
Gärling T, Gillholm R, Gärling A (1998) Reintroducing attitude theory in travel behavior research: the validity of an interactive interview procedure to predict car use. Transportation 25:129–146
Golounov V, Dellaert B, van Soest F, Timmermans HJP (2007) Mixed-Logit heterogeneous intertemporal lifetime utility model of car-leasing behavior using conjoint choice data. Compendium of Papers CD-ROM, the 86th Annual Meeting of the Transportation Research Board, Washington D.C., January 21-25
Han H (2015) Travelers' pro-environmental behavior in a green lodging context: converging value-belief-norm theory and the theory of planned behavior. Tourism Management 47:164–177
Hannes E, Janssens D, Wets G (2007) The use of choice heuristics in daily activity travel behaviour: an expert system. Paper presented at the CUPUM 2007 Conference, Iguassa Falls, Brazil
Harth N, Leach CW, Kessler Th (2013) Guilt, anger, and pride about in-group environmental behaviour: different emotions predict distinct intentions. Journal of Environmental Psychology 34:18–26
Holbrook MB (1977) Comparing multiattribute attitude models by optimal scaling. Journal of Consumer Research 4:165–171
Janssens D (2005) Calibrating unsupervised machine learning algorithms for the prediction of activity-travel

patterns. Doctoral dissertation, Hasselt University, Faculty of Applied Economics, Belgium
Janssens D, Lan Y, Wets G, Chen G (2006) Allocating time and location information to activity-travel patterns through reinforcement learning. Knowledge-Based Systems 20(5):466–477
Kahneman D, Tversky A (1979) Prospect theory: an analysis of decisions under risk. Econometrica 47:263–291
Kim J, Rasouli S, Timmermans HJP (2014a) Expanding the scope of hybrid choice models allowing for mixture of social influences and latent attitudes: application to intended purchase of electric cars. Transportation Research Part A 69:71–85
Kim J, Rasouli S, Timmermans HJP (2014b) Hybrid choice models: original formulation and recent progress incorporating social influence and nonlinear utility functions. Procedia Environmental Sciences 22:20–34
Klöckner C (2004) How single events change travel mode choice a life span perspective. Paper presented at the 3rd International Conference of. Traffic and Transport Psychology, Nottingham, UK, September5-9
Klöckner C (2013) A comprehensive model of the psychology of environmental behavior: A meta-analysis. Global Environmental Change 23:1028–1038
Krizek K (2003) Residential relocation and changes in urban travel. Journal of the American Planning Association 69:265–281
Lanzendorf M (2010) Key events and their effect on mobility biographies. the case of child birth. International Journal of Sustainable Transportation 4(5):272–292
Loukopoulos P, Jakobsson C, Gärling T, Schneider CM, Fujii S (2004) Car user responses to travel demand management measures: goal setting and choice of adaptation alternatives. Transportation Research Part D 9:263–280
Loukopoulos P, Gärling T, Jakobsson C, Meland S, Fujii S (2005) Choices of activity- and travel change options for reduced car use. In: Timmermans HJP (ed.), Progress in Activity-Based Analysis. Amsterdam, Elsevier, 489–501
Loukopoulos P, Jakobsson C, Gärling T, Meland S, Fujii S (2006) Understanding the process of adaptation to car-use reduction goals. Transportation Research Part F 9:115–127
Matthies E, Selge S, Klöckner CA (2012) The role of parental behaviour for the development of behaviour specific environmental norms: the example of recycling and re-use behavior. Journal of Environmental Psychology 32:277–284
McFadden D (1978.) Modelling the choice of residential location. In: Karlqvist A, Snickars F, Weibull J (eds), Spatial Interaction Theory and Planning Models, North Holland, 75–96
Oakil ATM, Ettema DF, Arentze TA, Timmermans HJP (2011a) Longitudinal model of longer-term mobility decisions: framework and first empirical tests. Journal of Urban Planning and Development 137:220–229
Oakil ATM, Ettema DF, Arentze TA, Timmermans HJP (2011b) Dynamics in car ownership and life cycle events: a longitudinal analysis. Compendium of Papers CD-ROM, the 90th Annual Meeting of the Transportation Research Board, Washington, D.C., January 23-27
Onwezen MC, Antonides G, Bartels J (2013) The norm activation model: an exploration of the functions of anticipated pride and guilt in pro-environmental behavior. Journal of Economic Psychology 39:141–153
Perugini M, Conner M (2000) Predicting and understanding behavioral volitions: the interplay between goals and behaviors. European Journal of Social Psychology 30:705–731
Prillwitz J, Lanzendorf M (2006) Impact of life course events on car ownership. Compendium of Papers CD-ROM, the 85th Annual Meeting of the Transportation Research Board, Washington D.C., January 22-26
Prillwitz J, Lanzendorf M (2007) Interactions among residential relocations, life course events and daily commute distances. Compendium of Papers CD-ROM, the 86th Annual Meeting of the Transportation Research Board, Washington D.C., January 21-25
Rasouli S, Timmermans HJP (2014a) Activity-based models of travel demand: promises, progress and prospects. International Journal of Urban Sciences 18:31–60
Rasouli S, Timmermans HJP (2014b) Applications of theories and models of choice and decision-making under conditions of uncertainty in travel behaviour research. Travel Behavior and Society 1:79–90
Rasouli S, Timmermans HJP (2015) Models of bounded rationality under certainty. In: Rasouli S, Timmermans HJP (eds.) Bounded Rational Choice Behavior: Applications in Transport, Emerald Publishers
Rasouli S, Timmermans HJP, van der Waerden PJHJ (2015) Employment status transitions and shifts in daily activity-travel behavior with special focus on shopping duration. Transportation 42(6):919–931
Rocci A (2006) Why don't we change our mobility behaviours? acceptance and hindrance to a change: the case study of the Greater Paris Region as compared to Nagoya. Proceedings of the 11th International Conference on Travel Behaviour Research, Kyoto, August 16-20 (CD–ROM)
Rogers EM (1962) Diffusion of Innovations. Glencoe: Free Press
Schultz RL, Slevin DP (1975) A program for research in implementation. In: Schultz RL, Slevin DP (eds) Implementing Operations Research/Management Science, New York: American Elsevier
Schwarz SH (1977) Normative influences on altruism, Advances in Experimental Social Psychology 10:221–279
Stanbridge K, Lyons G (2006) Travel behaviour considerations during the process of residential relocation.

Proceedings of the 11th International Conference on Travel Behaviour Research, Kyoto, August 16-20 (CD–ROM)
Stanbridge K, Lyons G, Farthing S (2004) Travel behaviour change and residential relocation. Paper presented at the 3rd International Conference of Traffic and Transport Psychology, Nottingham, UK
Steg L, De Groot J (2010) Explaining prosocial intentions: testing causal relationships in the norm activation model. British Journal of Social Psychology 49:725–743
Stern PC (2000) Toward a coherent theory of environmentally significant behavior. Journal of Social Issues 56:407–424
Stern PC, Dietz T, Abel T, Guagnano GA, Kalof L (1999) A value-belief-norm theory of support for social movements: the case of environmentalism. Research in Human Ecology 6:81–97
Train K (2003) Discrete Choice Methods with Simulations. Cambridge University Press, Cambridge, UK
Vanhunsel M, Janssens D, Wets G (2007a) Calibrating a new reinforcement learning mechanism for modeling dynamic activity-travel behavior and key events. Compendium of Papers CD-ROM, the 86th Annual Meeting of the Transportation Research Board, Washington D.C., January 21-25
Vanhulsel M, Janssens D, Wets, G (2007b) Use of a relational reinforcement learning algorithm to generate dynamic activity-travel patterns. Paper presented at TRISTAN VI, Phuket Island, Thailand
Venkatesh V (2000) Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model. Information Systems Research 11:342–365
Venkatesh V, Davis F (1996) A model of the antecedents of perceived ease of use: development and test. Decision Sciences 27:451–481
Venkatesh V, Davis F (2000) A theoretical extension of the technology acceptance model: Four longitudinal case studies. Management Science 46:186–204
Verhoeven M, Arentze TA, Timmermans HJP, van der Waerden PJHJ (2005a) Modeling impact of key events on long-term transport mode choice decisions: decision network approach using event history data. Transportation Research Record 1926:106–114
Verhoeven M, Arentze TA, Timmermans HJP, van der Waerden PJHJ (2005b) Examining temporal effects of lifecycle events on transport mode choice decisions. Proceedings of the Computers in Urban Planning and Urban Management Conference, London (CD–ROM: 15)
Verhoeven M, Arentze TA, Timmermans HJP, van der Waerden PJHJ (2006) Modeling the influence of structural lifecycle events on transport mode choice decisions using a structure learning algorithm. Proceedings of the 11th International Conference on Travel Behaviour Research, Kyoto, August 16-20 (CD–ROM)
Verhoeven M, Arentze TA, Timmermans HJP., van der Waerden PJHJ (2007) Simulating the influence of life trajectory events on transport mode behavior in an agent based system. Proceedings of the 10th IEEE Conference on Intelligent Transportation Systems. New York, NY: IEEE 107–112
Waerden PJHJ van der, Borgers AWJ, Timmermans HJP (2003a) Key events and critical incidents influencing transport mode choice switching behavior: an exploratory study. Compendium of Papers CD-ROM, the 82nd Annual Meeting of Transportation Research Board, Washington, D.C., January 12-16
Waerden PJHJ van der, Borgers AWJ, Timmermans HJP (2003b) The influence of key events and critical incidents on transport mode choice switching behaviour: a descriptive analysis. Proceedings of the 10th International Conference on Travel Behaviour Research, Lucerne, August 10-15 (CD–ROM)
Xie C, Wang H, Nozick LK (2006) Modeling travel mode choice behavior by a Bayesian network. Compendium of Papers CD-ROM, the 85th Annual Meeting of the Transportation Research Board, Washington D.C., January 22-26

Chapter 17

Behavioral Changes in Migration Associated with Jobs, Residences, and Family Life

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Abstract

This chapter first explores migration-related urban issues and then illustrates migration dynamics. It further points out the limitations of existing migration theories. To overcome the shortcomings of existing theories, this chapter presents a new analysis framework for migration, where multiple life choices, including migration, are simultaneously incorporated by expanding the theory of planned behavior. To empirically confirm the applicability of the new framework, a web-based questionnaire survey about migration associated with employment, dwellings and child rearing was implemented in Japan in 2015. This is the first study to reveal such interrelated behavioral changes in multiple life domains from the perspective of decision-making process. Such a theoretical reformulation could provide more scientific insights into cross-sectoral policies of migration than existing theories.

Keywords: migration dynamics, microlevel theory, life course, mobility biographies, behavioral changes, behavioral interdependencies, theory of planned behavior, Japan

References

Ajzen I (1988) Attitudes, Personality, and Behavior. Chicago, IL: Dorsey

Ajzen I (1991) The theory of planned behavior. Organizational Behavior and Human Decision Processes 50:179–211

Albrecht J, Doering L, Holz-Rau C, Scheiner J (2015) The relevance of the place of childhood and adolescence for residential choice in later life: a life-course and intergenerational approach. Compendium of Papers CD-ROM, The 94th Annual Meeting of Transportation Research Board. Washington, D.C., January 11–15

Bamberg S (2013) Changing environmentally harmful behaviors: a stage model of self-regulated behavioral change. Journal of Environmental Psychology 34:151–159

Bijker RA, Haartsen T, Strijker D (2012) Migration to less-popular rural areas in the Netherlands: exploring the motivations. Journal of Rural Studies 28(4):490–498

Boneva BS, Frieze, IH (2001) Toward a concept of a migrant personality. Journal of Social Issues 57(3):477–491

Botetzagias I, Dima A-F, Malesios C (2015) Extending the theory of planned behavior in the context of recycling: the role of moral norms and of demographic predictors. Resources, Conservation and Recycling 95:58–67

Carro JM, Traferri A (2014) State dependence and heterogeneity in health using a bias-corrected fixed-effects estimator. Journal of Applied Econometrics 29(2):181–207

Castles S (2010) Understanding global migration: a social transformation perspective. Journal of Ethnic and Migration Studies 36(10):1565–1586

Chatterjee K, Scheiner J (2015) Understanding changing travel behavior over the life course: Contributions from biographical research. A Resource Paper for the Workshop "Life-Oriented Approach for Transportation Studies" at the 14th International Conference on Travel Behaviour Research, Windsor, UK, July 19-23.

Chan S, Stevens AH (2004) Do changes in pension incentives affect retirement? a longitudinal study of subjective retirement expectations. Journal of Public Economics 88(7-8):1307–1333

Chen M-F (2016) Extending the theory of planned behavior model to explain people's energy savings and carbon reduction behavioral intentions to mitigate climate change in Taiwan–moral obligation matters. Journal of Cleaner Production 112(2):1746–1753

Chen Y, Rosenthal SS (2008) Local amenities and life-cycle migration: do people move for jobs or fun? Journal of Urban Economics 64:519–537

Chi G, Voss P (2005) Migration decision-making: a hierarchical regression approach. The Journal of Regional Analysis and Policy 35(2):11–22
Childs G, Craig S, Beall CM, Basnyat B (2014) Depopulating the Himalayan highlands: education and outmigration from ethnically Tibetan communities of Nepal. Mountain Research and Development 34(2):85–94
Clifton-Sprigg J (2015) Educational spillovers and parental migration. Labour Economics 34:64–75
Crivello G (2015) 'There's no future here': the time and place of children's migration aspirations in Peru. Geoforum 62:38–46
De Jong MG, Lehmann DR, Netzer O (2012) State-dependence effects in surveys. Marketing Science 31(5):838–854
De Leeuw A, Valois P, Ajzen I, Schmidt P (2015) Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: implications for educational interventions. Journal of Environmental Psychology 42:128–138
Doering L, Albrecht J, Scheiner J, Holz-Rau C (2015) Mobility socialization in work trip biographies: work trips over the life course of two generations. Compendium of Papers CD-ROM, The 94th Annual Meeting of Transportation Research Board. Washington, D.C., January 11–15
Ek E, Koiranen M, Raatikka V-P, Jarvelin M-R, Taanila A (2008) Psychosocial factors as mediators between migration and subjective well-being among young Finnish adults. Social Science & Medicine 66:1545–1556
Fahr R, Sunde U (2006) Spatial mobility and competition for jobs: some theory and evidence for Western Germany. Regional Science and Urban Economics 36(6):803–825
Florida R (2002a) Bohemia and economic geography. Journal of Economic Geography 2:55–71
Florida R (2002b) The economic geography of talent. Annals of the Association of American Geographers 92:743–755
Frenkel A, Bendit E, Kaplan S (2013) Residential location choice of knowledge-workers: the role of amenities, workplace and lifestyle. Cities 35:33–41
Glaeser EL, Kolko J, Saiz A (2001) Consumer city. Journal of Economic Geography 1:27–50
Globalization101.org (2013) Migration and Globalization (http://www.globalization101.org /uploads/File/Migration/migration.pdf; Accessed January 28, 2016)
Graham E, Jordan LP, Yeoh BSA (2015) Parental migration and the mental health of those who stay behind to care for children in South-East Asia. Social Science & Medicine 132:225–235
Groenewold G, de Bruijn B, Bilsborrow R (2012) Psychosocial factors of migration: adaptation and application of the health belief model. International Migration 50(6):211–231
Gottlieb PD (1995) Residential amenities, firm location and economic development. Urban Studies 32:1413–1436
Guo JL, Wang TF, Liao JY, Huang CM (2016) Efficacy of the theory of planned behavior in predicting breastfeeding: meta-analysis and structural equation modeling. Applied Nursing Research 29:37–42
Hagen-Zanker J (2008) Why do people migrate? a review of the theoretical literature. Maastricht University, Maastricht Graduate School of Governance, Working Paper MGSoG/2008/WP002 (Downloadable from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1105657; Accessed January 29, 2016)
Han H (2015) Travelers' pro-environmental behavior in a green lodging context: converging value-belief-norm theory and the theory of planned behavior. Tourism Management 47:164–177
Haug S (2012) Migration and return migration: the cause of Italian migrants in Germany. Kakanien Revisited 1–11 (http://www.kakanien-revisited.at/beitr/labourmigration/SHaug1.pdf; Accessed January 29, 2016)
Heckman JJ (1981) Heterogeneity and state dependence. In: Rosen S (ed), Studies in Labor Markets, University of Chicago Press
Hoppe A, Fujishiro K (2015) Anticipated job benefits, career aspiration, and generalized self-efficacy as predictors for migration decision-making. International Journal of Intercultural Relations 47:13–27
Huinink J, Vidal S, Kley S (2014) Individuals' openness to migrate and job mobility. Social Science Research 44:1–14
Hunt LM (2008) Examining state dependence and place attachment within a recreational fishing site choice model. Journal of Leisure Research 40(1):110–127
Jacobs J (1961) The death and life of great American cities. New York: Random House
Jiang Y, Zhang J, Jin X, Ando R, Chen L, Shen Z, Ying JQ, Fang Q, Sun Z (2015) Rural migrant workers' residential, commuting, and energy consumption preferences in the changing context of urban China. Transportation Research Part D (under review)
Kennan J, Walker JR (2010) Wages, welfare benefits and migration. Journal of Econometrics 156(1):229–238
Kennan J, Walker JR (2013) Modeling individual migration decisions. In: Constant AF, Zimmermann KF (eds), International Handbook on the Economics of Migration. Edward Elgar Publishing: Cheltenham, UK. Chapter 2
Khan U, Dhar R (2007) Where there is a way, is there a will? the effect of future choices on self-control. Journal of Experimental Psychology: General 136(2):277–288
Kitamura R (1990) Panel analysis in transportation planning: an overview. Transportation Research Part A General 24(6):401–415

King R (2012) Theories and typologies of migration: an overview and a primer. Willy Brandt Series of Working Papers in International Migration and Ethnic Relations 3/12, Malmö Institute for Studies of Migration, Diversity and Welfare, Malmö University, Sweden
Kniveton D, Smith C, Wood S (2011) Agent-based model simulations of future changes in migration flows for Burkina Faso. Global Environmental Change 21:S34–S40
Kotkin J (2000) The New Geography. New York, Random House
Kuwano M, Zhang J, Fujiwara A (2011) A dynamic discrete choice model with multi-dimensional social interactions. Transportation Research Record 2231:68–75
Lee E (1966) A theory of migration. Demography 3:47–57
Li Y, Liu Y, Long H, Cui W (2014) Community-based rural residential land consolidation and allocation can help to revitalize hollowed villages in traditional agricultural areas of China: evidence from dancheng county, Henan Province. Land Use Policy 39:188–198
Liu YS, Liu Y (2010) Progress and prospect on the study of rural hollowing in China. Geographical Research 29(1):35–42
Liu H, Mrozb TA, van der Klaauw W (2010) Maternal employment, migration, and child development. Journal of Econometrics 156:212–228
Lloyd R, Clark TN (2001) The city as entertainment machine. In: Gatham, K.F. (ed.), Research in Urban Sociology, Vol. 6, Critical Perspectives on Urban Redevelopment, Oxford, JAI/Elsevier, 357–378
MacDonald JS, MacDonald LD (1964) Chain migration, ethnic neighbourhood formation and social networks. Milbank Memorial Fund Quarterly 42 (1):82–97
Manski CF (1999) Analysis of choice expectations in incomplete scenarios. Journal of Risk and Uncertainty 19(1-3): 49–65
Massey DS, Arango J, Hugo G, Kouaouci A, Pellegrino A, Taylor JE (1993) Theories of international migration: a review and appraisal. Population and Development Review 19(3):431–466
Mathur VK (1999) Human capital-based strategy for regional economic development. Economic Development Quarterly 13(3):203–216
Mencarini L, Vignoli D, Gottard A (2015) Fertility intentions and outcomes: implementing the theory of planned behavior with graphical models. Advances in Life Course Research 23:14–28
Muilu T, Rusanen J (2003) Rural young people in regional development—the case of Finland in 1970–2000. Journal of Rural Studies 19(3):295–307
Nachreiner M, Mack B, Matthies E, Tampe-Mai K (2015) An analysis of smart metering information systems: a psychological model of self-regulated behavioural change. Energy Research & Social Science 9:85–97
Nugin R (2014) "I think that they should go. Let them see something": The context of rural youth's out-migration in post-socialist Estonia. Journal of Rural Studies 34:51–64
Paul J, Modi A, Patel J (2016) Predicting green product consumption using theory of planned behavior and reasoned action. Journal of Retailing and Consumer Services 29:123–134
Plum A, Ayllon S (2015) Heterogeneity in unemployment state dependence. Economics Letters 136:85–87
Prochaska JO, DiClemente CC (1983) Stages and processes of self-change of smoking: toward an integrative model of change. Journal of Consulting and Clinical Psychology 51(3):390–395
Prochaska JO, Velicer WF (1997) The transtheoretical model of health behavior change. American Journal of Health Promotion 12(1):38–48
Romer PM (1990) Endogenous technological change. Journal of Political Economy 98(5):S71–S102
Rowe R, Andrews E, Harris PR, Armitage CJ, McKenna FP, Norman P (2016) Identifying beliefs underlying pre-drivers' intentions to take risks: an application of the theory of planned behaviour. Accident Analysis & Prevention 89:49–56
Smith DP, Sage J (2014) The regional migration of young adults in England and Wales (2002–2008): A 'conveyor-belt' of population redistribution? Children's Geographies 12(1):102–117
Tabor AS, Milfont, TL (2011) Migration change model: exploring the process of migration on a psychological level. International Journal of Intercultural Relations 35(6):818–832
Thissen F, Fortuijn JD, Strijker D, Haartsen T (2010) Migration intentions of rural youth in the Westhoek, Flanders, Belgium and the Veenkoloniën, The Netherlands. Journal of Rural Studies 26(4):428–436
Triandis H (1977) Interpersonal Behaviour. Monterey, CA: Brookds/Cole
Tran MT, Zhang J, Fujiwara A (2015) Interdependences between current choices and future expectations in the context of Hanoians' residential location choices. Transportmetrica B: Transport Dynamics (in press)
Ullman EL (1958) Regional development and the geography of concentration. Papers in Regional Science 4(1):179–198
Van Dalen HP, Henkens K (2012) Explaining low international labour mobility: the role of networks, personality, and perceived labour market opportunities. Population, Space and Place 18(1):31–44
Van Dalen HP, Henkens K (2013) Explaining emigration intentions and behaviour in the Netherlands, 2005–10. Population Studies 67(2):225–241

Van der Klaauw W (2012) On the use of expectations data in estimating structural dynamic choice models. Journal of Labor Economics 30(3):521–554
Van der Klaauw W, Wolpin KI (2008) Social security and the retirement and savings behavior of low income households. Journal of Econometrics 145(1-2):21–42
Vilhelmson B, Thulin E (2013) Does the Internet encourage people to move? Investigating Swedish young adults' internal migration experiences and plans. Geoforum 47:209–216
Wu L, Zhang J, Fujiwara A (2013) Representing the influence of multiple social interactions on monthly tourism participation behavior. Tourism Management 36:480–489
Xiong Y, Zhang J, Kayama Y (2016) Disentangling the young adults' residential relocation choices in Japan. Asian Transport Studies 4(1):78-95
Yazdanpanah M, Forouzani M (2015) Application of the theory of planned behaviour to predict Iranian students' intention to purchase organic food. Journal of Cleaner Production 107:342–352
Yigitcanlar T, Baum S, Horton S (2007) Attracting and retaining knowledge workers in knowledge cities. Journal of Knowledge Management 11:6–17
Yu B, Zhang J, Fujiwara A (2012) A household time use and energy consumption model with multiple behavioral interactions and zero-consumption. Environment and Planning B 40(2):330–349
Zachary PG (2000) The Global Me: New Cosmopolitans and the Competitive Edge – Picking Globalism's Winners and Losers. New York, Perseus Books
Zhang J, Fujiwara A (2006) Representing household time allocation behavior by endogenously incorporating diverse intra-household interactions: a case study in the context of elderly couples. Transportation Research Part B 40:54–74
Zhang J, Fujiwara A (2009) Intrahousehold interaction in transit-oriented residential choice behavior represented in stated preference approach. Transportation Research Record 2134:73–81
Zhang J, Kuwano M, Lee BJ, Fujiwara A (2009) Modeling household discrete choice behavior incorporating heterogeneous group decision-making mechanisms. Transportation Research Part B 43:230–250
Zhang J, Timmermans HJP, Borgers A (2002) A utility-maximizing model of household time use for independent, shared and allocated activities incorporating group decision mechanisms. Transportation Research Record 1807:1–8
Zhang J, Yu B, Chikaraishi M (2014) Interdependences between household residential and car ownership behavior: a life history analysis. Journal of Transport Geography 34:165–174

Chapter 18

Future Perspectives of the Life-oriented Approach

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Abstract

This book has attempted to provide a general picture about the life-oriented approach by focusing on major life choices. In reality, there are so many types of life choices and it is therefore impossible to cover all of them in a single book. Here, first, this chapter makes brief discussions on research issues related to several life choices excluded from the previous chapters. Second, relevance of the life-oriented approach to cross-sectoral planning and policy as well as general public services is described. Third, future research from the perspective of making use of Big Data is illustrated. Fourth, it is discussed how to put the life-oriented approach into practice. Finally, this chapter describes future perspectives of the life-oriented approach in general, as a truly scientific system.

Keywords: interdependencies, life-oriented behavior analysis system, cross-sectoral policy, public services, Big Data & open government data, citizen participation, non-reductionism

5. Additional Remarks on Life Choice Studies

The previous chapters have provided rich insights into analyses of various life choices; however, there are still more life choices that need to be explored within the life-oriented approach. Here, I provide additional discussions on the following life choices that are also important to urban policy: residential behavior, time use, expenditure, habitual life choices, social network, and general travel behavior.

First, residential behavior involves long-term decisions (e.g., where to reside, whether to purchase a house or rent, and how long to reside), that may have long-lasting impacts on many other life choices. Residential behavior has been widely studied together with travel behavior, where residential self-selection is a core behavioral phenomenon. A dominating argument is that residential self-selection comes from two sources: attitudes and sociodemographic traits. This argument would be true if decisions were made only on residential choice and travel behavior (Zhang, 2014). In reality, residential and travel behavior are a part of people's life choices. Accordingly, omission of information about other life choices may also result in the existence of residential self-selection and it is therefore necessary to extend the decision boundary of residential and travel behavior research. In line with such consideration, Zhang (2014) proposed a new framework to analyze residential and travel behavior research considering the influence of residential self-selection issues by treating other life choices as the third source of the self-selection, based on the life-oriented approach. Zhang (2014) further presented several promising methodologies how to represent the residential self-selection under this new framework from static and dynamic perspectives, including multiple discrete-continuous choice modeling, modeling of future expectation and other behavioral dynamics, and choice models with flexible error structures.

Second, even though everybody has the same amount of time per day (24 hours), per week (7 days), and per year (365 days), income levels of individuals with the same attributes are not the same. This means that the economic productivity of time use differs between individuals. Time is a kind of tradable resource in the market (e.g., housekeeping and chauffeur services). It is worth investigating what such features of time use mean for urban policy research, considering the interdependencies between activities and their connections with monetary expenditure. Unfortunately, little has been done

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with respect to joint analysis of time use and expenditure behavior (Zhang, 2009). Because money and time are resources for decisions on many other life choices, it is not unrealistic to assume that decisions on monetary expenditure and time use are associated with other life choices. There are two types of monetary expenditure: utilitarian and hedonic expenditure. Utilitarian expenditure is for problem solving and hedonic expenditure for obtaining better affective experience (or enjoyment of life). It is expected that the more expensive a purchase, the higher its dependence on other life choices. On the other hand, spending time at a certain place usually involves energy consumption. Due to limited time, people have to trade off not only between in-home activities and out-of-home activities, but also between different in-home activities. In this sense, examining household energy consumption needs to treat in-home and out-of-home activities within the same analysis framework (see Yu and Zhang, 2016), and types of in-home activities should be distinguished for the analysis of energy consumption. In line with such considerations, interestingly, a new type of energy-saving system has just been developed in Japan[1]. This system can automatically control lights and air conditioners in response to the resident's activity patterns at home, which are automatically detected based on the use of various electronic appliances via the in-home network. Considering that rebound effects cannot be ignored during the deployment of such new technology (Yu and Zhang, 2016), it is worth clarifying whether such a new energy-saving system can actually reduce the overall household energy consumption. People usually spend one-third of a day sleeping, mainly at home. As sleeping time is a core indicator of a healthy lifestyle, health behavior and energy consumption behavior might be interrelated as a consequence of time use. Furthermore, there is a so-called solitude issue related to those young people who dislike face-to-face communication with others[2]. In recent years, people have been able to communicate with others via social media such as Facebook and LINE, without leaving home. This trend is especially prevalent among young people. Positively speaking, social media have dramatically improved people's lives. However, the above solitude issue is surely a serious social issue, which needs more research.

Third, in reality, some daily activities are habitual (e.g., Gärling and Axhausen, 2003; Wood and Neal, 2009). People may perform different habitual behaviors over a different length of time. For example, employed persons usually commute daily on weekdays; people may go shopping mainly on weekends; tourists may repeat their overseas travel annually or over several years. It is necessary to clarify how to represent time-use behavior involving habits. If two or more habits are behaviorally connected, their representation will become even more challenging. For this purpose, the time window for their representation should be clarified, because once the time window is extended, some habitual behaviors may be no longer habitual. A habitual activity may constrain participation in other daily activities. Once the living environment is changed, the habitual activity may become nonhabitual, consequently resulting in a changing interdependence structure among activities. In line with such considerations, long-term observation of various life choices is required. There are some time use related policies; for example, flexible working hours, flexible work contracts, and telework. Changes in time use patterns may have various impacts on people's daily life, not just the time spent on other activities. For example, in the case of telework, it may also lead to the reconsideration of residential functions and even the location of residence. Furthermore, people may participate in some activities more frequently in specific seasons. For example, people may enjoy more physical activities during spring and fall than during summer and winter. During spring and fall, more people may like to take a bicycle than during summer and winter. These seasonal activities may affect people's time use patterns in different ways.

Fourth, people live in a networked society. People's social networks are formed with a reflection of interpersonal bonds (e.g., Easterbrook and Vignoles, 2013), needs in life (e.g., Lin et al., 2014; Tetreaultet al., 2014), personality and attachment styles (e.g., Yaakobi and Goldenberg, 2014), etc. Various studies on social networks have been done in link with subjective well-being (e.g., Pinquart and Sorensen, 2000; Cheng et al., 2009; Huxhold et al., 2013), lifestyles (e.g., Baghaei et al., 2011; Sandra et al., 2011), residential choice (e.g., Magdol, 2000; Viry, 2012; Oishi et al., 2013), travel behavior (e.g., Schönfelder and Axhausen, 2003; Larsen et al., 2006; Kowald et al., 2013), health (e.g., Li and Zhang, 2015; Mohnen et al., 2015; Rook, 2015), time use (e.g., Moore et al., 2013; Chang and Hsiao, 2014),

[1] http://www.shimztechnonews.com/topics/t091007.html (in Japanese; Accessed May 14, 2015)

[2] http://ec.europa.eu/eurostat/statistics-explained/index.php/Being_young_in_Europe_today_-_digital_world (Accessed May 14, 2015)

tourism (e.g., Larsen et al., 2007; Kim and Tussyadiah, 2013) and so on. For example, in case of travel behavior research, one fundamental question is how to understand the associations between social networks, interrelated life choices, and daily activity-travel behavior. Social networks may mold various life choices and the resulting daily activity-travel behavior on one hand, while participating in various life activities allows people to get to know new members living in different locations on the other. Additionally, better accessibility supported by transport network and services may help people to form new social networks, which may provide them with more opportunities and enlarge their choice sets for enjoying a better life. However, such an effect may not appear soon and should be therefore captured over a longer period. In recent years, social networking via the Internet has become much more popular than ever before, which brings in more complexities. Better understanding of social networks needs more detailed information about people's social connections; however, such survey effort inevitably causes serious privacy issues. To avoid privacy issues, Big Data of social networking should be cleverly utilized based on innovative data fusion techniques. Furthermore, it might be worth exploring joint optimization of urban service networks and social networks, considering the social dimension of sustainable urban development.

Last but not the least, travel behavior should be reexamined from the viewpoint of life considerations. For this, trip-making behavior can be classified into two types: one is made reluctantly and the other willingly. In the former case, a trip maker has to be patient with the trip (e.g., commuting) and sometimes he/she may do something (e.g., reading, listening to music, and surfing the Internet) to relieve boredom (i.e., multitasking during travel). In the latter case, the trip maker may feel excited at the thought of participating in the subsequent activities (e.g., leisure and/or tourism activities) or may feel the travel is helpful because he/she can make use of the travel time to prepare for the subsequent activity (e.g., a business meeting). The willingness of trip making may also result from the liking of travel. The utility of trip making in the former case should be at least nonpositive and in the latter case at least nonnegative. In summary, positive utility derived from travel may result from three sources: travel liking, multitasking during travel, and expectation of activity participation after travel. Recently, studies of subjective well-being in the context of trip making have been attracting ever-increasing attention from travel behavior researchers. In particular, considering that the ideal travel time of many people is not zero (e.g., Redmond and Mokhtarian, 2001), the preferred distance from home to each type of daily facility has been under-researched. More studies are required, especially for specifying the proper size of a city and further realizing the transformation to sustainable urban forms. Life choices affect travel mode choices while on the other, there are more travel mode choice variables influencing other life choices. The activity-based approach is a powerful tool for understanding travel behavior, but the effects of daily travel behavior on life choices are greatly under-researched. Thus, the accumulative effects of daily travel behavior on various life choices from a long-term perspective should be examined, considering the long-term nature of transportation planning. Furthermore, more life choice variables should be introduced to the travel behavior research framework. However, the paradigm shift from the activity-based approach to the life-oriented approach does not simply suggest extending the decision boundary. Rather, it suggests a new way of thinking about transportation planning and policy with better consensus building. The availability of transport access to various facilities and locations is essential to people's life. In line with this consideration, it is important to promote further the study of social exclusion (e.g., Stanley and Vella-Brodrick, 2009; Stanley et al., 2011) in the context of transportation. For this purpose, the life-oriented approach could provide a new type of "compass" to guide social exclusion studies by paying more attention to various life domains with respect to different population groups in various contexts (e.g., aging society, depopulated areas, and natural disasters).

6. Relevance to Cross-sectoral Policymaking

The life-oriented approach may serve well for integrated planning and policies. For example, integrated land use and transportation planning needs a better understanding of people's decisions on activity participation at different locations and the resulting travel behavior. Healthy city planning should focus on improving not only people's lifestyle habits, but also their living environment that can facilitate their participation in more outdoor physical activities and social contacts with others. Low-carbon urban planning highly relies on how much people will live a low-carbon life in terms of transit-oriented and

non-motorized travel behavior, residential behavior, energy consumption behavior, and eating behavior, etc. Inclusive transport policy needs to eliminate various exclusions, such as physical exclusion, geographical exclusion, economic exclusion, time-based exclusion, fear-based exclusion, and space exclusion (Church et al., 2000), which may prevent some people's access to various services for supporting their daily lives. Incorporating various interdependencies in life choices may not only allow the above examples of integrated planning and policies to be made in a more accurate way, but also enhance their effectiveness to improve people's quality of life in a better way, than ignoring the interdependences as done in independent planning and policies. In case of transportation planning, the activity-based approach (e.g., Axhausen and Gärling, 1992; Algers et al., 2005), arguing that travel is a derived demand from activity participation, has been proved to be superior to the traditional trip-based approach. Barton (2009) stated that modern planning was invented in response to inhumane living conditions in the 19th century cities; however, in the last century the connection was lost and argued that land use planning should aim to the improvement of health and well-being. In line with this argument, Barton (2009) concluded, based on extensive literature review, that health and well-being is affected by physical activity, active travel, recreational activity, and diet, which may be further influenced by land use planning at the neighborhood level. Barton further concluded that health is closely tied with economic sustainability (in terms of jobs and income), social sustainability (in terms of the reduction of inequality, building inclusive and supportive communities), and environmental sustainability.

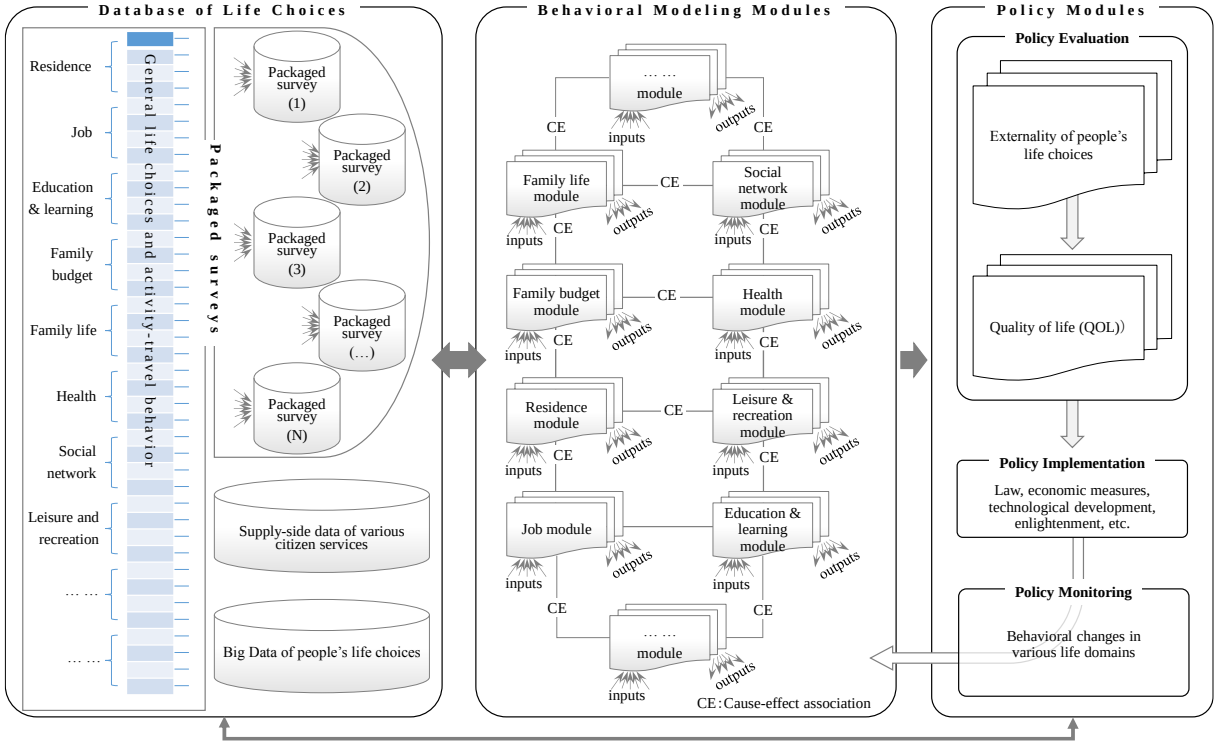

Fig. 18.1. A conceptual illustration of the life-oriented behavior analysis system

Considering the complexity of various interdependent life choices and the importance of reflecting them into urban policymaking, it may be worth developing a kind of life-oriented behavior analysis system (e.g., Figure 18.1). Conceptually, the system may consist of (1) database of life choices, (2) behavioral modeling modules, and (3) policy modules. The life-oriented approach requires more data than existing single discipline. Innovative survey methods should be developed by trading off between respondents' answering burdens and rich information that is required to represent various interdependencies across life choices. In this regard, it is necessary to package various life choices and conduct each packaged survey separately. Meanwhile, existing data (especially Big Data) related to various life choices should be cleverly applied to supplement the use of the surveys required by the life-oriented approach. The above database (1) contain various life choices surveys conducted at the individual and household level, Big Data, and supply-side data of various urban services. The modeling

modules cover behavioral models with respect to various life choices by explicitly incorporating the cause-effect associations connected by various inputs and outputs. The policy module includes policy evaluation, implementation, and monitoring. The evaluation should focus on not only QOL but also various externalities caused by people's life choices (the externalities may also influence QOL), the implementation covers laws, economic measures, technological development, and enlightenment and so on, and the monitoring should pay more attention to behavioral changes in various life domains.

7. Relevance to General Public Services

Globally, people are continuing to migrate to cities. Governments, firms and other organizations provide various services to them. All these stakeholders usually claim that they aim to improve people's quality of life (QOL); however, their claims often hold within their own territories, reflecting their own interests and benefits. In many cases, different stakeholders understand people's QOL and its associations with various life choices differently. Governments have taken up many responsibilities, such as insuring public safety, guaranteeing essential infrastructures, promoting economic development, protecting the environment, and providing services to each individual citizen with respect to various life domains (e.g., residence, job, education, health, leisure and recreation, and travel). Different public services are usually accessible at different departments, partially because of specialty and efficiency of service provision. A particular public service may be associated with two or more life choices, while a particular life choice may need supports from two or more public services. In this sense, integration of and collaboration among public services are not a choice, but a "must" from a citizen's point of view. In other words, public services must be citizen-centered. This argument is consistent with that of the life-oriented approach, which aims to support various policy decisions involving interdependent life choices.

For example, *One-Stop-Government*, the integration of public services from a citizen's point of view, is a solution to realize citizen-centered public service provision (e.g., Wimmer, 2002; Kunstelj and Vintar, 2010). Under the one-stop paradigm, all of a citizen's business can be completed in a single contact, either face to face or via other means (e.g., phone, fax, Internet). To make the one-stop scheme possible, Tambouris and Spanos (2002) proposed an architecture for integrated public service delivery based on life events in the context of e-government, where service is handled by front-office, mid-office, and back-office in a sequential way. They discussed how such an architecture could service for one-stop government not only within one public authority, but also across all public authorities. They further identified three areas that need technical innovations: central portal (a central access point to information and services), service integration (for creating and invoking composite services), and service coordination (to locate all essential information for service provision). Composite service refers to the workflow, inputs, and outputs of all elementary and basic services that are required to fulfil one life event.

Consumer's point of view is indispensable to the provision of any service. Even though studies on services can be traced back to the era of Adam Smith, service science, formally advocated by Innovate America in 2004, attaches the most importance to the value co-creation between consumers and service providers (Maglio et al., 2010). Service science argues the necessity of paradigm shift from goods-dominant logic to service-dominant logic, where the former looks at economic exchange in terms of the production and distribution of units of output, while the latter suggests that market exchange is the process of parties using their specialized knowledge for mutual service provision benefits, i.e., value co-creation. Service science also claims that it aims to improve people's QOL and consumer modeling is at its core. In this sense, the life-oriented approach is consistent with the idea of service science. Different from private services, public services need to pay more attention to social welfare of the whole society. Therefore, future research should figure out how to make use of the life-oriented approach to realize various value co-creations during the process of public services provision.

8. More General Perspectives

The life-oriented approach deals with behavioral research for urban policy. Considering behavioral complexities involved in the life-oriented approach, it is necessary to conduct more studies by directly

focusing on various urban issues, rather than just treating behaviors themselves. To understand life choices for urban policy, clearly, it is not a wise idea to focus on a specific discipline, for example, economics, psychology, or sociology. It is not a realistic choice, either, to develop a unified theory that can accommodate various interrelated life choices within the same modeling framework. Nevertheless, theoretical studies should be further promoted for scientifically guiding our understanding about various life choices. Society is sometimes too complex for models. For this reason, more qualitative research is required to derive some useful theories. Meanwhile, it is still worth applying various statistical approaches and simulation models to capture the complicated interdependencies involved in various life choices. More studies on the life-oriented approach should be implemented by exploring how to cultivate it as a new major behavioral research stream for supporting more general public policy decisions. Dialogue among researchers from various disciplines should be further promoted.

Use of open government data

Data collection is a troublesome task in promoting studies on the life-oriented approach, because it needs respondents to answer many questions about their life choices, some of which may be sensitive to privacy issues. To understand why people make a particular choice in their life, questionnaire surveys are still a powerful tool. As stated by Alexopoulos et al. (2014), governments are one of the largest producers and collectors of data in many different domains. Recently, a number of open government data movements sprung up around the world, with transparency, data reuse, and participatory governance as three major reasons (Ubaldi, 2013; Attard et al. 2015). Examples[3] of open government data include education, employment, industrial information, health, housing, transport and infrastructure, energy and environment, meteorological/weather information, geospatial information, crime and justice, government accountability and democracy, governmental budget, and public administration, etc. Currently, there are more than 30 countries with open data portal sites[4]. Research on how to make use of open government data based on the idea of the life-oriented approach should not be neglected.

Relevance to understanding of citizen participation

Democratic public policymaking requires citizen participation (or public involvement), which ideally needs to represent the whole population. However, there are various constraints to citizen participation. Tonn and Petrich (1998) summarized five constraints in the United States: work-related, consumerisms, social capital, personal, and built environment constraints. Work places major constraints on the amount and quality of people's discretionary time and attention. Consumerism as a lifestyle (e.g. time spent watching television, shopping, and engaging in entertainment activities) takes time away from community pursuits and also requires time and effort to produce sufficient income to maintain the lifestyle. Social capital is a prerequisite for citizenship; however, population mobility, time pressure, lack of leadership, and economic stratification lead to decline in social capital. Many people fear public speaking because of enormous pressures to conform, threat of psychological harm, and their intuitive feeling about social tendencies towards intolerance. Built environment refer to land use, building designs, and transportation systems. The loss of great good places and the retreat of people to their homes only exacerbates difficulties in building social capital. Car- rather than people-oriented land uses may discourage people to participate in community activities because of longer travel time. Constraints related to work, lifestyle, and built environment are closely related to individual time use of both activity and travel, and social networking. To overcome any constraint may require a concerted effort to simultaneously overcome several constraints. Coglianese (2006) further revealed that the more significant barriers to citizen participation are cognitive and motivational, even with more sustained efforts to create user-friendly tools for participation. Ravensbergen and VanderPlaat (2009) argued that poverty is a serious barrier to citizen participation of low-income people, and Irvin and Stansbury (2004) stated that one ideal condition for enhanced citizen participation is that citizens have enough income to attend meetings without harming their ability to provide for their families. The life-oriented approach has potential to contribute to a better understanding of citizen participation for value co-creation between public service providers and citizens. Relevant studies should be promoted in the future. If

[3] https://www.gov.uk/government/publications/open-data-charter/g8-open-data-charter-and-technical-annex
[4] http://www.soumu.go.jp/johotsusintokei/whitepaper/ja/h25/html/nc121240.html

citizens can voluntarily engage in citizen participation, achieve a sustainable society will not be a dream.

Toward a truly scientific system

There are many disciplines dealing with human behavior. As argued by Thomas S. Kuhn (1962), any discipline may face a crisis of paradigm shift when abnormal events that it cannot address come to accumulate. Such a crisis has motivated the proposal of the life-oriented approach. As argued by the famous psychologist Kantor (1958), scientific systems must aspire toward validity, significance, and comprehensiveness (Fryling and Hayes, 2010). Validity refers to internal consistency or lack of contradiction. Significance describes the relationship of an individual scientific system to others. When an individual scientific system shares the meta-assumptions of others, it is considered significant. Validity is a prerequisite for significant interactions with other scientific systems, but validity itself does not assure significance. Comprehensiveness means an adequate account of all of the events that fall within the scope of the scientific system. Importantly, comprehensiveness is only valued when it is construed within a system that is both valid and significant. From the validity viewpoint, the authors of this book have shown that there are complicated and diverse "chicken-and-egg" interdependencies across life choices, suggesting the necessity of treating multiple life choices within a unified analysis framework. The life-oriented approach can serve as such a unified framework. Considering interdependencies across life choices meets the requirements of significance and comprehensiveness. Reductionism has been widely adopted in various scientific research treating complex systems. Life choices are such a complex system. Reductionism decomposes a complex system into elements and assumes that as long as characteristics of each element can be revealed, the whole system can be understood (e.g., Sawyer, 2002). However, because of interdependencies across life choices, it is not desirable to treat different life choices separately. In other words, reductionism has its serious limitations in representing interdependent life choices. Therefore, it is necessary to promote studies on the life-oriented approach based on the idea of non-reductionism (e.g., Sawyer, 2002) that treats interdependent decisions as one cohesive unit of analysis. Studies based on non-reductionism may contribute to develop the life-oriented approach as a truly scientific system.

References

Alexopoulos C, Zuiderwijk A, Charalabidis Y, Loukis E, Janssen M (2014) Designing a second generation of open data platforms: Integrating open data and social media. In: Janssen M, Scholl HJ, Wimmer MA, Bannister F (eds), Electronic Government, Lecture Notes in Computer Science. Springer Berlin Heidelberg, 230–241

Algers S, Eliasson J, Mattsson LG (2005) Is it time to use activity-based urban transport models? A discussion of planning needs and modelling possibilities. The Annals of Regional Science 39(4):767–789

Attard J, Orlandi F, Scerri S, Auer S (2015) A systematic review of open government data initiatives. Government Information Quarterly 32:399–418

Axhausen KW, Gärling T (1992) Activity-based approaches to travel analysis: conceptual frameworks, models, and research problems. Transport Reviews 12 (4):323–341

Baghaei N, Kimani S, Freyne J, Brindal E, Berkovsky S, Smith G (2011) Engaging families in lifestyle changes through social networking. International Journal of Human-Computer Interaction 27(10):971–990

Barton H (2009) Land use planning and health and well-being. Land Use Policy 26 (Supplement 1):S115–S123

Chang T-S, Hsiao W-H (2014) Time spent on social networking sites: understanding user behavior and social capital. Systems Research and Behavioral Science 31(1):102–114

Cheng S-T, Lee CKL, Chan ACM, Leung EMF, Lee J-J (2009) Social network types and subjective well-being in Chinese older adults. Journals of Gerontology Series B 64(6):713–722

Church A, Frost M, Sullivan K (2000) Transport and social exclusion in London. Transport Policy 7:195–205

Coglianese C (2006) Citizen participation in rulemaking: Past, present, and future. Duke Law Journal 55(5):943-968.

Easterbrook M, Vignoles VL (2013) What does it mean to belong? Interpersonal bonds and intragroup similarities as predictors of felt belonging in different types of groups. European Journal of Social Psychology 43(6):455–462

Fryling MJ, Hayes LJ (2010) An interbehavioral analysis of memory. European Journal of Behavior Analysis 11:53–68

Gärling T, Axhausen KW (2003) Introduction: Habitual travel choice. Transportation 30(1):1–11

Huxhold O, Fiori KL, Windsor TD (2013) The dynamic interplay of social network characteristics, subjective well-being, and health: The costs and benefits of socio-emotional selectivity. Psychology and Aging 28(1):3–16.
Irvin RA, Stansbury J (2004) Citizen participation in decision making: Is it worth the effort? Public Administration Review 64 (1):55–65
Kantor JR (1958) Interbehavioral Psychology. Chicago: The Principia Press.
Kim J, Tussyadiah IP (2013) Social networking and social support in tourism experience: The moderating role of online self-presentation strategies. Journal of Travel & Tourism Marketing 30(1-2):78–92
Kowald M, Van den Berg P, Frei A, Carrasco J-A, Arentze T, Axhausen KW, Mok D, Timmermans HJP, Wellman B (2013) Distance patterns of personal networks in four countries: A comparative study. Journal of Transport Geography 31:236–248
Kuhn TS (1962) The Structure of Scientific Revolutions. Chicago: The University of Chicago Press.
Kunstelj M, Vintar M (2010) One-Stop Government: Critical analysis of the concept and its implementation in the selected countries. In: Nemec J, Peters BG (eds), State and Administration in a Changing World, NISPAcee Press, 131–156
Larsen J, Urry J, Axhausen KW (2006) Mobilities, Networks and Geographies, Ashgate, Aldershot.
Larsen J, Urry J, Axhausen KW (2007) Networks and tourism - Mobile social life. Annals of Tourism Research 34(1):244–262
Li T, Zhang Y (2015) Social network types and the health of older adults: Exploring reciprocal associations. Social Science & Medicine 130:59–68
Lin H, Tov W, Qiu L (2014) Emotional disclosure on social networking sites: The role of network structure and psychological needs. Computers in Human Behavior 41:342–350
Magdol L (2000) The people you know: The impact of residential mobility on mothers' social network ties. Journal of Social and Personal Relationships 17(2):183–204
Maglio PP, Kieliszewski CA, Spohrer JC (2010) Handbook of Service Science. New York: Springer.
Mohnen SM, Volker B, Flap H, Subramanian SV, Groenewegen PP (2015) The influence of social capital on individual health: Is it the neighbourhood or the network? Social Indicators Research 121(1):195–214
Moore J, Carrasco J-A, Tudela A (2013) Exploring the links between personal networks, time use, and the spatial distribution of social contacts. Transportation 40(4):773–788
Oishi S, Kesebir S, Miao FF, Talhelm T, Endo Y, Uchida Y, Shibanai Y, Norasakkunkit V (2013) Residential mobility increases motivation to expand social network: But why? Journal of Experimental Social Psychology 49:217–223
Pinquart M, Sorensen S (2000) Influences of socioeconomic status, social network, and competence on subjective well-being in later life: A meta-analysis. Psychology and Aging 15(2):187–224
Ravensbergen F, VanderPlaat M (2009) Barriers to citizen participation: the missing voices of people living with low income. Community Development Journal 45 (4):389–403
Redmond LS, Mokhtarian PL (2001) The positive utility of the commute: modeling ideal commute time and relative desired commute amount. Transportation 28:179–205
Rook KS (2015) Social networks in later life: Weighing positive and negative effects on health and well-being. Current Directions in Psychological Science 24(1):45–51
Sandra B, Jeroen L, Lise K, Jacqueline D, Nijpels G (2011) Association between social network characteristics and lifestyle behaviour. Psychology & Health 26:94–94
Sawyer RK (2002) Emergence in psychology: Lessons from the history of non-reductionist science. Human Development 45:2–28.
Schönfelder S, Axhausen KW (2003) Activity spaces: Measures of social exclusion? Transport policy 10(4):273–286
Stanley JR, Vella-Brodrick D (2009) The usefulness of social exclusion to inform social policy in transport. Transport Policy 16(3):90–96
Stanley JK, Hensher DA, Stanley JR, Vella-Brodrick D (2011) Mobility, social exclusion and well-being: Exploring the links. Transportation Research Part A 45(8):789–801
Tambouris E, Spanos E (2002) An architecture for integrated public service delivery based on life-events. Electronic Markets 12(4):281–288
Tetreault S, Freeman A, Carriere M, Beaupre P, Gascon H, Deschenes PM (2014) Understanding the parents of children with special needs: collaboration between health, social and education networks. Child Care Health and Development 40(6):825–832
Tonn BE, Petrich C (1998) Everyday life's constraints on citizenship in the United States. Futures 30(8):783–813
Ubaldi B (2013) Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives. OECD Working Papers on Public Governance, No. 22, OECD Publishing (doi: 10.1787/5k46bj4f03s7-en)
Viry G (2012) Residential mobility and the spatial dispersion of personal networks: Effects on social support. Social Networks 34(1):59–72

Wimmer MA (2002) A European perspective towards online one-stop government: the eGOV project. Electronic Commerce Research and Applications 1(1):92–103
Wood W, Neal DT (2009) The habitual consumer. Journal of Consumer Psychology 19(4):579–592
Yaakobi E, Goldenberg J (2014) Social relationships and information dissemination in virtual social network systems: An attachment theory perspective. Computers in Human Behavior 38: 127–135
Yu B, Zhang J (2016) Household energy consumption behavior. In: Zhang J (ed), Life-oriented Behavioral Research for Urban Policy, Springer, Chapter 5
Zhang J (2009) A model of pedestrian time and monetary consumption behavior at city center. In: Timmermans HJP (ed), Pedestrian Behaviour: Models, Data Collection and Applications, Emerald, 157–193
Zhang J (2014) Revisiting the residential self-selection issues: A life-oriented approach. Journal of Land Use and Transport 7(3):29–45.