Donggen Wang · Shenjing He *Editors*

Mobility, Sociability and Well-being of Urban Living

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Introduction

The twenty-first century marks the advent of an urban age. In 2014, about 54 % of the world's population resided in urban areas, and this figure is expected to increase to 66 % by 2050 (United Nations 2014). Urban living is distinguished from lives in small towns and rural areas by its fast pace and multiplicity of economy, occupation, and social life (Simmel 1997; Sheller and Urry 2006). Mobility, sociability, and well-being are three distinctive yet highly interrelated facets of urban living. They are also the most important quintessence and three essential aspects of urban living addressed by the sustainable urban mobility campaign that the European Union has recently been actively promoting. Through sensitizing public opinion on the importance of a sustainable and taking an integrative and participatory approach to urban mobility, the sustainable urban mobility campaign does not purely focus on transport modes *per se*. It urges for coordination of policies among public authorities and specialized sectors, including transport, land use, environment, social policy, health, energy, economic development, and safety. Mobility, sociability, and well-being are the three keywords sketching out the story line of this edited volume.

The increased and diversified mobilities of urbanites, resulted from, among others, globalization and the evolutionary embedment of information and communication technology in everyday life, have redefined the contour of social science studies. Mobility is considered central to the complicated and globalized world and 'lies at the center of constellations of power, the creation of identities and the micro-geographies of everyday life' (Cresswell 2011). The so-called mobility turn in social science has been declared (Sheller and Urry 2006). This mobility turn, also called 'new mobilities paradigm,' has emerged as an interdisciplinary research field, which links science and social science to arts and humanities (Cresswell 2011). As 'moving between places physically or virtually can be a source of status and power' (Sheller and Urry 2006), mobility is an issue of not only utilitarian and practical relevance, but also ethnical and political importance (Cresswell 2010). The new mobilities paradigm examines the mobilities of not only people, but also objects and ideas at different scales ranging from small-scale bodily movements to global flows of people or finance; it is concerned about not only the measurable and

modeled forms of movements, but also the meaning and politics of movement (Cresswell 2011). The 'mobility turn' in social science has transcended the dichotomy between fields of research such as transport research and social research (Sheller and Urry 2006).

Mobility is contended to be a constitutive element of both objective and subjective well-being in a number of studies including Qian (this book) and Ettema et al. (this book). In a broad sense, mobility is conceptualized as a means of distributing resources and opportunities through which personal and collective well-being are affected (Kaufmann et al. 2004). In particular, the embodied experience of various forms of mobility is an important component of subjective well-being measured by momenta affect and sense of satisfaction (Cresswell 2010, Ettema et al., this book).

Meanwhile, sociospatial experience is an integral part of urban living that closely connects to mobility and the well-being of urban residents. Sociability and well-being has long been a classical topic in social research (see Barresi et al. 1983; Emmons and Diener 1986; Helliwell 2006; Lyubomirsky et al. 2005a; Morrow 1999; Oerlemans et al. 2011; Simmel 1949). Yet, most research is confined in the domain of psychological and built environment studies. For instance, Barresi et al. (1983) have pointed out environmental satisfaction and neighborhood sociability as key determinants of well-being in people's later life. Emmons and Diener (1986) reported that sociability was strongly related to positive affect of subjective well-being and was significantly related to life satisfaction. Most recently, a spatial dimension has been added to studies on sociability and well-being (see Du Toit et al. 2007; Ken and Thompson 2014; Schwanen and Wang 2014; Sutko and Silva 2011; Yip et al. 2013). There are ample evidences on the connection between sociability and well-being at different geographical scales and contexts, e.g., public spaces, streets, and residential neighborhoods. For instance, Schwanen and Wang (2014) contend that geography matters to not only overall well-being but also momentary well-being, while the former is associated more strongly with geographical context. Number of friends, social activities, and social support at intra-urban level and neighborhood scale affect well-being in a significant way. In particular, sense of community and neighborly interactions have been widely recognized as important factors improving urban residents' well-being and mitigating physical and emotional traumas (Browning and Cagney 2003; Liao et al., this volume; Liu et al., this volume; Yan and Gao, this volume; Yip et al. 2013).

As a classical research topic in geography, quality of life or well-being research has been concerned with the objective condition or quality of the environment (air quality, housing conditions, amenities, or disamenities) and attributes of people (e.g., education attainment, life expectancy) (Smith 1973; Pacione 2003; Ballas and Tranmer 2012; Ballas 2013). Pacione (2003) proposed a five-dimensional structure to synthesize the research of quality of life: geographical level, temporal scale, level of specificity, objective/subjective, and social groups of study. The research interests in quality of life have led to the development of territorial social indicators, which are composite indices of different factors including natural and human-created amenities. Such indicators are often used to compare the quality of

life of different regions or places (Pacione 2003; Ballas and Tranmer 2012). Perhaps inspired by the rapid proliferation of the literature in positive psychology and happiness economics (Easterlin 1974; Veenhoven 1991; Diener et al. 1995; Diener 2000), geographers' conventional emphasis on the objective aspects of well-being has recently shifted somehow to the subjective dimension of well-being, which focuses on people's evaluation of their own lives (Diener et al. 1995), and is often expressed in terms of individuals' cognitive and emotional well-being directly measured by means of reliable psychometric scale (Diener 2000). The constituent components of well-being include positive affect and negative affect of immediate experiences and cognitive component of satisfaction with life as a whole (Diener 2000; Lyubomirsky et al. 2005b), or different aspects of life such as work, residence, and family life (Campbell et al. 1976). Subjective well-being is increasingly considered as an important yardstick alternative to income growth to evaluate economic, social, and urban developments (Diener 2000). Subjective well-being also offers a new perspective to investigate critical urban issues related to sociospatial segregation, housing, daily travel, mobility of the elderly, etc. For instance, the daily travel has long been evaluated by time and cost. The subjective well-being perspective suggests that travel should also be assessed by the affective experiences during travel, which may be important factors influencing travel decisions (Abou-Zeid and Ben-Akiva 2012).

Addressing these highly interrelated hot topics, this edited volume is an interdisciplinary endeavor by researchers actively working in the fields of geography, urban studies, urban planning, transport, and sociology. Distinguished from existing studies on well-being that predominantly rely on social indicators, this book emphasizes the geographical and spatial dimension of well-being of urban residents through combining the analytical perspectives of mobility, sociability, and well-being. Covering the well-being of a wide range of urban population, especially those marginal groups such as African immigrants, rural migrants, and elderly people, this edited volume attempts to introduce a broad scope in well-being studies. This book also aims to present a comprehensive understanding of contemporary urban living by looking at both overall well-being and momentary well-being concerning different life events and daily activities such as career development, residential choice, travel behavior, and leisure and social activities. Overall, the book explores the social practices and everyday living of urbanites in different parts of the world. More than half of the chapters document the latest transformations of urban living in China, where accelerated mobilities, dynamic sociability, and pressing issues of well-being are among the most important concerns addressed by policy makers and researchers. This book also reports on the experiences of urban living from more developed countries and regions, such as USA, Japan, and Taiwan. In addition to empirical studies based on first-hand data and official statistics from a variety of contexts, this book also offers comprehensive reviews on the latest advancements in the field. This edited volume consists of 13 chapters that are organized into four parts: Mobility and Immobility (Part I); Urban Living and Sociospatial Experiences (Part II); Travel and Life Satisfaction (Part III); and Neighborhood and Subjective Well-being (Part IV).

Part I comprises three chapters dealing with the issues associated with mobilities at different geographical scales. Lan's chapter ethnographically documents the living experiences of those undocumented African immigrants in Guangzhou, China. Through examining their lived realities, this chapter reveals their decisions and choices in navigating the gray area between legal and illegal and discloses a liminal space between mobility and immobility. Lan argues that because of their illegality, undocumented African immigrants may have limited physical mobility at the local scale, but their knowledge about the Chinese market and connections with local suppliers help them gain competitiveness and transnational mobility. Drawing upon recent scholarship on the politics of mobility and new mobility paradigms, the chapter by Qian analyzes the outlawing of motorcycle mobility and the regulation of motorcycle taxis in Guangzhou and demonstrates that transport mobility entangles with the production of meanings, discourses, and more importantly relations of power. Qian's chapter also acknowledges the role of mobility in distributing resources and opportunities and its contribution to well-being, as well as the emotional aspect of the embodied experience of motorcycle mobility in terms of endless fear, stress, and frustration, which bear negative implications for subjective well-being. Ding and Wang's chapter addresses the issue of on-street parking in Chinese cities, which is considered an integral part of automobility. From the perspective of competing for urban space, they liken the on-street parking phenomenon to the occupancy urbanism of the urban poor in India as a strategy of resistance against the rigidity and inflexibility of urban regimes in governing urban space. They argue that on-street parking is at the same time rebellious and assertive in claiming their shares of urban space by the Chinese urban middle class.

The three chapters of Part II document the sociospatial experiences of the urban marginal groups. The chapter by He and Wang analyzes the urban experiences and well-being of China's new-generation migrant workers through the lens of field and habitus proposed by Bourdieu. Compared with the old generation, the new generation is found to be better educated, more adaptable to urban living, and more creative and adventurous. However, the new generations suffers from a similar level of precarity that the old generation has experienced. The urban experiences of the new generation are characterized by 'self-stigmatization' and 'ambiguous identities,' two common 'habitus' in the highly unequal and contested urban field shaped by state institutions and social and market forces. Hao's chapter provides a comprehensive survey of the processes that have produced the built environment and social space in Shenzhen's urban villages, which shelter millions of migrant workers. It highlights the importance of the economic and institutional forces and the actors holding scarce resources in producing the space of urban villages. Hao argues that urban villages provide affordable housing opportunities for migrant workers to reside in close proximity to employment and urban amenities, hence contributing to a fairer society. The redevelopment of urban villages that is underway in Shenzhen and elsewhere may jeopardize the well-being and life chances of the underprivileged and imperil the co-presence of different social classes in the urban core. Feng's Chapter presents a qualitative investigation into the living experiences of senior citizens co-residing with their adult children in

Nanjing, China. Although co-residing with adult children may sacrifice senior citizen's opportunities to engage in physical and social activities because they need to share household responsibilities including home maintenance and child care, the study shows that for those seniors with low education level and without post-retirement plans, co-residing with adult children increases their satisfaction with life.

Part III focuses on the connections between mobility and subjective well-being especially life satisfaction, a topic that has recently received much research attention in the field of travel behavior studies. The chapter by Ettema et al. outlines the recent advancements in the research on the affective experience of travel by different transport modes. It offers a comprehensive account of the instrumental, affective, and symbolic aspects of using various major transport modes in terms of theories, empirical findings, and policy implications. The chapter also discusses the well-being implications of transport mode change and its relevance to transport policy design. This is a highly relevant chapter for researchers interested in transport subjective well-being. The chapter by Cao and Wang applies econometric modeling approach to examine the association between travel and life satisfaction in Twin cities of the USA. Structural equation models are developed to empirically verify the statistical relationships between travel behavior, and satisfaction with travel and life in general. Travel satisfaction is found to be positively associated with life satisfaction. Most measures of travel behavior especially trip frequencies are reported to negatively impact on travel and life satisfaction. A similar modeling approach is adopted by Xiong and Zhang, who analyze a panel data collected in Japan. Their study also intends to establish links between travel behavior and life satisfaction but in the context of other life choice behaviors including residential choice and engagement in and time allocation to leisure and social activities. Moreover, the panel data allow the study to capture and differentiate the effects of past and current life choices on the current level of life satisfaction. A major finding of this chapter is that the current and past choices in other life domains rather than travel choices play a more important role in determining individuals' current level of life satisfaction.

Part IV is a cluster of four chapters devoted to the study of neighborhood impacts on subjective well-being. The chapter by Wang and Wang offers a comprehensive review of the literature concerning geographical patterns of life satisfaction and the contribution of spatial factors to subjective well-being. This chapter covers the conceptualizations and measurements of subjective well-being. It also summarizes the empirical findings about the spatial variations in life satisfaction and the geographical determinants of subjective well-being at different geographical scales including the neighborhood level. The chapter will be an important reference for readers interested in the geographical approach to study the subjective well-being. The chapter by Yan et al. is an empirical study of neighborhood determinants of elderly's life satisfaction. This study collected data from the elderly residents living in different types of neighborhoods in Beijing. Structural equation models are developed to examine the impacts of neighborhood factors including elderly care facilities, neighborhood social support, and accessibility to services on life

satisfaction of senior citizens. The chapter by Liu et al. is concerned with the effects of neighborhood factors on the emotional well-being of social housing residents in Guangzhou, China. Emotional well-being is measured by five indicators of positive effect and four indicators of negative effect. Neighborhood factors include the availability of different types of amenities and the perception about various aspects of social cohesion. The empirical findings of this study highlight the importance of neighborhood social milieu in promoting social housing residents' emotional well-being. This finding is also verified to some extent by the last chapter of this section. In this chapter, Liao et al. examines the importance of social support in moderating the negative effects of heat wave on emotional well-being and mental health. Their study of social vulnerability and adaptation under a heat wave in Taiwan shows that community social support is conducive to mitigate the negative impacts of heat wave on emotional well-being and adverse moods.

Overall, this book offers various perspectives and diverse analytical approaches for academics and research students to better understand different aspects of contemporary urban living in relation to mobility, sociability, and well-being. The book makes novel and important contributions to the literature in a number of ways. Firstly, the chapters on mobilities supplement the currently Euro-American dominated literature with empirical studies in Chinese and Japanese cities and shed light on the power relations embedded in mobilities and the connections between mobilities at different geographical scales. Secondly, the book adds to the literature with new empirical evidences on the predicament of Chinese migrant workers and reveals that the well-being and life chances of the marginalized groups in Chinese cities are severely compromised by institutional, social, and market forces in the highly unequal and contested urban field. Thirdly, the chapters on travel well-being contribute to the well-being literature by establishing the links between mobility and life satisfaction. They also enrich the mobilities literature by conceptually and empirically construe the well-being meaning of travel. Finally, the book explores the neighborhood effect on well-being and reveals that the availability of amenities and social support at neighborhood level appears to be important determinants of both life satisfaction and emotional well-being of the senior citizens. Research findings presented in the book are highly relevant for practitioners and policy makers in the pursuit of improving urban livability and promoting well-being.

The book is not intended to be a textbook. However, it can serve as a supplementary reading for postgraduate courses concerning with urban studies, urban geography, urban planning, urban sociology, gerontology, etc. The book will provide postgraduate students exposure to diverse perspectives and study approaches that bridge transport/mobility research and social research and incorporate quantitative and qualitative analyses.

This book is partly a follow-up product of the International Conference on Spatial and Social Transformation in Urban China held in December 2012 in Hong Kong and partly the endeavor of the Centre for China Urban and Regional Studies (CURS) of Hong Kong Baptist University in promoting urban studies. The book is also benefited from three research grants of National Science Foundation of China (NSFC): 41371181, 41271180, and 41322003.

References

Abou-Zeid, M., & Ben-Akiva, M. (2012). Well-being and activity-based models. *Transportation, 39*, 1189–1207.

Ballas D. (2013). What makes a 'happy city'? *Cities, 32*(1), S39–S50

Ballas, D., & Tranmer, M. (2012). Happy people or happy places? A multilevel modeling approach to the analysis of happiness and well-being. *International Regional Science Review, 35*(1), 70–102.

Barresi C. M, Ferraro, K. F., & Hobey, L. L. (1983). Environmental satisfaction, sociability, and well-being among urban elderly. *International Journal of Aging and Human Development*, *18* (4), 277–293.

Browning, C. R., & Cagney, K. A. (2003). Moving beyond poverty: Neighborhood structure, social processes, and health. *Journal of Health and Social Behavior*, *44*(4), 552–571.

Campbell, A. (1976). Subjective measures of well-being. *American Psychologist*, *31*(2), 117–124.

Cresswell, T. (2010). Towards a politics of mobility. *Environment and Planning D: Society and Space*, *28*(1), 17–31.

Cresswell, T. (2011). Mobilities I: Catching up. *Progress in Human Geography*, *35*(4), 550–558.

Diener, E. (2000). Subjective wellbeing, the science of happiness and a proposal for a national index. *American Psychologist*, *55*(1), 34–43.

Diener, E., Suh, E., Smith, H., & Shao, L. (1995) National differences in reported subjective well-being: Why do they occur? *Social Indicators Research*, *34*(1), 7–32.

Du Toit, L., Cerin, E., Leslie, E., & Owen, N. (2007). Does walking in the neighbourhood enhance local sociability? *Urban Studies*, *44*(9), 1677–1695.

Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. *Nations and households in economic growth*, *89*, 89–125.

Emmons, R. A., & Diener, E. (1986) Influence of impulsivity and sociability on subjective well-being. *Journal of Personality and Social Psychology*, *50*(6), 1211–1215.

Ettema, D., Friman, M., Gärling, T., & Olsson, L. E. (this book). Travel mode use, travel mode shift and subjective well-being: Overview of theories, empirical findings and policy implications.

Helliwell, J. F. (2006). Well-being, social capital, and public policy: What's new? *The Economic Journal*, *116*(510), C34–C45.

Kaufmann, V., Bergman, M. M., & Joye, D. (2004) Motility: Mobility as capital. *International Journal of Urban and Regional Research*, *28*(4), 745–756.

Kent, J., & Thompson, S. (2014). The three domains of urban planning for health and well-being. *Journal of Planning Literature*, *29*(3), 239–256

Lyubomirsky, S., King, L., & Diener, E. (2005a). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*(6), 803–855.

Lyubomirsky, S., Sheldon, K. M., Schkade, D. (2005b). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, *9*(2), 111–131.

Morrow, V. (1999) Conceptualising social capital in relation to the well-being of children and young people: A critical review. *The Sociological Review*, *47*(4), 744–765.

Oerlemans, W. G. M., Bakker, A. B., & Veenhoven, R. (2011) Finding the key to happy aging: A day reconstruction study of happiness. *Journal of Gerontology B: Psychological Sciences*, *66* (6), 665–674.

Pacione, M. (2003) Urban environmental quality and human wellbeing-a social geographical perspective. *Landscape and Urban Planning*, *65*(1–2), 19–30.

Qian, J. (this book) Disciplined mobility and migrant subalternity: Sketching the politics of motorcycle taxis in Guangzhou

Schwanen, T., & Wang, D. (2014) Well-being, context and everyday activities in space and time. *Annals of the Association of American Geographers*, *104*(4), 833–851.

Sheller, M., & Urry, J. (2006). The new mobilities paradigm. *Environment and Planning A*, *38*(2), 207–226.

Smith, D. M. (1973). *The geography of social well-being in the United States: An introduction to territorial social indicators*. New York: McGraw-Hill.

Simmel, G. (1949) The sociology of sociability, (E. C. Hughes, Trans.). *American Journal of Sociology*, *55*(3), 254–261.

Simmel, G. (1997) *Simmel on culture*. In D. Frisby & M. Featherstone (Eds.), London: Sage.

Sutko, D.M., & Silva, A. S. (2011). Location-aware mobile media and urban sociability. *New Media and Society*, *13*(5), 807–823.

United Nations (Department of Economic and Social Affairs). (2014). *World urbanization prospects: The 2014 revision (Highlights)*. New York, United Nations

Urry, J. (2008). Moving on the mobility turn. In S. Kesselring, W. Canzler & V. Kaufmann (Eds.), *Tracing mobilities*. *Towards a cosmopolitan perspective in mobility research* (pp. 13–23). Ashgate: Aldershot.

Veenhoven, R. (1991). Is happiness relative? *Social Indicators Research*, *24*(1), 1–34.

Yip, N. M., Leung, T. F., & Huang, R. (2013). Impact of community on personal well-being in urban China. *Journal of Social Service Research*, *39*(5), 675–689.

Part I
Mobility and Immobility

Chapter 1
Between Mobility and Immobility: Undocumented African Migrants Living in the Shadow of the Chinese State

Shanshan Lan

Abstract With China's accession to the World Trade Organization in 2001 and the enormous growth of Sino-African trade, Guangzhou, a mega city in South China, has become the Promised Land for many African migrants seeking wealth and fortune in the global economy. Differing from the previous generation of African migrants who were mainly from elite backgrounds and who traveled to China to receive higher education training, this recent wave consisted of mainly traders and petty entrepreneurs who have relatively small amount of capital and who tend to operate their businesses in the informal economy. Based on ethnographic fieldwork within the African diaspora communities in Guangzhou, this chapter examines the structural constraints faced by undocumented Africans under China's stringent immigration policy and their various coping strategies. It questions the strict division between mobility and immobility by recognizing the existence of a continuum between the two. It further argues that the relationship between mobility and immobility is mediated by both the scale of analysis (local, national, and transnational) and migrants' different levels of interactions with local society. In the Guangzhou context, the limitation of undocumented African migrants' motility options can be complemented by their business collaboration and partnership with migrants from less developed areas of China. Collaboration with Chinese migrants enables African traders to bypass some of the constraints imposed by state immigration law. It also expands their motility options beyond Guangzhou to other cities in China.

Keywords Mobility · Immobility · Motility · Undocumented Africans · Chinese state

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1.1 Introduction

With China's accession to the World Trade Organization in 2001 and the enormous growth of Sino-African trade, Guangzhou, a mega city in South China, has become the Promised Land for many African migrants seeking wealth and fortune in the global economy.[1] Differing from the previous generation of African migrants who were mainly from elite backgrounds and who traveled to China to receive higher education training, this recent wave consisted of mainly traders and petty entrepreneurs who have relatively small amount of capital and who tend to operate their businesses in the informal economy. In July 2009, an undocumented African was severely injured after jumping from the second floor of a trade mall to evade a passport check by the Chinese police (Tang and Gong 2009). The event drew worldwide attention to the presence of illegal African migrants in China.[2] 3 years later, the African community was under the spotlight again when open clashes broke out between African traders and the Chinese police on 19 June 2012 over the death of a Nigerian man in police custody (Beech 2012; Branigan 2012). While such media coverage reflects the growing tensions between African migrants and the Chinese authorities, relatively little is known about the daily life experiences of undocumented African migrants in Guangzhou and how they interact with the local Chinese community.

Based on ethnographic fieldwork within the African diaspora communities in Guangzhou, this chapter examines the structural constraints faced by undocumented Africans in urban China and their various coping strategies. Specifically, it focuses on "illegal" residence as a business strategy maintaining vital transnational trade networks between China and Africa. For many African migrants, "illegal" residence in Guangzhou is just one special phase of their life for the purpose of capital accumulation. It enables them to maintain a transnational advantage over traders in Africa. By voluntarily choosing a lifestyle of circumscribed mobility in Guangzhou, undocumented African migrants have been playing an important role in facilitating transnational trade activities between China and their home countries.

Guangzhou's African population began increasing in 1998 when the Asian financial crisis prompted African merchants to leave Indonesia and Thailand in search of new markets (Bodomo 2012; Osnos 2009). The capital of Guangdong Province, Guangzhou has a rich history of foreign trade and exchange. Since its inauguration in 1957, the Canton Fair (renamed the Annual China Import and Export Fair in 2007) has attracted merchants from all over the world. Guangzhou also became a popular destination for Africans because of its warm weather,

[1]This follows the popular Chinese understanding of African migrants, which mainly refers to sub-Saharan or black Africans. In Guangzhou Arabic-speaking migrants from North Africa are usually identified by Chinese as whites or Arabs, not as Africans.

[2]The English-language media carried a different version of the story, claiming that the African man died. Interviews with African migrants who witnessed the 2009 incident revealed that the man was severely injured but did not die.

religious diversity and relatively tolerant political and economic setting. The African population in Guangzhou is extremely diverse and almost every country in Africa is represented in the diaspora. The majority of Africans in Guangzhou are traders from West Africa, but there are also significant numbers of East and Central African migrants. According to Bodomo (2012), the top five groups are Nigerians, Senegalese, Malians, Guineans, and Ghanaians. About 80 % of the migrants surveyed by Bodomo are between 24 and 40 years old, and close to 82 % of them are men.

There are no available government statistics on the exact number of Africans in Guangzhou. According to some scholarly estimates, the number is probably around 20,000 (Li et al. 2009a; Haugen 2012; Yang 2012). African migrants are commonly found in two major areas of the city: the Xiaobei area, where most of the French-speaking Muslims gather, and the Sanyuanli area, where most of the English-speaking Christians frequent. The division between the two areas is not clear cut. In reality there is a constant flow of people and goods from one area to another. This research mainly focuses on the Anglophone Christian migrant communities in the Sanyuanli area, with special attention to undocumented Nigerians.

Although undocumented migration is a global phenomenon, the existing literature mainly focuses on migrant experiences in Europe and North America (Koser 2005). China provides an interesting case study for undocumented African migration for several reasons. First, the recent African migration to China is based on trade migration, not labor migration. It is not mediated by China's structural demand for low-cost, flexible, foreign-born labor, but by China's position as the global manufacturing powerhouse of cheap consumer goods. In fact, the majority of African migrants in Guangzhou are traders who function as middlemen between factories and suppliers in China and clients in Africa. Due to its long history as an immigrant-sending country, China has not yet developed "a clear legal and administrative framework and apparatus to deal with the entry, residence, and employment of foreigners" (Pieke 2012: 58). The concentration of undocumented African migrants in Guangzhou is the result of complex interplays between structural constraints, such as gaps and contradictions in China's immigration policy, and individual migrant survival strategies (Lan 2015). As an example of South–South migration, the African presence in China is also mediated by changing political and economic relations between China and Africa, and the intersection of internal and international migration in global cities such as Guangzhou.

The data for this research was gathered between April 2012 and June 2014 through archival research (government legal documents, Chinese language newspapers, and journals) and participant observation in the African markets in the Xiaobei and Sanyuanli areas of Guangzhou. From July to August 2013, the author made a 3-week research trip to Lagos, Nigeria. In Guangzhou, the author and her research assistants conducted over 50 open-ended interviews with Africans from Nigeria, Uganda, Kenya, Togo, Gambia, Tanzania, Niger, Senegal, Cameroon, and other countries. The team also interviewed 40 Chinese who had various levels of interaction with Africans. Their backgrounds include real estate agents, small business owners, government officials, migrant workers, and wives of African men.

In Lagos, the author conversed informally with 43 Nigerian traders on their business experience in China and encounters with the police in Guangzhou. Due to the extreme heterogeneity in the African diaspora community, this chapter can only present a partial picture of the undocumented African experience in Guangzhou.

1.2 "Illegal" Residence as a Transnational Mobility Strategy

The transnational flow of people, goods, and ideas not only challenges geographically defined borders but also transforms social economic relations in different political and cultural contexts. Identifying the linkages between spatial and social mobility, scholars have noted that different social groups' access to mobility opportunities are mediated by unequal power relations (Massey 1993; Liu 1997; Nonini 1997). Glick et al. (2013) propose a "regimes of mobility" framework to explore "the relationships between the privileged movements of some and the co-dependent but stigmatized and forbidden movement, migration and interconnections of the poor, powerless and exploited" (188). Kaufmann et al. (2004) introduce the concept of motility, or the potential of mobility, to illuminate the connection between spatial and social mobility. According to this group of authors, motility encompasses three elements, "*access* to different forms and degrees of mobility, *competence* to recognize and make use of access, and *appropriation* of a particular choice, including the option of non-action" (750). They further conceptualize motility as a form of capital that can be transformed into other types of capital. This chapter offers a nuanced analysis of the transnational mobility dreams of undocumented African migrants in Guangzhou by examining some of the contradictions in their motility options. On the one hand, undocumented African migrants encounter severe restrictions to their physical and social mobility in China due to state immigration control policy and their vulnerable legal status. On the other hand, African migrants can expand their motility capital, to a certain extent, by making strategic choices in regard to a shifting range of statuses between the "legal" and "illegal," and by building personal and business relations with migrants from other parts of China.

Scholars in migration studies have noted that migrant "illegality" is legally, politically, and socially constructed (Chavez 2007; De Genova 2002, 2004; Ngai 2004). Anderson and Ruhs (2010) emphasize the importance of studying "illegality" not as an end-state by itself, but as a processual and temporal phenomenon. Since most African migrants enter China on a valid business or tourist visa, there is a process of migrant choice and decision making when confronted with the constraints of immigration control. Instead of merely being victims of state policy, migrants may carefully evaluate the risks and benefits of living as an undocumented migrant in China and make their strategic choices accordingly. As noted by Cvajner and Sciortino (2010a), irregularity is "a status that may be both attained and left

behind in very different ways" (214). Some migrants may start with a valid legal status but end up losing that status for various reasons; others may manage to legalize their status after living as an undocumented migrant for a certain period.

Anderson and Ruhs (2010) use the term "status mobility" to describe migrants' ability to move between a shifting range of immigration statuses. This chapter argues that illegal residence started as an involuntary coping strategy for some early African traders as China tightened its control over immigration, but it gradually became a voluntary choice for newcomers, especially Nigerian Igbo, as they developed alternative motility options that move beyond the binary of the legal and illegal.

Some pioneering studies have been conducted on the adaptive strategies of different groups of African migrants in response to China's inconsistent visa policy and police abuse of power (Lyons et al. 2008, 2012; Yang 2012). Li et al. (2012) identify that the local state has a key role in contributing to the "prosperity" and "collapse" of the African enclave in Guangzhou. Haugen (2012) describes the spatial entrapment and restricted movement of undocumented Nigerians in Guangzhou as "a second state of immobility," in comparison with their "involuntary immobility" in the home country. This chapter questions the strict division between mobility and immobility by recognizing the existence of a continuum between the two. In other words, the relationship between mobility and immobility is relative and is mediated by both the scale of analysis (local, national, and transnational) and migrants' different levels of interactions with local society. Undocumented African migrants may have limited physical mobility at the local scale (i.e., Guangzhou city), but their knowledge of the Chinese market, competence in the Chinese language, and connections with local suppliers, may help them gain competitive advantages at the transnational scale. By functioning as intermediaries between suppliers in China and customers in Africa, undocumented Africans are instrumental in facilitating the transnational flow of people, goods, and information between the two regions. In this vein, "illegal" residence can be a transnational mobility strategy for some Africans who wish to find a business niche in Sino-African trade relations.

This research also extends Haugen's analysis on migrants' physical and spatial mobility by adding the dimension of social mobility. In the Guangzhou context, the limitation of undocumented African migrants' motility options can be complemented by their business collaboration and partnership with migrants from less developed areas of China. As one of the first cities that benefited from China's open-door policy, Guangzhou is a popular destination not only for African traders, but also for migrants from other parts in China. The city's thriving export-oriented markets and concentration of African traders has attracted migrant workers and entrepreneurs from different regions of China, who find business and job opportunities by providing trade or trade-related services to Africans. Recent scholarship in migration studies has de-centered the national scale by paying attention to relationships between different types of mobility trajectories (Wimmer and Glick Schiller 2002; King and Skeldon 2010; Ellis 2012; Kalir 2013). This research regards Guangzhou as a contact zone where China's internal migration converges

with international migration. Collaboration with Chinese migrants enables African traders to bypass some of the constraints imposed by state immigration law. It also expands their motility options beyond Guangzhou to other cities in China.

1.3 Reasons for Migration

The African migration to South China has been boosted by the enormous growth of Sino-African trade relations and the increasing presence of mainland Chinese enterprises and small entrepreneurs from Africa (Alden et al. 2008). The influx of inexpensive Chinese products has significantly changed consumer culture and marketplace hierarchies in some African countries (Dobler 2009; Marfaing and Thiel 2013). To bypass the Chinese middlemen, an increasing number of Africans prefer to travel directly to China to purchase cheap consumer goods and bring them back for sale in Africa. This connection between Chinese migration to Africa and African migration to China is confirmed by Bodomo (2012), whose African research subjects summarize their reasons for migration to China in one sentence, "We are here because they are there" (230). Sam, a 32-year-old Nigerian trader in Guangzhou, told me that he had no knowledge about China when his father asked him to go there to do business. He said, "A Chinese man I met in the market told me that Chinese people are very nice and Chinese women are very beautiful and I would enjoy staying in China. My friends thought I should go and see China because they had never been to China themselves." Sam's father had traveled to China in 1997 to do business. With the help of one of his father's Chinese friends, Sam obtained a business visa to travel to Guangzhou in 2007. At the time of my interview with him, Sam was running a clothing shop in the Tangqi market, one of the busiest African markets in Sanyuanli area.

Another major reason for African migration to China is the relative ease of obtaining a visa. Traditional countries for immigration in Europe and North America are continuingly challenged by the increasing diversity in undocumented migration, and the draconian immigration control policies in these countries have forced migrants to look for new destinations in the developing world. Some of the African migrants chose China as their destination because of the business opportunities there, others ended up in China because their agents failed to obtain a visa to more developed countries in the West. As noted by Haugen (2012), the proliferation of visa and document services in Nigeria encourages hasty migration decisions and unrealistic expectations about business and job opportunities in China. As China tightens its immigration control, African migrants can still easily purchase forged passports and traveling documents through transnational brokerage service networks maintained by cross-border and cross-cultural collaboration between Chinese and African agents (Lan and Xiao 2014). Due to its history as an immigrant-sending country, China has not yet developed a mature immigration system to handle the increasing diversity of foreign migrants. The lack of systematic state policies for the administration of the business activities of grassroots foreign

traders in China has contributed to the thriving informal foreign trade activities in Guangzhou, which often blur the line between being legal and illegal.

Depending on their migrant trajectories, Castillo (2014) identifies three types of African traders in Guangzhou: (1) the more established, (2) the itinerants and semi-settled, and (3) the newly arrived. The first category includes those who have been doing business in Guangzhou for more than a decade and who have established important personal and business relations with local authorities and business partners. The last category refers mainly to fortune seekers who have no previous business experience and cultural knowledge of China. Unlike the first two groups who generally hold valid visas in China, these latecomers tend to have a vulnerable legal status and have to rely on ethnic community networks for survival. Most of the African migrants interviewed in this research belong to the semi-settled and newcomers' groups, whose immigration status often shifts between being legal and illegal depending on their economic circumstances, social connections with the Chinese community, and changes in state immigration policy. The majority of our interviewees learned about business opportunities in China through friends and family networks and decided to try their luck in the Promised Land. There are several ways for migrants to acquire start-up capital for the China trip, which generally involves various types of family obligations and social reciprocity. One is to combine all family resources, including loans from distant relatives or the sale of family assets, to send a son to China. This person is usually under great pressure to succeed in China due to all the family expectations. Another way is to work for an experienced trader or a relative for a few years (usually seven or eight) as an apprentice. At the end of his service, the person is offered a plane ticket to China and a modest sum of money as start-up capital. A third way is through the help of friends. One Nigerian informant reported that a friend who has been traveling to China for business paid for his China trip, on the condition that he would return the money in a few years.

Although most of our African informants migrated to China for economic reasons, not all of them traveled to China for trading purposes. Quite a number of them became traders involuntarily due to the lack of alternative mobility opportunities for foreign migrants in China. Linda, a 24-year-old woman from Cameroon, migrated to China for an English teacher's job promised by her visa agent, but ended up in Guangzhou buying and selling counterfeit goods to survive. John, a 27-year-old man from Uganda, paid an agent US $2000 for a visa and plane ticket to China to find a factory job in Guangzhou. Yet, after his arrival at the airport, he found that the Chinese contact number provided by his agent was a fake one. At the time of the interview, John's visa had already expired, and he was stranded in Guangzhou with no money to start a business or buy a return ticket. Lucky, a 28-year-old Nigerian from a wealthy family came to China with the intention to attend law school there. But he found Chinese universities do not offer English language instruction and the educational system in China is quite different from the system in his own country. He finally gave up his dream of law school and turned to trading activities. At the time of the interview, he was selling shoes in the Canaan market in Sanyuanli. The

three examples cited here show that a lack of knowledge about education, job, and business opportunities in China may lead to unexpected difficulties in post-migration life in China, including financial constraints, loss of legal status, a change in career paths, and other tragic consequences.

1.4 The Social and Legal Construction of African "Illegality" in Guangzhou

Within the Chinese language, the term *sanfei* is often used in both official and popular media to describe illegal immigrants. *Sanfei* literally means "triple illegal." It includes three types of illegal immigrants: those who enter illegally, stay illegally, and work illegally in China. The term first gained popular usage in coastal and border areas of China, where the pressure to curb undocumented immigration was more keenly perceived (He 2009; Wu 2013). On May 15, 2012, when Beijing launched the 100-day crackdown on *sanfei* foreigners in the city, the term started to gain national popularity. Unlike "foreign experts" who are generally considered contributors to the development of Chinese economy, in many Chinese analyses *sanfei* foreigners are often related to social problems such as "terrorism, organized and petty crime, drinking, drugs and violence, prostitution, and unemployment" (Pieke 2012: 57).[3] Although *sanfei* foreigners are from a variety of countries in both the developing and developed worlds, in the Guangzhou case, *sanfei* are primarily associated with African migrants.

Reasons for Chinese prejudice against Africans at the personal level include the following: traditional esthetic values, ignorance of African cultures and societies, influence of Western media, language barriers, and cultural misunderstandings. Despite the state rhetoric of the Sino-African friendship, the majority of Chinese citizens still have very limited knowledge of Africa. In a 2006 survey conducted by *China Youth Daily,* the official organ of the Communist Youth League, and Sina.com, the biggest Chinese Internet news portal, 71.7 % of the 5119 respondents reported that they knew very little about Africa. Around 30.4 % associated Africa with poverty, underdevelopment and AIDS (Li and Rønning 2013). In the Guangzhou context, Africans are identified primarily by their black skin color, not by their country of origin, language, or religious beliefs. The Chinese term *heiren* (black person) is often used, in both popular media and daily life settings, as a generic term to refer to Africans from diverse backgrounds. Because of this conflation of black and African identities, Chinese perceptions of Africans tend to be rather homogenous, and oftentimes are tainted with negative stereotypes. For example, the Cantonese term *hakgwai* (literally meaning black devil or ghost) is

[3]According to Brady (2000), "foreign expert" is a polite term used by the Chinese to describe all foreign technicians and workers. In its specific sense, it is the highest rank of the sliding pay scale for foreigners who work for the Chinese government.

sometimes used, by local Cantonese and migrant workers from other parts of China, in a derogatory manner to show contempt for African migrants.[4]

The local Chinese media also plays a key role in constructing a negative image of Africans as guilty of illegal immigration, drug dealing, sex offenses, and the spread of AIDS (Li et al. 2009b). The media production of the "African threat" was achieved in several ways. First was the exaggeration of the number of undocumented Africans in the city. In 2007, a report in *Guangzhou Daily* claimed that there were 200,000 Africans in the city and only about 20,000 were officially registered with the government (Ke and Du 2007).[5] Since then, news reporters and individual Chinese frequently quote the figure of 200,000 as the most popular estimate of the African population in Guangzhou. The "African threat" discourse was also highlighted by the demonization of black masculinity over the internet. One news website in Shenzhen reprinted the *Guangzhou Daily* report with a sensational title, "There are 200,000 blacks in Guangzhou and rape cases committed by blacks have been rapidly rising"[6] Racist comments such as the black invasion, the 57th ethnic group in China and the AIDS threat can be found among Chinese netizens from different parts of China (Cheng 2011).[7] The criminalization of Africans as drug dealers in popular media also played an important role in the racialization of the black identity in Guangzhou. Although several groups of foreigners are involved in drug-related crimes in the city, including Southeast Asians, Middle-Easterners, and overseas Chinese, Africans are often singled out as the most visible group (Liao and Du 2011; Qiu 2011).

At the government level, the influx of Africans to Guangzhou was first considered a positive stimulus to the city's economy (Li et al. 2012). However, as media reports of "black-related crimes" increased, African migrants soon became the target of the local government's anti-*sanfei* campaign. Prior to the Beijing Olympics in August 2008, the Chinese government tightened its visa policy for foreigners. The government rejected multi-entry visa applications and no longer allowed foreigners from 33 countries to apply for a visa to China in Hong Kong or Macau, but instead required them to return to their home countries to apply and provide extra documents such as a return ticket and a hotel reservation (AsiaNews 2008; Cheng and Chao 2009). In Guangzhou, the police carried out special anti-*sanfei* raids every 2 months in the areas where Africans were concentrated (Li et al. 2012). In August 2008, the Guangzhou government announced that foreigners would be included in the "floating population" category and were subjected to the corresponding rules and regulations (Ju 2008). In parallel with the well-publicized

[4]The naming of foreigners as "barbarians" or "devils" originated from an ethnocentric tradition in ancient Chinese society when Chinese culture was celebrated as the culmination of human civilization.

[5]*Guangzhou Daily* is the official newspaper of the Guangzhou municipal party committee and is one of the largest circulations of the daily papers in China.

[6]http://www.sznews.com/news/content/2007-12/13/content_1718395.htm, last accessed February 20, 2014.

[7]China currently has 56 ethnic groups.

stigmatization of the internal "floating population" in urban China (Zhang 2001), *sanfei* foreigners were blamed for the increasing crime rates in cities, creating pressure for China's labor market and draining social resources reserved for Chinese citizens (Zhuang 2007). After the African protest in 2009, the Guangzhou municipal government began to receive pressure from Beijing to implement more stringent immigration control policies.

On May 1, 2011, the *Interim Provisions of Guangdong Province on Administration of and Services to Aliens* went into effect. This was the first local government-level legislation in China concerning the administration of foreigners. Designed to specifically target *sanfei* foreigners in the Pearl River Delta area, the Guangdong Act promotes a reward and penalty scheme by encouraging ordinary Chinese civilians to report illegal foreigners to local authorities.

This law ends up breeding hostility, suspicion, and mistrust between local residents and African migrants and helps to perpetuate the media stereotypes that every black African is a potential *sanfei.* The Guangdong Act also expanded the power of local police to stop foreigners for passport and visa verification. This encourages the arbitrary nature of law enforcement and corruption in the police force. Due to their black skin color, African migrants are the easiest to identify among foreigners, and they became the most vulnerable group in the local government's anti-*sanfei* campaign. The Guangdong Act highlights the Pearl River Delta area as a pilot of China's anti-*sanfei* campaign. On June 30, 2012, the Standing Committee of the National People's Congress passed a new *Exit-Entry Administration Law*, which took effect on July 1, 2013. The new law contains tougher provisions for *sanfei* foreigners (Mao and Bai 2012). It also incorporated some of the key principles in the Guangdong Act, such as the reward and penalty scheme and the expansion of authority for visa officers (Lan 2015).

1.5 "Illegality" as Lived Experiences

Like Japan and South Korea, China is reluctant to admit its status as an emerging new destination for immigrants. The Chinese state still treats foreign migrants as temporary, and there is no official effort to integrate them to Chinese society. The relative ease of obtaining a visa for China and the tightening of immigration control in the country has created a dilemma for some African migrants. Unlike developed countries where immigrant workers can be readily absorbed into the second- and third-tier market, in China, no labor-intensive jobs are available for unskilled African migrants due to the big supply of the migrant labor force from rural China. The only option for them is to engage in international trade or trade-related services. Due to the higher risk and longer business cycle of doing international trade, and their relatively small amount of capital, some Africans find it necessary to stay in China to personally handle details at each stage of business transactions. However, China's stringent immigration policy makes it difficult to renew their visa for an extended period of time. Due to several high-profile drug-dealing cases concerning

undocumented Nigerians and their involvement in the two public protest events in Guangzhou, Nigerians have encountered more difficulty than other Africans in extending their visa (Haugen 2012; Li et al. 2012). Nigerian Igbo are often identified by both researchers and other Africans as constituting the largest number of visa overstayers in Guangzhou (Haugen 2012; Yang 2012). Igbo are more likely to become overstayers due to the structural marginalization they face in Nigeria and the tremendous cultural pressure for success in a foreign land.

Undocumented Nigerian Igbo can be roughly divided into two groups: the first constitutes those who became "illegal" immigrants involuntarily, either due to poverty, an inability to pay the expensive visa renewal fee or by failed attempts to renew one's visa. The second group constitutes of newcomers who travel to China with the intention to overstay. These migrants already knew about the challenges of living in China as undocumented migrant from communicating with their fellow countrymen who have done business in China, but they still desire to try their fortune in China to escape poverty and unemployment in their home country. In addition, there is a third group of Nigerian migrants who make a circular migration between China and Nigeria by moving between different immigration statuses—legal, semi-legal, illegal, and legal again. For example, an undocumented migrant may become successful in business and decided to register a legal office in China. A deportee may obtain a new passport from an agent in Nigeria and enter China again with a valid visa. An undocumented Nigerian trader may enroll in a Chinese university to obtain a valid student visa while keeping his business activities. Each of these examples has its own complications, but together they challenge the strict binary between legal and illegal as prescribed by state law.

Compared with the many obstacles to maintaining one's legal status in China, the challenges for living as an undocumented migrant is even more formidable. Increased police surveillance in Guangzhou has severely restricted the physical mobility of undocumented African migrants in the city. After the 2009 protest, local landlords in Sanyuanli refused to rent to undocumented Nigerians under pressure from the police. Many Nigerians had to relocate to Nanhai, a district in the nearby city of Foshan. Others moved to smaller cities such as Dongguan, Shenzhen, and Zhongshan, where fewer Africans are concentrated and police surveillance is less strict. However, since some of the major African markets are located in Guangzhou, many still had to commute to Guangzhou regularly to continue their trade activities. Due to their vulnerable legal status, undocumented Africans have to limit their travel in the city and avoid certain public spaces at certain times of the day to minimize their chance of being intercepted by the police (Haugen 2012). A 40-year-old undocumented Nigerian man told me, "There is no peace and security for blacks in Guangzhou. The police check papers everywhere: in people's homes, on the bus, in the street, in the market, in the restaurants, everywhere. When I am walking on the street, it is purely by the grace of God. If not for God's protection, there won't be any Africans in this city." A lack of physical mobility not only jeopardizes undocumented migrants' business activities, but also poses a threat to their psychological well-being. A 31-year-old Nigerian man attributed his business failure to his undocumented status. He said, "If I had papers, I could travel

to other cities to buy cheaper goods, but now I'm trapped in Guangzhou." Most undocumented Africans I interviewed expressed feelings of vulnerability and insecurity in the face of police harassment. One Nigerian deportee in Lagos told me, "Now I can sleep well at home. In Guangzhou you could only sleep with one eye closed."

To a large extent, undocumented African migrants' fear of the Chinese police can be interpreted as their fear of detention or imprisonment, which is an extreme form of immobility.

When an undocumented migrant is arrested by the police, he is kept in the detention center for a few weeks and then deported. This usually results in the loss of all personal belongings and business opportunities in China because there is little chance for the migrant to return to the market to collect the orders he had placed for customers in Africa or to claim the deposit already paid to Chinese merchants. Some of the lucky ones managed to call their friends before they were taken away by the police. But since their friends could not produce the original receipts, most of the time they were unable to collect the goods for the arrested person. Being arrested by the police usually represents an abrupt interruption and termination of business activities in China. Some deportees faced lawsuits because of their inability to pay back the debts to customers in Africa. Restricted mobility in the city also aggravates issues of credibility and trust between African migrant traders and their Chinese suppliers. Chinese traders who have little knowledge of the structural constraints faced by African migrants in Guangzhou generally interpret the latter's failure to keep promises or appointments as evidence of their lack of business integrity. Others have learned to take advantage of African migrants' vulnerable legal status by threatening to call the police whenever a business dispute arises between Chinese and Africans. In many cases, Africans have to suffer a business loss by fleeing from the scene to avoid encounters with the Chinese police.

1.6 Alternative Motility Options

Despite the circumscribed mobility experienced by undocumented African migrants in Guangzhou, many of them still consider Guangzhou a Promised Land. A 25-year-old Nigerian, who had stayed in China for 3 years, compared the situation of undocumented migrants in Europe and in China. He said, "In Europe, undocumented people can move around freely, but they don't give you opportunities like in China. If you don't have proper documents, you can't own a business and ship goods to Africa daily, like we do here in Guangzhou. Life in China is not free, but I can still do my business if I live very carefully here. The Chinese government allows us to stay and run our businesses here, so it is not that wicked." The man's testimony points to the existence of a liminal space between mobility and immobility in Guangzhou, which provide undocumented African migrants with alternative motility options despite stringent immigration control by the Chinese state. This research identifies two major sources for alternative motility options for

undocumented Africans: (1) support from the diaspora African community in Guangzhou and (2) collaboration with Chinese migrants from less developed areas in China.

Based on research in Italy, Cvajner and Sciortino (2010a) describe three types of irregular migratory careers: atomistic, volume-based, and structured. Migrants in the atomistic career usually become undocumented because of unexpected combinations of factors such as individual contingencies and legislative changes. Those in the volume-based category are part of a sudden increase in irregular migration, and they generally depend on weak ties with acquaintances or fellow countrymen for initial survival in the host society. The structured trajectory has a strong link with previously legal flows and can manage the consequences of increasingly repressive policies. While these three types of careers coexist in the African community in Guangzhou, there are generally more Nigerians in the volume-based and structured trajectories than migrants from other African countries. Since Nigerians constitute the largest group of all Africans, they have the most mature ethnic support network in Guangzhou, which can help reduce the challenges and risks for visa overstayers. Undocumented Nigerians mainly work as middlemen between suppliers in China and clients in Africa. Some combine trade activities with unauthorized employment in, for instance, cargo companies, African restaurants, or night clubs. The research team encountered some undocumented Africans from other countries, yet they generally have had a harder time finding employment or business opportunities than undocumented Nigerians.

De Genova (2002) notes the embedded nature of social networks between undocumented and documented migrants, between migrants and citizens. He observes, "…there are no hermetically sealed communities of undocumented migrants. In everyday life, undocumented migrants are invariably engaged in social relations with 'legal' migrants as well as citizens, and they commonly live in quite intimate proximity to various categories of 'documented' persons" (422). Since Guangzhou hosts the largest African diaspora in China, it has a relatively well-developed community infrastructure, which provides crucial survival networks for undocumented migrants. For example, migrants can sometimes obtain a modest loan from ethnic organizations or churches at the time of business failure. Several of our informants reported finding casual jobs in an ethnic business through friends and church networks shortly after their arrival in Guangzhou. In addition to survival needs, the ethnic community also functions as a training ground for newcomers to access information about the Chinese market, develop rudimentary knowledge of the Chinese language, and seek advice about business success in a foreign land. Since most African migrants enter China with a 1-month tourist or business visa, some take advantage of this 1-month's freedom of movement to do market research, that is, to familiarize themselves with the various wholesale markets in Guangzhou and other Chinese cities. For a small fee, they can get help from more experienced traders, who will accompany them to the markets and offer advice on how to find cheaper goods, how to bargain with Chinese people and how to tell the difference between original and copied goods. At the end of 1 month, when the newcomer's visa is about to expire, he is supposed to have developed enough knowledge of the

Chinese market and some survival Chinese to face all the challenges of living as an undocumented trader in Guangzhou.

Another important source of alternative motility originates from daily life interactions between undocumented African traders and migrants from other parts of China. Despite language barriers and cultural differences, the African and Chinese migrant populations in the Xiaobei and Sanyuanli areas have formed an economically interdependent relationship. Migrants from rural China share similar structural marginalization with African traders because both are severed from the state-support system and both belong to the legally ambiguous category of "the floating population." As noted by Cvajner and Sciortino (2010b), "in economics, an irregular status is nearly always translated into the possibility of charging a higher price for goods and services" (398). Chinese migrants and some local Chinese regard the presence of undocumented Africans in Guangzhou as potential economic opportunities and are generally willing to provide various kinds of trade-related services in exchange for financial gain. In their effort to survive outside the state system, Chinese migrants have learned to collaborate with African traders in playing the hide-and-seek game with the local state. Since undocumented Africans cannot open a bank account in China, they have to depend on underground banks operated by Chinese or documented Africans to handle transnational cash flows. Although the business of foreign currency exchange is illegal, plenty of Chinese migrants provide this service to African traders. In Xiaobei, a historically Muslim neighborhood, the majority of the money-changers are Muslim migrants from Northwestern China. An undocumented African only needs to make a phone call to get the service he needs, thus minimizing his chance of being intercepted by the police on the street.

There are generally three types of relations between Chinese and Africans: personal friendships, business relations, and romantic relations. The three often overlap because one can easily lead to the other. Daily interactions with Chinese migrants can significantly expand undocumented African migrants' motility options due to the latter's enhanced knowledge of Chinese language and culture, and growing personal and business networks in China. One unintended consequence of the Guangdong government's anti-*sanfei* campaign is that it actually pushed undocumented Africans to become more embedded in Chinese society; for example, by learning the Chinese language, marrying Chinese women, and forming business partnerships with Chinese migrants. One undocumented Nigerian explained to me why some of his friends are seeking Chinese spaces for social activities. He said, "We go to Chinese restaurants because we love Chinese food, and also because it's safe there. We try to blend in with local Chinese. The police wouldn't expect us to go to Chinese places." Besides socializing in Chinese spaces, some undocumented migrants also rely on their Chinese friends, spouses, or business partners to rent shop spaces in trade malls, collect market information, travel to other cities to make orders or collect goods, and provide other trade-related services. During a national crackdown on drug trafficking in 2013, most African shops in the Sanyuanli area were forced to close due to frequent police passport checks. While some African traders chose to leave China, others went into hiding in

Foshan where they maintained contact with Chinese suppliers through e-mail and the phone. One important mobility strategy during this difficult time for some African traders was to hire a Chinese employee to take care of business in the shop, while the African shop owner gave instructions behind the scene.

Collaboration with Chinese migrants enables African traders to bypass some of the constraints imposed on their mobility in the city by state immigration control. Interethnic business partnerships provide undocumented migrants with alternative motility options that move beyond the binary between the legal and illegal. In some cases, it can enhance African traders' transnational mobility opportunities in unexpected ways. In Lagos, I encountered several voluntary departure cases, in which the Nigerians had surrendered themselves to the Chinese authorities and requested repatriation. The truth was that they were asked by their Chinese partners to return home and manage the Lagos branch of the business. In these types of business collaborations, the Chinese partner is usually in charge of sourcing goods in China and shipping it to Lagos. The Nigerian partner is responsible for clearing customs and selling the goods to customers all over the African continent. In two cases, it was the Chinese who took the initiative to invite the Nigerian into a transnational business partnership. In another case, the Chinese partner provided the bulk of the starting capital and the two parties split the profits based on the proportion of their investment. Such examples of cross-border and cross-cultural business partnerships illustrate that for African traders in China, "illegality" is a temporary status that can be left behind once alternative transnational mobility opportunities become available. It must be noted that due to the lack of legal intervention in the informal economy and the loosely constructed nature of business and personal networks, interethnic collaborations between Chinese and Africans are not always successful and are often challenged by issues of miscommunication, misplaced trust, and cultural differences.

1.7 Conclusion

Scholars have noted that stringent visa policies and border control in the United States and Europe have not only failed to deter undocumented migration but have also encouraged unauthorized migrants to overstay due to the increased difficulty of reentry (Andreas and Snyder 2000; Cornelius 2001; Reyes et al. 2002). This is also true in the Guangdong situation. To some extent, the migration trajectories of undocumented Nigerians in China reflect the sequential relationship between atomistic, volume-based, and structured migratory careers depicted by Cvajner and Sciortino (2010a). While some earlier traders became undocumented due to abrupt changes in state immigration policy and other personal contingencies, quite a number of newcomers travel to China with the intention of overstaying. This research questions the strict binary between the "legal" and "illegal" by recognizing the shifting range of immigration statuses between the two. Through examining migrants' decisions and choices in navigating the gray area between the "legal" and

the "illegal," it uncovers a liminal space between mobility and immobility in the lived realities of undocumented African experiences in Guangzhou. Instead of blaming individual Africans for the *sanfei* problem, undocumented African migration to China should be interpreted as a structural problem that is mediated by China's growing presence in the African continent, the expansion of Sino-African trade relations, gaps, and contradictions in China's immigration policy and the intersection of internal and international migration in global cities such as Guangzhou.

Until recently, China has been known mainly as an immigrant-sending country. However, with the rapid diversification of its immigrant population, scholars predict that China will soon be facing similar problems as experienced by more established immigrant countries in the West (Pieke 2012). Yet, China's situation is also different from the West in several important aspects. First, despite China's recent rise as a global economic power, the majority of the African informants for this research do not regard it as an ideal place to settle down. Mathews and Yang (2012) note that the primary goal for African traders in China is for economic profits, and most of them have displayed little interest in integrating into Chinese society. Haugen (2012) also notes that some of her Nigerian interviewees regard China as a springboard to more desirable destinations, such as Japan, Australia, and Europe. This research finds that most Nigerians choose to overstay, either voluntarily or involuntarily, because of business opportunities in China. For many Nigerian migrants, "illegal" residence in Guangzhou is one special stage of life for the purpose of capital accumulation. It enables them to maintain transnational advantage over traders in Africa. Most plan to eventually return to Africa to open their own business. Those who marry Chinese women also prefer a transnational lifestyle entwined with their trans-border trade activities. Understanding migrants' motivations for overstaying has important policy implications. It not only helps disabuse stereotypes of undocumented African migrants as "problems" and "threats" to Chinese society but calls for more effective state policies on the administration of and services to foreigners who desire to do honest business in China.

China's situation is unique due to the uneven development in its rural and urban areas. The intersection between internal and international migration in Guangzhou has significantly compromised the implementation of the Guangdong anti-*sanfei* legislation at the community level. It also helps create a tension between immobility and mobility by leaving some space for undocumented African migrants to maneuver and survive in urban China. Viewed in a transnational context, the immobility of undocumented Africans in China is due to the existence of many loopholes in state policy, and cross-border business collaboration between Chinese and African migrants. From the African migrants' perspective, success, or social mobility is not evaluated by their difficult life in China, but by improved living standards at home in Africa; for example, a new house, expensive furniture and a car funded by remittance from China. Pictures of weddings, graduation ceremonies, birthday parties, and charity events in Africa funded by migrants in China are proudly displayed in an African online social website that both people in China and Africa can access. These sites serve as continuous inspirations for those who are

still struggling in China and for others who are still planning their journeys to China.

In terms of Sino-African relations, the Chinese government is confronted with a dilemma between the predominance of the Sino-African friendship discourse at the central state level and the growing anti-black racism at the personal and local level. Since many African migrants conduct their transnational trade activities in the informal economy, their contribution to Sino-African trade relations cannot be fully reflected in official statistics. Due to the grassroots nature of their business activities, African migrants are providing business and job opportunities mainly for marginalized and disadvantaged groups in China, such as migrant workers and individual petty entrepreneurs. Unlike special interest groups in Western countries, these people have little power to influence state immigration policy. From the Chinese state's perspective, Africa has been treated mainly as a strategic political partner, not as an economic partner on equal terms. Chinese state propaganda has been focusing mainly on China's economic aid to Africa, not on Africa's contribution to the Chinese economy. This has unwittingly perpetuated negative stereotypes of Africans as poor and always in need of help. Without positive interventions from the Chinese state, the future of African migrants in China remains obscure. However, the increase in the number and diversity of foreigners in China will continue challenging the inconsistent and improvised nature of state immigration policy.

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References

Alden, C., et al. (Eds.). (2008). *China returns to Africa: A superpower and a continent embrace*. London: HURST publishers Ltd.

Anderson, B., & Ruhs, M. (2010). Researching illegality and labor migration. *Population, Space and Place, 16*(3), 175–179.

Andreas, P., & Snyder, Timothy (Eds.). (2000). *The wall around the West: State borders and immigration Controls in North America and Europe*. Totowa: Rowman and Littlefield.

AsiaNews. (2008). As the games know China shuts the door. April 18. http://www.asianews.it/news-en/As-the-Games-knock-China-shuts-the-door-12050.html

Beech, H. (2012). A Nigerian dies in China—and racial tensions heat up. *Time, 20*.

Bodomo, A. B. (2012). *Africans in China: A sociocultural study and its implications on Africa-China relations*. Amherst: Cambria Press.

Branigan, T. (2012). Africans in China protest after death of expat. *The Guardian, 19*.

Castillo, R. (2014). Feeling at home in the "Chocolate City": An exploration of place-making practices and structures of belonging amongst Africans in Guangzhou. *Inter-Asia Cultural Studies, 15*(2), 235–257.

Chavez, L. R. (2007). The condition of illegality. *International Migration, 45*(3), 192–196.

Cheng, J., & Chao, L. (2009). Fewer foreigners visit Beijing amid tighter rules on visas. *The Wall Street Journal.* May 22. http://online.wsj.com/news/articles/SB121138172668010789

Cheng, Y. (2011). From campus racism to cyber racism: Discourse of race and Chinese nationalism. *The China Quarterly, 207*, 561–579.

Cornelius, W. A. (2001). Death at the border: Efficacy and unintended consequences of U.S. immigration control policy. *Population and Development Review, 27*(4), 661–85.

Cvajner, M., & Sciortino, G. (2010a). A tale of networks and policies: Prolegomena to an analysis of irregular migration careers and their developmental paths. *Population, Space and Place, 16* (3), 213–225.

Cvajner, M., & Sciortino, G. (2010b). Theorizing irregular migration: The control of spatial mobility in differentiated societies. *European Journal of Social Theory, 13*(3), 389–404.

De Genova, N. (2002). Migrant "illegality" and deportability in everyday life. *Annual Review of Anthropology, 31*, 419–447.

De Genova, N. (2004). The legal production of Mexican/migrant "illegality". *Latino Studies, 2*(2), 160–185.

Dobler, G. (2009). Chinese shops and the formation of a Chinese expatriate community in Namibia. *The China Quarterly, 199*, 707–727.

Haugen, H. Ø. (2012). Nigerians in China: A second state of immobility. *International Migration, 50*(2), 65–80.

He, Y. (2009). Yunnan jingnei de waiguo liudong renkou taishi yu bianjing shehui wenti tanxi (Exploration and analysis of the situation of the foreign floating population inside Yunnan's border and problems of frontier society). *Yunnan shifan daxue xuebao, 41*(1), 18–25.

Ju, Y. (2008). zai sui waiguoren jiang naru liudong renyuan guangli fuwu ('Foreigners in Guangzhou will be incorporated into the management and service of the floating population in the city'). *Guangzhou Daily*, *17*.

Kalir, B. (2013). Moving subjects, stagnant paradigms: Can the "mobilities paradigm" transcend methodological nationalism? *Journal of Ethnic and Migration Studies, 39*(2), 311–327.

Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: Mobility as capital. *International Journal of Urban and Regional Research, 28*(4), 745–756.

Ke, X., & Du, A. (2007). Guangzhou heiren 'buluo' quan jilu (A Full Record of "Black Tribes" in Guangzhou). *Guangzhou Daily*, *13*.

Koser, K. (2005). *Irregular migration, state security and human security*. Geneva: Global Commission on International Migration.

Lan, S., & Xiao, A. H. (2014). Trans-border mobility and cross-cultural business networking among Chinese and Nigerian petty entrepreneurs. *Politique Africaine, 134*, 45–67.

Lan, S. (2015). State regulation of undocumented African migrants in China: A multi-scalar analysis. *Journal of Asian and African Studies, 50*(3), 289–304.

Li, S., & Rønning, H. (2013). Half-orchestrated, half freestyle: Soft power and reporting Africa in China. *Ecquid Novi: African Journalism Studies, 34*(3), 102–124.

Li, Z., Ma, J. C., & Xue, Desheng. (2009a). 'An African enclave in China: The making of a new transnational urban space'. *Eurasian Geography and Economics, 50*(6), 699–719.

Li, Z., Xue, D., Feng, D., & Zhu, Y. (2009b). The local response of transnational social space under globalization in urban China: A case study of African enclave in Guangzhou. *Geographical Research, 28*(4), 920–932.

Li, Z., Lyons, M., & Brown, A. (2012). China's 'chocolate city': An ethnic enclave in a changing landscape. *African Diaspora, 5*, 51–72.

Liao, R., & Du, G. (2011). Guangzhou diqu waiguoren fanzui qingkuang fenxi ji duice yanjiu" (An analysis of crimes committed by foreigners in Guangzhou area and responding strategies). *Fazhi luntan, 4*, 260–269.

Lyons, M., Brown, A., & Li, Z. (2008). The 'third tier' of globalization: African traders in Guangzhou. *City, 12*(2), 196–206.

Lyons, M., Brown, A., & Li, Z. (2012). In the dragon's den: African traders in Guangzhou. *Journal of Ethnic and Migration Studies, 38*(5), 869–888.

Mao, L., & Bai, L. (2012). churujing guanlifa sida liangdian jiedu (Four highlights of China's new exit-entry administration law), People's Daily (overseas edition), 2 July.

Marfaing, L., & Thiel, A. (2013). The impact of Chinese business on market entry in Ghana and Senegal. *Africa, 83*(4), 646–669.

Mathews, G., & Yang, Y. (2012). How Africans pursue low-end globalization in Hong Kong and Mainland China. *Journal of Current Chinese Affairs, 41*(2), 95–120.

Ngai, M. (2004). *Impossible Subjects: Illegal Aliens and the Making of Modern America*. Princeton: Princeton university press.

Osnos, E. (2009). The promised land: Letter from China. *The New Yorker*, *9*, 50–55.

Pieke, F. N. (2012). Immigrant China. *Modern China, 38*(1), 40–77.

Qiu, Z. (2011). dui zai yue waiguoren guanli fuwu gongzuo de tantao (Exploration and discussion on the administration and services to foreigners in Guangdong Province). *Zhengfa xue kan, 28* (4), 112–115.

Reyes, B., et al. (2002). *Holding the line? The effect of the recent border build-up on unauthorized immigration*. San Francisco: Public Policy Institute of California.

Ruhs, M., & Anderson, B. (2010). Semi-compliance and illegality in migrant labor markets: An analysis of migrants, employers and the state in the UK. *Population, Space and Place, 16*(3), 195–211.

Tang, G., & Gong, X. (2009). Guangzhou waiji renyuan juji shijian liangming dangshiren shexian feifa juliu (The incident of foreigners gathering in Guangzhou: two people suspected of illegal residence). *China News, 16*. http://www.chinanews.com/gn/news/2009/07-16/1778838.shtml. Accessed June 4, 2013.

Wu, X. (2013). zhongyue bianjing yunnanduan "sanfei" renyuan wenti de yuanyin ji duice (On the causes and coping strategies for the sanfei population in the China/Vietnam border in Yunnan). *Journal of Yunnan Police Officer Academy, 1*(1), 58–60.

Yang, Y. (2012). "African traders in Guangzhou: Routes, reasons, profits, dreams". In Mathews, G. et al. (Eds.), *Globalization from below: The world's other economy* (pp. 154–170). London: Routledge.

Zhang, L. (2001). *Strangers in the city: Reconfigurations of space, power, and social networks within China's floating population*. Stanford: Stanford University Press.

Zhuang, H. (2007). sanfei waiguoren jiujing you duoshao? (How many triple illegal foreigners actually are there?). *Renmin gong'an (People's Public Security), 5*, 24.

Chapter 2
Disciplined Mobility and Migrant Subalternity: Sketching the Politics of Motorcycle Taxis in Guangzhou

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Abstract This chapter examines the regulation of motorcycle taxis in Guangzhou and its implications for the construction of migrant identity. The motorcycle taxi refers to a motorcycle used to provide commercialised, highly flexible and door-to-door transport service. In Guangzhou, this informal taxi service plays a notable role in sustaining the livelihood of a subgroup of urban migrants. However, alongside the ambition of local officials and elites to rationalise and sanitise urban space, motorcycle mobility fell victim to discourses and representations which constructed its unruliness, incivility and disorderliness. Eventually, the use of motorcycles was outlawed from the central city of Guangzhou in 2007 by the municipal government. As a result, the motorcycle taxi, as the only form of motorcycle mobility which persists on Guangzhou's streets to this day, has become a primary object of state disciplinary power. This chapter first frames the regulation of motorcycles within debates on the politics of mobility and speed. It then outlines the context of the regulation of motorcycle mobility in Guangzhou, with a specific focus on the ways in which discourses and knowledge rendered the problematic of motorcycle mobility narratable and intelligible. It then moves to document and reflect upon state regulatory practices directed towards motorcycle taxis, which are operated at the street-level. Engaging with the notion of *motility*, this chapter argues that the curtailing of *physical mobility* at the street-level constrains migrants' access to socioeconomic resources and hence sabotages their prospect of *social mobility*. Finally, this chapter investigates the street-level, largely improvised tactics deployed by motorcycle taxi drivers to eschew state regulation. It analyses street encounter with state policing power as formative of the migrants' identity and subjectivity. However, instead of celebrating such tactics as romantic resistance to

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hegemonic power, it contends that street-level negotiation with state power contributions to the consolidation, rather than alleviation, of a subaltern identity experienced among migrant motorcycle drivers.

Keywords Mobility · Politics of speed · Discourse · Regulation · Subalternity

2.1 Introduction

2.1.1 Towards a Politics of Mobility

Reflecting upon the recent 'mobility turn' that attempts to recast the epistemological foundation of the research of movement, transport geographers Shaw and Hesse (2010) appeal for attention to the links between transport activities and 'their socio/cultural/political meanings and representations, and corporeal and (en)gendered experiences' (307). Elsewhere, Shaw and Sidaway (2010) also spotlight the ways in which specific modes of transport are imbricated in the transformations of social, cultural and political relations. Both works, in light of this chapter, attest to an imperative for scholars of urban transport to move from the conception of transport as the rational, effort-minimising means for moving between Points A and B (Cresswell and Merriman 2011), to a socially and culturally meaningful activity sui generis, which is heavily invested with desires, intentions and symbols, and thus constitutive of social relations and power.

This point of view is precisely what is proposed in the rapidly expanding literature following what Sheller and Urry (2006a) have termed the 'new mobilities paradigm'. Movements organise and structure dynamics of hierarchisation, stratification and differentiation in the domain of the social (ibid). As Adey (2010) contends, mobilities are always positioned in relation to something else or somebody, and involve multiple ways in which we form, and make sense of, relations with others. Thus, there is an intrinsically social and political dimension in diverse actors' inhabitation and appropriation of mobilities, which throws into sharp relief the constraints, power dynamics and social norms that determine whether or not particular mobility practices can be allowed in specific social, political and institutional conditions.

Cresswell (2010) has proposed three problematics that constitute a politics of mobilities. First, mobility is a resource to which the access is unevenly distributed, and not all movements can be realised to the same extent. Second, there is a need to take into account how particular mobilities are represented by dominant discourses, and how associations are built up between given mobility practices and ideological connotations. Finally, the politics of mobility revolves around *embodied* experiences of mobilities, inter alia the joy, comfort and pleasure, or the pain, fear and coercion that are encountered and experienced during physical movements.

With regard to urban politics and the governance of cities, many commentators concur that, 'those who ultimately control channels of movement in the city constitute a powerful urban elite' (Hubbard 2006: 137). Much of this argument is enlightened by the French cultural theorist Paul Virilio and his idea of *dromocracy*, a terrain of politics which places at its centre the promotion, management or/and regulation of speed and movements (Clarke and Doel 2011). As Virilio (1986) brings forth, in dromocracy social order converges with the control of traffics, namely, the flows of goods and people. To expedite certain circulations while impeding others both manifests and constitutes political authority and power. Interestingly, even though the modern city consecrates accelerated paces of daily life, it does not 'speed everything up', but rather 'accelerate some flows at the expense of others' (Hubbard and Lilley 2004: 277). As Virilio (1986) and Scott (1998) have both touched upon, the elite classes have a tendency to create a rational nomenclature that endows carefully *planned* circulations with privileged access to speed, only by disrupting and slowing down *unplanned* movements. To sum up, technologies, social norms and institutional arrangements that enhance mobilities of certain social groups may concomitantly reinforce the *demobilisation* of others (Adey 2010). This is precisely the central point in Cresswell's (2010: 21) contention that 'one person's speed is another person's slowness', and 'some move in such a way that others get fixed in place' (also Cresswell 2006; Hannam et al. 2006).

Of particular relevance to the management and governance of mobilities is the argument that all practices of mobility reside within intricate webs of representations, discourses and knowledge (Cresswell 2001; Frello 2008). Because these representations and discourses claim to reflect the 'nature' of mobile practices, mobility is inevitably interwoven with ideologies, and evaluated in tandem with predominant identity categories and social norms: mobility 'means different things, to different people, in differing social circumstances' (Adey 2006: 83). Thus, how we think about and act towards particular forms of mobility is, in various circumstances, utterly contingent upon discourses that take pains to ascribe meanings and values. Concurrently, the act of naming and representing mobility itself is constitutive of power, as the agency of making things 'sayable' and visible feeds into projects of control (Deleuze 1988). In the planning and governing of cities, knowledge serves particularly salient and abiding roles in legitimising or curtailing certain groups' rights to mobility (Jensen 2011). Therefore, the meanings ascribed to mobilities become sites of ongoing social struggles (Cresswell 2006, 2010).

Extant literatures in urban studies have offered ample evidence of how individuals or groups differentially positioned in social hierarchies have highly stratified access to the right of mobility. Via the operation of constructed knowledge and discourses, technocrats and elites tend to situate certain forms of mobilities in tensioned relationships with dominant visions of order and civility. From constraints imposed upon the mobility of shopping containers (Cidell 2012), to the

attempts to civilise young drivers boasting subcultural mobility practices, the urban setting acts as a vivid testament to Binnie et al.'s (2007: 169–170) incisive argument that for 'those who are differently habituated to particular ways of travelling and follow contrasting cultural conventions', the scope is enlarged for 'contestation over how to move, by what means and according to what norms'. Perhaps, what Cresswell (2001), (2010) characterises as the dialectics between speed and slowness is most lucidly mirrored by the embarrassed status of cycling vis-à-vis the dominant automobility. As various commentators have noted, mainstream urban policies show a tendency to reinforce the use of automobiles at the expense of other forms of mobilities, especially cycling (and walking) (Meneses-Reyes 2013). Not only is cycling relegated to marginalised access to urban spaces, but also stigmatised as a disorderly, law-trespassing and dangerous conduct that disrupts the normal operation of urban traffic (Fincham 2006; Blickstein 2010).

Last but not least, it is essential to note that politics of mobility has profound implications for issues of well-being and quality of life. Following the framework proposed by Phillips (2006), this chapter suggests that the idea of quality of life, which is also a central tenet of this book, needs to encompass both an *objective* and a *subjective* dimension. On the one hand, quality of life refers to the improvement of the material aspects of life, including, to name a few, incomes, longevity, material welfare and, more importantly, equal access to social resources. On the other hand, the quality of life perspective also underscores subjective well-being, namely the prospects of having pleasurable experiences and therefore a sense of happiness.

Notably, this twofold conceptualisation corresponds well with the recent debates on the ways in which mobilities constitute relations, emotions and identities. To begin with, mobility needs to be viewed as a crucial site whereby social inequalities are produced. Physical mobility and social mobility are inextricably intertwined, as potentials to move physically open up new possibilities for individuals to access social resources. Therefore, to restrict particular mobilities generates new forms of inequalities and disempowerment (Cresswell 2010). The notion of *motility* is illustrative of the entanglement between mobility and a broader distributive system of social resources. This concept foregrounds the ways in which spatial mobility and social mobility can be translated into each other (Kaufmann et al. 2004)—spatial mobility may advance upward social mobility; social mobility, in turn, enhances competences to move physically. Musing on this concept, Kaufmann et al. (2004), Flamm and Kaufmann (2006) and Kaufmann and Montulet (2008) have already made substantial efforts to reconceptualise mobility as a means whereby individuals or groups develop personal or collective projects to enhance well-being.

On the other hand, embodied experiences of mobilities, as Cresswell (2010) has emphasised, involve a subjective and *emotional* dimension, which is neatly intertwined with the construction of identities and subjectivities. As Adey (2008) argues, the situational context of mobility, enmeshed in rationalities and technologies of

control and management, summons up emotional repercussions (also Bruno 2002). Subject well-being, needless to say, is closely connected to how pleasant one's situated mental state is (Phillips 2006). This is probably the most straightforward way in which the embodied experiences of mobility register significant implications for the subjective well-being. More profoundly, drawing from Sheller's (2004) discussion of emotions of automobile movement, Jensen (2011) makes gesture to the view that mobility takes part in the self-formation of its initiators, via embodied and emotion-laden experiences. The comfort and happiness, or depression and nervousness that characterise the embodied inhabitation of mobilities project back onto more transcendent issues, such as self-identities and values of being, writing and rewriting our views of both the self and our locations in an unsettled social world.

2.1.2 Introducing This Study

Building upon the abovementioned theoretical framework, this chapter aims to bridge the research of urban transport activities with social and political sensitivities inherent in debates on mobility. To substantiate this claim, I present a study of the regulation of motorcycle taxis in Guangzhou. As a means of transport that emerged with Guangzhou's economic take-off in the 1980s, both motorcycles in general and motorcycle taxis in particular acted notable roles in the provision of faster, more flexible mobility that catered to accelerated paces of economy and daily life. Yet, with car-based mobility becoming the new zeitgeist in the elite's imagination of urban modernity, the municipal government of Guangzhou, in 2004, made a move to outlaw motorcycle mobility all together, although this policy was implemented to the full extent not until 2007.

The regulation of motorcycle taxis was a direct consequence of the outlawing of motorcycle mobility in general. In this chapter, I narrate a story of the stigmatisation, exclusion and regulation of motorcycle taxis and analyse motorcycle mobility as a site of contestation that is scripted by discourses, state regulatory power and embodied experiences. The empirical research serves two purposes. On the one hand, I argue that, in Guangzhou, the governance of movement is centrally implicated in the ordering impulses of the dominant power, by drawing from a rich repository of representations and meanings. Also, my argument is in congruence with the claim that restriction imposed upon the right to mobility constitutes new parameters of disempowerment and inequality (Adey 2010).

On the other hand, informed by the view of mobility as a constitutive dimension of subjective well-being, I also view mobility as integral to processes of subject formation. I adopt Rose's (1995) conceptualisation of subjectivity as the complex and contradictory *projection* of our lifeworlds. In particular, this chapter analyses

how a sense of *subalternity*[1] is articulated by the motorcycle taxi drivers, as a result of their encounter and negotiation with dominant discourses and street-level police actions. For motorcycle taxi drivers, to label themselves as a subaltern group expresses not only emotional feelings of fear and anger in response to revanchist police actions, but frustration with entrenched social marginality. If a sense of being subaltern, as Spivak (1998) has noted, stems from the absence of one's voice in the structure of social power and blueprint of collective future, this subjectivity is strikingly visible in the motorcycle taxi drivers' understandings of their marginalised and stigmatised position in society and their lament over collective inability to make legitimate their views, concerns and interests.

2.2 Methods

Data in support of this research are garnered from two sources. First, this chapter reviews all the articles and editorials related to motorcycle mobility and motorcycle taxis in three major local newspapers, namely *Yangcheng Evening New*s, *Nanfang Daily* and *Guangzhou Daily*, from 2002 to 2006, right before the outlawing of motorcycles was fully implemented in 2007. I chose these three newspapers because they were locally influential and, very often, acted as spokesmen of the local state. *Guangzhou Daily* is sponsored directly by the Guangzhou Municipal Committee of the Chinese Communist Party (CCP). It has continuously enjoyed the largest circulation among all newspapers distributed in the city, and its readership covers people from all walks of life. The circulation of *Yangcheng Evening News* ranks the second. *Nanfang Daily* is also characterised by wide circulation, and its readership consists mainly of government officials, business people and urban professionals. It is under direct sponsorship of CCP's Provincial Committee of Guangdong Province.[2]

Meanwhile, I collected publicised government documents, and applied via official channels for relevant information on government rationalities in the regulation of motorcycles and motorcycle taxis, which resulted in three Responses to

[1]While I acknowledge that the term 'subaltern' has rich colonial and postcolonial connotations, I use it in the same way as Gramsci (1971) initially developed this idea, which was to generically refer to social groups that are oppressed and/or at the margin of social structures. I use this term to describe not only actually existing disempowerment, but also migrants' *self-definition* of their status. I find this term useful because, in both Gramsci's original conception and its later application in postcolonial studies, its conceptualisation centres on particular groups' inability to exercise agency and the deprivation of one's voice within the hegemonic structure of social power. In other words, this term underscores a state of *domination*, instead of merely economic or material inequality. Anthropologist Pun (2005), for example, uses the conception of subalternity to characterise the situation of domination inflicted on female migrant workers (*dagongmei*) in China, offering a vivid example of the application of the term beyond postcolonial contexts.

[2]Data on the circulation and readership of Chinese newspapers can be found in the website: www.chinesebk.com/.

Requests of Government Information from Police Department of Guangzhou (hereafter *Responses* 1, 2 and 3).

In addition, from September 2011 to February 2012, I conducted 27 in-depth interviews with key actors involved in the regulation of motorcycles. All the interviews were recorded with the informants' consent, and transcribed. The cohort of interviewees included 16 motorcycle taxi drivers, 2 government officials and 9 police officers in Guangzhou Police Department of Traffic, the police organ that specialised in the management of urban traffic.

2.3 Setting the Scene: The Regulation of Motorcycle Taxis in Guangzhou

The motorcycle taxis refers to the short distance, flexible and door-to-door transport service that employs motorcycles as vehicles, carrying both people and cargos. Not constrained by regularised timetables and routes that public transport needs to comply with, the motorcycle taxi has been a preferred means of transport for those demanding flexible, door-to-door mobility but feel reluctant vis-à-vis the costs of car-based taxi service. Meanwhile, nowadays operated almost exclusively by rural migrants, motorcycle taxis make an essential contribution to the livelihoods of a social group marginalised in mainstream urban political economy (Fig. 2.1).

Fig. 2.1 Concentration of electrically propelled motorcycle taxis at a roadside

The flourishing of motorcycle taxis in Guangzhou was situated in a broader context of the city's post-reform economic development and the *speeding-up* of urban mobilities that ensued. In the pre-reform period, non-motorised travel, such as walking and cycling, constituted the bulk of everyday commuting and mobility in Guangzhou. From the mid-1980s to early 1990s, however, the use of motorcycles remarkably compromised the centrality of walking and cycling. In 1990, approximately 200,000 motorcycles ran in Guangzhou's streets and the number rose exponentially to 800,000 in 1998 (*Response* 2). Motorcycles were used by households for daily mobility, as well as by motorcycle taxi operators as a means for earning a living. During more than a decade, the motorcycle was emblematic of accelerated paces of life that characterised Guangzhou's emerging urban modernity, and celebrated not only as a conspicuous status symbol, but also an emotionally laden signifier that bore collective memories of the city's inhabitants.

However, as Guangzhou's urban economy continued to boom during the past two decades, the status of motorcycles as a hallmark of progress and development has almost entirely given place to car-based mobility. Dramatically enough, the motorcycle is now viewed by many urban inhabitants as an eyesore, and alleged by urban technocrats and elite to be at odds with efficient and ordered urban traffic. The primary reason for this radical change in popular attitude is not hard to identify. Along with the rapid spread of car ownership, people who use motorcycles nowadays tend to concentrate in relatively lower strata of society, such as laid-off workers and rural migrants. As the association between motorcycles and economic success has sundered, social prestige is now exclusively attached to automobility. Meanwhile, in the early 2000s, the use of motorcycles to conduct street robberies began to haunt local policy makers. It eventually culminated into a generally adverse, even hostile, attitude towards motorcycles among the general public. In sum, Guangzhou urbanites' evolving attitudes towards motorcycles encourages us to conceive of 'ordered and efficient mobility' as a social construct that resides within complex systems of representations and meanings, rather than an absolute reality that complies merely with objective criteria.

As early as 1991, the municipal government started to restrict the number of licenses issued every month to motorcycles. In 1998, the local Urban Transport Administration stopped licensing new motorcycles. In 2001, the local government of Guangzhou implemented a municipal by-law prohibiting all motorcycles from entering two major blocks and two traffic arteries in the urban centre. In 2004, the municipal government finally issued an ordinance that announced the decision to cleanse the city's streets of motorcycles. To alleviate the impacts of this policy upon those who had been habituated to motorcycle travelling, the same ordinance stated that the outlawing would be implemented by following two steps: since 2004 motorcycles had been prohibited to use 24 major urban traffic arteries (Motorcycle traffic, however, was allowed between 5:00 and 9:00 am, and between 16:30 to 20:30 pm, to offer some convenience to motorcycle commuters). In 2006, the

Fig. 2.2 The three phases in which motorcycle ban took effect in Guangzhou

outlawing was expanded to include three move traffic arteries; eventually, in 2007, the use of motorcycles in the urban centre was utterly outlawed on a 24-h basis[3] (Fig. 2.2).

The regulation of motorcycles in Guangzhou offers a telling case of the *dromocratic* dimension of urban governance: the question of which *mobile technologies* (Sheller and Urry 2006b) or social groups are endowed with the right to move freely becomes part and parcel of the government of spatiality (Huxley 2008), which is innately sensitive to discourses and knowledge. Blueprints of mobilities, in this sense, necessarily stand out in all visions of urban orders.

The exclusion of motorcycles has gone hand-in-hand with a private car-cum-public transport urban future that the city administrators in Guangzhou envisage. On the one hand, the increasingly pervasive influence of the car as a privileged means of mobility offers important justification for the demobilisation of motorcycles. As Seiler (2012) already points out, in contemporary urban China,

[3]After 2004, many motorcycle riders—in particular motorcycle taxi drivers—began to use what were called electric motorcycles, a design of motor-vehicles upgraded from human-powered bicycles but propelled by electronic motors rather than fossil fuel. However, in 2006 the municipal government of Guangzhou also outlawed the use of electrically driven motorcycles in the entire metropolitan area of Guangzhou, based on the same reasons as outlawing conventional motorcycles. In this chapter, the term of motorcycle taxi refers to taxi service provided by both types of vehicles.

people celebrate the car not only as an indispensable marker of middle class membership, but also an emblem of the country's embrace of Western modernity and global economy. Zhang (2009) also underlines that the car refashions the notion of citizenship in the post-reform China, cultivating individuals as self-reliant, self-motivated and, foremost, self-interested. In Guangzhou, regulation of motorcycles bears a detectable subtext that cars embody a more ordered, efficient and secure mobility, attuned with standards of modern, global urbanism. In fact, shortly before the first phase of motorcycle outlawing, which was implemented in 2004, the local government of Guangzhou clarified explicitly that this policy did not target ownership of all private vehicles, but aimed to 'making more space' for private cars (*Yangcheng Evening News*, 6 October 2003).

On the other hand, Guangzhou municipal government's ambitions to construct a modernised public transport system also worked to devalue motorcycle mobility. For example, many accounts in Guangzhou's local media lent support to the outlawing of motorcycles by drawing from the Ninth 5-Year Plan of Economic and Social Development of Guangzhou, which, as early as in 1996, advocated the large-scale construction of public transport facilities and elimination of 'less efficient' means of private transport, with specific reference made to the motorcycle. The efficacy of public transport in relieving the pressure posed by private transport is widely concurred among policy makers of Chinese cities (Pucher et al. 2007; Wang 2010). Yet, as Richardson and Jensen (2008) indicate, public transport plays a no less remarkable role in cultivating social subjects that conform to state-sanctioned notions of order and civility. From 2002 to 2006, Guangzhou's media were stuffed with optimistic accounts, applauding how those who were habituated to disorderly mobilities based on motorcycles would eventually be channelled into ordered and civilised traffic flows premised on state-of-the-art public transport facilities. Public discourses demeaned cycling and motorcycling as 'inefficient means of private transport' to be replaced by rapidly optimising public transport systems (*Response* 1), while accounts from grassroots urban inhabitants tended to spotlight demands for 'last mile' commuting (e.g. *Guangzhou Daily*, 16 January 2004; *Nangfang Daily*, 1 December 2006), which rationally planned public transport systems could not effectively meet in a foreseeable future.

It is against a broad backdrop of the outlawing of motorcycles in general that the motorcycle taxi becomes a primary object of state regulatory power. Due to illegalisation of the motorcycle, its use by ordinary households for individual mobilities has almost completely disappeared. But motorcycle taxis have persisted even in face of draconian police regulation. The persistence of motorcycle taxis is attributable to, on the one hand, a market niche that demands cheap, flexible transport and, on the other hand, rural migrants who exploit motorcycle taxi service as the route to a less disciplined job and better incomes. It is also thanks to the relative flexibility of motorcycles, which allows the drivers to dodge police actions in swift ways. The motorcycle taxi service is particularly favoured by the working class and early career white-collars. It serves to bridge major nodes in public transport networks with less connected neighbourhoods and workplaces, and is thus largely concentrated in more recently urbanised districts with less sophisticated

transport infrastructure and numerous informal settlements, inter alia the districts of Haizhu, Baiyun and Huangpu.

As a tactic of survival that capitalises on motorcycle mobility for incomes, motorcycle taxis elucidate vividly the intersection of mobility and more substantive, material interests and concerns. Motorcycle taxis have not only inherited stigmatising representations of motorcycles as a whole, but are always morally judged by value-laden convictions regarding what are socially appropriate ways of earning a living within a dominant and totalising structure of order and power, as the next sections will show.

2.4 Representing and Regulating Motorcycle Mobility

2.4.1 The Motorcycle as Discursive Construction

In *Lost Geographies of Power*, John Allen (2003) conceives of power as a relational effect which emerges from entangled networks of social interactions. Power is instantiated in, and produced by, social actions, and it mobilises situated resources to advance specific purposes. In Guangzhou, the regulation of motorcycles is in essence a process in which empowerment and disempowerment are instantiated—the urban technocrats and elites mobilise ideology-laden representations as critical resources to exclude motorcycles and promote other forms of mobilities. Invoking a Foucauldian conception of power, Allen (2003) also contends that the constitution of spatiality is intrinsic to the exercise of power. If, in the Foucauldian sense, power does nothing more than prescribing appropriate conducts by working through 'the techniques and practices which compose the texture of daily life' (ibid: 66), it wields significant impacts over the spatial-temporary arrangements of activities; or, in Allen's (2003: 70) view, power is imbricated in 'the imposition of certain forms of conduct through the spacing and timing of activities'. Space is always coded by shared norms that specify whose visibility should be acknowledged and socially approved more than the others; and, '[e]xcluded from the 'membership' of such a space, then, are those whose rhythms and movements do not accord with the dominant representation and use of such spaces' (ibid: 164).

With regard to the outlawing of motorcycles, the coding of space enables acts of ordering *not* by way of authoritarian rule, but a sophisticated system of discourse and knowledge that legitimise and naturalise the exclusion of motorcycle mobility. In fact, the policy-making process regarding motorcycles draw much legitimacy from ostensible flavours of democracy and public participation, with local media sparing no effort to spotlight the local state's keen adoption of public opinion consultation, in the forms of opinion polls and public hearings. However, these polls and hearings tended to reproduce dominant visions of order and civility, instead of giving genuine voices to different social strata. For example, in a survey-based research published in 2004 by Guangzhou Public-Opinion Research

Centre (GPORC), a state-run survey institute, all research findings were carefully organised under the overarching conclusion that most Guangzhou citizens were supportive of the outlawing policy. Curiously, only 34 % of the survey respondents were actual motorcycle users. Resultantly, while it was reported that over 60 % motorcycle users surveyed were against the outlawing of motorcycles, this dissident group accounted for less than 20 % of all respondents, and was submerged under an overwhelming project of consensus-building. With specific reference to motorcycle taxis, the same research estimated that only 10 % of all motorcycles in Guangzhou were used for earning a living, ignoring largely migrants who were not counted as potential respondents as well as their motorcycles which were commonly unlicensed. Given that motorcycle users constituted the single most impacted group vis-à-vis the outlawing policy, the rendering-invisible of their interests, concerns and claims is the de facto reification of privileges of those who had nothing to lose, but would potentially gain from the demobilisation of motorcycles, making the survey ethically problematic. The bias towards the non-users' opinions and the under-representation of motorcycle users' voices also characterised public hearings that were devised to collect public opinions on the outlawing of conventional and electric motorcycles (*Nanfang Daily*, 15 January 2005; *Response* 1).

No less biased and distorted were the central conclusions foregrounded in a survey of public opinions on outlawing electric motorcycles, conducted in 2006 by Guangzhou Urban Social and Economic Research Team, another state-led research organ. This study, apart from the customary under-representation of motorcycle users and rural migrants, stated that only 1 % urban inhabitants in Guangzhou listed the electric motorcycle as a means of daily transport, and that the majority of respondents concurred that to outlaw electric motorcycles would improve urban traffic conditions. Obvious absurdity in this line of argumentations is detectable: on the one hand, if such a small proportion of urban residents depended upon electric motorcycles, why did the latter's presence warrant direct state intervention in the first place? On the other hand, the single premise that cleansing urban streets of motorcycles would improve traffic condition does *not* justify policies enforcing exclusion, as access to mobility is not a utilitarian resource to be distributed rationally, but a crucial arena whereby the right to the city (Lefebvre 1996) is enacted.

Nonetheless, all these inconsistencies and lack of rigour, which haunted state-initiated public opinion consultation, were relegated to invisibility by morally and politically correct vocabularies of order, civility and collective goods that grassroots urban citizens could hardly resist. Indeed, the cleansing of motorcycles was viewed by the state as a *pre-destined* end of societal development, for which public polls and hearings were only to provide further affirmation (e.g. *Nanfang Daily*, 9 January 2004; 16 January 2004).

Compared to the two opinion polls, the newspaper representations constituted a slightly less monolithic field of discourses. None-stigmatising accounts of motorcycles did exist; yet, most news articles within the category were neutral by nature (regarding the development of motorcycle manufacturing industry, for instance), while representations that added to a positive public image of motorcycles are

strikingly scarce. Particularly noteworthy, though, is the news coverage of a public hearing held on 15 January 2004 (e.g. *Nanfang Daily*, 16 January 2004), whereby the local media openly conveyed forceful claims voiced by local residents, which contravened the totalising representations of motorcycles as danger, sources of disorderliness and an out-dated means of mobility. These claims emphasised the role that motorcycles played in sustaining the livelihoods of a significant proportion of urban inhabitants, and criticised a tendency to uncritically associate motorcycles with accidents, pollution and violation of rules. Above all, however, these resistive claims tended to be submerged by an overarching consensus that worked to justify the regulation of motorcycle mobility.

In sum, representations of motorcycle mobility in Guangzhou's media and public discourses pivoted around four major themes. First, the media discourses built up a naturalised connection between motorcycle mobility and accidents, injuries and even deaths. Media representations portrayed motorcycle mobility as a major threat to security and constructed the taken-for-granted 'truth' that motorcycles were necessarily associated with higher probabilities of traffic accidents. As *Response* 1 from Guangzhou Traffic Police puts it:

> In 2002, 6,760 traffic accidents involving motorcycles took place in Guangzhou, accounting for 50.4% of total traffic accidents. These accidents resulted in 905 deaths and 8,987 injuries, making up, respectively, 47.3% and 61.8% of all traffic-induced deaths and injuries. In 2003, 6288 motorcycle-related accidents took place in Guangzhou, resulting in 755 death and 8405 injuries. These three figures accounted for, respectively, 54.37%, 43.95% and 62.30% of the corresponding totals.

One article in *Yangcheng Evening* News even labelled the motorcycle as the "biggest killer on streets":

> The motorcycle has already become Guangzhou's "No.1 killer on streets". During the first half of 2003, there were totally 3044 motorcycle accidents in Guangzhou, with 363 deaths. Those who were killed in motorcycle accidents accounted for 43.61% of all deaths in traffic accidents. (*Yangcheng Evening News*, 15 January 2004)

At the same time, however, we may also be surprised at how vaguely the notion of 'motorcycle accident' was defined in those number-based narratives. In fact, all three newspapers tended to define motorcycle accidents so broadly as to refer to all traffic accidents involving the presence of a motorcycle. What was neglected was nuanced examination of the distribution of responsibility in any given case of accident. In reality, both media accounts and police officers that I interviewed acknowledged frankly that motorcycles were not responsible for all those accidents. Meanwhile, this rhetoric sidestepped any consideration of how biases towards the culture of automobility in urban planning restricted the possibility for motorcycle users to manoeuver mobility in safer ways. During the interviews, many motorcycle taxi drivers complained about the failure of the local state to implement efficient management for reconciling motorcycles with other forms of transport.

Nonetheless, instead of scrutinising closely at the immediate contexts of specific accidents, newspaper representations turned out to highlight the *physical vulnerability* of motorcycle riders, in *all* accidents involving motorcycles. This trope of

vulnerability involved two facets. On the one hand, media representations portrayed motorcycle riders as more susceptible to injury or death in face of clashes with vehicles built with more robust physical structures, such as cars and trucks, as well as steel-and-concrete road infrastructures. On the other hand, the representations scrutinised closely the alleged 'under-controllability' of motorcycles due to their smaller weight, mechanical uncertainty and lack of technological sophistication. Anecdote-style stories flourished, depicting how motorcycles suddenly lost balance or control of direction, eventually resulting in clashes and casualties (e.g. *Nanfang Daily*, 13 October 2003). A reversed image of motorcycle users' constant exposure to danger, unsurprisingly, was proclaimed to be embodied by the private car, which the interviewed police officers avidly celebrated, in congruence with the normative assumptions undergirding the dominant automobility (Sheller and Urry 2000), as more adaptable to modern traffic and infrastructural conditions, and as a heavily equipped and protected shelter for bodily security.

Second, local media also portrayed motorcycle mobility as incompatible with values of order, controllability and efficiency. In these narratives, motorcycles mobility not only created threat to bodily security, but also fundamentally jeopardised desirable order and efficiency of urban roads: it resulted in disorderly and chaotic use of urban space, and impaired the ability of other social members to enjoy uninterrupted flows. A plethora of media discourses, for example, blamed motorcycles for Guangzhou's notoriety for chaotic traffic conditions:

> [Mr Zhang:] It was only after I began to drive the car that I found how annoying motorcycles were. Someone may argue that motorcycles are fast and convenient. But this is at the expense of the convenience of others, and made possible by violating traffic rules. Now some lanes have been designated specifically for motorcycles, but how many motorcycle riders would conform to this arrangement? (*Guangzhou Daily*, 17 January 2004)

For this reason, the three newspapers frequently portrayed the motorcycle as an 'out-of-date' means of transport, which should naturally die out in the linear process of social progress. They claimed that the role which motorcycles played in facilitating everyday mobilities could be more efficiently fulfilled by more 'respectable' ways of urban mobility, such as public buses, the newly constructed metro system and private cars. Soon after motorcycles were partly outlawed in 2004, several newspaper representations featured how major traffic arteries had been 'cleaned up' and restored with rational and uninterrupted flows. The municipal government of Guangzhou claimed, in various occasions, that after the outlawing of motorcycles, the average speed for cars in major urban arteries had increased at least by 5–10 km per hour (*Guangzhou Daily*, 28 October 2006).

Pertaining to both rhetorics of security and efficiency were representations of the unruliness of motorcycle users. These representations highlighted how motorcycle riders lacked compliance with traffic codes, and how unruly mobilities of motorcycles increased possibilities of congestion and accidents. They portrayed motorcycle drivers as those who sabotaged the normative ordering of urban traffic by driving faster than they should, driving the opposition direction in a given traffic lane, competing with cars for lanes or carrying too many passengers. Particular

stress was given to the 'extreme flexibility' of motorcycles, which resulted from the relatively small sizes of motorcycles and, more relevantly, motorcycle users' unruliness, with media accounts condemning motorcycles for constantly changing lanes and bypassing freely via small interstices between cars.

Notably, these accounts served to stigmatise motorcycle drivers as an essentially chaotic and unruly group. During the interviews, the police officers often invoked the Chinese word *suzhi* (literally meaning 'quality'). To them, it was motorcycle drivers' lack of personal qualities that had contributed to their intrinsic inability to move with order and safety. In contrast, owners of private cars, thanks to their higher status and *suzhi*, were thought to be more attentive to protocols of order and civility, and thus deserve secured and protected access to uninterrupted mobilities.

To summarise: the representations propagated by local media saw the motorcycle as a hybrid of out-dated technology and unruly social bodies, reflective of the naturalised association between motorcycles and underprivileged social status. Technological malfunction and human unruliness, in this sense, were regarded by the urban elite as entangled, even mutually reinforcing. The joint product, as the representations claimed, was the high probability of accidents and traffic disorder. In other words, social and political sensitivities to *physical* mobility are contingent upon the public perceptions of those who are more likely to utilise it, and, in turn, have impact over the prospect of their *social* mobility.

Third, the local society's hostile attitudes towards motorcycles were also associated with the perceived connection between motorcycle mobility and street criminality. Since the late 1990s, the motorcycle had been heavily used by street criminals in Guangzhou as a means to conduct robbery. In usual cases, the criminals would ride a motorcycle with high speed, approach a pedestrian from behind, and then unexpectedly grab the victim's handbag, earrings, necklace or mobile phone. Throughout the late 1990s and the early 2000s, the motorcycle-based street robberies contributed significantly to the perceived insecurity and chaos of Guangzhou's public space. According to the local Police Department, in 2002 alone, totally 9668 motorcycle-based street robberies happened in Guangzhou, accounting for 52 % of all robbery offences. The number and percentage in 2003 were, respectively, 10,210 and 47.2 % (*Response* 1).

As a result, the local state targeted both motorcycles and motorcycle drivers for stern street policing. The municipal Police Department, in particular, launched a series of campaigns against motorcycle-based robberies. The police not only invested a tremendous amount of material and human resources, but also devised an exhaustive set of tactics to fend off street crimes. Given that the police themselves share a collective identity as defender of the 'good', the 'ordered' and the 'respectable' (Blomley 2011), it is arguable that one cumulative effect of these campaigns was the essentially antithetical stance that police officers adopted towards motorcycles as a whole.

Media representations continuously portrayed criminals riding motorcycles as desperate street villains who brutally violated ordinary pedestrians' bodily security and property right. Their disobedience and inconformity to the legal regime were spotlighted, as flourishing news reports depicted in detail how these street criminals

desperately resisted police actions. The local police, on the other hand, showed an extremely high morale in battling with the criminals on motorcycles. Sensational photographs appeared very frequently, portraying police officers' heroic crackdown of motorcycle-based robberies and street criminals. Local newspapers also featured several stories of ordinary residents who voluntarily united and fought valiantly against motorcycle-based crimes. In this vein, media representations reified street criminals not only as a hostile force against state power, but also common enemies to the respectable part of the general public.

It is certainly not the aim of this chapter to justify street robberies or to criticise the local society's attempts to suppress it. But at the same time we need to note that to represent motorcycle robberies as immediate, de-contextualised street-encounters was also to disarticulate them from structural factors of social inequalities which contributed to crimes. Indeed, even the local police were fully aware that the outlawing of motorcycles could make no contribution to the reduction of crimes, but only channel criminals into other forms of unlawful activities (e.g. *Nanfang Daily*, 23 December 2014). Nonetheless, without any close scrutiny of the historical contingencies of crimes, this policy regime failed to consider the street crime as a product of structural social changes, and ran the risk of universalising motorcycle users as an innately dangerous and threatening group.

The final, and relatively less central, rationale assumed that motorcycles constituted a major source of urban pollution, thanks to its emission of noises and toxic exhaust gas. On the one hand, local media spotlighted motorcycles as an out-of-date mobile technology that burned fossil fuel inefficiently, and hence exacerbated air pollution. While this claim might bear some reality, it was not built upon any reliable comparison with pollution induced by automobiles, and refused to recognise any possibility for motorcycles to be technologically optimised. With regard to noise pollution, on the other hand, media accounts tended to make the rather blank statement that the motorcycle necessarily made a greater contribution to noise pollution, without ever subjecting different modes of transport to an unbiased framework of assessment.

2.4.2 Encountering the State on the Street

After 2007, the motorcycle taxi became the only use of motorcycle mobility that persisted to make a visible presence on the streets of Guangzhou. As a result, the local state not only singled it out as the primary inheritor of the disorderliness and unruliness associated with motorcycles in general, but also subjected it to new rhetorics which contributed to the production of its otherness in a post-motorcycle Guangzhou. These more recent anxieties also appear to dovetail with the negative stereotyping of migrant bodies in the public discourses of contemporary China, which highlights the rhetorics of unruliness and low *sushi* (Zhang 2001).

On the one hand, although the motorcycle taxi drivers were not often associated with street robbery before 2007, now the state increasingly see them as potentially

dangerous and threatening to street security. In part because of the iron-handedness of state regulation, migrant motorcycle taxi operators are now strengthening mutual ties to tackle street-level police actions. For example, they are prone to use communication devices such as mobile phones to circulate information on the locations of police assaults. Communal solidarity and shared identity, consequently, are also being forged among motorcycle drivers. Interestingly, such strengthening of mutual connections is now interpreted by police officers as evidence of motorcycle drivers' 'gradual transformation' from 'individual business runners' to 'collective street gangs' (interview with Mr D, Police Supervisor, December 2011), which has further added to the local state's anxiety over this mobile social group.

On the other hand, police discourses now tend to focus on the relatively *higher income*s that migrants earn from motorcycle taxi service. These rhetorics portray motorcycle taxi operators as selfish social members who sacrifice the 'collective interests' of the city for the sake of personal gains. Indeed, the interviewed motorcycle drivers were reasonably outspoken in acknowledging that motorcycle taxi service could provide a monthly income of approximately 3000–6000 RMB, much higher than what manufacturing jobs in factories offered. Meanwhile, interviewed migrants underlined the relative flexibility and freedom endowed by motorcycle taxi service as a vocation, in contrast to the discipline and labour alienation that are typical of the manufacturing sector in post-reform China.

It is precisely by seeing through the tension between dominant visions of street order and the motorcycle mobility seen as a route to economic welfare that my analysis comes to terms with the outlawing policy as mechanism of disempowerment and disfranchisement. It needs to be noted that rationales undergirding the outlawing of motorcycles in Guangzhou do not fit squarely with what Smith (1996) once analysed as the revanchist mode of urban governance. In policy rhetorics undergirding the outlawing agenda, traces of the will to class domination are at best obscure. Rather, this policy appears to reify purely *technological* lexicons of order, civility and collective good. In fact, outlawing of motorcycles in Guangzhou went hand-in-hand with the local state's efforts to offer cash compensations, job opportunities and skill trainings to who used motorcycles for breadwinning purposes, with migrants actually *accepted* to the schemes in most circumstances. However, at an operational level, the outlawing policy has without doubt led to the privileging of the interests of certain social classes over those of others, as it forestalls migrants' endeavour to exploit alternative possibilities of livelihoods. For example, a telling rhetoric, circulating within the local media after the outlawing was implemented, stated that the state's generous offer of job opportunities was conditioned upon 'reasonable' migrants being neither captious nor 'picky'; and, unsurprisingly, these re-employment opportunities only provided incomes much lower than those from motorcycle taxi service.

With their collective values interpellated by the hegemonic discourse that income gained at the expense of normative social order is morally despicable, the police officers I interviewed find it more than justifiable to crack down the motorcycle taxis by means of force and sometimes even violence. It needs to be noted that the local police's regulation of motorcycle taxis should not be interpreted

in terms an intrinsic inclination to dominate or oppress those under their jurisdiction. In fact, several police officers expressed sympathy with motorcycle taxi drivers' socioeconomic marginality, albeit merely at a *personal* level. As the agents of law enforcement, however, they are uncompromisingly convinced that income which is gained 'at the expense' of normative social order is morally despicable:

> They say that they are socially vulnerable groups. Yes, I admit it. But if you need to survive and support your family, why not pursue a legitimate career? Most of them are migrants from rural areas. Why did you come to Guangzhou in the first place? Why not just stay in your hometown so that it might be easier to find a more decent and morally blameless job?
>
> Interview, Mr D, Police Supervisor, December 2011

Sociologist Xu's (2012), (2014) recent works have indicated that street-level regulation of motorcycles in Guangzhou exhibits key characteristics of campaign-style policing (*yundong shi zhifa*), in which legal norms are temporarily suspended, and rights and dignity of those targeted for policing may be relegated to thorough oblivion.[4] According to the local police, in 2011 alone, the police confiscated over 255,000 motorcycles used for taxi service via street-level regulation (*Response* 3). Indeed, the local police force is keen on devising an exhaustive set of tactics to be adopted at a street-level. At an earlier stage, the police's tactic of street-level regulation was quite simple. One police officer riding a police motorcycle would watch at a specific spot by the roadside, and chase on sight any motorcycle taxi. But, soon, this watch-and-chase approach was criticised as too passive. Then, the police decided to set up observation points at the intersections of main traffic arteries so that motorcycle taxis could be much more easily caught when they slowed down for traffic lights. Subsequently, this tactic was considered equally passive, since motorcycle taxi drivers would simply turn around to drive in the opposition direction when they sighted police officers at certain intersections or crossroads. Eventually, the police realised that it was precisely the flexibility of motorcycles and their non-routinised mobilities that had raised difficulties for regulation. Hence, the local police now prefer targeting upon the moments of the relative *immobility* of motorcycle taxis: the moments when motorcycles taxis are parked or awaiting potential passengers at certain 'concentration points'—metro station entrances, entrances to residential communities or pavements alongside busy

[4]The regulation of motorcycles is enmeshed in a broader project of cracking down on street nuisances, including street robberies, unlicensed/untaxed transport services, the violation of traffic rules and road accidents. Numerous police campaigns have been launched to regulate not only gasoline- or electricity-propelled motorcycles, but also tricycles, motorised wheelchairs operated by disabled people and self-modified vehicles. Regulation of all these sorts of vehicles are based on very similar rationales, framed in terms of security, traffic order, robbery, and, sometimes, illegal parking (source: http://www.gzjd.gov.cn/gzjdw/gaxw/ztbd/zzwlc/20141205/detail-264674.shtml). These vehicles are lumped together into the category of 'five types of vehicles' ("*wulei che*") in local police vocabulary.

urban roads. To act upon the moments of immobility requires joint actions of several local government departments, since the traffic police have no jurisdiction in regulating immobile vehicles parked at public spaces. In normal cases, the police would seek permission from other government departments and then a squad of police officers would unexpectedly raid those sites. Such tactic has significantly reduced the chance for motorcycle taxis to escape police actions, and result in considerable increase in the number of motorcycles confiscated during police campaigns.

However, the increased alertness of motorcycle taxi drivers soon began to compromise the police's ability to successfully and effectively locate and act upon specific 'concentration points'. As a result, regulation of motorcycle taxis is now increasingly conducted by police staff in plain clothes rather than uniformed officers. Such a tactic is aimed to reduce the possibility that motorcycle taxi drivers detect police actions in advance. Besides, the police have adopted more flexible schedules of working time to implement a 24-h policing system. Overall, as the police officers suggest, the combination of plainclothes policing and flexible timing has proved to be immensely effective.

Indeed, one motorcycle taxi driver describes a deep sense of powerlessness in regards to the encounters with police officers in plain clothes:

> If the police officers come in uniforms, we can still have some time to react before they come close to you. But now they are dressed just like everyone else. They approach you slowly and no one can tell that they are actually police officers. Sometimes, they even lie to you that they want to buy motorcycle taxi service. Then they suddenly hold your motorcycle firmly and identify themselves to you. What can you do then? When things turn out to be that situation, you cannot resist at all because in China you do not dare to attack a police officer. (Interview, November 2011)

Abrupt encounters between the police and motorcycle taxi drivers can easily end up in violent conflicts. For police officers, face-to-face encounters with deviant migrant others are emotionally charged experiences that re-assert collective morale of the police. Police officers often cannot help trespassing on the boundaries between the identity as agents of law enforcement and their personal loath of migrant motorcycle drivers. Resultantly, elevated motives to defend order and 'collective goods' of the society often lead to excessive use of violence in tackling disobedient motorcycle drivers. During the interviews, a number of motorcycle taxi drivers complained about the frequent occurrence of bodily collision and even beating during police actions; and several informants also suspected that the police even hired ruffians and gangsters to harass motorcycle taxi drivers. Also, while the Police Department of Guangzhou forbids police vehicles to chase motorcycle taxis, in prevention of unexpected accidents, most interviewed migrants nonetheless suggest that racing between motorcycle taxis and police motorcycles has persisted and even gone rampant; and the experience of extreme fear and nervousness, which results from being chased by police vehicles, is now increasingly innate to motorcycle mobility as a mundane, embodied experience.

2.5 Motorcycle Mobility as Experience of Subaltern Identity

The policing of motorcycle taxis, in the meantime, registers notable significances for the migrant motorcycle taxi drivers to negotiate identities and subjectivities. This section examines briefly the ways in which motorcycle taxi drivers interpret and negotiate the rationalities of regulation; and it argues that subalternity is a self-experienced subject position contingent upon social relations and the asymmetrical geometry of power. As various commentators have argued, travelling time is not passive or empty, but full of sensuous engagements with diverse people, objects, meanings and practices (Sheller and Urry 2006a; Jensen 2009; Cresswell 2010). In the case of motorcycle taxi drivers, understanding and interpreting their identity is engraved in rich, if often psychologically disturbing, experiences of mobility, space and social relations. The police's regulation of urban streets has transformed motorcycle travelling into a temporality fraught with constant alert, with chasing and being chased, and with potential conflict with state power. Thus, I view motorcycle mobility as a key site whereby dominant relations of power are experienced and understood by the migrants.

Motorcycle taxi drivers' subjectivity is shaped by both dominant discourses of motorcycle taxis and their diverse tactics in counteracting state power at the street-level. While the former has been discussed in detail so far, it is equally important to note that street-level interactions between motorcycle taxi drivers and police force also contributes to the production of subaltern social and cultural experiences. To keep providing transport service, motorcycle taxi drivers have adopted various tactics to play a cat-and-rat game. 'Escaping the police' for sustaining a living, for them, has become as essential as making a living per se. These daily tactics include constantly watching around when riding motorcycles, identifying locations where police officers are likely to appear, doing taxi business at night when there are fewer police officers, and using small lanes rather than main traffic arteries. Many motorcycle taxi drivers have developed sophisticated knowledge of the networks of small lanes and pathways which can help them more easily get rid of police chasing. In particular, many motorcycle drivers now restrict their business to places subject to less strict or frequent police intervention, such as underdeveloped areas where the police set foot less often, or urban villages, spatial legacies of former rural settlements in which regulation exercised by rural collectives is often stronger than that of formal state apparatus. Some others have even developed sophisticated skills to distinguish police in plainclothes from real clients.

However, from the perspective of motorcycle taxi drivers, these resistant tactics are far from transgressive appropriation of spaces that leads to romantic empowerment (*à la* de Certeau 1984). Rather, moments of tackling state power are mentally disturbing processes which have enhanced the self-experience of marginality. During the interviews, it is not uncommon to hear motorcycle taxi drivers commenting that their means of earning a living is also a source of endless fear, stress and frustration. In other words, for motorcycle taxi drivers, immediate

socio-spatial contexts of motorcycle mobilities bear negative implications for subjective well-being. A more far-reaching effect of these negative emotional experiences, however, lies in the construction of identities and subjectities.

To begin with, many motorcycle taxi drivers have internalised stigmatising representations of motorcycle mobility. Hence, many of them also view motorcycles as a disorderly, unruly and potentially dangerous means of mobility. Inadvertent acts of breaking traffic codes, in particular passing through the red light and driving the opposite direction, are mentioned as manifestations of their failure to comply with institutionalised social norms. Yet, motorcycle taxi drivers refuse to portray themselves as essentially dangerous or threatening. Instead, their rhetoric seeks recourse to the notion that they are 'less educated' and not yet adapted to urban living. Also, they tend to see the breaking of traffic rules as an outcome of inter-personal interactions rather than manifestation of essential nature of unruliness. As some motorcycle drivers suggest, many minor transgressions of traffic codes are actually at the request of passengers for the purpose of saving time:

> You know, what we are doing is a business and you need to obey the passengers' requests so that you will be able to make money. Many people choose motorcycle taxis precisely because they are more flexible and can save them some time by breaking some traffic rules, in cases that they are in a hurry. In most cases we do resist those requests, but we also need to keep rapport with our passengers, because we need to make a living. (Interview, September 2011)

As I have put earlier, in hegemonic discourses there is unsolved tension between rural migrants' aspiration for relatively better incomes and the hegemonic visions of ordered urban space. Notably, to reconcile their intention of sustaining a living with widely accepted notions of order and civility has actually prompted many migrants to contest stigmatising representations of motorcycle taxis through diverse rhetorical formulation. While most of these narratives seem to be compatible with hegemonic conceptions of order, efficiency and security, they also provide alternative frameworks to ground those abstract terms into concrete everyday practices. These narratives hint at the fact that the dominant notion of motorcycle mobility is abstracted out of heterogeneous experiences of everyday practices; and they also downplay the agency of motorcycle drivers to navigate street security and efficiency in ways that are different from rationalities promoted by the state.

First, motorcycle taxi drivers contest the definition of motorcycles as a homogeneous system of mobility. For example, many motorcycle drivers make a clear distinction between motorcycles propelled by gasoline and those by electricity whose maximum speed is much lower. To them, the motorcycle propelled by electricity is a compromise between high speed, potentially dangerous motorcycle mobility and an increasingly complex traffic system.

Second, motorcycle taxi drivers also contend that random violation of traffic codes does not necessarily mean lack of attention to security. With regard to traffic codes, motorcycle taxi drivers tend to switch between compliance and violation. Whether or not to respect a traffic rule is a decision based on immediate micro-level contexts of mobile practices, rather than essential human nature. Bodily security is

always at the heart of decision-making processes. Such an argument can be seen as an attempt to disconnect particular mobile technologies from taken-for-granted malign human intentions. This attempt can also be glimpsed from many motorcycle taxi drivers' view that motorcycles are not naturally related to crimes. They insightfully view criminality as the product of structural factors such as inequality and welfare dysfunction, rather than the technological means which may or may not facilitate criminal behaviours.

Finally, motorcycle taxi drivers also propose a different perspective to envisage the efficient use of urban roads. For them, the small size of motorcycle taxis enables them to achieve mobility by occupying limited space of urban roads. Also, the flexibility of motorcycles also allows them to devise more diverse routines. As a result, many motorcycle taxi drivers suggest that they only use 'residual' spaces between larger vehicles, which actually renders the use of urban roads more, rather than less, efficient.

This view of 'not-so-bad' motorcycle mobility, apparently, contradicts the representations in mainstream discourses. Indeed, it is through the motorcycle taxi drivers' interpretation of this contradiction that a subaltern identity is articulated. They unequivocally understand the outlawing of motorcycle mobility as the urban elite's endeavour to impose hegemonic spatiality upon urban spaces by excluding marginal groups. This opinion, unsurprisingly, feeds into a strong feeling of being dominated and oppressed. It also enables motorcycle drivers to capture the unequal structure of power underlying street-level regulation:

> At least in this case, I dare to say that the local government has served only the interests of the rich. It is true that now in Guangzhou there are so many rich people but there are even more who are poor and powerless… The local government has no ability to regulate the rich, so they prefer regulating the poor, because the poor have no power or resource to resist. Also, this policy has a large influence on us migrants. We have also made our contribution to building up the prosperity of this city, but the government just ignores the difficult situation we are now facing because of this policy. (Interview, November 2011)

But, in the meantime, motorcycle taxi drivers also recognise their collective inability to contest the local state. In the political milieu of China, there appears to be little space for subordinate groups to directly question or challenge particular government policies. This unique political environment significantly enhances the state's ability to enforce socially unjust programmes of governance. Because of the perceived inability to voice concerns and interests within the system of dominant discourses and the processes of policy-making, the motorcycle taxi drivers tend to undertake no individual or collective action to voice counteracting claims to the state rationalities. To reconcile their indignation over social injustice with feelings of disempowerment, many motorcycle taxi drivers end up in self-devaluation, blaming themselves for 'not being rich enough' to be respected by the society and state. In many interviewees' accounts, it is motorcycle drivers' own lack of personal qualities that has led to their subaltern status in the social hierarchy; and it is the poor, the marginal who are responsible for their inability to pursue more decent and respectable ways of life:

> I don't know whom I can blame for this. The only thing that is to blame is that you are not doing well and you are not rich. In this world, you can only rely on your own labour and your own ability. They say motorcycles are illegal, and then be it. The rich people contribute to this society more than us, and the government makes policies in their favour. This logic is not entirely unreasonable in fact. (Interview, November 2011)

Such narratives re-assert the taken-for-granted equation of personal wealth and economic power with individual merit and respectability. It also speaks to how the hegemonic value of personal merit and individualist conception of responsibility are contributing to intensifying hierarchisation of Chinese society and the displacement of concerns over social injustices entrenched in China's emerging capitalist mode of production and consumption. This mentality of self-blaming needs to be understood in the context of China's political environment and, more importantly, the dominant *zeitgeist* in post-reform Chinese society, in which ascending logics of private success and wealth are re-shaping the subjectivities of both the dominant and subaltern social classes. Such rhetoric re-inscribes the existing dichotomies of poor/rich, order/disorder, respectable/unrespectable, and also constrains marginal groups' agency to envisage alternative social relations and fully realised right to the city.

2.6 Conclusion

In this chapter, I have attempted to use the outlawing of motorcycle mobility and the regulation of motorcycle taxis as a case study to foreground and elucidate two points of view. On the one hand, I appeal for urban scholars to attend to the multifarious ways in which transport mobility entangles with the production of meanings, discourses and, eventually, relations of power. While safety and efficiency are thematics that are essential to the geographical study of urban transport, it warrants special note that the ways in which the urban polity and policy makers come to terms with these catchphrases are rarely value-neutral, but, more often than not, embody hegemonic visions of an ordered system of mobility, to which ordinary citizens are expected to get habituated. What Scott (1998) has so adeptly analysed as the view of the state supposes that by inhabiting state-approved systems of mobility, urban citizens 'become part of a mobile citizenry that responds to the new travel and lifestyle opportunities that are enabled' (Richardson and Jensen 2008: 218). Failing to be incorporated into the systems, therefore, is seen as justification for oppressive state responses. Given that, against the backdrop of global-scale competition for footloose capital and investment, the governing of cities has become inseparable from the management of order and civility (Flusty 2001; Bannister et al. 2006), the positivist view—which states that the promotion or devaluation of specific forms of movements is nothing but the outcome of rational, value-neutral calculation—can no longer hold ground. Mobility practices, as the state policing of motorcycles in Guangzhou indicates, are *produced* by symbols and discourses that give meanings to them and thereby make them intelligible objects of the programmes of government.

On the other hand, this chapter stands in line with the view that mobility is constitutive of both objective and subjective well-being; hence, unequal access to mobility crosscuts, and in many cases reinforces, pre-existing structures of hierarchisation and social differentiation. The notion of mobility as capital, as Kaufmann et al. (2004) put forward via their conceptualisation of motility, holds that mobility is a medium through which resources and opportunities are distributed. For the operators of motorcycle taxis, being mobile within networks of urban spaces is a critical resource from which economic value is extracted. In this sense, to relegate motorcycle taxis to the state of mooring further adds to the institutionalised marginality of migrants in post-reform urban China. Subjectively, vis-à-vis ironhanded state regulation, embodied experiences of motorcycle mobility are deprived of any possibility to generate senses of happiness and satisfaction; in other words, the risk associated with motorcycle mobility is so high that it neutralises the satisfactions brought by material gains. Indeed, during the research, many motorcycle taxi drivers likened themselves to beggars, whose means of making a living was devalued and discriminated. Can people dwelling in this mentality of self-demeaning possibly have a high level of subjective well-being? The answer may be indefinite, but the question nonetheless poses a challenge, not only to urban policy makers, but also to scholars who attempt to rethink the intricate intersection of mobility and the healthiness of our society.

References

Adey, P. (2006). If mobility is everything then it is nothing: Towards a relational politics of (im) mobilities. *Mobilities, 1*(1), 75–94.

Adey, P. (2008). Airports, mobility and the calculative architecture of affective control. *Geoforum, 39*(1), 438–451.

Adey, P. (2010). *Mobility*. London, UK: Routledge.

Allen, J. (2003). *Lost geographies of power*. Oxford, UK: Blackwell.

Bannister, J., Fyfe, N., & Kearns, A. (2006). Respectable or respectful? (In)civility and the city. *Urban Studies, 43*(5/6), 919–937.

Binnie, J., Edensor, T., Holloway, J., Millington, S., & Young, C. (2007). Mundane mobilities, banal travels. *Social and Cultural Geography, 8*(2), 165–174.

Blickstein, S. G. (2010). Automobility and the politics of bicycling in New York City. *International Journal of Urban and Regional Research, 34*(4), 886–905.

Blomley, N. (2011). Rights of passage: Sidewalks and the regulation of public flow. New York, NY: Routledge.

Bruno, G. (2002). *Atlas of emotion: Journeys in art, architecture, and film*. New York, NY: Verso.

Cidell, J. (2012). Flows and pauses in the urban logistics landscape: The municipal regulation of shipping container mobilities. *Mobilities, 7*(2), 233–245.

Clarke, D. B., & Doel, M. A. (2011). Paul virilio. In P. Hubbard & R. Kitchin (Eds.), *Key thinkers on space and place* (2nd ed., pp. 440–446). London, UK: Sage.

Cresswell, T. (2001). *The tramp in America*. London, UK: Reaktion Books.

Cresswell, T. (2006). *On the move: Mobility in the modern Western world*. New York, NY: Routledge.

Cresswell, T. (2010). Towards a politics of mobility. *Environment and Planning D: Society and Space, 28*(1), 17–31.

Cresswell, T., & Merriman, P. (2011). Introduction: Geographies of mobilities—practices, spaces, subjects. In T. Cresswell & P. Merriman (Eds.), *Geographies of mobilities: Practices, spaces, subjects* (pp. 1–15). Farnham, UK: Ashgate.

de Certeau, M. (1984). *The practice of everyday life*. Berkeley, CA: University of California Press.

Deleuze, G. (1988). *Foucault*. Minneapolis, MN: University of Minnesota Press.

Fincham, B. (2006). Bicycle messengers and the road to freedom. *The Sociological Review, 54* (s1), 208–222.

Flamm, M., & Kaufmann, V. (2006). Operationalising the concept of motility: A qualitative study. *Mobilities, 1*(2), 167–189.

Flusty, S. (2001). The banality of interdiction: Surveillance, control and the displacement of diversity. *International Journal of Urban and Regional Research, 25*(3), 658–664.

Frello, B. (2008). Towards a discursive analytics of movement: On the making and unmaking of movement as an object of knowledge. *Mobilities, 3*(1), 25–50.

Gramsci, A. (1971). *Selections from Prison Notebooks*. London, UK: Lawrence and Wishart.

Hannam, K., Sheller, M., & Urry, J. (2006). Mobilities, immobilities and moorings. *Mobilities, 1* (1), 1–22.

Hubbard, P. (2006). *City*. London, UK: Routledge.

Hubbard, P., & Lilley, K. (2004). Pacemaking the modern city: The urban politics of speed and slowness. *Environment and Planning D: Society and Space, 22*(2), 273–294.

Huxley, M. (2008). Space and government: Governmentality and geography. *Geography Compass, 2*(5), 1635–1658.

Jensen, A. (2011). Mobility, space and power: On the multiplicities of seeing. *Mobilities, 6*(2), 255–271.

Jensen, O. B. (2009). Flows of meaning, cultures of movements—urban mobility as meaningful everyday life practice. *Mobilities, 4*(1), 139–158.

Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: Mobility as capital. *International Journal of Urban and Regional Research, 28*(4), 745–756.

Kaufmann, V., & Montulet, B. (2008). Between social and spatial mobilities: The issue of social fluidity. In W. Canzler, V. Kaufmann, & S. Kesselring (Eds.), *Tracing mobilities: Towards a cosmopolitan perspective* (pp. 37–55). Aldershot, UK: Ashgate.

Lefebvre, H. (1996). *Writings on cities*. Oxford, UK: Blackwell.

Meneses-Reyes, R. (2013). Out of place, still in motion: shaping (im)mobility through urban regulation. *Social and Legal Studies, 22*(3), 335–356.

Phillips, D. (2006). *Quality of life: Concept, policy and practice*. London, UK: Routledge.

Pucher, J., Peng, Z. R., Mittal, N., Zhu, Y., & Korattyswaroopam, N. (2007). Urban transport trends and policies in China and India: Impacts of rapid economic growth. *Transport Reviews, 27*(4), 379–410.

Pun, N. (2005). *Made in China: Women factory workers in a global workplace*. Durham, NC: Duke University Press.

Richardson, T., & Jensen, O. B. (2008). How mobility systems produce inequality: Making mobile subject types on the Bangkok Sky Train. *Built Environment, 34*(2), 218–231.

Rose, G. (1995). Making space for the female subject of feminism: the spatial subversions of Holzer, Kruger and Sherman. In S. Pile & N. Thrift (Eds.), *Mapping the subject: Geographies of cultural transformation* (pp. 302–322). London, UK: Routledge.

Scott, J. C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven, CT: Yale University Press.

Seiler, C. (2012). Welcoming China to modernity: US fantasies of Chinese automobility. *Public Culture, 24*(2), 357–384.

Shaw, J., & Hesse, M. (2010). Transport, geography and the 'new' mobilities. *Transactions of the Institute of British Geographers, 35*(3), 305–312.

Shaw, J., & Sidaway, J. D. (2010). Making links: On (re)engaging with transport and transport geography. *Progress in Human Geography, 35*(4), 502–520.

Sheller, M. (2004). Automotive emotions: Feeling the car. *Theory, Culture and Society, 21*(4/5), 221–242.

Sheller, M., & Urry, J. (2000). The car and the city. *International Journal of Urban and Regional Research, 24*(4), 737–757.
Sheller, M., & Urry, J. (2006a). The new mobilities paradigm. *Environment and Planning A, 38* (2), 207–226.
Sheller, M., & Urry, J. (Eds.). (2006b). *Mobile technologies of the city*. London, UK: Routledge.
Smith, N. (1996). *The new urban frontier: Gentrification and the revanchist city*. London, UK: Routledge.
Spivak, G. C. (1998). *In other worlds: Essays in cultural politics*. London, UK: Routledge.
Virilio, P. (1986). *Speed and politics*. Los Angeles, CA: Semiotext(e).
Wang, R. (2010). Shaping urban transport policies in China: Will copying foreign policies work? *Transport Policy, 17*(3), 147–152.
Xu, J. H. (2012). Driving-away policing and situational crime prevention in China. *International Journal of Offender Therapy and Comparative Criminology, 56*(2), 239–264.
Xu, J. H. (2014). Authoritarian policing with Chinese characteristics: A case study of motorcycle bans in the Pearl River Delta. *Crime, Law and Social Change, 61*(4), 439–460.
Zhang, J. (2009). *Driving towards modernity: An ethnography of automobiles in contemporary South China.* (Ph.D. thesis, Yale University).
Zhang, L. (2001). *Strangers in the city: Reconfigurations of space, power and social networks within China's floating population*. Stanford, CA: Stanford University Press.

Chapter 3
Reappropriation Through Occupation: Interrogating on-Street Parking in Chinese Cities

Yannan Ding and Shuqun Wang

Abstract In the wake of an auto-era, parking has become a pressing problem for Chinese cities. In order to accommodate an ever-expanding fleet of automobiles, on-street parking is widely practiced as an ad hoc solution. Yet, illegal parking defying traffic regulations is rampant. Many cars are parked on roadside strips that are reserved for pedestrians, cyclists and other road users by urban planning. In this paper, we draw a cautious and selective reference to Solomon Benjamin's 'Occupancy Urbanism' to view the intrusion of cars into roadside strips as an act of occupation. In so doing, we argue that some car drivers in contemporary Chinese cities have turned the de jure order of road space into the de facto situation. Contingent and illegal parking like that renders road space severely disrupted, unpredictable, and above all a dangerous place for all road users. The on-street parking problem is calling for a revision of policies on car ownership and urban administration. Urban planning should also take actual situations like illegal on-street parking into account.

Keywords Automobility · China · On-street · Parking problem · Occupancy urbanism

3.1 Introduction

Once known as the "kingdom of bicycles," China is quickly transforming itself into a(nother) nation of automobiles due to its phenomenal pace of urbanization over the past three decades. In particular, the period from 2005 onwards has been labeled as the "rapid growth" phase of automobilization in China, following the "steady

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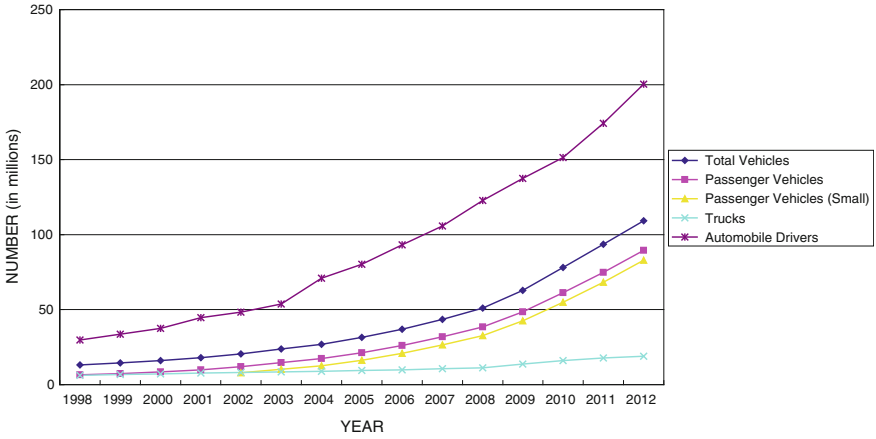

Fig. 3.1 Nationwide statistics of vehicle possessions and automobile drivers. (*Source* National Bureau of Statistics of China 2013)

growth" phase starting in 1995 (Cao and Huang 2013: 51). At the end of 2013, the number of total civil automobiles in China had exceeded 137 million, making it one of the largest fleets in the world (National Bureau of Statistics of China 2014; see also Fig. 3.1). This dramatic increase in automobiles can be easily felt whenever one travels by road. In spite of the sprawling newly built-up urban areas and the proliferated road system, traffic congestion and difficulties with parking are commonplace. In particular, on-street parking [*zhandao tingche*, or *lunei tingche*], either lawful or unlawful, is omnipresent in Chinese cities. Parked cars often form clot-like barriers on urban roads, and further aggravate the traffic capacity in the already congested city.[1]

In addition to taking a considerable portion of the carriageway space that has been designated as a parking lane, some parked cars straddle the non-motorized vehicle lane, the pedestrian lane and the frontage area of buildings. Typically, people who park cars defying traffic regulations are intruding into the roadside strips and forcing pedestrians, cyclists, motorcyclists and their passengers to circumvent, or even enter the main auto lane. The pedestrians, cyclists, and motorcyclists are known, in World Health Organization's terminology, as "vulnerable road users." On-street parked cars, especially those parked in unauthorized spots, greatly reduce traffic capacity, and impose grave dangers to the safety of these vulnerable road users on an everyday basis. As such, parking issues and related conflicts have become a common topic for Chinese mass media.

Compared to other topics in transport studies, however, the parking problem has largely been overlooked. The problem is not only limited to China, given that

[1]Reports on parking problems in Chinese mass media are numerous and beyond citation. A considerable share of them is social news about accidents or crimes related to parking conflicts.

"parking is one of the most under-taught and least understood aspects of urban geography and has little recognition in the critical geographic analysis of urban space" (Henderson 2009: 73). It was not until very recently that the parking problem began to attract the attention of sociologists, geographers and planners (Sheller and Urry 2000; Cass et al. 2005; Manville and Shoup 2005; Urry 2006; Merriman 2009). These disciplines posit parking into the study of automobility, which is on the rise. Even though parking is integral to automobility, it is still often neglected. Neoliberal urban economists, on the other hand, are primarily obsessed with devising tolling and taxing models to optimize the provision of parking facilities. Their approaches toward the parking problem consist of various improvised forms of road-pricing techniques. They have, however, not been able to come to terms with the social behavioral mindset that underpins untrammeled parking.

This chapter crystallizes our joint effort, from the perspective of a geographer and an urban planner, respectively, and aims to comprehend the situation of on-street parking. To that end, we cautiously and selectively reference Indian urban planner Solomon Benjamin's "Occupancy Urbanism" (Benjamin 2007, 2008; see also Roy 2011). In particular, we argue that the act of occupancy could be paired with the act of "Zhan" (as in *zhandao Tingche*) in the Chinese context. However, unlike Benjamin, who praised "Occupancy Urbanism" as a worthy tactic for the underprivileged in Indian cities, and its potential for rebuking a techno-hegemonic view of the city, we have found that the inherent logic behind the act of occupancy could also be discernable among other social classes. We believe this is the key to deciphering the seemingly irrational act of unauthorized on-street parking in Chinese cities, which is mostly undertaken by the middle class. Unauthorized parking not only poses a rebellious stance to the governance of the urban road but also undermines the rationale behind conventional urban traffic planning. This reality of urbanism deserves a serious review and effective counter measures.

In the remainder of this chapter, we posit the issue of parking in relation to the emerging study of automobility. It is imperative to introduce the backdrop against which automobility has been practiced, observed, debated and studied in countries with what might be called a more developed culture of the car. This is followed by a review of on-street parking situations in Chinese cities. In particular, we provide detailed descriptions of the conditions of the parking site, parking policy and parking governance in the city of Hefei, eastern China. We also review the existing but very limited studies on parking problems in China. Section three critically examines the rationale of on-street parking through the lens of "Occupancy Urbanism" as outlined above. Following that, we juxtapose model road plan with actual scenario on the road, and advise urban planners to take adaptive measures in order to accommodate the real life problem. The chapter concludes with a call for revisions of parking policies in Chinese cities.

3.2 Automobility and the Parking Problem

Private car as an important, if not indispensable, part of modern lifestyle has been a fact often taken for granted. With the convenience also comes the trouble, thus as early as in the 1930s measures of parking restriction had already been introduced in British cities in response to the aggravating road traffic conditions. Colin Pooley provided an interesting analysis, using counterfactual historical method, of a scenario in which strict control over car ownership was introduced in Britain since early twentieth century (Pooley 2010). His findings include that daily mobility would not be much different from that of today since other means of transport have developed in the meantime, but the layout of the city would be designed differently. A city with fewer cars would request and allow greater proximity between the people and the services they need. In reality, however, post-war democratizing of automobiles in Britain served as the stimuli of James Ballard's *Crash*, which remained one of the most controversial and dystopian representations of the car.

The emerging study of automobility is a rather belated issue. According to Sheller and Urry, a critical analysis of the car is needed in urban studies, precisely because so far this discipline "has omitted to consider how the car reconfigures urban life, involving, as we shall describe, distinct ways of dwelling, traveling and socializing in, and through, an automobilized time-space" (Sheller and Urry 2000: 738). It was not until the turn of this century that sociologists pioneered the rediscovery of automobility (Featherstone 2004; Urry 2006). Calling for an effort of "rematerializing" the contemporary human geography, Latham and McCormarck discussed the idea of mobility. Pointing to the dire need of "serious social scientific" studies of automobility in the social and geographical making of Western cities, they discussed the materiality of mass automobility, which "demanded parking places, service stations and garages, along with new traffic regulations" (Latham and McCormarck 2004: 711). Thus, they suggest that "perhaps the most obvious place to start is simply the way the automobile has been involved in reworking the physical space of the city so that it could be accommodated" (ibid.).

Automobility is both about being mobile and how those seemingly immobile matters are being reorganized to complement this mobility. In particular, parking has yet to be considered holistically and associated with the transport system. Manville and Shoup note that parking issues are neglected by professionals and academics because the study of mobility is often associated with the act of travel and with streets and freeways (all with connotations of being mobile) rather than parking lots. They point out that about half of the street surface in the U.S. is consumed by cars (Manville and Shoup 2005: 234). At a different level of discussion, Ian Davidson exposes the sheer contrast of immobility and hyper-mobility of Eric Packer, the fictional financier in Don DeLillo's *Cosmopolis*, who made an astronomical number of transactions while he was stuck in a traffic jam in downtown Manhattan (Davidson 2012). Communication technology may have come to the rescue of immobility.

Parking, like driving, is often portrayed as "democratically seized, through notions of individual choice and personal flexibility" (Sheller and Urry 2000: 754). Hidden within these notions is the detail of the struggle over urban space. Oldenziel and Bruheze reviewed the development of separate cycling lanes in urban Europe. The advanced network of cycling lanes in Europe is the outcome of a century-long struggle and adjustment between activists, planners and the government (Oldenziel and Bruheze 2011). Focusing on the planning process of parking in San Francisco, Henderson carried it further. He singles out the attitudes of three factions, namely progressive, neoliberal and neoconservative, toward the parking problem. According to him, "the politics of mobility is not just about movement, but how cities are organized and configured—and for whom" (Henderson 2009: 87).

Little research has been conducted on the relationship between the parked car and other road users. The "quasi-private" character of traveling inside the car, and hence the occupation of the space when a car is parked, is assertive in nature. "Pedestrians and cyclists, to a significant extent, are confined to small slivers of the urban public, while many public-transport users are relatively disenfranchised and excluded from full citizenship" (Sheller and Urry 2000: 754). On-street parking, especially the unauthorized, severely hinders the traffic capability of other more vulnerable road users in both visceral and corporeal ways. The salient but undeniable power relationship of on-street parking has not yet been well studied.

3.3 On-Street Parking in Chinese Cities

China's recent urbanization is unprecedented in its scale and pace, and the same could be said of its mass automobilization. Within merely a decade, the number of automobile drivers in China increased by a factor of four (see Fig. 3.1). Accordingly, by the end of the year 2012, the number of passenger vehicles (*zaike qiche*) in China reached close to 100 million, the bulk of which are small-sized passenger cars. The democratizing price of automobiles has made owning a car realistic for many people who may be broadly defined as the middle class. The middle class in China have not waited to reap the fruits of a decade-long, double-digit growth. Cao and Huang found that the increase of automobile ownership in Chinese cities is strongly co-related with their economic performance (Cao and Huang 2013). Adding to existing car-owners, Zhu et al. have detected strong aspirations of owning a private car among university students, who are the future middle class (Zhu et al. 2012). It is hardly surprising that the automobile fleet in China is growing by the day, in spite of various local restrictions on car purchasing, registration and operation.

The dramatic increase in private cars has led to a shortage of parking spaces in almost all Chinese cities. While new towns and newly (re-)built urban areas have better parking facilities in general, the inner city is still indispensable because many of the employment opportunities, as well as managerial functions, remain located there. Overall, traffic in the city has not been reduced as a consequence of urban

sprawl. Wang and Yuan have noted that city governments in China are rather unprepared for the sudden increase in the gap between parking demands and supply (Wang and Yuan 2013). Wang and Liu found that in the city of Shenzhen, property developers have played a key role in parking provisions, which has led to a pattern that is directed by marketing purposes and often regardless of overall efficiency (Wang and Liu 2014).

One of the solutions to the increasing parking demand is designating more on-street parking spots. While on-street parking has been widely practiced elsewhere since the early days of motorization, it was not until recently that it has become the target of urban governance and control in China. Local regulations and bylaws concerning on-street parking were and are being adopted by city governments throughout the country. In principal, on-street parking takes up the space for parking curbs without causing extra traffic congestion and reserves enough space for cyclists and pedestrians. In reality, the exacerbated mismatch between the supply and demand due to fast urbanization has resulted in the widespread occurrence of unauthorized parking. "Occupying traffic lanes for parking became unavoidable. It is common to find that people park their cars on dead-end streets or even in bicycle lanes on main roads overnight" (Wang and Yuan 2013: 112). A report from the Asian Development Bank has noted that in Beijing, there is "widespread illegal parking outside designated on-street spaces (both daytime and nighttime)" (Asian Development Bank 2011: 31).

In this chapter, we focus on a middle-sized city in eastern China, namely Hefei, the capital city of Anhui province. Unlike major Chinese cities, such as Beijing, Shanghai and Guangzhou, Hefei stands at the other end and is chronically understudied. Nonetheless, economic development in the last decade or so also unleashed unprecedented growth in cities like Hefei (see Easen 2013). With a fast growing population numbering 3.7 million in its urban area by the end of 2014, it is typical of what has been called the "second tier" city of China (Jin et al. 2010). The consumption of private cars has also increased at a dazzling pace in recent years. On average 10,000 newly registered automobiles are added to the road each month. In the last month of 2014, the number of cars added was over 13,000 and in a total number of automobiles in the city that exceeded 780,000.

Figure 3.2 shows an image of an ordinary street packed with cars. Hongxing Road is a one-way street next to the old city center, and is famous for stylish independent shops. The photo was taken in mid-afternoon but even then parked cars had already occupied the two edges of the street. As evident in the figure, both authorized parking within parking curbs (right row) and unauthorized parking along the street (left row) are present. A parking toll collector is located on the far left end, standing on the street. This scene of a quiet street in order is unfortunately the exception rather than the norm. Once traffic starts to flow, many of the streets and crossings will become packed with automobiles, motorcyclists, cyclists and pedestrians, all vying for passage through the crowded street. Parked vehicles are the obstacles that other road users must circumvent. The chaotic scene cannot be accurately represented in one or two images. Figure 3.3 is an attempt to visualize the situation. Some of the motor bicycles and e-bicycles are forced into the main

Fig. 3.2 On-street parking on an urban road during off-peak hours in Hefei

auto lane, and the flow of both automobiles and pedestrians is disturbed and crooked by parked cars. In particular, parked cars jeopardize the normal flow of traffic for these vulnerable road users.

The ad hoc solution of on-street parking is sanctioned and even promoted by the government. The chaos on the street is not a sign of uncontrolled parking. Quite the contrary, city governments in China implement on-street parking controls by designating the location of on-street parking curbs, setting quotas and pricing schemes, organizing the ticketing corporations and enforcing the relevant regulations. At the national level, the public security industry standard, *Code for Setting of On-Street Parking Spaces* (chengshi daolu lunei tingche powei shezhi biaozhun), was promulgated by the Ministry of Public Security in 2010. At the local level, the management of the city road surface falls solely in the hands of the traffic police and the urban control force (*chengguan*). Franchise companies were established to collect parking fees for authorized parking spots. City streets were graded and parking prices were set accordingly. For instance, starting in the summer of 2014, it cost 3 CNY for the first 30 min to park a passenger car in the "A-level Region" in Hefei with an extra 2 CNY charged for every other half an hour. The fee in the "B-level Region" is slightly lower. Parking curbs are marked with white paint along certain streets. There are 516 curbs on 23 streets in the "A-level Region", and 2604 places on 60 streets for the other class. Toll collectors (see Fig. 3.2) are mostly low-skilled local citizens who are paid with both a prime salary and bonus in accordance with the fees they collect.

This approach has left a lot of ambiguity because the company that runs the authorized parking system is under direct control of the *chengguan*, which also has the power to issue traffic tickets to drivers who park in unauthorized places. A report from the local media in Hefei city revealed that 182,459 cases of unauthorized parking were charged in the year of 2012 (Yu 2013). Considering the normal fine for unauthorized parking is 200 CNY, the *chengguan* has generated a huge amount of money. By the end of 2014, the parking control company in Hefei was reincorporated and put under the control of the state-owned property management department (*guoziwei*) of the city government. However, no information could be obtained on where the parking fees collected by the company eventually go.[2]

3.4 Occupancy Urbanism of the Middle Class

Facing the alliance between urban elites and global capital who were both pushing for development under planning, the urban poor in Indian cities resisted with the strategy of occupancy, using the leverage of "vote bank politics" to ensure "political protection of extra-legal and informal claims to space" (Shatkin 2014: 5). Indian urban planner Solomon Benjamin showcased this resistance, which he has termed as "Occupancy Urbanism," through an example of airport zone development in Bangalore (Benjamin 2007). The settlements in the planned zone were not demolished to make room for development; on the contrary, some of the settlements were even extended. Benjamin called these actions a "planners' nightmare," because the act of occupancy not only reframed regulations, but also generated more development charges for the occupiers. Following Benjamin,

> Occupancy Urbanism is not a narrative of progressive urban change shaped by developmentalism; nor is it one that…depicts a heroic poor standing up to big business and harsh state action…Rather, Occupancy Urbanism is a conceptual frame for viewing city dynamics in an open-ended way…its specific focus is on how the politics of space is not only manifested but also *reconstituted* at a perpetual level. By this I imply the constant relationship between day-to-day acts on material issues (land, economy, working the bureaucratic system), and the consolidation of a popular political consciousness influenced by those actions. (Benjamin 2007:545. Original italic font)

In the Indian case, "land (rather than economy) as a conceptual entry, helps reveal subtle, often stealth-like and quiet, but extensive forms of political consciousness" (Benjamin 2008: 720). The power of occupancy lies in the subversive stance and tendency to replace the existing de jure tenure with de facto tenure. Hence the right to urban land is not singular and exclusive, but rather plural. To quote him,

[2]In several cities of China, public pleas directed at the government have been made by lawyers and social activists to publicize the details of parking fees collected by government-controlled companies. Thus far, none of them have been answered.

> De facto implies an act of proactive settlement by occupants claiming locations…Some can be pressured to intervene in ways to strengthen claims – the extension of basic infrastructure to areas irrespective of their land status. Others act in ways to reduce de facto tenure via evictions, restrictions on basic amenities, or vigorous acts of Master Planning. (Benjamin 2007:548. Original italic font)

The question of legality gives way to practical considerations for a fragile equilibrium of power between different social groups, and eventually grants the act some legitimacy. In light of this, the "Occupancy Urbanism" is essentially subversive to the existing governmental modes and the underpinning political economy. In an improvisational thesis, Ananya Roy, quoting Liza Weinstein, noted that in the process of globalized urban development, the politics of occupancy could be used by the more powerful group (Roy 2011: 230). Merchants, for instance, tend to expand their shops onto the sidewalk. Occupancy is thus not a patent of the urban poor.

Researchers of urban China could easily identify some similarities between China and the social conditions with the Indian city. First, there are also a lot of cases of occupancy by local people against prevailing development projects. The so-called "nail-household" (*dingzi hu*) is a derogatory term widely used to designate residents, often from a former village, who refuse to be relocated to make way for grand projects. These residents have being practicing a variation of occupancy strategy. Second, while all of the urban area is state-owned in principal, the use of urban road space is a contested status. Those who are more aggressive in claiming part of the road space, such as street vendors and shopkeepers, have successfully transformed the public space into a "quasi-private" space and have benefited from it. Occupy as a verb, according to the Merriam-Webster dictionary, could mean "to take or hold possession or control of." Its equivalent in Chinese is *Zhan*, as it is used in the phrases *zhandao tingche* and *zhanling huaerjie* (Occupy Wall Street). The logic behind the act of *occupy* and *zhan* is the same, and this allows us to make an association between them.

Therefore, the act of on-street parking could be likened to the occupancy undertaken by the Indian urban poor, only that the car-owners in Chinese cities are better described as the middle class. By taking up the small piece of road space, either paying or not paying the parking fee, they are re-appropriating the urban road according to their mode of consumption. The contest for the urban road, especially with respect to on-street parking curbs, is exactly the kind of contest in which the de facto occupation runs against de jure urban governance. In the city of Hefei, for instance, the government has been busy frequently adjusting parking policies, including parking curb distributions and installation of isolation piles on streets that are deemed as inappropriate for parking.

In China, the local government and indeed the undertakings of government, such as the traffic police, urban control force and parking management companies, control the street. Amidst the chaotic scenario, the Chinese urban middle class is materializing their power through many means, including the parked car. However, unlike in the revanchist theory, the middle class is hardly in an alliance with the government. Their claim over the street is silent yet incremental. Many drivers in

Shenzhen choose to park in unauthorized places at the risk of being ticketed due to the lack of sufficient parking spaces and the overpriced parking fees for authorized on-street parking spots (Lin et al. 2015). This is indicative for understanding of contemporary Chinese urbanism. While the city and the middle class go together, the latter is rebellious and constantly pushing for adjustment in urban governance.

The other aspect of on-street parking, namely the accidents and offenses related to parking, is not directed toward urban governance, but toward the urban middle class themselves. In Featherstone's critique of automobility, he said that a traffic accident "has become something unworthy of reporting in the media, except in the case of dramatic human interest tragedies" (Featherstone 2004: 4). Hagman also noted that in Sweden, road rage, a typical psychological response toward traffic difficulties, is often related to "parking than with driving or queuing," and that "threats and violence may be directed towards other drivers, or towards parking officers" (Hagman 2006: 64). Vandalism against parked cars happens too often to be reported in the media except for in extreme cases. For example, a retired man in his 70 s was caught in the summer of 2014 for maliciously scratching on the surface of five parked cars in the city of Changzhou. He confessed that he was angered by the drivers who had parked their cars along a very congested street (Gao 2014). The contest for urban road space could easily materialize and result in physical conflicts between road users, sometimes entailing serious accidents. In September 2013, *The Guardian* published a report of less than 150 words on the death of a 2-year-old toddler girl, who was killed when she was hurled to the ground by a perpetrator, after a brief argument over parking space in suburban Beijing (Associated Press 2013).

3.5 Discussion: Beyond the Planners' Nightmare

For Solomon Benjamin, "Occupancy Urbanism" is the nightmare of planners because it is tightly knitted within Indian urban politics. The city is "increasingly out of control with regard to policy and programmes," and "it emerges as a fearful, unruly and occupied terrain" (Benjamin 2007: 540). Benjamin found that Master Plans became ineffective, and he called it a crisis for planning (Benjamin 2008).

Admittedly, the discrepancy between the vision of urban elites and the real power structure on the ground is nothing new. Gavin Shatkin draws attention to the "actually existing urbanisms" by which, he was referring to "appropriations of urban public space for housing and economic activity by both the poor and the wealthy; the performance of activities in public space deemed inappropriate by planners" (Shatkin 2011: 80). In particular, Shatkin contrasts state-driven modernist planning, typical of authoritarian and centralized regimes, and its associated rigidity and inflexibility with the practical measurements of entrepreneurial governments, and points out that the latter is better adapted in dealing with actually existing urbanisms.

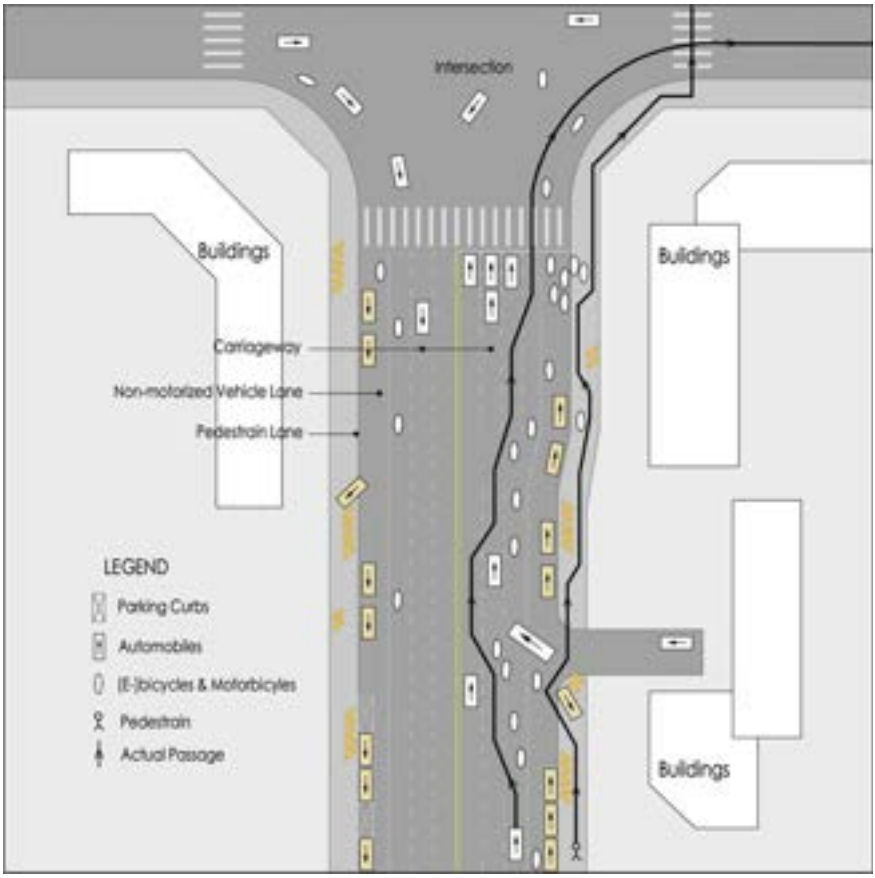

Fig. 3.3 Diagram of typical traffic flows in Chinese cities

Ironically, "Occupancy Urbanism" is perhaps the soundest answer to his question of "how do people make claims to urban space outside urban regimes and rational-comprehensive planning and legal framework?" (Shatkin 2011: 84). It reflects what he has called local politics, in contrast to hallmark grand projects of the post-liberalization era of the Indian economy (Shatkin 2014). In Chinese cities, parked cars have taken a large amount of urban open space. Consequentially, the streetscape becomes highly fragmented, unpredictable and dangerous.

Figure 3.4 contrasts two transverse sections of the urban road. One is the planning guidance model, and the other is the improvisation of the model based on empirical observations. It is obvious that the rational road planning fails to reflect actual traffic flows. Together with Fig. 3.3, they give an idea of the actual operation of the urban road in Chinese cities. This "actually existing urbanism," with its unlawfulness and inefficiency is undermining the effectiveness of planning, and eventually does harm to the general welfare of society.

Fig. 3.4 A transverse section of 36-m-wide urban road as depicted in urban planning guides (*left*) and in reality (*right*)

However, there is no reason to be overly pessimistic. In a way, the cities of China are repeating what has happened in other cities that have undergone mass immigration and motorization. Post-war Hong Kong, for instance, experienced tremendous population increases and automobile increases. The British colonial government of Hong Kong invited Pattick Abercrombie to consult. Abercrombie later advised the Hong Kong government to start constructing public parking sites and to make parking lots mandatory for new office buildings in 1948 (Ho 2008: 58). Ten years later, it was proposed that parking on busy roads be prohibited in Hong Kong (Ho 2008: 64). By the year of 2007, on-street parking accounts for merely three percent of total parking spaces in Hong Kong (Wang and Liu 2014).

Yet, as an ad hoc solution, it is not easy for officials and planners to ditch on-street parking in Chinese cities in the short term. Instead, various kinds of road-pricing and automobile control regulations have been adopted. In the city of Shanghai, for example, cars without certain plates are prohibited to enter the outer-ring roads during rush hours. Wang and Yuan have also suggested that cities may require proof of parking space before registering automobiles (Wang and Yuan 2013).

What is at stake, and practical, is to enhance social awareness of the nexus between automobility and welfare. Society should be attentive to Manville and Shoup's warning that the street, long predating the car, is being consumed by the latter (Manville and Shoup 2005: 233). Road safety, too, should not be solely viewed as the "responsibility of individual road users" (Featherstone 2004: 4). Both of these hegemonic views of automobility and the urban road must be balanced with an emphasis on the people, the real subject of mobility and the public sphere, rather than the materialization of personality, namely the car. A reduction of on-street parking should be coupled with an increase in off-street parking spaces, improved public transportation systems and more transparent governance of parking control companies. The urban planner is, of course, only one of the players in this comprehensive project.

3.6 Conclusion

In this chapter, we offer a theoretical framework for comprehending the on-street parking problem in contemporary Chinese cities. Urbanization brings with it the motorization of China. The on-street parking problem is an ad hoc solution to the pressing demands for parking spaces. Theoretically speaking, we likened the on-street parking phenomenon to the occupancy urbanism of India's urban poor. In particular, we associate the act of *zhan* and *occupy* in the two different contexts on the ground because both acts take possession and control of certain spaces in an extra-legal manner. On-street parking can take place in both authorized and unauthorized places, therefore posing a challenge to the de jure status of parking control. The legitimacy of parking control is arbitrary, and the boundary between legal and illegal is blurred. The public space of an urban road is being contested between the local government (and its undertakings), car drivers and other more vulnerable road users.

However, unlike the original use of "Occupancy Urbanism" by Solomon Benjamin, we stress that in the Chinese urban context, occupancy as a strategy is not limited to the urban poor. In the case of on-street parking, the Chinese urban middle class goes on to occupy urban spaces with the car, which further deteriorates the traffic conditions. The middle class is at the same time rebellious and assertive in claiming their share of the city. The association between social classes and their strategies is not applicable.

The everyday experience of on-street parking in Chinese cities is calling for an urgent revision of the parking policies. Considering the high density of Chinese cities and the pace they have been developed, it is perhaps not surprising that on-street parking will still be in existence for some time. To comprehend the mechanism behind the seemingly unruly parking behavior, and mitigate its negative externalities, it is necessary to get back to the social and human dimensions of automobility. In this process, planners should be joined by other social groups to work for a fairer share of the road space.

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References

Asian Development Bank. (2011). *Parking policy in Asian cities*. Manila: Asian Development Bank.

Associated Press. (2013). China sentences man to death for killing toddler in parking row. *The Guardian*. Available at http://www.theguardian.com/world/2013/sep/25/china-sentences-man-death-toddler-parking-row. Accessed on November 16, 2014.

Benjamin, S. (2007). Occupancy urbanism: Ten theses. *Sarai Reader*, pp. 538–563.
Benjamin, S. (2008). Occupancy urbanism: Radicalizing politics and economy beyond policy and programs. *International Journal of Urban and Regional Research, 32*(3), 719–729.
Cass, N., Shove, E., & Urry, J. (2005). Social exclusion, mobility and access. *The Sociological Review, 53*(3), 539–555.
Cao, X., & Huang, X. (2013). City-level determinants of private car ownership in China. *Asian Geographer, 30*(1), 37–53.
Davidson, I. (2012). Automobility, materiality and Don Delillo's Cosmopolis. *Cultural Geographies*, *19*(4), 1–14.
Easen, N. (2013). The rise of China's secondary cities. *BBC travel*. Available at http://www.bbc.com/travel/story/20130327-the-rise-of-chinas-secondary-cities. Accessed on March 20, 2015.
Featherstone, M. (2004). Automobilities: An introduction. *Theory, Culture & Society, 21*(4–5), 1–24.
Gao, J. (2014). Seventy year old man scratches on the surface of parked cars as in anger and revenge. *Jiling Evening Post*, Aug. 31. Available at http://news.sina.com.cn/s/2014-08-31/055330770530.shtml. Accessed August 31, 2014. [in Chinese]
Hagman, O. (2006). Morning queues and parking problems. On the broken promises of the automobile. *Mobilities, 1*(1), 63–74.
Henderson, J. (2009). The spaces of parking: Mapping the politics of mobility in San Francisco. *Antipode, 41*(1), 70–91.
Ho, P. (2008). *Ways to urbanization: Post-war road development in Hong Kong*. Hong Kong: Hong Kong University Press.
Jin, X., Bauer, T., & Weber, K. (2010). China's second-tier cities as exhibition destinations. *International Journal of Contemporary Hospitality Management, 22*(4), 552–571.
Latham, A., & McCormack, D. (2004). Moving cities: Rethinking the materialities of urban geographies. *Progress in Human Geography, 28*(6), 701–724.
Lin, Y., Wang, J., Liu, Y., Zhang, X., Liu, F., & Mi, Y. (2015). Shenzhen city begins charging fee for on-street parking, drivers prefer to park at unauthorized spots that occupy part of the street. *Southern Metropolis Daily*, Jan. 7. Available at http://news.sina.com.cn/c/2015-01-07/084431369782.shtml. Accessed on February 24, 2015. [in Chinese]
Manville, M., & Shoup, D. (2005). Parking, people, and cities. *Journal of Urban Planning and Development, 131*(4), 233–245.
Merriman, P. (2009). Automobility and the geographies of the car. *Geography Compass*, *3*(2), 586–599.
National Bureau of Statistics of China. (2013). *China Statistical Yearbook*. Beijing: China Statistics Press. Available at http://www.stats.gov.cn/tjsj/ndsj/2013/indexch.htm. Accessed on November 16, 2014.
National Bureau of Statistics of China. (2014). *Commnique of Statistics of National Economic and Social Development*. Available at http://www.stats.gov.cn/tjsj/zxfb/201402/t20140224_514970.html. Accessed on November 16, 2014.
Oldenziel, R., & Bruheze, A. (2011). Contested spaces: Bicycle lanes in urban Europe, 1900–1995. *Transfers, 1*(2), 29–49.
Pooley, C. (2010). Landscapes without the car: A counterfactual historical geography of twentieth-century Britain. *Journal of Historical Geography, 36*(3), 266–275.
Roy, A. (2011). Slumdog cities: Rethinking subaltern urbanism. *International Journal of Urban and Regional Research, 35*(2), 223–238.
Shatkin, G. (2011). Coping with actually existing urbanisms: The real politics of planning in the global era. *Planning Theory, 10*(1), 79–87.
Shatkin, G. (2014). Contesting the Indian city: Global visions and the politics of the local. *International Journal of Urban and Regional Research, 38*(1), 1–13.
Sheller, M., & Urry, J. (2000). The city and the car. *International Journal of Urban and Regional Research, 24*(4), 737–757.
Urry, J. (2006). Inhabiting the car. *The Sociological Review, 54*(s1), 17–31.

Wang, J., & Liu, Q. (2014). Understanding the parking supply mechanism in China: A case study of Shenzhen. *Journal of Transport Geography, 40*, 77–88.

Wang, R., & Yuan, Q. (2013). Parking practices and policies under rapid motorization: The case of China. *Transport Policy, 30*, 109–116.

Yu, Q. (2013). Hefei *chengguan* collectively responses to the plan of straightening and correcting chronicle urban problems. *Jianghuai Morning Post*, Jun. 10. Available at http://news.hf365.com/system/2013/06/10/013255506.shtml. Accessed on February 24, 2015. [in Chinese]

Zhu, C., Zhu, Y., Lu, R., He, R., & Xia, Z. (2012). Perceptions and aspirations for car ownership among Chinese students attending two universities in the Yangtze Delta, China. *Journal of Transport Geography, 24*, 315–323.

Part II
Urban living and Socio-spatial Experiences

Chapter 4
China's New Generation Migrant Workers' Urban Experience and Well-Being

Shenjing He and Kun Wang

Abstract Among the tens of millions of migrant workers in Chinese cities, a substantial proportion are new generation migrants. Yet, their distinction from the old generation and their unique urban experience and well-being have not been fully explored in the existing literature. Referring to Bourdieu's concepts of field and habitus, this chapter unfolds the stories of China's new generation migrant workers by examining their predicaments and well-being, their changing imagination and representation of the city and home, and their life prospects under a confluence of forces from the state, market, and society. Compared with the first-generation migrants, the new generation is better educated and more willing and adaptable to stay in the city. Unlike their predecessors, most of them do not have farming skills, but they are more creative and have an adventurous and entrepreneurial spirit. Nonetheless, their urban lives suffer from the same level of precarity as their predecessors, sometimes even worse because the rigid *hukou* system and rural–urban dichotomy endure while competition among themselves becomes much fiercer. In the highly unequal and contested urban field, self-stigmatization and ambiguous identity are common "habitus" for new generation migrants and are reflected in their imagination and representation of the city and home. To a large extent, the field and habitus faced by migrants are shaped by state institutions. Yet, market and societal forces have added new dimensions to migrants' urban experience.

Keywords New generation migrant workers · Field · Habitus · Urban experience · Well-being

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4.1 Introduction

Since the late 1980s, tens of millions of rural migrants have thronged into cities and towns in China, and formed a special social class that often endures various precarities and multiple predicaments. After more than two decades, a new generation of rural migrants has emerged and gradually become the largest proportion of urban laborers. Since the term "new generation migrants" was first coined by Wang (2001), however, it has not been clearly defined. Some scholars use earlier urban experience and *hukou* status as the main criteria to define them. For instance, Lan (2014) defines the new generation migrants as those who either were born or grew up in the cities but still hold a rural *hukou*. Some scholars emphasize their parents' migrant status. For example, Liang (2011) and Xie (2010) define them as the children of first-generation migrants regardless of their own experience and status. Others distinguish them according to their birth date and starting date in the urban labor market. For instance, Wang (2001) and Pun and Lu (2010) consider them to be migrants who were born or raised in the reform period, especially those who were born in the late 1970s and 1980s and who entered the urban labor market in the late 1990s and 2000s. A number of scholars refer to the new generation migrants as those with a rural *hukou* who were born after the 1980s, also known as the post 1980s migrants (Zhu and Lin 2014; Liu et al. 2012; Liu and Xu 2007). The definition that takes the trajectories of life course into account is more accurate because migrants' early exposure to urban life, such as being born or raised in an urban setting or spending a significant proportion of their childhood in cities, might have a significant influence on their adult lives. However, due to constraints in the available empirical data, we are not able to trace the life history of the surveyed migrants. We, therefore, opt for a simplified definition of new generation migrants as post 1980s migrants in the city who have retained their rural *hukou*.

In the past few years, new generation migrant workers have attracted extensive scholarly attention for two main reasons: first, migrant workers in China are no longer a highly homogenous group, with the new generation migrants becoming the majority (Liu 2010). According to a national survey from 2013, the total number of new generation migrants has exceeded 100 million, which is about 60 % of the total rural migrants in China. Second, since 2010, the issue of the social integration of new generation migrants in the city has drawn wide attention from both researchers (e.g. Cheng et al. 2014; To and Tam 2014) and the central government. Generational differences are commonly observed between the old and new generation migrants. Compared with the old generation, the new generation is typically described as a cohort with relatively higher educational attainment, higher occupational expectations and higher demands for material and spiritual enjoyment. They are also criticized for having a lower tolerance for arduous work, lower attachment to rural land and lower tolerance towards social inequality, and for being more eager to become a part of the urban society (Fan and Chen 2013; Liu et al. 2012; Liu 2010; Wang 2001, 2010). In spite of these differences, both generations have suffered from multiple predicaments including institutional and market

exclusion, cultural discrimination, social isolation, and residential segregation (Liu et al. 2012).

Despite their growing abundance and significance in Chinese cities, new generation migrants' unique urban experience has not been fully explored in the existing literature. This chapter is therefore to unfold the stories of China's new generation migrant workers through examining their urban experience and well-being. In particular, we use data from a large-scale questionnaire survey conducted in the Pearl River Delta in 2008 and 50 in-depth interviews conducted in Guangzhou in 2012 to examine new generation migrants' self-stigmatization, changing representations of cities and home, aspirations, and future plans. Referring to Bourdieu's ideas of "habitus" and "field," we interrogate how new generation migrants' urban experiences are shaped by the forces of the state, market, and society.

4.2 Research Framework and Data Source

Bourdieu introduced methodological relationism, which signifies a separation from "social physics" and "social phenomenology," into social research in the 1960s, He argued that the dualistic way of thinking reflects the real world that exists in two ways: objectivity of the first order and objectivity of the second order (Bourdieu 1984). Based on this methodological principle, this study analyzes new generation migrants' urban experiences through combining two perspectives. First, we illustrate the predicaments new generation migrants encounter in the urban field. The particular material relations formed by the existing means of resource allocation and the different capabilities to mobilize various scarce social goods and values (i.e. what Bourdieu called the "objectivity of the first order") in urban China have generated a highly unequal and contested field and have produced multiple marginality for new generation migrants. Second, we delineate new generation migrants' habitus, including their self-stigmatization, their changing imagination, and representation of the city and home and their aspirations, in Bourdieu's term, the "objectivity of the second order." In elaborating the new generation migrants' urban experience, this research applies two of Bourdieu's key concepts: habitus and field.

According to Bourdieu, field is the network, or configuration, of objective relations between positions (Bourdieu and Wacquant 1992). It is the setting where agents and their social positions are located (Bourdieu 1984). There are three key points to understand Bourdieu's concept of field. First, the concept of position is essential to understand Bourdieu's field theory. If the field is similar to a net, positions are the knots of the net (Liu 2014: 152). A field is a structured set of positions, whose occupants typically have different resources and dispositions (Warde 2004). In other words, field is a social network woven by different positions. The position of each particular agent in the field is a result of the interaction between the specific rules of the field, agent's habitus and agent's capital (Bourdieu

1984). Various social factors can only exist and function in the field by occupying a specific position, which is decided by the power and resources they possess.

The concept capital is another cornerstone of Bourdieu's field theory because the amount and type of capital possessed by individuals or a particular social group determines their positions in the urban field. Field is a social space full of struggle and the outcome of struggle is determined by the amount of capital possessed by competing actors in a given field (Bi 2004; Houston 2002). Bourdieu consented to the classical political economy perspective that capital is accumulated labor, the value and transformation of capital should be based on the labor included. He further distinguished four forms of capital: economic capital, cultural capital, social capital and symbolic capital. Bourdieu basically accepted the economic capital concept defined by economists. Yet, he argued that the examination of economic actions should be combined with specific practice, and the extension of the concept of capital should transcend the tunnel vision of economics (Bourdieu 1986). Therefore, he put forward three other forms of capital: cultural capital involving a person's or institution's possession of recognized knowledge; social capital constituted by social ties; and symbolic capital referring to one's status, honor or prestige (Houston 2002). However, symbolic capital is a special category of capital that could be achieved only if capital of other types were legitimatized (Bourdieu 1986). Given new generation migrants' inferior socioeconomic positions, in this study we only discuss their economic, cultural and social capital.

Finally, the relationalism methodology is the pivotal methodological basis for the field theory. Bourdieu (1989) argued that field is the system of objective relationships rather than entities, which comes down in one continuous line with his relationalism way of thinking. As he illustrated, "whatever exists is relational: all that exists in the social world is various relations, not the interaction among actors or ties of inter-subjectivity among individuals, but what Marx named 'objective relation independent on individual consciousness and individual will'" (Bourdieu and Wacquant 1992: 133). We can therefore consider fields as arenas of social relationships that are characterized by the power differentials among the actors who make them up (Houston 2002), or "the various social and institutional arenas in which people express and reproduce their dispositions, and compete for the distribution of different kinds of capital" (Gaventa 2003: 6).

Through clarifying the concept "field," it is now clear that new generation migrants' urban experience in the urban field is determined by their relational position and the corresponding capital attached. Their positions and possession of capital could be analyzed through examining the interaction between state, market, and society, which determines the structure of fields and generates different amounts of capital attached to different positions. In this regard, the understanding of new generation migrants' urban experience and well-being should be situated in the ternary interactive framework of the state, market, and society.

Bourdieu cautioned the unconsciousness of subjects in some fields. In certain relatively small and uncomplicated fields, subjects can have a clear vision of the structure and rules of the field they are in. But in some large-scale and complex fields, it is very difficult for subjects to have a clear sense of all the social relations

and rules they are subject to. They are unconscious about their positions and also behave unconsciously in that field. The unconsciousness of subjects brings about diverse dispositions of different individuals and social groups, which Bourdieu called "habitus" (Bourdieu 1998) [i.e., the transformation of a position into individual disposition (Friedland 2009)]. Habitus is a persistent and transferable system of dispositions, both a structured structure, which is structured by the social world, and a structuring structure, which constantly structures society (Ritzer 1996). Habitus functions as "a very loose set of guidelines permitting us to strategize, adapt, improvise or innovate in response to situations as they arise. This type of action is not typically pre-mediated, but more often works in a pre-reflective manner as part of an inner set of dispositions" (Houston 2002: 157). This set of dispositions is a system constituted by the schemes of perception, thought and action (Liu 2014). Groups with similar dispositions have the common tendency to feel, perceive, act and think in the same way. Habitus is persistent because the dispositions are rooted in our mind and tend to be continuous in our lives. Habitus is also transferable because dispositions obtained in one domain of experience can also work in other domains (Swartz 2012). According to Bourdieu, fundamental life chances are determined by our habitus because it becomes embodied in the way we speak and in our preferred tastes, proclivities, and deportment. Meanwhile, others react to us on the basis of these class markers to reinforce existing perceptions of our place in the social world (Houston 2002).

Habitus is neither a result of free will nor is it determined by structures, but rather it is created by a kind of interplay between the two over time (Bourdieu 1998). As Friedland (2009: 889) puts it, "habitus is the incorporation of position as disposition, that is, as an incorporation of the categorical order immanent to that social structure of positions." Habitus remains a kind of subjectivity but considerably differs from pure subjectivity because it is a strictly established social structure and is closely combined with the objective structure. That is to say no habitus can exist independently. It can only be developed in a particular field. Although new generation migrants' habitus are their subjective dispositions, all these dispositions are closely linked with the urban field they are in. Building upon Bourdieu's theories, this study aims to take a fresh look at the lasting problem of socio-spatial inequality in relation to the rural–urban divide by incorporating in-depth analyses at both macro/structural and micro/individual levels. This analytical framework helps bridge the two separate strands of studies in the field that either adopt the political economy approach or quantitative approach, so as to provide a comprehensive and updated understanding of China' new generation migrants.

This study makes use of a large-scale questionnaire survey (sample size: 2510) conducted in the Pearl River Delta in 2008 by the Urban Social Research Center at Sun Yat-sen University to present a close-up portrait of the new generation migrants through delineating their socioeconomic characteristics and subjective well-being. We also conducted nonparticipatory observation and 50 semi-structured interviews in Guangzhou, from June to October 2012, covering migrants from different occupations and places of origin. Each interview lasted from 30 to 60 min and covered different aspects of migrants' urban experience, their representation of

the city and home, as well as their long-term further plans. Building on the research framework, these ethnographic materials will be used to analyze the new generation migrants' habitus and field, and the role played by the state, market, and society.

4.3 New Generation Migrants in the Pearl River Delta: Urban Experience Shaped by Habitus and Field

4.3.1 New Generation Migrants' Urban Lives and Well-Being

Drawing on the 2008 household survey data in the Pearl River Delta, this section first presents a sketch of the new generation migrants' urban experience. A T-test between the two generations of migrants shows that significant generational differences exist, in terms of age, gender, educational attainment, marital status, and monthly income (see Table 4.1).

Table 4.2 compares the demographic and socioeconomic characteristics between the two generations of migrant workers. Conforming to the findings from other researchers (e.g., Fan and Chen 2013; Liu et al. 2012), the educational level of new generation migrant workers is significantly higher than the old generation. However, the new generations' monthly income is much lower than the income of the old generation, which suggests that more education does not necessarily lead to a greater return for migrant workers in the urban labor market due to institutional exclusion and discrimination. For migrant workers, to a great extent market remuneration depends on experience and working hours rather than educational attainment. In terms of marriage and family life, new generation migrants have much lower marriage rates and lower fertility rates. Similar to Fan and Wenfei (2008) finding in Sichuan, about one-third of migrants from both generations

Table 4.1 *T*-test for old and new generation migrants (independent sample test)

	Mean value		$T^{\#}$
	New generation (N = 1587)	Old generation (N = 921)	
Age	22.07	37.57	−76.815***
Gender[a]	0.48	0.35	6.318***
Educational attainment[b]	2.46	2.08	11.414***
Marital status[c]	0.17	0.92	−53.935***
Monthly income	1463.47	1660.64	−5.737***

[a]Male = 0, female = 1
[b]No formal education = 0, primary school = 1, junior high = 2, senior high, technology school, vocational school = 3, college and beyond = 4
[c]Single = 0, married = 1
[#]two-tailed test; ***$p < 0.001$

Table 4.2 Demographic and socioeconomic characteristics

	New generation	Old generation
A. Educational attainment		
No formal education	0.13	1.09
Primary school	7.44	23.53
Junior high	47.39	46.84
Senior high, technology school, vocational school	36.42	22.98
College and beyond	8.63	5.56
B. Average monthly salary	1463.47	1660.64
C. Marriage and family		
C1. Marital status		
Single	83.18	7.60
Married	16.76	90.01
Divorced	0.06	2.06
Widowed	0.00	0.33
C2. Location of spouse		
At the same work place	25.00	25.85
In the same city/town	47.73	46.50
At home	16.67	20.41
Other places	10.61	7.25
C3. Live with spouse		
Yes	81.00	83.02
No	19.00	16.98
C4. Have children		
Yes	73.88	92.02
No	26.12	7.98
Average number of children	1.18	1.75
D. Employment		
D1. Occupation structure		
Public institution	2.18	2.63
State-owned and state-holding enterprise	3.51	4.81
Urban or rural collective enterprises	1.34	1.53
Private enterprises	42.15	51.31
Foreign or joint ventures	28.10	20.46
Incorporated companies	6.83	6.46
Self-employed entrepreneurs	13.98	11.05
Others	1.92	1.75
D2. Work and life balance		
Working days per week	6.13	6.32
Days off per month	3.68	3.11
E. Agricultural production		

(continued)

Table 4.2 (continued)

	New generation	Old generation
E1. Possession of farmland		
No	20.59	15.64
Yes	79.41	84.36
E2. Average farmland area (Mu)	11.06	7.44
E3. Average farmland area cultivated by him/herself (Mu)	3.66	5.23

endure the predicament of household splits to maximize their household income. Among the new generation migrants, separation from spouses is even more common than their processors, which partly contributes to a much lower fertility rate.

The two generations of migrants have slightly different occupation structures. The percentage of new generation migrants employed in foreign/joint venture enterprises or who are self-employed is much higher than that of the old generation, partly due to their higher educational attainment. Meanwhile, new generation migrants also have slightly fewer working days per week and have more days off every month, which conforms to their typical portrait. However, slightly different from the conventional understanding, the survey data shows that the percentage of new generation migrants who own agricultural land is higher than that of the old generation. Additionally, on average, the new generation also owns more farmland than the old generation. The reason might be that with fewer siblings in their households compared with the old generation, new generation migrants inherit more farmland from their parents. However, most new generation migrants do not actually work on their farmland. New generation migrants, therefore, have a lower dependency on farmland. According to a report published by the National Statistical Bureau in 2013, 87.3 % of new generation migrants have never engaged in any agricultural activities.

Table 4.3 compares the expenditures and housing conditions of the two generations of migrants. Although new generation migrants have much lower monthly income than their older counterparts, the former have a higher monthly expenditure than the latter. They also have a very different consumption structure. Expenditures on housing and food for new generation migrants are much lower because more than half of them live in factory dormitories. However, the new generation tends to have much higher expenditures on telecommunication, feasts and presents, entertainment and other non-subsistence spending. This reflects the generational difference commonly observed among all populations in society: the new generation tends to have a higher demand for a spiritual and cultural life. According to the 2008 survey data, new generation migrants sent much less remittance back to their hometown than the old generation. Meanwhile, a higher percentage of them did not have savings. The main reason is that many new generation migrants remain single and have less family burdens and commitment. However, the old generation seems to enjoy better housing conditions than the new generation because nearly half of

Table 4.3 Expenditures and housing

	New generation	Old generation
A. Expenditure		
A1. Monthly expenditure	751.07	746.01
Accommodation	79.64	92.76
Food	217.69	284.07
Communication	93.21	84.31
Feasts and presents	67.91	55.33
Entertainment	122.66	74.58
Others	147.43	133.46
A2. Personal computer ownership		
Yes	18.84	15.00
No	81.16	85.00
A3. Remittance in 2007	3393.94	5300.41
A4. Saving in 2007		
No	50.35	42.53
Yes	49.65	57.47
B. Housing		
B1. Housing type		
Dormitory	58.59	37.87
Rental housing	36.36	48.97
Living with relatives	1.83	1.09
Working place	1.89	5.33
Purchased apartment	0.51	4.24
Others	0.82	2.50
B2. Average housing area per capita	10.19	11.92

them live in rental houses rather than dormitories. In addition, only 0.51 % of new generation migrants have purchased apartments, much lower than the old generation, of which the percentage reached 4.24. This is mainly because older generation migrants have already worked in the city for a much longer time and have more savings. Due to having a different occupational structure, only 1.89 % new generation migrants live in the workplace, such as workshops and construction fields, while the figure for the old generation is 5.33 %.

Many intergenerational differences can be found by comparing the socioeconomic and consumption characteristics of the two generations of migrants. Table 4.4 further compares another important aspect of the two generations of migrants' urban living: subjective well-being and perception of their urban lives. In responding to the set of questions to measure their subjective well-being, a higher proportion of the old generation migrants continually have very negative feelings and a much lower percentage of them never have those feelings compared with the new generation. Different from the findings of Fan and Chen (2013), our study shows that the old generation migrants have a much stronger sense of the rural–

Table 4.4 Subjective well-being[a]

Frequency	Never		Occasionally		Usually		Constantly		Not clear	
	New	Old	New	Old	New	Old	New	Old	New	Old
My life is tough here	47.4	41.5	35.4	33.0	9.0	13.8	3.1	8.0	5.2	3.6
The urban society is highly unequal	31.0	25.9	31.8	27.3	14.4	19.9	12.2	15.1	10.6	11.8
I belong to a lower class here	75.9	62.7	14.4	18.1	3.3	9.5	1.0	4.5	5.5	5.2
My income is much lower than local people	28.5	23.0	36.7	26.5	17.8	26.7	10.3	18.8	6.7	5.0
We are excluded by local people to a great extent	52.9	49.4	25.4	25.4	8.7	11.9	4.0	7.7	9.0	5.7
My life would be much better if I have a local *hukou*	42.6	35.4	26.3	22.0	10.6	19.8	7.6	11.1	12.8	11.7

Self-identification	New generation	Old generation
Farmer	19.68	48.91
Worker	53.25	32.83
Others	7.70	7.61
Not clear	19.37	10.65

[a]Respondents were asked to report the frequency of having the feelings described in the table

urban inequities than the new generation. A much higher percentage of the old generation migrants constantly feel that the urban society is highly unequal; they are the lower class in cities; their income is a lot lower than local people; they are excluded by local people to a great extent; and their lives would be much better if they had a local *hukou*. In contrast, new generation migrants have a relatively higher sense of happiness and are generally more optimistic. New generation migrants' comparatively high level of subjective well-being is attributed to a number of characteristics: higher educational attainment, more colorful recreational activities and lower family burdens. It is worth noting that there is a huge contrast between the two generations in terms of self-identification. Only a small percentage of new generation migrants consider themselves farmers, and more than half of them identify themselves as workers. At the same time, nearly 20 % of them are confused about their own identity, which is double the figure for the old generation.

4.3.2 Habitus in a Highly Unequal and Contested Urban Field

Since the 1980s, industrialization in the coastal areas of China has largely been accelerated by foreign direct investment, which has subsequently propelled the process of urbanization. Millions of migrants left the countryside and thronged into coastal cities to find jobs in manufacturing plants. Waves of migration movements have passed, and now the new generation peasant-workers, to a certain extent, are repeating the life course of the old generation. The allocation of scarce resources in urban China, which Bourdieu termed the "objectivity of the first order," has not changed very much, and has further generated a highly unequal and contested field in which new generation migrants suffer various predicaments. However, from the perspective of new generation migrants, the "objectivity of the second order" has altered dramatically. In particular, their self-identification, imagination, and representation of the city and home, and projection of the future are not the same as the old generation.

4.3.2.1 A Highly Unequal and Contested Urban Field

Compared with urbanites, new generation migrants are in a comparatively weak position when their capital is calculated in whichever form. First, new generation migrants are usually in possession of less economic capital compared with urbanites. Their parents fall into in one of the two typical poverty groups in contemporary China: either the peasants in rural areas or the old generation migrants circulating between cities and the countryside. Poverty, to some extent, has been passed to the new generation migrants (Pun and Lu 2010; Solinger 2006). As well, most new generation migrants were born in rural areas and were typically raised by a single parent or grandparents in their hometown or went to migrant schools in cities. Due to the extremely imbalanced distribution of fundamental public services, the educational resources in rural areas and the migrant schools cannot be compared to the formal schools in cities. Additionally, many new generation migrants dropped out of school very early before college. Needless to say, their cultural capital is not as abundant as their urban peers. Finally, new generation migrants' social networks are restricted to a narrow circle formed by people with a similarly low socioeconomic status as themselves. As a result, the social capital they possess is relatively inadequate. The forms, content, and structure of capital determine the logic of a particular field and the social relations among various groups of social actors (Guo 2008).

According to our interviews, new generation migrants generally endure marginality in multiple areas, such as in employment, housing, social security, and children's education. First, a huge gap exists between new generation migrants and urbanites in the labor market. Although there are differences in the employment structure between the two generations of migrants, the fundamental fact that

migrants are usually concentrated in the labor-intensive, secondary sectors of the dual labor market with low-paying and unstable jobs has not changed (Zhu and Lin 2014). Higher educational attainment and better technical capability do not necessarily mean that new generation migrants can satisfy modern industries' requirements because the education and training they received cannot be compared with those of their urban peers (Liu 2010). Therefore, their demand for vocational skills training is more intense than their predecessors even though they typically cannot afford it. Mr. Zhou describes his predicament:

> I want to attend some training programs too, but my family have to be fed, who can they depend on? Only me! If I stopped working and go for some training programs, who is going to make money to feed them? (interview with Mr. Zhou, owner of a print shop, 25 May 2012).

Besides, the rigorous *hukou* institution may block them from the formal employment market (Zhu 2007), which increases the instability of their career and makes informal jobs sometimes more lucrative to them. As a vendor who makes Chinese hamburgers on the street said,

> I don't want a fixed stand, that would be too costly. I earn more as a haunting peddler (interview with Mr. Gong, a vendor, 25 May 2012).

But the income of informal employment is highly volatile and largely depends on the probability of being caught by the police or city appearance inspectors (*Chengguan*). As a tricycle driver recounted:

> I basically have no strengths in terms of self-fulfillment in Guangzhou city. My only skill is driving. But I can make four to five thousand yuan monthly if I don't get caught (his motor tricycle is unregistered) (interview with a motor tricycle driver, 21 May 2012).

However arduous, deep down new generation migrants still yearn for career stability, which is heavily deterred by the lack of local *hukou* and initial capital. This inspires the idea of going back home to start a small business. A motorcycle taxi driver told us his future plan:

> I don't want to drive motorcycle taxi anymore. I want to save about ten thousand yuan to start some small business. I cannot see the future of driving motorcycle taxi. I want to have a stable income, with 5 to 7 thousand yuan saving per year and then go back to hometown to build a better house (interview with a motorcycle taxi driver, 24 May 2012).

Second, new generation migrants commonly endure the extremely undesirable residential conditions in the city. No cities in China hitherto have seriously considered solving migrant workers' housing problems (Huang 2012). According to the 2008 survey in the PRD, the average living space for new generation migrants is only about 12.4 m^2, while the figure for urban residents has exceeded 30. Most new generation migrants cannot afford to buy or rent a decent apartment. Yet, migrants are excluded from the social housing program in the city. Most of them end up living in shabby dorms provided by their employers or overcrowded rental houses in urban villages that are notorious for substandard housing conditions, severe

infrastructure deficiencies, infamous social disorder and a chaotic built environment (Zhang et al. 2003). As Mr. Chen, a computer technician told us:

> The living condition of my apartment is terrible. I want to live in a nice commercial housing estate too, but I don't have the money to move to a new apartment (interview with Mr. Chen, an IT technician, 24 May 2012).

Third, the current institution of social security and the huge rural-urban disparity makes it very difficult, if not entirely impossible, for new generation migrants to be incorporated into the urban social security schemes. The socioeconomic inferiority of migrant workers endures, if not is exacerbated, because the changes between the two generations in terms of access to various social security programs are very minor (Zhu and Lin 2014). Also, as many migrants engage in informal jobs, they normally cannot afford to join a commercial social security program. As two of our informants stated,

> Commercial social insurance? Are you kidding me? I can hardly feed myself. I don't have extra money for that thing (interview with Mr. Gong, a vendor, 25 May 2012).
> I don't have money to buy social security. I want to buy it too, but I have children to feed (interview with a motorcycle taxi driver, 24 May 2012).

Finally, new generation migrants are further marginalized because their children's education is in a disadvantageous position due to the lack of local *hukou*. *Hukou* remains a critical social boundary in China's divided educational institutions, shaping the uneven distribution of educational resources and opportunities (Lan 2014). Without a local *hukou*, most migrant children cannot register in public schools. Even if they could, the sponsor fee for non-local children is too costly for them. In most cases, migrants can hardly afford the extra cost to enroll their children in urban formal schools because the expense of raising a child is already unbearable for them. It is, therefore, very common for the migrants to leave their children behind with their parents or relatives when they work in the city. As Mr. Zhou recited:

> My daughter is about seven years old, studying in the school in my hometown. I want to bring her to Guangzhou to stay with me. But I don't have enough money to support her to study in Guangzhou. The "Voluntary Donation Fee" (sponsor fee) is way too expensive, at least multiple ten thousands yuan. How could we afford it? (interview with Mr. Zhou, owner of a print shop, 25 May 2012).

Additionally, even if some children were fortunate to have the opportunity to be educated in cities, they face discrimination by teachers and urban children because of their stigmatized identity. According to Lan (2014), class and spatial differentiation between migrants and urbanites' children can be commonly observed. For instance, spatial practices, such as access to and usage of public space in schools, clearly manifests the marginality of migrant children in Chinese cities.

4.3.2.2 New Generation Migrants' Habitus

The reform and opening-up policies have had a great impact on China's societal structure, giving rise to new production relations and new social groups in modern China. The newly emerging social structure has been internalized into new generation migrants' habitus. This study assumes that the predicaments attached to new generation migrants' particular position has contributed to their self-stigmatization and changing representation of the city and home. Meanwhile, field is the objective premise for actors therein, and actors make their action plans and strategies according to various social relations of the field (Bourdieu 1998). In this section, we discuss new generation migrants' habitus concerning their self-stigmatization, changing representations of the city and home, urban aspirations, and long-term future plans.

Self-stigmatization

Through examining new generation migrants' urban experience, it is conspicuous that they are still associated with a low socioeconomic status, being excluded from the formal employment market and urban housing system and suffering from low social security. Limited by their educational level and rural lifestyles, migrants have a reputation for low *suzhi* (quality), high criminal rates, and a lack of concern for the public environment (Yan 2003). All these features have contributed to the stigmatization of migrants in urban society (Liu 2006), which further intensifies their marginality. Considering all these predicaments, it is not surprising that the new generation migrants commonly are self-stigmatizing.

> It seems that urban citizen are always superior than peasants. Take myself, I always want to be an urban person. But I don't have the capability. I always feel that I belong to a lower class. Indeed, I'm so poor, I don't have the confidence (interview with Ms. Zhou, a garment factory worker, 29 May 2012).
> I feel like the urban underclass, at the very bottom of the society. I work so hard every day like a bee or an ant, only to make some money to support my family (interview with a motorcycle taxi driver, 24 May 2012).
> You know, born as a rural person, I have to fight so hard to survive in the city, even though I have a degree from the college. If I don't work hard, I'll soon be eliminated… (interview with Mr. Zhu, a ship electrician, 28 May 2012).

Changing Imagination and Representation of City and Home

Most rural migrants in China circulate between the places of origin and destination cities and maintain their dual residential status (Zhu 2007). In comparison, the old generation migrants' disposition is more similar to the peasants living in rural areas, which makes going back home to engage in agriculture production a backup for many of them. Lacking agricultural experience and being exposed to the urban

experience in an earlier stage, new generation migrants' dispositions are comparatively closer to urbanities (Liu 2006).

Compared with their predecessors, new generation migrants have a higher occupational status and expectations for employment (Zhu and Lin 2014). As well, their urban aspirations are more ambitious than the old generation, with the motivation to explore the outside world, to expand the horizon, to pursue better personal development, and to learn better skills. Their migration to a greater extent is driven by more colorful urban dreams and imaginations other than only financial rewards. When asked about the reason for leaving hometown, a ship electrician told us:

> I cannot be a farmer forever, right? I want to have an urban journey, to explore the outside world (interview with Mr. Zhu, 28 May 2012).

A dormitory supervisor recounted:

> Cities are more developed, the economy is more prosperous, the opportunities are abundant. Apparently, we should choose to go out. It's impossible for youngsters like us to stay at home doing farm work, isn't it? (interview, 1 June 2012)

A courier explains why he came to the city:

> I came to Guangzhou because I have never been here before. Guangzhou is a first-tier city, very novel for me! (interview, 25 May 2012).

And a motorcycle taxi driver added:

> If everything went well in the next few years, I want to buy a house with 50 to 80 square meters in the suburb of Guangzhou to settle down. I don't want to stay in my hometown, it is boring! (interview, 24 May 2012).

Unlike their predecessors who were labeled as a "blindly floating population" (Li 2006), the migration of the new generation is more organized and purposive. Most of our interviewees came to Guangzhou through the introduction of family members, relatives, fellow countrymen, or friends. With a better supportive social network and higher educational attainment, new generation migrants are more adaptive to urban life and less emotionally or financially attached to their hometown. To a large extent, their imagination of the city and their urban experience have outweighed their attachment to their hometown. Far away from home for a long time, their representation of the home—the countryside—has become blurry and afar.

As a motorcycle taxi driver recited:

> I have not really been engaged in agriculture before. I don't know why, I don't really have a special sentiment to my hometown…Whereas Guangzhou really means something to me. The food, the climate, the dialect, the folk-custom, to which I adapt so naturally… (interview with a motorcycle taxi driver, 24 May 2012).

Ms. Zhou expressed in a similar way:

> I don't like to stay at my hometown. I don't have agricultural skills, don't know how to make a living. I feel comfortable only staying outside. After all, I've been out for such a long time (interview with Ms. Zhou, a garment factory worker, 29 May 2012).

Table 4.5 Long-term future plans

Future plan	Old generation	New generation
Staying in the city	69.8	60.5
Going home	15.9	22.6
Others	4.7	6.1
Not clear	9.6	10.9
Among those going home		
Become a farmer	31.76	4.88
Employed in non-agricultural sector (*Dagong*)	14.12	10.98
Start a small business	45.88	66.67
Establish own enterprise	8.24	17.48
Among those staying in the city		
Stay in current job	63.1	37.9
Remain in the same city	5.4	16.5
Go to other city/town	1.2	6.1

Along with the increasing years staying in cities, new generation migrants' social identity is ambiguous. Their value and manner has become more or less "urbanized," and they are more eager to be integrated into urban civilization. Due to institutional and market exclusion, it is very difficult for them to really settle down in cities. To some extent, they are caught in-between rural and urban:

> After drifting in the city for more than ten years, now I feel that I'm estranged from the countryside. My habits have totally changed. But I also don't think I'm an urban citizen. Not 100 % urban, not 100 % rural, maybe I'm in-between rural and urban… (interview with a motorcycle taxi driver, 24 May 2012).

Urban Aspiration and Future Plans

Considering migrants' ambiguous identity, a closely related question is how they plan for their future. Contrary to most of the existing literature (e.g. Zhu and Lin 2014; Liu and Xu 2007; Wang 2006), this research shows that new generation migrants are better educated, more adaptive to urban life, lack farming skills, and are more willing to be become urban citizens. Despite that, a high proportion of new generation migrants still prefer to return home eventually. This partly conforms to the findings by Yue et al. (2010). According to the 2008 survey data (see Table 4.5), 60.5 % new generation migrants plan to stay in cities in the long run, which is 9.4 % lower than the old generation. Meanwhile, 22.6 % new generation migrants claim to prefer to return back home, which is 6.7 % higher than their predecessors.

The reason for such preferences might be the predicaments they experience in cities are less bearable compared with those endured by their predecessors. Both the rigid *hukou* system and rural–urban dichotomy persist, and competition among new

migrants has become much fiercer. They are also less satisfied with their jobs and lives and have much higher aspirations for their future than the old generation (Cheng et al. 2014; To and Tam 2014; Fan and Chen 2013). The higher their aspirations are, the more frustration and anxiety they feel because of the huge contrast between the harsh reality and their colorful dreams. Many informants complained about the overwhelming stress and fast pace in the modern metropolis.

Mr. He, a mobile phone technician told us:

> The stress is so intense that I will not even think about marriage. In first-tier cities, without stable job and decent housing, it is not easy to think about that kind of stuff. If I were married, I would probably think about going to some second and third-tier cities (interview with Mr. He, 31 May 2012).

Ms. Zhu, a clothing saleswoman said:

> There is too much stress here. I don't want a urban hukou because urban life is too stressful. As long as I make some money, I will get back right away without hesitation (interview with Ms. Zhu, 1 June 2012).

According to our interviews, new generation migrants are more willing to relocate to smaller cities or towns near their home. This is related to their unsuccessful urban experience in a large metropolis. First, although new generation migrants have become more accustomed to an urban lifestyle and their representation of home has become ambiguous, the predicaments attached to their "positions" in the urban field are not significantly different from the old generation. The material civilization and colorful lifestyle in first-tier cities that once inspired their urban aspirations, together with the predicaments attached to their "positions" have now become a cruel irony that wears out their passion and "urban dreams." Second, most new generation migrants are trapped in "glass ceiling" jobs. According to a survey released by the Sociology Department of Tsinghua University, more than one-third of new generation migrants did not get promotion in terms of wages, skills, and administration structure during their last job and did not experience an improvement between different jobs (Zhang 2013a, b, c). Considering these two reasons, settling down in a small- or medium-sized city near their hometown seems to be a more realistic choice for new generation migrants.

As Mr. Liao explained to us:

> I don't mind adventure when I am still young. But we usually choose to go back to the towns near our home in the future. I want to settle down in my hometown, just like the Chinese saying goes 'Fallen leaves return to the roots' (interview with Mr. Liao, a salesman in a cloth wholesale market, 31 May 2012).

A motorcycle taxi driver already took action to fulfill his plan:

> I've bought a small flat in a small city near my village, still paying mortgage. I can get a non-agricultural hukou in that city at any time (interview with a motorcycle taxi driver, 24 May 2012).

Our findings more or less conform to Zhu (2007), who reveals that the settlement intention of the floating population in the cities is not as strong as expected. As Zhu

(2007) contends, apart from the *hukou* system, the highly mobile nature of the floating population is shaped by the combined effects of the intrinsic demand of the industrial society for temporary migrants, the household strategy of migrants to diversify and maximize economic opportunities and spread economic risk and certain conditions of the current stage of development. This is particularly true for new generation migrants. The settlement intention of new generation migrants in large cities is, therefore, lower than the old generation.

It is worth noting that, among those who plan to go home, there are significant intergenerational differences in the choices of occupation (see Table 4.5). First, new generation migrants are much less dependent on agriculture. Second, new generation migrants tend to be more creative and full of entrepreneurial spirit. About 66.7 % of new generation migrants plan to start small business and 17.8 % intend to launch an enterprise, which is 20.8 and 9.24 % higher than their predecessors, respectively.

Ms. Zhou, a saleswoman, detailed her future plans:

> I have always wanted to start my own business. Last year, I prepared to launch a salvage station but gave up after investigation because I was informed that it was very difficult for retail stores to make a profit and the work was torturing. Today when I was on my way going back home, seeing a variety of stores, I feel that impulsion again. Those traditional stores are everywhere. I have not decided what I can do to be distinguished from them. But I definitely will start my own business eventually (interview with Ms. Zhou, 1 June 2012).

Among those who prefer to stay in cities, only 37.9 % of new generation migrants claim they will continue in their current job, while the figure for the old generation is 63.1 %. Meanwhile, 6.1 % of new generation migrants intend to work in other cities, which is 4.9 % higher than the old generation. This reflects the precarity and instability of new generation migrants' urban occupations and their high mobility.

4.4 Framing New Generation Migrants' Urban Experience by the State, Market, and Society

4.4.1 Institutional Barriers Produced by the State

There are two institutional reasons for the marginality of new generation migrants in the urban field. First, the rural-urban dichotomy inherited from the socialist period has shaped two different institutional positions in China's urban field: urban *hukou* holders and agricultural *hukou* holders. The exclusive capital of various types attached to urban *hukou* continues to be the main barrier for new generation migrants' integration in urban society and the primary catalyst for the formation of their habitus. Additionally, very few migrants have received support from governments or employers due to the absence of social responsibilities. As Li (2002)

contends, capital is both the result of historical accumulation and the starting point for a new round of social actions. As long as the state fails to improve new generation migrants' capabilities to acquire capital, they will continue to lose at another starting point in a new round of social actions.

The *hukou* system and related institutional arrangements in many socioeconomic aspects favor urbanites and leave migrants disadvantaged (Zhu and Lin 2014). New generation migrants cannot enjoy equal fundamental public service as urbanites (Goodkind and West 2002) because of the migrants' position associated with an agricultural *hukou*. These unequal treatments are at the core of the slow socioeconomic progression of new generation migrants (Zhu and Lin 2014) and might lead some of them to criminal activities. Being left behind by their migrant worker parents, numerous new generation migrants were raised without study supervision and daily care, which might lead to social deviant behaviors, such as juvenile delinquency, in their later urban experience. The *hukou* institution has set a clear social boundary between urbanites and migrants in the urban field, which is still hard for new generation migrants to break through. Essentially, rural migrants' inferiority has been produced and perpetuated by the institutional barriers dominated by the *hukou* system.

The highly unequal urban field shaped by the *hukou* system is also the basis for the formation of new generation migrants' habitus. Under the existing *hukou* system, new generation migrants have suffered from various forms of stigmatization, including labeling, stereotyping separation, status loss and discrimination (Li et al. 2007). The unequal institutional arrangements have played a significant role in preventing them from getting rid of the negative stereotype labeled by mainstream society. This stigmatization combined with the new generation migrants' urban predicaments could easily contribute to their self-stigmatization. Additionally, the *hukou* difference in conjunction with new generation migrants' less dependence on rural land also give them an ambiguous identity, making their representation of the city and home very different from the old generation.

The lack of professional skills and occupational training are also key factors that deter new generation migrants from capital accumulation in the urban field. Thus far, governments at all levels have not paid sufficient attention to this issue, although new generation migrants' demand for vocational skills training are more intense than their predecessors while most of them cannot afford the cost of training. Most of them can only engage in labor-intensive industry or informal sectors due to the deprivation of rights of social security and self-development including education and training. Their development ability and upward mobility are thus limited (Wang 2006). While local governments already realize the significance of new generation migrants' contribution to local development, they are not willing to be responsible for migrants' training due to the lack of accountability and limitation of human and financial resources (Huang 2010).

4.4.2 Market Constraints and Opportunities

As Bourdieu contended, the discussion of economic capital should be combined with practice, and particular relationships between fields and habitus. The dual labor markets emerging from the neoliberalized regime in the post-reform period to a great extent have determined the new generation migrants' economic position in the urban field. More than three decades' economic reform has transformed China into the world's factory, making it the second largest economy of the world. Behind the glamorous economic miracle, rural migrants' tamed bodies serve as the biofuel of the world factory. While China has benefited greatly from such a development strategy, the labor-intensive nature has significantly restricted the scope of occupational diversification and upward social mobility provided by such development to rural-urban migrants (Zhu and Lin 2014). Although new generation migrants have become part of the urban economy, they are usually trapped in the informal labor market or the "secondary labor market" (Li 2004). Higher educational attainment has not changed the fundamental fact that they are constrained in the lower strata of the employment structure. This enduring dual labor market deters new generation migrants from changing their conventional status and acquiring an equal economic position as urbanites, which further precludes them from acquiring economic capital in the urban field. Being constrained in the secondary labor market, new generation migrants cannot be integrated in the urban institution, urban society and urban culture, forming the so-called "peri-urbanization" phenomenon (Wang 2006).

Although market conditions conform to and intensify the institutional barriers in some respects, market forces also provide leeway for rural migrants to escape their rural lives and shape their urban dreams and aspirations. The accumulation of entrepreneurial skills and capital in the urban field gives them the choice of becoming a petty business owner back in their hometown. Being full of the entrepreneurial spirit has become part of their habitus that differs from the old generation. New generation migrants no longer conform to the stereotype of the rural migrant who is strongly dependent on their rural land and stays in some of the most arduous urban jobs. In virtue of abundant employment opportunities provided by cities, their higher educational attainment and better Internet skills, new generation migrants are much better at job hunting than the old generation, and therefore, they change jobs more frequently. The newly emerged neoliberalized regime shapes a more liberal employment field, in which new generation migrants have developed various entrepreneurial skills and diverse urban aspirations.

4.4.3 Social Processes and Relations

Together with the state and market, social processes and relations play an important part in shaping new generation migrants' field and habitus. Compared with their

predecessors, new generation migrants have different socioeconomic characteristics and are more willing to be integrated into urban society. But they have also suffered from multiple marginality and social exclusion as we explored in previous sections. As a tricycle driver told us:

> We have no interaction with local people at all, many of them look down upon us (interview with a tricycle driver, 21 May 2012).

And Mr. Chen, a computer technician recounted:

> We don't have connection with local people. Let me tell you, what else can those local people contact us for apart from collecting rents to from us? (interview with Mr. Chen, 24 May 2012).

Despite being marginalized in the urban field, they have a more positive attitude toward the exclusion and are more actively trying to be integrated. As the motorcycle taxi driver explained:

> Whether you are accepted by the city, depends on your own. Only if you adapt to the city, to understand the city, it is possible to be accepted (by the urban society). It's a mutual thing, simple as that (interview with a motorcycle taxi driver, 24 May 2012).

Additionally, having a social network is another factor determining new generation migrants' social capital. Their social relations have reinforced their inferiority, but they also function as a remedy for them to survive the highly competitive urban field. Our research is consistent with other researchers' findings. Although new generation migrants are more likely to draw on cross-class, non-kin and non-territorial networks while seeking social support, hometown-based bonds and the urbanite-migrant divisions remain central to their social networks (Liu et al. 2012; Wu and Wang 2014; Yue et al. 2013). According to the 2008 survey data, most of new generation migrants' three best friends are their migrant colleagues or their fellow countrymen (see Table 4.6). They basically have no close connections with local people, governmental staff, or enterprise managers. It is conspicuous that their social network is still limited to migrant groups and hometown-based bonds. Although the social capital that they acquire through their social network can provide some support in the process of capital reproduction, it has also reinforced their inferiority because the social capital they possess seems very uncompetitive compared with that of the urbanites. This might also be true for the newly emerging virtual social network. Social media such as *weibo* has broken through the monolithic propaganda of traditional Chinese media and provides new generation migrants the opportunities to voice their own opinions. However, these platforms have also largely privileged the opinions of the well-educated, middle class netizens, keeping new generation migrants' voices on the margins (Zhang 2013a, b, c).

Table 4.6 Social network

Most close friends	Classmates (%)	Hometown-based bonds (%)	Colleagues (%)	Enterprise executive (%)	Enterprise managers (%)	Government staff (%)	Entrepreneur (%)	Local people (%)	Others (%)
First	13.48	37.49	52.89	2.77	1.02	0.00	0.45	2.83	4.13
Second	10.31	31.20	50.17	1.93	0.57	0.06	0.34	2.43	
Third	7.13	22.48	39.81	2.21	1.19	0.06	0.23	2.43	3.06

4.5 Conclusions

As a large number of rural youth join the low-cost urban labor force that fuels the Chinese economic miracle, a distinct social category, namely new generation migrants are produced in the urban field. Compared with the first-generation migrants, the new generation is better educated and is more willing and adaptable to stay in the city. Unlike their predecessors, most of them do not have farming skills. Yet, they are more creative and full of an adventurous and entrepreneurial spirit. Nonetheless, their urban lives suffer from the same level of precarity as their predecessors, sometimes even worse, because the rigid *hukou* system and rural–urban dichotomy endure, while competition among them is much fiercer.

The urban field in China has become an arena in which various social groups occupy different positions and compete for the distribution of different kinds of capital. Due to historical and institutional factors, urbanites and migrants are situated in two different positions in the urban field and are treated highly unequally in terms of resource allocation. The uneven distribution of capital between urbanites and migrants makes the new generation migrants a new marginal group in cities enduring marginalization in employment, housing, social security and children's education.

Self-stigmatization and an ambiguous identity are common "habitus" generated among new generation migrants and reflected in their imagination and representation of the city and home. To a large extent, state institutions shape the field and habitus faced by migrants. Yet, market and social forces have added new dimensions to migrants' urban experience. Regardless of the predicaments and precarities in their urban lives, which are largely decided by the institutions inherited from the socialist period and emerging from the neoliberal regime in the post-reform era, many new generation migrants hold onto their urban dreams, which to a great extent are supported by the emerging market opportunities and their gradually established social capital and social networks in the city.

Accumulation of capital and entrepreneurial skills in the highly unequal and contested "urban field" is central to new generation migrants' urban aspirations and future plans that form a key aspect of their habitus. As a result, a large proportion of new generation migrants opt for settling in small- or medium-sized cities near their hometowns to start their own small business. This is a rather rational choice after experiencing multiple levels of marginalization due to institutional and market exclusion in large cities while accruing economic entrepreneurial capital from their urban experience. It is worth noting that, new generation migrants' marginality is by no means assuaged when compared with their forbearers, as the highly unequal and contested urban field remains unchanged. For those returning to their hometowns to start their own businesses, their future remains highly uncertain. After all, because they possess very limited capital, their enthusiastic entrepreneurial spirit could easily be crushed by the cruel reality. To a certain extent, their positive attitude towards urban living illustrates a somewhat "distorted representation," because their consumption patterns, cultural tastes, and values are more "urbanized" than their actual positions in the structure of social power. Nonetheless, new

generation migrants' urban experience has been internalized in their daily lives and has become part of the habitus that contributes to their active engagement in envisaging a brighter collective future. As well, their imagination and representation of the urban might be able to inspire actions that could improve their future.

References

Bi Y. T. (2004). Bourdieu's "field-habitus" theory. *Academic Exploration, 1*, 32–35. (in Chinese).

Bourdieu, P. (1984). *Distinction: a social critique of the judgement of taste*. London: Routledge.

Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education*. New York: Greenwood Press.

Bourdieu, P. (1989). Social space and symbolic power. *Sociological theory, 7*, 14–25.

Bourdieu, P. (1998). *Practical reason: On the theory of action*. Redwood City: Stanford University Press.

Bourdieu, P., & Wacquant, L. J. (1992). *An invitation to reflexive sociology*. Chicago: University of Chicago Press.

Cheng, Z., Wang, H., & Smyth, R. (2014). Happiness and job satisfaction in urban China: A comparative study of two generations of migrants and urban locals. *Urban Studies, 51*, 2160–2184.

Fan, C. C., & Chen, C. (2013). New-generation migrant workers in China. In F. Wu, F. Zhang & C. Webster (Eds.), *Transient urbanism: migrants and urbanized villages in Chinese cities*. London, UK and New York, NY: Routledge.

Fan, C. C., & Wenfei W. W. (2008). The household as security: Strategies of rural-urban migrants in China. In Nielsen, I. L., & Smyth, R. (Eds.) *Migration and social protection in china*. Singapore: World Scientific.

Friedland, R. (2009). The endless fields of Pierre Bourdieu. *Organization, 16*, 887–917.

Gaventa, J. (2003). Power after lukes: A review of the literature. Brighton: Institute of Development Studies.

Goodkind, D., & West, L. (2002). China's floating population: Definitions, data and recent findings. *Urban Studies, 39*, 2237–2250.

Guo H. Q. (2008). Bourdieu's field and habitus theory in the relationalism perspective. *Journal of Hunan University of Arts and Science(social science edition),*45–48. (in Chinese).

Houston, S. (2002). Reflecting on habitus, field and capital: Towards a culturally sensitive social work. *Journal of Social Work, 2*, 149–167.

Huang, L. D. (2010). The training model and mechanism focusing on new generation migrants under the rural-urban integration context. *Journal of Fuzhou University (Philosophy and Social Science Edition), 6*, 89–94. (in Chinese).

Huang, Y. (2012). Low-income housing in Chinese Cities: Policies and practices. *The China Quarterly, 212*, 941–964.

Lan, P. (2014). Segmented incorporation: The second generation of rural migrants in Shanghai. *The China Quarterly, 217*, 243.

Li, Q. S. (2002). Analysis of Bourdieu's field theory. *Journal of Yantai University: Philosophy and Social Science Edition, 15*, 146–150. (in Chinese).

Li, Q. (2004). *Migrant workers and social stratification in China*. Shanghai: Social Sciences Academic Press. (in Chinese).

Li, B. (2006). Floating population or urban citizens? Status, social provision and circumstances of rural-urban migrants in China. *Social Policy & Administration, 40*, 174–195.

Li, X., Zhang, L., Fang, X., Xiong, Q., Chen, X., Lin, D., et al. (2007). Stigmatization experienced by rural-to-urban migrant workers in China: Findings from a qualitative study. *World Health Popul, 9*, 29–43.

Liang, H. (2011). Migrating—out and Left—behind in the view of life course: a comparative analysis of the characteristics of the second—generation Migrant Workers. *Population Research, 35*(4),17–28. (in Chinese).
Liu, C. J. (2006). Citizenization of China's migrant workers. *Theories Monthly, 22*, 5–12. (in Chinese).
Liu, C. J. (2010). The characteristics of new-generation migrant workers and the challenges to citizenization. *Population Research, 34*(2), 34–39. (in Chinese).
Liu, S. J. (2014). *Postmodern western sociology theories*. Beijing: Peking University Press. (in Chinese).
Liu, Y., Li, Z., & Breitung, W. (2012). The social networks of new-generation migrants in China's urbanized villages: A case study of Guangzhou. *Habitat International, 36*, 192–200.
Liu, C. J., & Xu, J. L. (2007). Study on the second generation migrants and their citizenization in China. *China Population Resources and Environment, 17*, 6–10. (in Chinese).
Pun, N., & Lu, H. L. (2010). Unfinished proletarianization: Self, anger, and class action among the second generation of peasant-workers in present-day China. *Modern China, 36*(5), 493–519.
Ritzer, G. (1996). *Sociological theory*. New York: McGraw-Hill.
Solinger, D. (2006). The creation of a new underclass in China and its implications. *Environment & Urbanization, 18*(1), 177–193.
Swartz, D. (2012). *Culture and power: The sociology of Pierre Bourdieu*. Chicago: University of Chicago Press.
To, S. M., & Tam, H. L. (2014). Generational differences in work values, perceived job rewards, and job satisfaction of chinese female migrant workers: Implications for social policy and social services. *Social Indicators Research, 118*, 1315–1332.
Wang, C. G. (2001). Social identity of the new generation of rural hobo and merger of urban and rural. *Sociological Studies, 3*, 63–74. (in Chinese).
Wang, C. G. (2006). Study on the Peri-urbanization of Rural Floating Population. *Social Studies, 5* (7), 107–122. (in Chinese).
Wang, C. G. (2010). Study on social integration of new generation migrant workers in cities. *Population Research, 34*(2), 31–34. (in Chinese).
Warde, A. (2004). *Practice and field: revising Bourdieusian concepts*. England: Centre for Research on Innovation & Competition, The University of Manchester.
Wu, W. P., & Wang, G. X. (2014). Together but unequal: Citizenship rights for migrants and locals in urban China. *Urban Affairs Review, 50*(6), 781–805.
Xie, G. (2010). A review on the new generation migrant workers issues. December 10. December 20, 2014, from http://www.ccyl.org.cn/10hlzc/bzlt/201012/t20101210_436912.htm
Yan, H. R. (2003). Neo-Liberal governmentality and neo-humanism: Organizing value flow through labor recruitment agencies. *Cultural Anthropology, 18*(4), 493–523.
Yue, Z. S., Li, S. M., Feldman, M., & Du, H. M. (2010). Floating choices: A generational perspective on intentions of rural-urban migrants in China. *Environment and Planning A, 42* (3), 545–562.
Yue, Z. S., Li, S. Z., & Jin, X. Y. (2013). The role of social networks in the social integration of rural-urban migrants: A migrant-resident tie perspective. *Urban Studies, 50*(9), 1704–1723.
Zhang, L. W. (2013a). Employment short-termism of new generation migrant workers. *Journal of Changsha District Vocational Technical College, 2*, 47–49. (in Chinese).
Zhang, N. (2013). Home divided, home reconstructed: Children in rural–urban migration in contemporary China. *Children's Geographies, 4*,1–17.
Zhang, P. Y. (2013c). Social inclusion or exclusion? When weibo (microblogging) meets the new generation of rural migrant workers. *Library trends, 62*, 63–80.
Zhang, L., Zhao, S. X. B., & Tian, J. P. (2003). Self-help in housing and chengzhongcun in China's urbanization. *International Journal of Urban and Regional Research, 27*, 912–937.
Zhu, Y. (2007). China's floating population and their settlement intention in the cities: Beyond the Hukou reform. *Habitat International, 31*, 65–76.
Zhu, Y., & Lin, L. (2014). Continuity and change in the transition from the first to the second generation of migrants in China: Insights from a survey in Fujian. *Habitat International, 42*, 147–154.

Chapter 5
Urban Villages and the Contestation of Urban Space: The Case of Shenzhen

Pu Hao

Abstract The physical expansion of cities in China has become intertwined with the influx of rural migrants to produce new forms of urban spaces and new standards of urban living. Communities and their settlements that stand in the way of development are exposed at the center of the dramatic urban transformation, which influences local residents' well-being. Meanwhile, the changing urban landscapes determine the welfare of urban communities, which depends on local residents' mobility and accessibility to urban services. In this context, the transformation cycle of the so-called urban villages has continuously responded to market-driven demands, resulting in evolving physical and social landscapes. The development and redevelopment of the urban villages then dictate how their migrant residents are able to pursue urban living and well-being. This chapter provides a comprehensive survey of the processes that have produced the built environment and social space in Shenzhen's urban villages. The construction of the built forms, the distribution and use of the different sites and the buildings that provide the physical setting for the economic and socio-cultural life are examined to unveil how the evolution of urban villages has been propelled by broad economic and institutional forces that have been altering the entire city. The production of the space is examined with respect to the supply and demand that has played out on a stage built by broad economic forces, and it is evaluated within and as a function of time- and place-specific contestations surrounding urban villages.

Keywords Urban village · Migrant housing · Urban land · Well-being · Shenzhen

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5.1 Introduction

Since China began its economic liberalization some 30 years ago, its urban population has expanded by more than 500 million. Every year 10 million people move to cities from the countryside (NBS 2010), providing the pool of skilled and unskilled labor that has put the urban economy on the path to sustained growth. Across the country, built-up land has been growing by an average of 8 % a year (NBS 2010). The physical expansion of cities has become intertwined with the influx of rural migrants to produce new forms of urban spaces and new standards of urban living. Communities and their settlements that stand in the way of development are exposed at the center of the dramatic urban transformation, which influences local residents' well-being. Meanwhile, the changing urban landscapes determine the welfare of urban communities, which depends on local residents' mobility and accessibility to urban services. This process is most phenomenal in Shenzhen—once a backwater 30 years ago but now the fourth largest city in China and the country's powerful growth engine for manufacturing, finance, and technological innovation (Schuman 2006).

When Shenzhen was founded as China's first Special Economic Zone (SEZ) in the late 1970s, it was part of the former Baoan County, which was overwhelmingly rural (Ng 2003). Strategically located to the north of Hong Kong, the SEZ has been spearheading China's reforms and economic opening. Economic success has been made possible by initiating an investment-driven and export-oriented economy, which implemented preferential policies and welcomed a cheap migrant labor force from China's poorer regions (Wang and Wu 2010). To facilitate the growth, the government has relied on rapid expansion of infrastructure and industrial premises. Urban expansion has stretched over the entire 400 km^2 territory designated as the SEZ, swallowing preexisting farmland (Shenzhen Museum 1999). Nonetheless, land in rural village settlements has remained in the hands of the indigenous communities. Local landlords and village collectives have taken advantage of their villages' prime locations and exploited them by constructing tenement houses and industrial plants for lease. Embedded within the urban fabric, the transformation cycle of these so-called urban villages has continuously responded to market-driven demands, resulting in evolving physical and social landscapes (Hao et al. 2011).

These changes influence many dimensions of the lives of the local residents, especially in light of the dispersed population who live in a scattered distribution of urban village neighborhoods and a concentration of high-order facilities in prime urban locations. The presence of centrally located villages enables access to available transport and proximity to employment and amenities, which are essential for the livelihood and social interaction of the residents. In remote urban villages, residents lack access to adequate mobility and consequently have a reduced access to opportunities, goods, and services (Hao et al. 2013b). In a sense, urban villages of Shenzhen enable both the inclusion and exclusion of the migrant population because large numbers of the migrant population live in and are widely distributed

throughout urban villages. The development and redevelopment of these urban villages then dictate how the migrant residents are able to pursue urban living and well-being.

This chapter provides a comprehensive survey of the processes that have produced the built environment and social space in Shenzhen's urban villages. The construction of the built forms, the distribution and use of the different sites, and the buildings that provide the physical setting for the economic and socio-cultural life are examined to unveil how the evolution of urban villages has been propelled by broad economic and institutional forces that have been altering the entire city. The production of the space is examined with respect to the supply and demand that has played out on a stage built by broad economic forces, and it is evaluated within and as a function of time- and place-specific contestations surrounding urban villages. Among the variety of actors involved in urban village development, such as indigenous villagers, tenants, investors, developers and the government, only those who hold the scarce resources that promise growth opportunities have been the core players. More recently, the governance framework that was put in place when the village land was declared urban (despite the villages' de facto autonomy) demonstrates that the delineations between the village communities and the city have become blurred, and a new growth coalition has started to take shape.

5.2 The Production of Urban Villages

Prior to the establishment of the Shenzhen SEZ in 1979 along China's southern border with Hong Kong, local residents lived in small, tight-knit rural communities. The undulated terrain spanning 2000 km^2 consisted of hundreds of village settlements along with 355 km^2 of cropland spread as archipelagos (SSB 2002). The initial development of the SEZ was based on engaging domestic and foreign investments into the manufacturing sector. Especially after the signing of the Sino-British Joint Declaration in 1984, there was a massive relocation of industrial activities from Hong Kong to the SEZ. Preferential policies were granted from the central government to attract investments; however, the SEZ government was constrained by stringent finances to implement hasty but ambitious development plans. Moreover, the SEZ had to provide land for investors without much revenue. Farmland was requisitioned at a standard of 50,000 RMB per hectare; rural settlements were left untouched to avoid extra costs (SUPLAB 1998). To compensate for the long-term livelihood of the landless farmers, around 10 % of the requisitioned land was returned to village collectives. This land was designated to develop village enterprises, which was expected to partly solve unemployment due to the loss of agricultural land (Hao et al. 2012).

Economic growth converted rural land at the rate of 6 km^2 per year in the first decade of the SEZ (SUPLAB 1998). With the rapid transformation of farmland into built-up landscapes, the urban environment engulfed village settlements. The proliferation of urban construction sites and industries attracted migrant workers,

driving the demand for affordable, well-located rental housing. This demand fit perfectly with local villagers' intent on rent seeking. Their right to village land and their freedom to build dwelling houses allowed them to profit from creating extra rental units (Hao et al. 2013a). Extensions were made to existing houses, and new tenement houses were constructed, offering a large quantity of low-cost housing units. Villages in prime locations became magnets for migrant workers. An urban village was usually the first stop for a migrant arriving in Shenzhen. Early arrivals later also brought relatives, friends and fellow countrymen, who would sleep over for the first few weeks until they found a job and their own housing, mostly likely also in an urban village. The flow of incoming migrant workers sustained the growth of housing units in urban villages.

Increasing numbers of migrant workers helped the indigenous villagers draw a growing proportion of their income from rental properties. The urban policy permitted indigenous villagers to continue the rural tradition that each male sibling of the family was entitled to construct a village house. To prevent excessive use of land, the maximum land area for a house was stipulated at 150 m^2, and the house footprint could be no more than 80 m^2 (Shenzhen Municipal Government 1982). The building density of the villages was still generally low because courtyards and open spaces inherited from the rural villages remained. Such urban villages were not radically different from traditional rural villages. Over time, the traditional two- to three-story houses became insufficient to meet demand, and these houses were replaced by taller and bigger tenement buildings (Fig. 5.1: left). Although most of the buildings exceeded the limits allowed by the government, the construction proceeded unimpeded. Consequently, the urban village housing emerged as a substantial housing market and provided the most popular housing option for migrant workers. Since the livelihood of the indigenous villagers and the housing problem of the migrants were simultaneously solved by the urban villages, the government turned a blind eye to the unauthorized construction occurring there (Hao et al. 2011). Urban villages became a synonym for cheap migrant housing.

Fig. 5.1 Tenement houses (*left*) and industrial (*right*) buildings in urban villages in Shenzhen (*Source* Author's photographs)

Massive-scale construction also took place on economic development land that was returned to the village (Hao et al. 2012). Supported by the government, shareholder companies of villages were established to promote village enterprises as an alternative means for earning a livelihood from agriculture. However, attempts to engage in industrial production seldom succeeded due to a lack of adequate technological and managerial skills. As a result, villages resorted to developing dedicated, low-cost industrial premises to attract external entrepreneurs (Fig. 5.1: right), which also coincides with the development strategy of the SEZ. The SEZ had been absorbing investments through its cheap labor and land. Big enterprises were welcomed by municipal industrial parks while these parks favored small enterprises less. Instead, the cheap industrial premises developed in urban villages met the demand of these small enterprises. Their investors, most of whom were domestic or overseas Chinese, also benefited from having closer social and cultural ties with the local community, which facilitated quick and successful deals (Hao et al. 2012). Therefore, while the urban village housing served as the entry-level housing market for most migrants, communal development land in urban villages served as an entry-level industrial park. This arrangement worked as a successful development model. Additionally, as development projects within the urban villages were not scrutinized by urban planning regulations due to their de facto autonomous status; indigenous villagers were able to provide self-built housing and facilities that were of inferior standards. This not only substantially reduced construction and management costs, but it also enabled quick and massive construction to provide large quantities of premises to cater to the increasing demand.

Both housing units and industries proliferated in urban villages. Their tenants and workers generated enormous demand for everyday consumption and community service, which allowed commercial and service facilities to flourish. Grocery stores, hair salons, kindergartens, clinics and other business outlets emerged to create a niche place for many rural migrants to experience an "urban life." In urban villages, the "ruling class" are the clan-based indigenous villagers whose ancestors settled in Baoan hundreds of years ago. Their claim to landholding rights was upheld by the country's rural collective land ownership and the local government's compromise strategy during farmland expropriation. While only a few of the indigenous villagers rely on farming for a living, the indigenous community has maintained strong cultural traditions, including the authority of the clan chief or village head to manage the village's affairs and collective assets, and the holding of festivities centered around the village's ancestor temple. Officials of the city generally had neither the resources nor the ability to intervene in the villages' administration and social issues. As a result, urban villages were not ostensibly considered a part of the city. Even the police typically do not patrol urban villages. However, the retreat of the state has left a dangerous power vacuum. Local officials are often less accountable to deter malpractice. The elections of village heads are often rigged and corruption is rampant (Hin and Xin 2011).

5.3 Construction Mania

In 1987, national land reform was initiated in Shenzhen, where the first land auction in Socialist China took place (Yeh and Wu 1996). Urban land use rights, once a public resource distributed to end users at no cost, became a commodity of value, tradable on the market. The property market started to boom in the early 1990s and land prices soared. In the surrounding environment of urban villages, thickets of residential tower blocks and office buildings were sprouting. The physical growth of the urban village mirrored these changes, which drove the urban village market to expand even more through highly intensive construction. In terms of physical growth, even though some urban villages were interspersed within the formal urban landscape, all of them inevitably relied on densification by infilling and intensification by increasing building height (Hao et al. 2013a). Idle lands and open spaces in the village were developed, as streets were narrowed and courtyards were filled. In urban villages in the SEZ, high-rise tenement buildings up to ten or more stories were built. Outside the SEZ, new urban villages were created by urban expansion. These villages started to growth physically, following the general development path of their counterparts in the SEZ. The development of tenements and industrial premises proved to be a profitable business model worth engaging in for the landlords of most urban villages (Hao et al. 2012).

Unbridled construction and the ensuing social problems associated with urban villages made the government increasingly intolerant of unauthorized urban village development and the existence of informality (Wu et al. 2013). Policies were introduced to control construction, but the government had no resources to enforce the prohibition on unauthorized construction. Moreover, due to the scattered distribution of urban villages, urban development often encountered village settlements that stood within designated development zones and required indigenous villagers to relocate their homes to new resettlement sites. A successful implementation of such land exchange schemes required the full cooperation of the landlords involved, which demanded that the government facilitate an infrastructure provision for the new site and permit higher density village development. Consequently, when the landlords moved from the old village to the new village, their holdings of floor space usually significantly increased. In other cases, urban villages were partially redeveloped as part of the government's city beautification campaigns. Village houses visible from the city's main avenues and scenic spots were the most undesirable. Since replacing these houses with modern buildings was the first priority, house construction on the rest of the village land was typically tolerated.[1]

In 1992, the rest of Baoan County that remained outside the SEZ was incorporated into Shenzhen Municipality. The agricultural sector, which made up 37 % of the GDP of the former Baoan County in 1979, dropped to less than 0.1 % of the

[1]This is based on interviews with the leaders of neighborhood committees and shareholding companies of Gangxia, Hubei and other urban villages in December 2008.

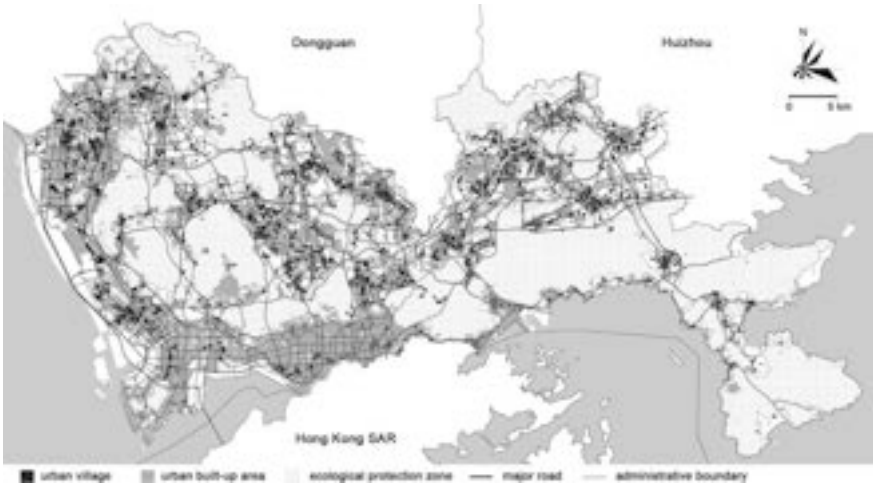

Fig. 5.2 The distribution of urban villages in Shenzhen, 2009 (*Source* Urban Planning, Land and Resources Commission of Shenzhen Municipality)

GDP of Shenzhen in 2008 (SSB 2009). The former agrarian communities turned into 320 urban villages scattered across the entire territory (Fig. 5.2). These urban villages covered 101 km^2 of land, equivalent to 12 % of the built-up area. The total floor area of urban villages increased from 54 million m^2 in 1999 to 106 million m^2 in 2004 while the land area occupied by urban villages expanded from 73 to 94 km^2. The growth of urban village land mainly occurred outside the SEZ, where the number of urban village houses increased by 50 % from 204,870 to 306,594 in the same period, and the total floor space expanded by 41 million m^2, almost double its original size. In the SEZ, where the spatial expansion of urban villages was not feasible due to a lack of vacant land, adding stories and extending plot areas created more floor space. The number of urban village houses increased by 20 % from 35,290 to 42,300, while the total floor area doubled, from 10.4 to 21.4 million m^2.[2] Consequently, buildings in urban villages in the SEZ were significantly taller and denser than their peripheral counterparts.

From 2004 to 2009, land expansion slowed and the number of buildings declined due to the regeneration of buildings by the indigenous villagers and government-led redevelopment. In general, the growth of urban villages was sustained in terms of floor space and building heights. Such intensification of land use accommodated most of the population growth in this period. However, throughout both periods, in some urban villages in the peripheries, housing and industrial developments almost never occurred because of a lack of demand (Hao et al. 2013b). Some of these villages are now languishing and the deterioration of the

[2]The numbers are based on the calculation using the Municipal Building Survey Data, which include physical attributes of all buildings in Shenzhen.

village houses has reached the stage where landlords cannot find tenants and as a result, have to leave their homes empty.

The variation between urban villages is substantial as their degree of development intensity and speed have depended on a combination of factors such as the employment in the vicinity of the village, the distance from the city center and the existence of transport, such as the metro and roads. In the city, these factors largely determine the differences in real estate prices and the residual land value. As the buildings and land in the villages cannot be traded, there is no direct indication of the underlying property prices. However, the development intensity reflects the price of the land, and the rents are higher as more square meters are rented per unit land area (Hao et al. 2013b). Consequently, the spatial evolution of individual villages, while manifesting high levels of adaptability responsive to their surroundings and new situations, are linked to the location of these villages in the urban fabric.

For urban villages, physical growth is a significant part of value creation. The primary motive behind urban village development is to sustain further growth of revenue, which depends heavily on the urban village's built intensity. Across the city, the built-up intensities of urban villages and planned urban neighborhoods follow a similar pattern of distance decay as the road distance to the nearest city center (among Luohu, Futian and Nanshan) increases (Fig. 5.3). Comparing the two forms of development, abundant investments and modern technologies enable the possibility of higher built intensity in the formal urban areas. Moreover, development in the formal city exhibits a better regression fit (R^2 = 0.67) compared to development in urban villages (R^2 = 0.46), which implies formal urban developments resulted from more complete market competition.

Through the physical growth and social transformation of urban villages, the legacy of rural village communities has had a profound effect on the morphology and social geography of Shenzhen. Preexisting urban villages are found throughout the urban fabric, without particular concentrations. Both migrant workers and middle-class residents who prefer accessible locations to housing quality favor the urban villages that are centrally located. The location of urban villages is remarkable for its integration with formal housing neighborhoods and for its occupation by a wide band of the socioeconomic spectrum. Because of the presence and growth of urban villages, the society with a high degree of social stratification maintains a short distance between social groups. Those who are socially disadvantaged have the opportunity to reside in close proximity to jobs and urban amenities.

5.4 Evolving Space Use

The last decade has witnessed a substantial weakening of Shenzhen's manufacturing competitiveness. Great pressure from continually rising production costs has encouraged industrial restructuring and economic upgrades. Many enterprises have shifted from the inner-city to the outskirts and even to inland cities where

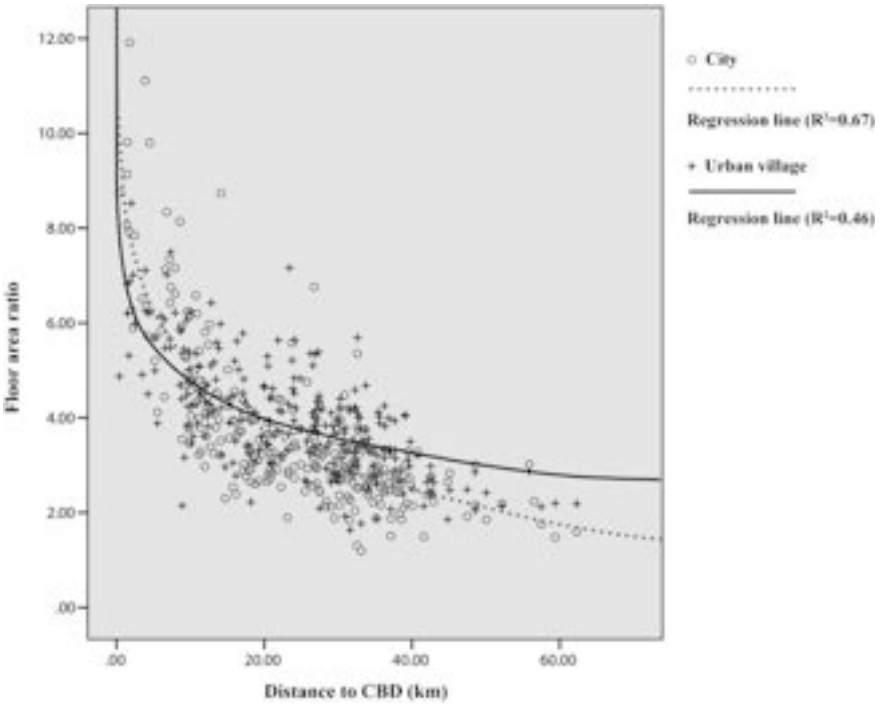

Fig. 5.3 Spatial variation in the development intensity of built-up land in Shenzhen, 2009 (*Source* Author's calculation using the municipal building survey data which include physical attributes of all buildings in Shenzhen)

production costs are lower. Industries in urban villages have also been subject to this restructuring process. As the environs of the urban villages developed, the underlying conditions to maintain certain land uses have changed. In central locations, industries were driven away from villages because of their relatively low returns against rising land values. Many industries shifted to urban villages in suburban areas where there are many cheap premises and transport and other infrastructure have improved in recent years. The development of commercial activities and public services has also changed to meet local demand and better fit the prevailing local conditions for development. As the environs of urban villages became more economically established, supermarkets, chain stores and other commercial outlets have brought down large commercial establishments inside urban villages that could not compete. The shops and services had to be converted to higher value-added products, so the communal land of the village was converted to urban land, which charged higher market prices. Industrial and commercial sectors that did not add high value were priced out to allow for other businesses that could gain higher returns. Tenants of the villages also typically have attained higher levels of education and acquired jobs in the formal urban sectors.

When faced with competing businesses and good offers to acquire villages' communal development land, villagers often relinquished their communal land while still relying on their private tenement houses for their own accommodation and to be their most important source of revenue. As communal land shrank, the number of dedicated commercial premises became rare. However, businesses still prevailed on the ground floor of private tenement houses. For instance, in the Caiwuwei village, a medium-size urban village of 20,000 residents and 98 tenement buildings had 274 commercial establishments, most of which were located on the ground floor of the tenement houses. The businesses served not only local residents but also consumers from the city, demonstrating a vibrant and diverse commercial landscape. Only about 40 % of commercial establishments obtained a license and thus complied with business registration regulations, but the government tolerated the presence of substantial unregistered commercial establishments. These commercial establishments satisfied consumption needs in almost every aspect of daily life, from convenience stores to beauty salons. Though opening hours were not regulated, these businesses had much longer opening hours than regular establishments in the planned areas. Moreover, the operating hours of different businesses varied substantially, indicating that every sector of business needed to operate as long as possible to be able to afford shop leases and survive the competition. The fast turnover of businesses tells everything.

Along with the upgrading of economic sectors within and around urban villages, the social structures of the tenements of urban villages have also changed over time. In urban villages in the city center, like Caiwuwei, significant proportions of urban village residents are well-paid professionals and employees. Lower-income workers in industries and consumer services can only afford urban village housing outside the SEZ. Similar to the formal housing market, the large stock of urban village housing of varied qualities and in various places provides highly diverse housing options. The social status of the residents of an urban village reflects economic sectors and employment opportunities available in the village's surroundings.

5.5 Redeveloping Urban Villages

Left unattended, urban village development often generates far from ideal living environments. The insecure property rights to urban village land tends to induce short-term investments, leading to a sub-optimal utilization of land and various negative externalities (Tian 2008). The lack of standard regulations, professional guidance for urban village development options and enforcement of building codes result in many physical problems, including the "thin line sky" and "handshake/kissing buildings." The government generally holds a negative view of urban villages, regarding them as "eyesores" and "backward places" and blames them for the chaotic land use that harms the city's modern and orderly image (People's Daily 2004; Shenzhen Urban Planning Bureau 2005). Restoration of local government control over urban villages is seen as important and essential for both

the political credibility and progress toward city development. These concerns lead to prolonged efforts to renew urban villages.

Given that urban villages cater to migrants' housing needs in terms of quantity and affordability, an ideal renewal scheme would not involve disrupting this niche housing market. Avoiding mass-demolition also allows the local landlords to enjoy a longer life span for their capital investments. In light of these concerns, architects and planners made great efforts to seek opportunities to renew urban villages without changing the physical and social fabric of the village. Many attempts have resulted in avant-garde designs, some of these being very radical and eye-catching. However, none of these creative renewal plans could possibly obtain the approval of the planning authority due to rigid building codes. Design requirements on sunlight spacing, fire engine access and infrastructure specifications would reject any modifications that preserve the existing tenement structures. The only option is wholesale demolition and redevelopment.

Moreover, there is an economic drive for redevelopment due to rising land values, which are mostly the result of general urban development and large public investments. These developments have driven urban villages to grow denser and taller, especially for the centrally located villages. The same attributes, such as a central location and access to public transport, make the land of urban villages potentially attractive to developers. Severe competition in the land development market is reshaping the urban landscape, where numerous urban villages are present and likely to fall prey to demolition and redevelopment. In the last decade, more than 100 villages were selected for full or partial redevelopment. Most of the listed villages are those that have grown the most during the stage of the hype over urban villages. Residual land values are the highest in those villages and thus the revenues of the redevelopment. However, after redevelopment plans were introduced and rumors spread throughout the villages, further growth and construction was strengthened rather than slowed as compensation was largely determined by the building floor space to be demolished. Thus, villagers built even more housing units to yield more compensation (Hao et al. 2013a). This contestation raised the costs for the authorities and led to longer delays for negotiation, which are often common with such village redevelopment projects.

For landlords, the housing demand generated by migrants has determined the development of housing. Rental prices vary according to certain features of different villages. Market prices reflect the accessibility of their locations, physical quality and services in exactly the same way as they do for formal housing markets. Landlords who own more profitable properties are more resistant to surrendering urban village land. The land they possess is more attractive for property development so the compensation would be high, but they are hesitant to trade their property in view of the long-term revenue generated by their houses and the even greater potential of higher property values as a result of continual improvements in infrastructure and environment in the village's surroundings. However, the possible gains from the urban village land are contained by physical and technological limits. Only redevelopment enables the full exploitation of the potential land value and provides an opportunity to monetize their share in a collective asset.

Some urban villages occupy prime locations that are encompassed by commercial streets, office towers or industrial parks. These urban villages are close to jobs, transportation nodes and various public facilities, which provide a good environment and services. The land and property of these urban villages are expected to command much higher values. However, the informal status and poor quality of the urban village housing determines that they operate as a sub-standard, niche market for low- income earners, with low rent compared to nearby formal housing. As the architectural style of houses and the village layout may also account for a considerably lower plot ratio than what is obtainable with high-rise apartment buildings, urban villages are generally very attractive prospects for redevelopment (Hao et al. 2013b). The redevelopment of an urban village could allow the stored wealth of urban village land to tap into a wide pool of potential investors to enable substantial capital increases.

The redevelopment of centrally located urban villages often requires financial resources that are beyond the capacity of the government and the collective company. External developers are attracted by potential profits, but they are confronted with uncertainty and the difficulties associated with negotiation and site clearance. Central to negotiation is the decision about compensation, which in most cases is offered as a demolition–compensation ratio, indicating the amount of floor space to be returned to villagers for each areal unit of houses demolished. Like other entrepreneurs, developers seek to minimize risk. In terms of residential development, this conservative approach generally translates into the type of property development for clearly established markets in which there is high spending power. This generally requires large-scale land acquisition and redevelopment into upscale private apartments, luxury hotels and shopping complexes. Only large real estate companies can manage such projects. They also have more leverage when negotiating with the government for more preferable planning prospects. This is a critical aspect of business because a redevelopment project that keeps the plot ratio high can significantly increase profit margins. As a result, high compensation for local landlords does not necessarily mean the land is more valuable. Rather, it indicates that developers will have a higher profit margin, which is often guaranteed by development parameters.

The profits to be made from exploiting the huge gap between village land and urban land give developers a strong incentive to insert themselves as key actors at the center of urban village redevelopment. This incentive is intensified by their interest in the speed of operation because they have to finance land preparation and construction long before receiving income from the sale of completed projects. It is the developers who initiate the development process by recognizing an opportunity to profit from a perceived demand for certain types of construction in particular locations. They negotiate with landlords and the government for either acquiring exclusive development rights to the village land or entering into joint development arrangements to share development profits with the landlords. It is the developers who arrange the financing for construction. They commission architects and a scheme, often in close collaboration with the government, to guarantee the profitability of the project and the approval of the scheme by planning authorities.

The redevelopment process can be illustrated by the case of Caiwuwei village,[3] which is located in Shenzhen's major commercial and financial district Luohu. In the 1980s and 1990s, it was home to many of the earliest migrant workers and entrepreneurs to the SEZ to seek prosperity. The village has seen its surroundings metamorphose from paddy fields and a small market town into an established financial center. The government first planned to redevelop the village in the early 1990s, but it only became possible when China Resources Land (one of the largest state-owned enterprises) was invited to implement the first phase of redevelopment. This project turned Caiwuwei's south-eastern part into the MixC Mall, a large, high-end shopping center that was completed in 2004. The indigenous villagers were relocated and received a record amount of compensation. In the same year, Kingkey, a local real estate developer, announced an ambitious plan to build China's tallest skyscraper in one of the remaining parts of the village. Although the local government and the leadership of the collective company supported the project, the indigenous villagers fiercely resisted it in the hopes of receiving greater compensation. The stalemate lasted for over three years. To enable the redevelopment, both the developer and the government were forced to compromise: the developer offered higher compensation while the government adjusted the planning parameters to make the project more profitable. In 2011, a 100-story tower block named Kingkey100 was completed. The relocated villagers were given new apartment units, and the rental revenue tripled.

As long as 10 years or more may be required to prepare for an urban village redevelopment project. During this period, business and market conditions can change radically, and it may no longer be a propitious time for property development, thus rendering the preparation work and expense ineffective. For instance, the redevelopment of Gangxia village was proposed by the municipal government in 1998 and then launched by the Futian district government around 2002. However, resistance and conflicts brought the project to a halt until 2009, when two external investors—Gemdale and the Wuyeshen Group—offered the indigenous villagers higher compensation. Redevelopment agreements were finally signed and demolition began. Gangxia village accommodated 68,000 people in 590 tenement buildings of 514,000 m^2. The site is currently being redeveloped to produce 700,000 m^2 floor space, but the number of residents of the area will be reduced to only 7000 people. Redevelopment proposals envisaged that new properties would be private-led development and comprised of residential, commercial and office complexes. The increase of plot ratio and the change of land use will all transfer into a high level of profitability, which makes all the initial costs of time and compensation worthwhile for the developers.

In the process of urban village redevelopment, migrant tenants, who after all, form the largest group of residents in urban villages, are excluded from the decision-making and compensation schemes (Lin et al. 2014). Given the role of

[3]The following examples are based on interviews with the leaders of the neighborhood committees and shareholding companies of Caiwuwei and Gangxia in June 2012.

urban villages as a major housing market for migrants, their redevelopments definitely jeopardize migrants' access to housing (Song et al. 2008). Moreover, the use value of urban villages extends well beyond the shelter provided by the dwelling itself. The locations of urban villages facilitate proximity to other scarce resources, such as jobs, services and leisure facilities, whose net utility is greatly reduced after relocation. In the face of massive-scale redevelopment, the existing welfare models built on the legacy of preexisting village settlements are vanishing. If the trend continues to prevail by means of unimpeded market forces, a substitute model based on state supply and social redistribution should be in place to cope with the potential social crisis.

5.6 Discussion

In the short history of Shenzhen, the evolutionary cycle of urban villages has gone through dramatic changes in terms of construction intensity, the use of buildings and land and the ownership and jurisdiction over the village land. The development of urban villages, whether by indigenous villagers in the early phases or by developers in wholesale redevelopment, is motivated by competition for exploiting scarce urban land (Hao et al. 2012). Much of the importance of the contested urban spaces in urban villages has to do with the special nature of these socioeconomic entities. The land of an urban village preexists in fixed geographic space and is a form of stored wealth. The role of the urban village land as an asset rather than a site of settlement means that its exchange value is largely determined by its potential for reaping unearned income. This potential, when urban village land is in the hands of indigenous villagers, is exploited through investing in constructing tenement houses and industrial buildings. Such development can generate stable and increasing revenues. However, the incomplete property rights over the land determine that this land is not tradable and the value appreciation of the stored wealth is impeded. Only through wholesale redevelopment does the land become an asset that is subject to external investments and speculative activities in the market.

The early spatial growth of urban villages reflects the rational behavior of landlords in capital accumulation constrained by land institutions (Zhang et al. 2003). The economic rationale also manifests itself in the spatial variation across urban villages in different locations where market demand for migrant housing differs. While centrally located urban villages grow exponentially, villages in the outskirts change little by comparison. The wholesale redevelopment at a later stage is a means to release the hidden land values constrained by the informal status of urban villages and the incomplete property rights over their landholdings. Although most densely developed urban villages demand the highest compensation, these villages are also likely to yield the highest return as the much-constrained native development forms a larger rent gap between what is earned by indigenous villagers and the potential of formal development (Hao et al. 2013b). Consequently, the sequence that urban villages are redeveloped and their lands released will most

likely follow the same pattern in the central locations to the outskirts. So far, most urban village redevelopments have been in the SEZ, especially close to the Shenzhen-Hong Kong border where most of the high-end property developments are located and most public resources are provided. In a sense, the physical and social development of urban villages is not only a function of the supply-demand interaction over housing and land; it also works within long-wave economic cycles and is conditioned by the evolving institutional structures.

In the historic process of urban village development, the changing phases of the contested social spaces reflect continued competition for the use and economic value of scarce urban land. The power competition affects the local villagers' right to use land (Chung 2013) and scarcity arises when demand outstrips supply. With the development of Shenzhen, increasingly scarce land for further growth reflects an unequal distribution of resources (Harvey 1973). The exploitation of scarce land proceeds through all stages of the evolutionary cycle of urban villages from incremental growth to conversion into urban land and then to wholesale redevelopment into upscale private estates by local landlords, the government and developers, respectively. In the process, scarcity is constantly reproduced to serve as an instrument that reproduces social order. The space produced by market forces spans the city but has not left urban villages free from it. These autonomous villages also follow its dictates to evolve in an orderly pattern. Social space is produced by and produces the power to serve its goals towards higher economic returns. The government has been an active player in competition, rather than a regulator of competition between various actors. This role was manifested in how the city government initially supported the development of urban villages and prioritized attracting investments when the land was perceived to have little economic value; how both the economy and attitudes changed during the 2000s and early 2010s; and how redevelopment projects were supported by the government with public sources and administrative power. The urban village has become politically contested spaces, and conflicting community needs have led to the dilemma of development prospects (Hin and Xin 2011).

Migrant tenants, the majority of urban villages' residents, are powerless non-players in the contestation. Their right to the city and housing has never been acknowledged, let alone have their rights to pursue the benefits of public resources and the improvements in urban infrastructure been considered. As the human factor is not valued, all attempts to preserve urban villages have simply been too costly in the thick of the capitalist frenzy. Wholesale demolition and redevelopment prevails whenever the market requires and affords higher land revenue. The process very much echoes what Friedrich Engels wrote in 1872 in *The Housing Question*.

> The expansion of the big modern cities gives the land in certain sections of them, particularly in those which are centrally situated, an artificial and often enormously increasing value; the buildings erected in these areas depress this value, instead of increasing it, because they no longer correspond to the changed circumstances. They are pulled down and replaced by others. This takes place above all with centrally located workers' houses, whose rents, even with the greatest overcrowding, can never, or only very slowly, increase above a certain maximum. They are pulled down and in their stead shops, warehouses and

> public buildings are erected… The result is that the workers are forced out of the center of the towns towards the outskirts; that workers' dwellings, and small dwellings in general, become rare and expensive and often altogether unobtainable, … (Engels 1975 p. 18).

In today's urban China, wholesale redevelopments in the name of urban renewal are destroying numerous urban villages and old inner-city neighborhoods (Zhang 2005; Liu and Wu 2006; He and Wu 2007). These areas become better quality neighborhoods in terms of the built environment. However, as these areas are redeveloped, population displacements occur for the lower-income groups who are forced to find housing elsewhere, and the new development welcomes only those who can pay high prices. The process diminishes a great deal of the affordable housing stock in the central city and further marginalizes disadvantaged social groups. Urban renewal campaigns are turning many lively neighborhoods into desolate, gated communities. This also works as a domino effect where the redevelopment of one neighborhood drives the process for other neighborhoods in the proximity to follow the same redevelopment path. These processes of market-driven redevelopment will continue to restructure the residential patterns by driving the low-income population from the urban core. Rather than upgrading a city's socioeconomic profile, the process contributes to the polarization of society. Moreover, as the low-cost housing, which contains labor costs, is diminishing, the renewal also goes against the general interest because it erodes the city's overall economic competitiveness and social vibrancy.

The presence and growth of urban villages, both of which are a legacy of the preexisting rural communities, have had a substantial role in forming Shenzhen's residential pattern. The constellation of urban villages has confined the influx of migrants to a largely predetermined housing market, consisting of numerous pockets across the city. This makes the urban village undoubtedly a form of segregation rather than a locus for genuine integration. On the other hand, the pockets allow the penetration of migrants into the capital-intensive and resource-rich sections of the city and enable a relatively even distribution of migrants across urban sections (Hao et al. 2013a). Consequently, a proportion of the migrant population could reside in close proximity to employment and amenities; hence, they are better situated to improve well-being and life chances. The role of urban villages in the creation of a fairer society is thus manifest, especially in urban China where the issue of social exclusion has long been overlooked on the policy map. Nevertheless, the redevelopment campaigns of urban villages, which are underway in Shenzhen and other cities, are likely to jeopardize the somewhat reasonable composition and distribution of social groups. The new dynamics of the housing market would impede the physical and social well-being of the displaced residents by reducing co-presence and mobility. Given the massive redevelopment campaign and its consequence, a reparative remedy would be new policies and public transport designed to use increased mobility to reduce exclusion.

References

Chung, H. (2013). The spatial dimension of negotiated power relations and social justice in the redevelopment of villages-in-the-city in China. *Environment and Planning A, 45*(10), 2459–2476.

Engels, F. (1975). *The housing question (1872)*. Moscow: Progress Publishers.

Hao, P., Geertman, S., Hooimeijer, P., & Sliuzas, R. (2012). The land-use diversity in urban villages in Shenzhen. *Environment and Planning A, 44*(11), 2742–2764.

Hao, P., Geertman, S., Hooimeijer, P., & Sliuzas, R. (2013a). Spatial analyses of the urban village development process in Shenzhen, China. *International Journal of Urban and Regional Research, 37*(6), 2177–2197.

Hao, P., Hooimeijer, P., Sliuzas, R., & Geertman, S. (2013b). What drives the spatial development of urban villages in China? *Urban Studies, 50*(16), 3394–3411.

Hao, P., Sliuzas, R., & Geertman, S. (2011). The development and redevelopment of urban villages in Shenzhen. *Habitat International, 35*(2), 214–224.

Harvey, D. (1973). *Social justice and the city*. London: Edward Arnold.

He, S., & Wu, F. (2007). Socio-spatial impacts of property-led redevelopment on China's urban neighbourhoods. *Cities, 24*(3), 194–208.

Hin, L. L., & Xin, L. (2011). Redevelopment of urban villages in Shenzhen, China—An analysis of power relations and urban coalitions. *Habitat International, 35*(3), 426–434.

Lin, Y., Hao, P., & Geertman, S. (2014). A conceptual framework on modes of governance for the regeneration of Chinese 'villages in the city'. *Urban Studies,*. doi:10.1177/0042098014540345. (published online).

Liu, Y., & Wu, F. (2006). Urban poverty neighbourhoods: Typology and spatial concentration under China's market transition, a case study of Nanjing. *Geoforum, 37*(4), 610–626.

NBS (National Bureau of Statistics of China). (2010). *China statistical yearbook 2009*. Beijing: China Statistics Press.

Ng, M. K. (2003). City profile: Shenzhen. *Cities, 20*(6), 429–441.

People's Daily. (2004). Shenzhen: Urban villages hamper development and progress thus must be redeveloped. In *People's Daily* (p. A5). 26 October.

Schuman, M. (2006). The birth and rebirth of Shenzhen. In *Time* (pp. 26–28). 21 August.

Shenzhen Municipal Government. (1982). *Shenzhen jingji tequ nongcun sheyuan jianfang yongdi de zhanxing guiding* [Provisional regulations on housing land use by rural village members in the Shenzhen SEZ]. Shenzhen Municipal Government Policy No. [1982] 185.

Shenzhen Museum. (1999). *The history of Shenzhen special economic zone*. Beijing: People's Press.

Shenzhen Urban Planning Bureau. (2005). *Shenzhen shi chengzhongcun (jiucun) gaizhao zhongtiguihua gangyao* (2005–2010) [Master plan of urban village redevelopment 2005–2010]. Shenzhen Urban Planning Bureau Document.

Song, Y., Zenou, Y., & Ding, C. (2008). Let's not throw the baby out with the bath water: The role of urban villages in housing rural migrants in China. *Urban Studies, 45*(2), 313–330.

SSB (Shenzhen Statistics Bureau). (2002). *Shenzhen Statistical Yearbook 2002*. Beijing: China Statistics Press.

SSB (Shenzhen Statistics Bureau). (2009). *Shenzhen Statistical Yearbook 2009*. Beijing: China Statistics Press.

SUPLAB (Shenzhen Urban Planning and Land Administration Bureau). (1998). *Shenzhen land resources*. Beijing: China Dadi Press.

Tian, L. (2008). The chengzhongcun land market in China: Boon or bane?—A perspective on property rights. *International Journal of Urban and Regional Research, 32*(2), 282–304.

Wang, M. Y., & Wu, J. (2010). Migrant workers in the urban labour market of Shenzhen, China. *Environment and Planning A, 42*(6), 1457–1475.

Wu, F., Zhang, F., & Webster, C. (2013). Informality and the development and demolition of urban villages in the Chinese peri-urban area. *Urban Studies, 50*(10), 1919–1934.

Yeh, A. G., & Wu, F. (1996). The new land development process and urban development in Chinese cities. *International Journal of Urban and Regional Research, 20*(2), 330–353.

Zhang, L. (2005). Migrant enclaves and impacts of redevelopment policy in Chinese cities. In L. J. C. Ma & F. Wu (Eds.), *Restructuring the Chinese city: Changing and society, economy space* (pp. 218–233). New York: Routledge.

Zhang, L., Zhao, S. X. B., & Tian, J. P. (2003). Self-help in housing and chengzhongcun in China's urbanization. *International Journal of Urban and Regional Research, 27*(4), 912–937.

Chapter 6
Mobility and Quality of Life of the Elderly in Urban China: The Role of Household Structure

Jianxi Feng

Abstract Mobility is a core factor of quality of life for the elderly. A substantial body of research shows that loss and a low level of mobility are generally related to a low quality of life. However, these conclusions are based on data from North America, North-western Europe, and Australia. Very little is known about the relationship between mobility and quality of life in China. As the concept of quality of life is, to some extent "culturally and geographically variable and socially constructed", the relationship between mobility and quality of life of the elderly in urban China could be different, given the different economic, social, and cultural contexts of China. Based on a dataset of in-depth interviews with elderly people in Nanjing, this chapter investigates how mobility and the quality of life of the elderly are linked through the special household structure in China involving co-residence of the elderly and their married children. The analyses show that the relationship between mobility and quality of life is more complex than what has been demonstrated in the Western context. Specifically, in China, a low level of mobility is not necessarily related to a low quality of life for the elderly co-residing with their adult children. The elderly who co-reside with their children sacrifice the ability to participate in many out-of-home activities, including physical exercise and social interaction. But the elderly co-residing with families who have low education levels and do not have post-retirement plans, generally display positive attitudes toward the trade-offs and satisfaction with their life because assisting with childcare gives them a sense of esteem and happiness. Conversely, seniors who are highly educated and have post-retirement plans tend to complain about the low level of mobility because they have to sacrifice their plans and freedom to take care of their grandchildren.

Keywords Mobility · Quality of life the elderly · Household structure · China

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6.1 Introduction

Around the world, governments are confronted with the adverse effects of aging societies. The increasing share and absolute numbers of older people have a variety of implications, including insufficient pension funds, increasing health care costs and changing transportation patterns. These effects might be even more dramatic in China than elsewhere (England 2005). While the proportion of the elderly around the world will increase from 6.6 % in 1995 to 9.3 % in 2020, China will experience a rise from 6.1 to 11.5 % during the same period (WHO 2002). Projections suggest that by 2020, one out of every four global seniors will live in China (James 2002).

This aging of the population has a variety of implications for society, including increasing pensions for healthcare, and for the general provision of consumer products and services (Metz 2000). Policy-makers and academics have been investigating various strategies to cope with the negative impacts of aging, such as active aging, healthy aging, among others. Promoting the quality of life of the elderly is seen as an effective approach to reduce public expenditures for elderly healthcare and other services (Felce and Perry 1995; Farquhar 1995).

It is generally agreed that mobility is a core factor in the quality of life for the elderly (Banister and Bowling 2004; Farquhar 1995). Mobility enables older persons to access desired people and places to realize various physical, social and psychological needs, gaining a sense of independence and self-efficacy and hence increasing the quality of life of the elderly. A substantial body of research shows that loss and a low level of mobility is generally related to a low quality of life (Metz 2000; Alsnih and Hensher 2003). For instance, Spinney et al. (2009) reported that the ability of the elderly to travel and participate in physical activity and social interaction is positively correlated with their subjective well-being. Similar findings were reported by Oishiet al. (1999), who found that daily satisfaction was impacted by the success of achievement and engaging in rewarding social activities. However, these conclusions are mainly based on data from North America, North-western Europe, and Australia (Age Concern 1994; Banister and Bowling 2004). Very little is known about the relationship between mobility and quality of life in China. As the concept of quality of life is, to some extent, “culturally and geographically variable and socially constructed” (Chen and Silverstein 2000; Chen and Liu 2012), the relationship between mobility and quality of life of the elderly in urban China might be different, given the different economic, social and cultural contexts of China.

One important difference between China and the West relates to household composition. In contrast to the West, Chinese seniors often live with their married children for cultural and economic reasons (Logan and Bian 1999; Chen and Silverstein 2000). The Confucius teaching of filial piety (*xiao*) commands young people to take material as well as emotional care of their aged parents. Co-residence is suitable and feasible to this end (Logan and Bian 1999). As for the practical

reasons, parents and their adult children provide for each other's needs. For older people, the family serves as the primary source of support. For their adult children, aged parents care for their grandchildren and share some of the household responsibilities, such as daily shopping, cooking, and other household chores (Goh 2009).

Obviously, the task divisions and decisions within the household of co-residence differ from the prevalent household structures in the West and tend to have serious effects on the mobility pattern of seniors as demonstrated in various existing studies (Wang et al. 2011; Feng et al. 2013a, b). For instance, based on the dataset of the Nanjing Residents Travel Survey (2008), Feng et al. (2013a) found that after controlling for the social-demographics of the elderly and the attributes of their residential location, significant influences of the co-residence household structure on seniors' mobility patterns are observed. Generally, elderly people co-residing with their adult children tend to make fewer daily trips and travel shorter distances than seniors who live alone or as couples. The difference is especially large for leisure trips. Because seniors co-residing with their adult children tend to share household responsibilities, such as running errands and taking care of children, they have less time and energy for out-of-home activities. It seems that co-residing with their adult children and grandchildren imposes more constraints on seniors in time and space than for those living apart from their children.

Research on Western countries (Metz 2000; Alsnih and Hensher 2003) has shown that the level of mobility is positively associated with the level of quality of life. Based on that research, we might easily conclude that the elderly who live with their adult children generally have a lower level of quality of life than their counterparts who live alone or as couples because of the lower level of mobility and limitations on their ability to participate in out-of-home activities. However, some studies demonstrate that living with adult children is positively associated with well-being (Chen and Silverstein 2000; Chen and Short 2008) because this living arrangement provides a crucial context in which the elderly enjoy varied levels of social integration as well as emotional and instrumental support. What is the real picture of the quality of life of the elderly living with their children and grandchildren? How are the mobility level and quality of life linked through the specific household structure in urban China?

This chapter attempts to investigate the role of the special household structure in China involving the co-residence of the elderly and their married children in the relationship between mobility and quality of life using a dataset of in-depth interviews with the elderly in Nanjing in 2013. Section 6.2 details the analytical framework for the relationship between quality of life and mobility. Section 6.3 presents an overview of the research design. Section 6.4 is the qualitative analysis of the relationship between quality of life and mobility in extended families. The final section discusses the conclusions of our analysis.

6.2 The Analytical Framework for the Relationship Between Quality of Life and Mobility

The term quality of life originated after the Second World War in Western countries and has become a popular term in Asia in recently years (Lau et al. 1998). Despite its popularity among policy-makers and scholars, quality of life has no precise and consensual definition. However, there has been consistent agreement on some aspects of the concept: it is a multi-dimensional construct that includes several domains, which are interrelated; it is a collection of objective and subjective elements, which interact together (Farquhar 1995; Cheng et al. 2009).

Compared with the sizable studies on the quality of life of the general population, limited research has examined the quality of life of the elderly population (Lau et al. 1998; Chen and Short 2008). Studies have shown that health and functional status, life satisfaction and social relationships are important quality of life components for the elderly (Farquhar 1995). The concept of quality of life is, to some extent, "culturally and geographically variable and socially constructed", which means that social and cultural diversity may result in differences in the types and characteristics of components valued by their ranked level of importance in contributing to a good quality of life and in the underlying reasons for the way quality of life is perceived. For this reason, instead of using the findings from Western contexts, this chapter will employ the category of quality of life investigated for the elderly in Hong Kong by Lau et al. (1998), that is, quality of life includes the following important component elements: physical and functional well-being, psychological well-being, social well-being and economic well-being.

The link between mobility and overall well-being has been established in various studies (Cantor and Sanderson 1999; Ettema et al. 2010; Spinney et al. 2009; Waters et al. 1989). In general, previous research suggests that activities add to global well-being in the sense that people make progress toward their goals but also in the sense that activities are enjoyed at an affective level (Ettema et al. 2010). Regarding the ways that mobility influences well-being, Deci and Ryan (2008) asserted that activities add to subject well-being in two ways: one way is that activities could provoke direct positive or negative affects, such as feeling good, happy or warm; another way is that activities could help people to actualise their potential and achieve personal growth and progress toward their goals. Metz (2000) redefined the concept of "mobility", which can be easily applied to the research of the quality of life for the elderly. It includes the following dimensions: travel to achieve access to the desired people and places, the psychological benefits of travel, the benefits of physical movement, maintaining social networks and potential travel. In a similar vein, Spinney et al. (2009) summarized three possible benefits of transport mobility for quality of life: psychological benefits, exercise benefits, and community benefits. As indicated in Table 6.1, we outline the possible benefits of mobility on the four domains of quality of life categorized by Lau et al. (1998). This will serve as the framework for the analysis in next section.

Table 6.1 The dimensions of quality of life and the potential influence of mobility on these dimensions

Domains	Elements	Benefit of mobility on quality of life
Economic well-being	Money, housing	The ability to travel to earn money
Physical and functional well-being	Good health-few illnesses, less pain, ability to perform the activities of daily living and normal life roles	Travel to various destinations necessary for life maintenance, to realize functional ability; exercise benefits of travel itself
Social well-being	Social interaction: social activities, opportunities to socialize; Social network and support: friends, government	Travel to achieve access to desired people and places for social activities, social involvement, social participation, social networks
Psychological well-being	Life satisfaction, happiness, self-concept, self-pride, sense of personal autonomy, sense of role fulfilment, self-perceived coping ability	Knowing that a trip could be made to realize self-independence, control over life; a sense of personal adequacy or usefulness; psychological benefits of movement itself

6.3 Research Design

The data we use in this chapter are in-depth interviews with the elderly in Nanjing in 2013. Nanjing is the capital of the Jiangsu Province and the second largest commercial center in East China. It covers an area of 4723 km^2, with a total population of 6.24 million in 2008 (Nanjing Statistic Bureau 2008). As a former national capital, the city has a prominent place in the history and culture of China (Cotterell 2007). Over the last few decades, the city has undergone a dramatic transformation. As a second-tier city, it is representative of a multitude of Chinese cities of a comparable size. Based on previous studies on travel behavior of the elderly in Nanjing using the Nanjing Residents Travel Survey 2008 (Feng et al. 2013a, b), we found that the household structure plays an important role in seniors' travel patterns, especially for those who live with their adult children and grandchildren. Therefore, we selected 30 older persons in extended families for in-depth interviews between from September 2013 through November 2013. According to the research of Lau et al. (1998), quality of life generally includes the following four aspects: physical and functional well-being, psychological well-being, social well-being, and economic well-being. We first asked the elderly about their general self-perceived quality of life (global), and then we interviewed them on how their household responsibility influences their mobility and quality of life through the four aspects.

We first interviewed the grandparents who were waiting for their grandchildren at the gates of two primary schools and three nurseries. After that we used the snowballing method to recruit new respondents. A deliberate attempt was made to include men and women, as well as respondents from neighborhoods differing in

Table 6.2 Profile of the sample

Variables	Classification	Case	Percentage
Seniors			
Gender	Male	8	26.7
	Female	22	73.3
Age	50–59	6	20.0
	More than 60	24	80.0
Educational level	Low	12	40.0
	Middle	12	40.0
	High	6	20.0
Annual household income (Euro)	More than 5000	20	66.7
	Less than 2000	8	26.7
	2000–5000	2	6.7
Car ownership	No car ownership	12	40.0
	Car ownership	18	60.0
Household structure	Retired household	0	0.0
	Adult family	0	0.0
	Extended family	30	100.0
Housing type in TAZ	Commodity-housing dominated	20	66.7
	Danwei-housing dominated	10	33.4
	Mixed		0
	Total	30	100.0

distance to the Nanjing central business district and having local access to facilities and services. We also specifically selected respondents from different types of communities, including the former *danwei* community and commodity community (Table 6.2). The 30 transcripts were carefully read, re-read, and analyzed with the aid of the qualitative software, Nvivo 10 (Fig. 6.1).

Aging is a contextual process that depends on changes in the life course, such as retirement. Most of the existing research in Western countries defines an old person as being more than 60 or 65 years old, which reflects the legal retirement age in these societies. In China, the legal retirement age is 60 for men, 55 for women in managerial positions, and 50 for all other women. Furthermore, there is a possibility of retiring 5 years early for those working in companies that become bankrupt or are restructuring or for those with hazardous occupations. Thus, in reality, the average retirement age in China for men is 56, and for women is 50 (James 2002). However, in our dataset we only have the age category of 50–59, which means that we are unable distinguish people from 50–55 and 55–60. In light of the above arguments, in this chapter, we chose two criteria to define "old people" as people who are retired and above 50 years old.

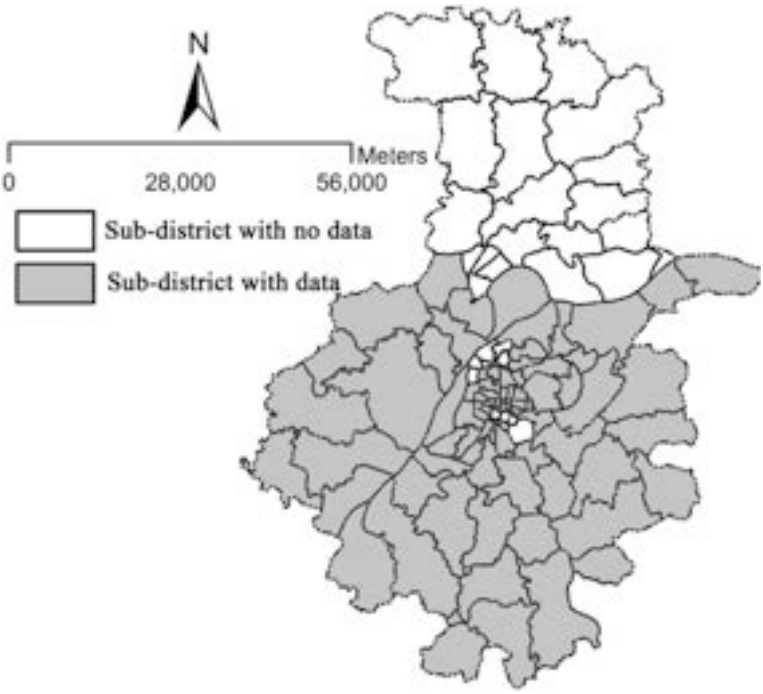

Fig. 6.1 Map of Nanjing in China

6.4 Qualitative Analysis of the Relationship Between Quality of Life and Mobility in Extended Families

Using the dimensions outlined in Table 6.1, in this section, we will explore the role co-residence has in the relationship between quality of life and mobility for the elderly. It is notable because all the elderly in our interviews did not have a job when they were interviewed—they were either retired or served as household wives all their lives. As such, we were not able to examine the influence of mobility on economic well-being. In this section, we have to confine our analysis to the other three domains.

6.4.1 Physical and Functional Well-Being

Good health and the ability to perform the activities of daily living and normal life roles were the two most frequently mentioned attributes of having a good life for the elderly. Almost all of the interviewees agree that "getting out and having exercise" would benefit their physical condition. Although sharing household

responsibilities, such as taking care of grandchildren and household chores, tends to reduce the time for exercising outside or even prevents them from exercising outside altogether, the elderly in extended families do not think they lack exercise. In their mind, doing housework can be considered a type of physical exercise, especially walking or cycling their grandchildren to/from school. In other words, the negative impact of less travel and time for exercise on the physical well-being of the elderly can be offset by the performance of household responsibilities:

> Of course, good health is the most important factor for having a good life… I have to walk my grandson to school in the morning, and I do not have time to practice square dance (Guangchangwu in Chinese) like other neighbors who do not have grandchildren to take care of. I usually wave my arms and shake (shuaishuai gebo, titi tui in Chinese) my legs when walking to school. It is enough for me.

However, due to gender differences in the allocation of household responsibilities, elderly women and men tend to have different perceptions on the influence of co-residence. Grandfathers generally only provide childcare to grandchildren, and they usually shoulder the particular responsibility of walking or cycling their grandchildren to school whereas grandmothers provide childcare and usually also do housework and prepare meals for the whole family. It is not uncommon for some of the grandmothers, especially those who are single and co-reside with their adult children to complain of physical exhaustion. A grandmother whose husband passed away several years before the interview reported:

> I am busy from morning to night. I take care of the child: sending and fetching for the child, cleaning the house, doing grocery shopping and making meals. I feel very tired (lei in Chinese) at the end of the day.

Indeed, whether grandparents experience exhaustion from providing childcare depends not only on gender but also more generally on the state of health of the older person and the amount of housework shouldered. Too much housework might have negative impacts on senior's physical well-being. As Chen and Liu (2012) found, among the co-residing grandparents, high-intensity care for younger grandchildren will accelerate health decline, whereas a lighter level of care has a protective effect.

6.4.2 Social Well-Being

Interacting with people outside the home, participating in community activities and getting support from friends, which can be termed as social well-being, were highly valued as important components as "a life in old age" by participants in the interviews. It is important because social involvement and socializing can help improve a person's mood, especially during difficult times and experiences. However, because of co-residence and household responsibilities, most of our respondents reported a lack of social activities and a social network:

> Since my granddaughter was born, I have had no time to play Mahjong with my friends. I have to take care of her and so much housework is there.

The situation seems more serious for the elderly who had to relocate from their hometown to Nanjing to take care of their grandchildren. Due to the high cost of living, including inflated housing prices and the steep cost of childcare services, as well as the legacy of socialism, more than 80 percent of the females in big cities in China are employed as full-time workers (Feng et al. 2013). They generally have no time and energy to take care of their children. It is, therefore, not uncommon that their aged parents, a considerable number of whom came from places other than Nanjing, move to co-reside with them to take care of children. This can be seen as a family strategy to cope with the high pressure of living in big cities currently in China. The relocation has a direct influence on the grandparents' social networks. Because of the unfamiliar environment and language barriers (the local dialect is Nanjing Hua), the elderly generally experience a sense of isolation. This can be reflected through the frequently used word during the interview—*gudan* (lonely):

> At the very beginning when I just came here, I could not even find the vegetable market (laugh). The place is entirely new to me. I have no friends here. Actually, I cannot get what they are saying and it is just frustrating. Sometimes, I feel very lonely. I miss my friends in my hometown and the time we spent together.

Nonetheless, it is notable that some respondents stated that they could combine childcare with socializing. Grandmother Wang, a local retired civil servant, said:

> It (the loss of opportunities of socializing because of caring for the child) is just OK. I do not think it is a problem. I usually carry my grandson in a pram to the park to chat with my friends. There are other grandmothers taking grandchildren gathering there. Sometimes, they play poker games and I just sit beside them, watching and chatting. My friends all like my grandson and tickle him sometimes… of course, the park is very close, less than 300 m from my home. It is very convenient.

Obviously, it is not easy to achieve both goals. We found that at least two common characteristics among the respondents who report a good integration between caring work and social involvement: all of them are original Nanjing people, and parks, squares, senior centers or other public spaces are located near their homes. It is not surprising that built environments play an important role here. If there is no public space nearby the community in the suburban area, for example, the elderly would not have the time and energy to travel a long distance carrying their grandchildren to a social activity.

6.4.3 Psychological Well-Being

Psychological well-being is a crucial component of quality of life. Compared with the aforementioned perspectives of quality of life, it is a somewhat more global indicator of quality of life (Chen and Silverstein 2000). It could refer to personal satisfaction with life in general. It may also specifically reflect satisfaction in a

number of life domains: material comforts, health, work, living situation, relations with family, social relations among others (Felce and Perry 1995). In our dataset, we interviewed the respondents about their personal satisfaction with life in general and whether and to what extent the loss of mobility due to co-residence influenced their psychological well-being in particular.

The analysis in the subsection above indicates that seniors in extended families who share additional household responsibilities generally lack social activities and a social network. This might have negative impacts on their psychological well-being. However, we should bear in mind that co-residence could also impact seniors' relationships with other family members, especially with their offspring, which is another essential factor that can influence their psychological well-being, as various studies have demonstrated (Yi and Vaupel 2002; Cheng et al. 2009). Some studies indicate that households provide a crucial context where the elderly enjoy varied levels of social integration as well as emotional and instrumental support, which could promote quality of life in China (Chen and Short 2008; Lau et al. 1998). Therefore, to detect the ultimate influence of co-residence on the psychological well-being of the elderly, we need to take into account both the influence of the lack of social involvement and the impact of the relationship with other family members.

The results of the analysis are rather mixed and complex. The ultimate influence of co-residence on the psychological well-being of the elderly depends on various aspects including the education level, occupation before retirement, whether the individual has a post-retirement plan, whether the individual lives with his or her son or daughter and the characteristics of the built environment.

6.4.3.1 Educational Level and Occupation

The interviews suggest that people with high educational attainment and professional occupations before retirement are more likely to report a loss of psychological well-being due to co-residence. These respondents often compare their current lives with their former conditions when living separately with their adult children and their colleagues who are living separately. Social comparisons and peer pressure seem to be important factors influencing seniors' perception of their lives. In fact, they also admitted that a co-residing, harmonious relationship with family members and intergeneration interaction could benefit their psychological well-being to some extent. However, these factors cannot completely offset the frustration caused by having limited freedom to pursue their own lives. A grandfather, who was a university teacher before retirement, uttered grievances about the caring role:

> I really miss my life before my granddaughter was born. (At that time) I and my wife live separately with my son. We played badminton twice a week. I used to be the director of the owners committee of my former community. I can do lots of things for the community … However, since JJ (his granddaughter) was born, everything has changed. My wife and I live a life revolved around her. There is no time left for travel and participating in social

> affairs … Yes, it is happy caring for JJ and watching her grow up day by day. But it is still a pity that we gradually disappear from our friendship circle and become isolated.

However, seniors of lower educational levels and lower level professional jobs before retirement generally view taking care of grandchildren as a continual way to provide instrumental support to their children even though they are adults, which could give them a sense of self-efficacy. It seems that providing instrumental support to children can improve elderly parents' well-being. In addition, co-residence can facilitate intergenerational interactions that can also promote their psychological well-being (Chen and Silverstein 2000). Therefore, despite the lack of a social network and activities because of co-residence, they generally report high psychological well-being. A former technician told us:

> It is better to give (support to adult children) than to receive (support from adult children). My son and daughter in-law are so busy that everyday they are dead tired (jing pi li jin) when they return home. We just want to reduce the burden by taking care of my grandson and sharing some of the housework. Besides, it (taking care of their grandson) is the only meaningful thing we (he and his wife) can do after retirement. It is a great pleasure to see my grandson grow up happily and healthily.

6.4.3.2 Post-Retirement Plan

Having a post-retirement plan seems to be a decisive factor that influences seniors' psychological well-being in extended families. Almost all of the grandparents who had made post-retirement plans before their grandchildren were born complained about the sacrifice of their own plans and freedom. Hence, a generally low psychological well-being among these people can be observed. One interviewee said:

> My husband and I both have an interest in tourism and I, myself, believe in Buddhism. We have made a plan to visit all of the famous Buddhist mountains in China after retirement. But now we have to give up our plan and spend almost all the time on our granddaughter, caring for her, sending and fetching, etc. It is really a pity. Maybe in the future, when my granddaughter grows up, we can realize our dream. Hope at that time we can still move…

However, the situation for those who did not have post-retirement plans seems much better. The reason could be that they did not have an alternative plan and hence, they do not hold any grievances about the lack of freedom.

6.4.3.3 Built Environment

The built environment surfaced from the data again to be an important influence on senior's psychological well-being. In general, elderly live in the community near the city center, in environments designed with human scale and with public spaces, such as small parks and squares distributed nearby, are more likely to report a high

level of psychological well-being. The reason could be that due to the proximity of various facilities, the elderly can balance their caregiver work with their own social activities relatively easily to cope with the high time–space constraints imposed on them. This is most evident for those who lived in former *danwei* compounds:

> Some of my former colleagues are also caring for their grandchildren. We gather in the small public area with some sports facilities in our community every afternoon. We all take our grandchildren with us. They can play games together, while we grandmothers can chat and communicate with each other. It is not bad. We enjoy the time there… Thanks to the small square. It cannot be better to have more facilities for children there (laugh).

6.4.3.4 Living with Son or Daughter

During the interview, we found that another important aspect that substantially influences the psychological well-being of the elderly is whether the co-residence is with their son or daughter. Although this living arrangement is not directly related to mobility, it is an important aspect that determines psychological well-being and is worth noting. Research suggests that harmonious interpersonal relationships within a household can promote the level of social integration of household members and give them emotional and instrumental support (Yi and Vaupel 2002; Chen and Liu 2012). Other studies have demonstrated that relationships between household members can create tensions, and they may involve unpleasant interactions and can therefore be damaging to the quality of life of the elderly (Chen and Short 2008). The elderly and young parents usually have very different life attitudes, habits, and customs. The difference in beliefs and ways of raising and educating children could be even larger (Goh 2009). Given that women in the family in China are mostly responsible for caregiving, tensions are more likely generated between women of the two generations. A daughter-in-law's emotional distance from the in-laws, however, may prevent the tensions from being easily released compared with situations between a daughter and her own mother. Our interviews suggest that the tension between the mother-in-law and daughter-in-law, especially when they are from different places with very different habits and customs, is the most frequently mentioned intergenerational dispute. We also found that the elderly living with a daughter generally reported higher levels of psychological well-being than those living with a son. A grandmother complained about the tension with her daughter-in-law:

> The young people (her daughter-in-law) do not eat the leftovers. She just throws it away. It is really a waste. We also have different ideas on when to send ZY (her grandson) to kindergarten … I admit that some of my ideas are out of date. But, I am the mother after all, you should show enough respect… You know (laugh in embarrassment), it is not good to let people out of the household know the unpleasant dispute (jia chou bu ke wai yang). But still, I am not satisfied with my current life.

6.5 Discussion and Conclusion

The aging society in urban China highlights the importance of research on the quality of life of the elderly. Mobility is viewed as an essential component for quality of life because it is basic to meeting all other life needs and to realize independence and self-efficacy and to some extent, can benefit seniors' physical and psychological well-being. Previous studies have indicated that co-residence tends to lower the mobility level of the elderly compared with those who are living separately because those co-residing have to share more household responsibilities, including caring for the children and other housework, and therefore have less time and energy for out-home activities (Feng et al. 2013). In the meanwhile, research originating from Western contexts suggests that a loss or decline in mobility tends to result in a substantial diminution of well-being (Metz 2000; Alsnih and Hensher 2003). As such, we might conclude that co-residence could lead to a low level of quality of life for the elderly.

However, the empirical results of this chapter show that the link between mobility and quality of life is rather complex. Interviewees with high educational levels, high professional jobs before retirement, and having a post-retirement plan tend to complain about having fewer social activities and sacrificing the freedom, which results in a decline in quality of life. Other elderly, however, report that co-residence can provide support to adult children and give them the joy of watching their grandchildren grow up and of playing with grandchildren (han yi nong sun), which can bring them greater well-being. For these interviewees, the loss in quality of life because of lower mobility caused by co-residence could be offset or even be surpassed by the psychological and social benefits of co-residence.

It seems that there are at least two paths in which co-residence could influence quality of life: indirect impacts through mobility and direct impacts on well-being. The ultimate influence depends on how individuals weight the two impacts in terms of personal values, life attitudes, and beliefs. Those who hold more individualistic life attitudes and beliefs might put more weight on freedom, self-concepts, and personal achievements and might emphasize their personal needs and experience. Engaging in social activities and especially social service, such as being involved in the red armbands (*hong xiu zhang*) to help to maintain security in the community, could lead to the establishment of new identities in old age, enhancing feelings of usefulness and competency in society and ultimately, and a sense of self-worth and self-satisfaction. It is therefore unsurprising that the loss of mobility and the resultant lack of a social network and social activities due to co-residence leads to a lower well-being for these people, even though they admit that co-residence could provide them happiness to some extent.

However, the elderly who adhere more to traditional norms regarding familial expectations and support tend to emphasize harmonious family relations and interdependence among family members. For them, a sense of new identity and self-worth are more likely to stem from their role caring for their grandchildren. Several interviewees in our study told us with pride that their son/daughter

complimented them as reliable child minders. They may attribute the fast physical development and healthy conditions of their grandchildren to their efforts as caregivers, which gives them a sense of achievement and fulfillment. It seems they are generally satisfied with the sense of a esteem from their adult children and enhanced power in the family because of their contributions to the family.

Obviously, Chinese special cultural norms—Confucianism—play an important role in how seniors perceive and behave themselves in family and society. According to Ho et al. (2009), in Confucian cultures individuals are bound in an interlocking network of obligations and indebtedness. To be specific, the elderly are locked into a tightly-kit network of the familial expectations from their adult children and the societal prescribed ideal roles for grandparents. For those who are deeply influenced by Confucian culture, they tend to take the above roles and expectations for granted. The willingness to provide continual support to adult children and invest themselves in their grandchildren among the elderly could also be driven by the cultural norms: *chuan zong jie dai* (to ensure the passing down of the family lineage) (Li 1994). They feel they have the obligation to sacrifice themselves for their children and give the best or largest part of their resources to their offspring.

Our empirical results indicate that the relationship between mobility and quality of life is highly contextualized. Gender, educational level, occupation, having a post-retirement plan, being local or nonlocal, and characteristics of the built environment all have the potential to influence seniors' self-rating of their quality of life. However, from geographic and urban planning perspectives, the findings that the built environment could influence quality of life is especially of high value and deserves future research.

There are some limitations worth noting. First, the measurement of quality of life is not strictly defined in the interviews, which might influence the accuracy of the results. Second, our interviews were only with elderly who had relatively good health conditions, which might also bias some of the results. In the future, more appropriate data with well-designed surveys and interviews are needed to deepen the understanding of the relationship between quality of life and mobility.

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References

Age Concern. (1994). *On the move: Transport, mobility and older people*. London: Age Concern England.

Alsnih, R., & Hensher, D. A. (2003). The mobility and accessibility expectations of seniors in an aging population. *Transportation Research Part A: Policy and Practice, 37*(10), 903–916.

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

Cantor, N., & Sanderson, C. A. (1999). Life task participation and well-being: The importance of taking part in daily life. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-Being: The foundations of hedonic psychology* (pp. 230–243). New York: Russell Sage.

Chen, F., & Liu, G. (2012). The health implications of grandparents caring for grandchildren in China. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 67* (1), 99–112.

Chen, F., & Short, S. E. (2008). Household context and subjective well-being among the oldest old in China. *Journal of Family Issues, 29*(10), 1379–1403.

Chen, X., & Silverstein, M. (2000). Intergenerational social support and the psychological well-being of older parents in China. *Research on Aging, 22*(1), 43–65.

Cheng, S. T., Lee, C. K., Chan, A. C., Leung, E. M., & Lee, J. J. (2009). Social network types and subjective well-being in Chinese older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 64*(6), 713–722.

Cotterell, A. (2007). *The imperial capitals of China: An inside view of the celestial Empire*. London: Pimlico Press.

Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies, 9*(1), 1–11.

England, R. S. (2005). *Aging China: The demographic challenge to China's economic prospects*. Washington, DC: Praeger and the Center for Strategic and International Studies.

Ettema, D., Gärling, T., Olsson, L. E., & Friman, M. (2010). Out-of-home activities, daily travel, and subjective wellbeing. *Transportation Research Part A, 44*(9), 723–732.

Farquhar, M. (1995). Elderly people's definitions of quality of life. *Social Science and Medicine, 41*(10), 1439–1446.

Felce, D., & Perry, J. (1995). Quality of life: Its definition and measurement. *Research in Developmental Disabilities, 16*(1), 51–74.

Feng, J., Dijst, M., Prillwitz, J., & Wissink, B. (2013a). Travel time and distance in international perspective: A comparison between Nanjing (China) and the Randstad (The Netherlands). *Urban Studies, 50*(14), 2993–3010.

Feng, J., Dijst, M., Wissink, B., & Prillwitz, J. (2013b). The impacts of household structure on the travel behaviour of seniors and young parents in China. *Journal of Transport Geography, 30*, 117–126.

Goh, E. C. (2009). Grandparents as childcare providers: An in-depth analysis of the case of Xiamen, China. *Journal of Aging Studies, 23*(1), 60–68.

Ho, S. C., Chan, A., Woo, J., Chong, P., & Sham, A. (2009). Impact of caregiving on health and quality of life: A comparative population-based study of caregivers for elderly persons and noncaregivers. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 64*(8), 873–879.

James, E. (2002). How can China solve its old-age security problem? The interaction between pension, state enterprise and financial market reform. *Journal of Pensions Economics and Finance, 1*(1), 53–75.

Lau, A., Chi, I., & McKenna, K. (1998). Self-perceived quality of life of Chinese elderly people in Hong Kong. *Occupational Therapy International, 5*(2), 118–139.

Li, Y. H. (1994). *Sheng yu yu cun luo wen hua (reproduction and village culture)*. Peking: China Social Science Press.

Logan, J. R., & Bian, F. (1999). Family values and coresidence with married children in urban China. *Social Forces, 77*(4), 1253–1282.

Metz, D. H. (2000). Mobility of older people and their quality of life. *Transport Policy, 7*(2), 149–152.

Oishi, S., Diener, E. F., Lucas, R. E., & Suh, E. M. (1999). Cross-cultural variations in predictors of life satisfaction: Perspectives from needs and values. *Personality and Social Psychology Bulletin, 25*(8), 980–990.

Spinney, J. E., Scott, D. M., & Newbold, K. B. (2009). Transport mobility benefits and quality of life: A time-use perspective of elderly Canadians. *Transport Policy, 16*(1), 1–11.
Wang, D., Chai, Y., & Li, F. (2011). Built environment diversities and activity-travel behaviour variations in Beijing, China. *Journal of Transport Geography, 19*(6), 1173–1186.
Waters, W. E., Heikkinen, E., & Dontas, A. S. (1989). *Health, lifestyles and services for the elderly*. Series: Public health in Europe, no. 29. Copenhagen: World Health Organization.
WHO. (2002). *Active ageing: A policy framework*. Geneva: World Health Organization.
Yi, Z., & Vaupel, J. W. (2002). Functional capacity and self-evaluation of health and life of oldest old in China. *Journal of Social Issues, 58*(4), 733–748.

Part III
Travel and Life Satisfaction

Chapter 7
Travel Mode Use, Travel Mode Shift and Subjective Well-Being: Overview of Theories, Empirical Findings and Policy Implications

Dick Ettema, Margareta Friman, Tommy Gärling and Lars E. Olsson

Abstract This chapter discusses how travel by different travel modes is related to primarily subjective well-being but also to health or physical well-being. Studies carried out in different geographic contexts consistently show that satisfaction with active travel modes is higher than travel by car and public transport, and that satisfaction with travel is lowest for different forms of public transport. These differences are shown to be explained by a variety of factors, which stem from fundamental differences between the travel modes in terms of the intensity of physical activity, mental involvement in the act of travel itself, exposure to and interaction with the vehicle and the wider travel surroundings, and the degree of control over travel circumstances. Taken together, the overview suggests that active modes are an attractive alternative to car travel. Public transport can be a good alternative to car travel, if requirements of seat availability, accessibility, safety, and cleanliness are met. Regarding the shift from one travel mode to another, some evidence indicates that most car commuters, when switching to public transport, experience lower satisfaction with travel by car. Yet, those who experience public transport more positive than car are likely to keep using it. Other evidence suggests, however, that car commuters' experience of public transport is better than they anticipate, but that they tend to "forget" this after some time. Switchers from car to active travel on average report higher levels of subjective well-being after the switch. Policies aimed at promoting the use of more sustainable modes should recognize that heterogeneity exists between travelers, and aim at targeting those with positive attitudes toward changing to active modes and public transport. Future research should address the dynamics in experienced travel satisfaction and mode choice.

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7.1 Introduction

Over the past several decades, increasing car traffic in industrialized and developing countries has led to negative side effects, such as air pollution, traffic accidents, greenhouse gas emissions, congestion, and health problems due to lack of physical exercise. While some of these side effects can be partially abated by technological and design measures (e.g., developing cleaner and more efficient engines, building more or safer infrastructure), behavior change is seen by many as an important strategy to reduce the negative impacts of car traffic (e.g., Bamberg 2014). As a consequence, behavior change programs have been implemented throughout the world (Brög et al. 2009; Richter et al. 2011) to make car drivers switch to more sustainable travel modes, such as public transport, walking, and cycling. Such programs apply various measures, including providing tailored information of travel options, providing feedback on behavior (either relative to a target or relative to others' behavior), providing information about environmental and health consequences of car travel and incentivizing travelers to implement their plans. While the effects of such measures on behavior change have been well documented, the effects on travelers' experience or their well-being after a travel mode change is largely unknown (Ampt 2004). Nevertheless, the effects of mode change on travel satisfaction and well-being are relevant for a number of reasons. First, if a forced or stimulated mode change leads to changes in travel satisfaction, care should be taken so that sufficient travel satisfaction remains for all travelers and reductions in travel satisfaction do not exceed acceptable levels. Second, if behavior change is to be sustained over a longer period, behaviors that lead to higher levels of satisfaction are more likely to be intrinsically motivating and therefore maintained. Thus, care should be taken so that travel mode alternatives and behavior change programs are developed to maximize satisfaction with travel.

In conventional cost–benefit analyses, assessment of the social benefits of mode change is based on econometric utility functions describing the existing modal split as a function of the characteristics of the transportation system and travelers. However, this approach is based on assumptions that are questionable in the context of mode change, such as the assumption that all travelers have complete knowledge of their choice options and do not face constraints in terms of availability or spending power. In addition, cost–benefit analysis is usually based on the unrealistic assumption that individuals' preferences and assessment of choice outcomes is invariant over time.

To complement the traditional approaches, this chapter will describe the implications of mode choice and mode change from the perspective of subjective well-being. Key to this approach is that subjective well-being associated with travel

is directly measured (using psychometric scales) instead of being solely derived from observed choices. To this end, the chapter starts with a discussion of the conceptualizations of subjective well-being, as well as the definitions and measurement issues when applied to travel. Next, for various travel modes (private car, public transport, and walking/cycling), we give a detailed account of the factors that influence satisfaction with travel and subjective well-being. These factors are largely specific to the travel mode because travel modes differ in terms of interaction with the physical and social environment and the physical and mental processes involved. Then, we analyze the effects of travel mode change on travel satisfaction. In particular, we review the ways in which travelers form expectations of an alternative travel mode, and what factors influence their experience of the new travel mode. In addition, we discuss the broader implications of travel mode change by offering an overview of health, sustainability and equity effects, which may influence the subjective well-being of the travelers and of others. The chapter ends with a discussion of implications for research and policymaking.

7.2 Subjective Well-Being and Satisfaction with Travel

In the context of cost–benefit analyses, assessing satisfaction with travel is commonly based on utility maximization theory (McFadden 2001). In this theory it is assumed that people make choices that maximize (random) utility and result in satisfaction with the outcomes of their choices. Satisfaction with travel is, therefore, derived from the observed choices (Carrasco et al. 2005; Hess et al. 2007; Newman and Bernardin 2010). However, this assumed correspondence between utility and satisfaction has been challenged. Kahneman et al. (1997) made a distinction between experienced utility and decision utility. Experienced utility is the satisfaction with the outcome of a choice (i.e., the degree to which it is good or bad), whereas decision utility is the degree to which the outcome is (anticipated to be) desired when the choice is made. Empirical research (e.g., Kahneman and Sugden 2005) has shown that experienced utility frequently differs from decision utility. Later, Kahneman (1999, 2000a, b) associated experienced utility with happiness. For decades, happiness, subjective well-being, or life satisfaction have been the focus of research in economics (e.g., Dolan et al. 2008), psychology (e.g., Diener et al. 1999), and sociology (e.g., Veenhoven 1984). Its roots have been traced back to ancient Greek philosophy (McMahon 2008).

Diener and Suh (1997) were first to posit that subjective well-being consists of three components (see Busseri and Sadava 2011): a cognitive judgment of satisfaction with life as a whole, positive affect (PA), and negative affect (NA). Life satisfaction judgments have usually been assessed by the 5-item *Satisfaction With Life Scale* (SWLS) (Diener et al. 1985; Pavot and Diener 1993), where five self-report statements (e.g., "I am satisfied with my life") are rated on 7-point Likert scales ranging from "totally disagree" to "totally agree." It is also common to assess life satisfaction by a single-item judgment such as Cantril's *Self-Anchoring Scale*

that asks participants to rate their current life on a "ladder" from 0 "the worst possible life for you" to 10 "the best possible life for you" (Kahneman and Deaton 2010).

The affective components (PA and NA) are assessed by different methods including instantaneous self-reports of specific emotions and moods or recalled past emotions or moods. Instantaneous self-reports may be obtained by the *Ecological Momentary Assessments* (EMA) or the *Experience Sampling Method* (ESM) (Stone et al. 1999). In these methods, participants report their affective experiences during an activity (referred to as an episode) by using, for instance, a smartphone. This produces low levels of "noise" (e.g., due to memory distortions) in the measures. However, EMA and ESM impose a considerable response burden on participants. In developing the *Day Reconstruction Method* (DRM), Kahneman et al. (2004) showed that ratings of specific momentary emotions from the memory of past episodes (the day before) are highly correlated with the results of ESM when the participants describe the episodes before making the ratings. It has also been suggested that the same procedure may be used to provide a reliable measure for less recent episodes if they are infrequent (the *Event Reconstruction Method* or ERM; Schwartz et al. 2009). As an alternative to self-reports of specific emotions, conventional self-report rating scales, such as the *Positive Affect and Negative Affect Scale* (PANAS, Watson et al. 1988) or the *Swedish Core Affect Scale* (SCAS, Västfjäll et al. 2002; Västfjäll and Gärling 2007) have been used to measure the affect components both from memory (e.g., how people have felt during a past period) and as instantaneous reports of current moods. Regardless of the measurement technique, repeated measurements of the affect component during some period are usually aggregated to indexes for the period as a whole. One index that has been argued as being highly correlated with life satisfaction judgments is the ratio of the frequencies of PA and NA (Diener et al. 1991). Another index assesses the net affect as the average intensity of PA minus the average intensity of NA (Kahneman et al. 2004). A third index captures duration-weighted intensities of positive and negative affects (the U-index, Kahneman and Kreuger 2006; the Diffmax index, Krueger and Schkade 2008).

We view satisfaction with travel as domain-specific life satisfaction (Ettema et al. 2010) and argue that, analogous to global life satisfaction, a measure of satisfaction with travel should include both cognitive and affective components. Previous studies have found that domain-specific satisfaction with work, family life, and leisure correlates positively with global life satisfaction (Schimmack 2008). Using the method that we developed to measure travel satisfaction, which is described below, Olsson et al. (2013) similarly found a positive correlation between satisfaction with travel and global life satisfaction. Personal travel is generally viewed as being instrumental for participation in activities in different places (Axhausen and Gärling 1992; Ettema and Timmermans 1997). We assume this is primarily captured by cognitive judgments of satisfaction with the transport system related to cost, travel time, and punctuality (Fellesson and Friman 2008). Other research has focused on the positive affective experiences of travel itself (Mokhtarian and Salomon 2001;

Table 7.1 The satisfaction with travel scale (STS)

Cognitive evaluation
Travel was worst (−4)—best I can think of (4)
Travel was low (−4)—high standard (4)
Travel worked well (−4)—worked poorly
Positive activation–negative deactivation
Tired (−4)—alert (4)
Bored (−4)—enthusiastic (4)
Fed up(−4)—engaged (4)
Positive deactivation–negative activation
Time pressed (−4)—relaxed (4)
Worried I would not be in time (−4)—confident I would be in time (4)
Stressed (−4)—calm (4)

Note In administering the STS, the items appear in counterbalanced order

Mokhtarian et al. 2001). In the following sections, evidence is presented for that affect plays an important role in satisfaction with travel.

The multi-item Satisfaction with Travel Scale (STS) that we have developed may be used for any type of travel, although when applying the scale, details of the targeted travel need to be specified. In Olsson et al. (2013) and Suzuki et al. (2014), STS was used to measure satisfaction with the most recent normal commute to and from work, either as a whole or for each stage (e.g., walk to bus stop, ride bus, walk from bus stop to workplace), that users of car, public transport, or walking/cycling modes were able to recall. STS combines cognitive judgments of travel satisfaction with measures of two orthogonal affect dimensions. The three first items in Table 7.1 are averaged to the composite measure of the cognitive judgments of the quality of the travel. To measure the two affective dimensions of STS, we chose SCAS (Västfjäll et al. 2002; Västfjäll and Gärling 2007), which consists of validated adjective scales in the participants' natural language, Swedish. SCAS is derived from the affect circumplex (Russell 1980, 2003; Yik et al. 2011; Kuppens et al. 2013) that includes the orthogonal core affect dimensions *valence* (varying from positive to negative) and *activation* (varying from activated to deactivated). The affect circumplex is shown in Fig. 7.1. Our choice of adjective scales that measure affect varying from positive activation to negative deactivation (the measure referred to as PAND obtained by averaging items 4 to 6 in Table 7.1) and affect varying from positive deactivation to negative activation (the measure referred to as PDNA obtained by averaging items 7 to 9 in Table 7.1) is dictated by a high content validity in representing discrete emotion states (alertness, boredom, relaxation, stress) frequently experienced during travel. The dimensions, which are orthogonal to each other, represent a 45-degree rotation of the main valence and activation axes. Note that the measures obtained on the PAND and PDNA dimensions may be converted to valence and activation. As shown in Fig. 7.1, they may also be converted to the PA and NA dimensions of PANAS.

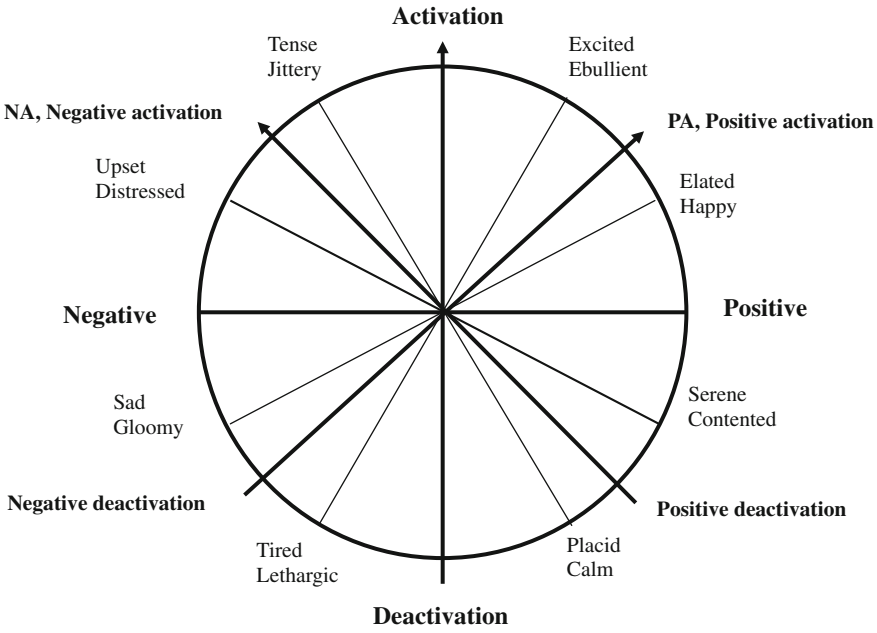

Fig. 7.1 The affect grid (see text for further explanation), from Yik et al. (2011)

A psychometric analysis of the STS is reported in Friman et al. (2013). The data analyzed were obtained from a mail survey of a population-based sample of work commuters in the three largest urban areas of Sweden (see details in Olsson et al. 2011). A confirmatory factor analysis (Byrne 2010) was conducted showing that the three STS composite measures (cognitive judgment of satisfaction, positive activation–negative deactivation, and positive deactivation–negative activation) were found to be distinct constructs, positively correlated with each other and subsumed to a latent higher order global measure interpreted as satisfaction with travel. As expected, the measurement model was found to be invariant across the three urban areas and across the three primary commute modes of private car, public transport (bus, subway, or train) and walking or cycling. The measures were also found to have acceptable reliability and to discriminate between urban areas and modes.

It is concluded that STS is general enough to be used to test specific hypotheses about satisfaction with travel by different modes in different urban contexts. In an experimental study (e.g., Ettema et al. 2011), STS was measured for three hypothetical weekdays differing in travel mode, travel time, access to bus stops, and daily activity agenda. In further support of its validity and reliability, STS was found to reliably differentiate between the fictitious changes in travel conditions.

7.3 Travel Satisfaction by Mode

7.3.1 Private Car

The private car has drastically altered the development of the world like few other human inventions. In developed countries, and now in developing countries, its versatility strongly contributes to why it is the preferred mode of urban, suburban, and rural travel (Jakobsson 2007). Preferences for the private car have traditionally been conceptualized as determined by instrumental factors, such as saving time or increasing reliability (Brownstone and Small 2005; Hensher 2004). Instrumental factors have also been empirically found to be a strong motive for car use (Jakobsson Bergstad et al. 2011; Steg 2005).

The private car allows easy access to out-of-home mundane activities such as, among other things, work, participation in children's activities, restaurant visits and shopping, that have been shown to be important for subjective well-being (Jakobsson Bergstad et al. 2012). Few, if any, alternatives to the private car manage to compete in reliability, convenience, and flexibility.

But factors other than the instrumental factors are also important, such as joy, independence, freedom, mastery, and prestige. It is obvious that commercials aim at triggering such emotion-laden motives—and for good reasons. A well-known method used by advertisers is to make the car (like many other products) appealing to potential consumers. Research examining the motives for car use has also documented that psychological motives are important for ownership and use (Jakobsson Bergstad et al. 2011; Steg 2005). These motives are connected to the emotions that driving a car evokes (such as pleasure to use, excitement, and feelings of freedom), as well as the symbolic motives associated with ownership (such as prestige, identity, and self-presentation) (Jakobsson Bergstad et al. 2011; Steg 2005).

Car travel has been shown to be an enjoyable activity in itself (Gatersleben 2007; Mokhtarian 2005), and the pleasure of driving for its own sake include adding variety to one's daily experience, viewing beautiful scenery, experiencing speed and, especially for men, a sense of mastery in operating the car (Jakobsson Bergstad et al. 2011; Ory and Mokhtarian 2005). It is also argued that the feelings associated with the car, such as the physical sensations of controlling it, need to be considered (Kent 2014). Thus, it can be noted that driving has positive affective consequences that partly may explain why it is attractive.

The private car is also attractive because it provides privacy and security (Gatersleben 2014). Commutes by car are used by some travelers as time to think or relax, or as the only time for themselves during the day (Jain and Lyons 2008). Some people, thus, cherish the time on the car commute as a buffer between their family and work roles, both spatially and psychologically (Mokhtarian and Salomon 2001). In a similar vein, Hartig (2007) proposes that the use of a car may be seen as an opportunity for restoration, "a safe and isolated haven from pressing role demands or aversive surroundings, and so a place that permits restoration."

In contrast, some drivers experience high levels of stress, and it has been found that long car commutes in congested traffic cause residual stress in the workplace (Novaco et al. 1990; see review in Novaco and Gonzales 2009). Although stress is important, Gatersleben and Uzzell (2007) suggest that a focus on stress may be too limited and that other emotions such as boredom and depression need to be taken into account. Commuting by car has then been found to be a worse experience than active commuting (walking and cycling) and about the same (Olsson et al. 2013) or slightly better than public transport (Friman et al. 2013). A study analyzing 18 waves of a British household panel survey (1992–2009) showed that car use is worse for psychological well-being than both active modes and public transport (Martin et al. 2014). The results also showed that travel time is negative for car users and that, although reducing travel time may be important, a shift to an active mode is more beneficial than reducing travel time. Experienced traffic safety, annoyance with other road users, the trip being tiring, being distracted by billboards, and the lack of freedom to choose speed and lanes are additional factors negatively influencing a car driver (Ettema et al. 2013).

To summarize, the private car is the main mode of travel in Western societies and will soon be in the developing countries. The environmental burden stemming from car use will probably continue to increase. One way to reduce the negative impacts is to make car users switch to other modes that are less detrimental to the environment. To accomplish this, it is important to understand and consider the motives of car use. As presented above, these motives can be strong and are instrumental, affective, and symbolic. However, although car users may be fully aware of these motives, they sometimes lack the knowledge of the potential negative consequences, not only for the environment, but also for their subjective well-being (Martin et al. 2014; Olsson et al. 2013).

7.3.2 Public Transport

European cities generally offer public transport services that are reliable, accessible, comfortable, safe, and flexible (Mees 2010; Newman and Kenworthy 1999; Pucher and Kurth 1996). In 2012 local public transport in the EU carried 57 billion passengers (UITP database 2012) and the majority of journeys (56 %) were taken by bus. The shares for each mode in the member states vary with five countries (Austria, Croatia, Czech Republic, France, and Germany) having a higher share of urban rail than buses. Metro networks, where they exist (in 16 of the 28 member states), attract a significant share of the number of public transport journeys. In Austria, France and Spain, for instance, metro journeys make up over one-quarter. Eurostat (2012) estimates that current public transport services account for 16 to 17 % of the total daily distance of passenger travel.

Public transport on other continents shows both similarities and differences to Europe. In the US, people are less likely to use public transport with a total market share of 5 % (Rapino and Field 2012). Investments in large bus systems and rail

infrastructure have positively increased the number of users in some US cities (e.g., in Los Angeles, New York, Washington DC, and Seattle). In Asia, the market share varies widely, from very low in Indonesian cities (2 %), to very high in cities such as Hong Kong (90 %) and Singapore (60 %). Buses and trains represent less than 10 % of all urban passenger transport in Australia (Hensher 2000). Eight percent of the population in Africa (e.g., Sierra Leone, Niger, and Liberia) uses public transport to travel to and from work (Households National Travel Survey 2013).

Improvement of public transport in places where it is required should be based on solid knowledge of what promotes satisfaction with travel by public transport. A review of studies that have investigated various quality factors in public transport shows that accessibility, reliability, and mobility provisions are particularly important (Redman et al. 2013). From this review it is clear that other quality attributes important for user satisfaction vary between different contexts, among different groups of users and between different types of public transport. In large cities, seat availability can be very important due to crowdedness, whereas the number of departures is crucial in rural areas due to infrequent service. Travelers who have access to a car but choose to use public transport may be more sensitive to security issues, cleanliness of stations, and user information than those with no other alternatives. It has also been shown that satisfaction differs between different modes of public transport (rail, metro, and bus). Rail passengers are generally more satisfied with their travel than bus and metro passengers (St-Louis et al. 2014). The study concludes that service quality is important for travel satisfaction, but the relative weight of different factors depends primarily on the context and particularities of the targeted segments.

Apart from service quality, improved physical health also contributes to public transport users' satisfaction. Several studies classify public transport as an active mode because it is frequently combined and integrated with walking and/or cycling at the beginning and/or end stage of a public transport trip. Physical activities are, in general, known to have a positive effect on physical as well as mental health. This is also confirmed in public transport studies. From a recent review of studies focusing on the physical activity associated with public transport use (Rissel et al. 2012), it is clear that there is an additional amount of walking (from 8 to 33 min) associated with public transport use. In addition, Wen and Rissel (2008) found that men who use public transport are less likely to be sedentary or obese than men who do not use public transport. Also, switching from car to public transport helps people to lose weight and become healthier physically (Martin et al. 2014). To be physically active combined with the possibility to relax during the trip or to do various activities (e.g., reading newspapers/books, talking to friends, or playing games) may explain some of the satisfaction that public transport travelers feel (Ettema et al. 2012).

Does high-quality public transport influence people´s subjective well-being? A recent longitudinal study (Martin et al. 2014) shows that public transport is more beneficial for people's mental health than driving. According to our theoretical model (Ettema et al. 2010), a positive relationship with subjective well-being should occur when the traveler experience PA (e.g., relaxing) during travel, when

public transport facilitates engagement in activities (progress toward goals), and when the organization of public transport has implications for the ease or difficulty with which activities are performed. In line with this, Cao (2013) showed that people living along high-quality public transport corridors rated the quality of their lives higher compared to people in other corridors. The level of mobility that high-quality public transport provides was assumed to be the explanation. People living in these areas can access all activities they want even if they do not have access to a private car. It is thus suggested that cities providing easy access to convenient public transport promote subjective well-being. Leyden et al. (2011) argue that such cities foster, with the support of public transport, social connections that are important. In this way, public transport may thus enhance the attractiveness of living in a city.

Taken together, there are several benefits of public transport. Satisfaction with public transport can be explained by high service quality, by the fact that it promotes an active and healthy lifestyle, and because it is relaxing and less stressful than driving a car. Instead of dealing with traffic, public travelers are able to engage in various attractive activities during the ride. It is also suggested that high-quality public transport enables participation in preferable activities and foster social interactions which together are important for subjective well-being. Improvements and further integration between public transport and active modes (walking and cycling) would likely have subjective well-being benefits and thus contribute to more livable cities.

7.3.3 Cycling and Walking

Travel satisfaction by slow modes such as cycling and walking is consistently found to be higher than travel satisfaction by automobile and public transport (Olsson et al. 2013; St-Louis et al. 2014; Gatersleben and Uzzell 2007; Martin et al. 2014). Various explanations are offered. Gatersleben and Uzzell (2007) argue that walking and cycling offer better opportunities to enjoy the scenery and bring more enjoyment. In terms of affective appraisal, cyclists and pedestrians are found to rate their travel as being more exiting, relaxing, interesting, and pleasant. Gatersleben and Uzzell (2007) further hypothesize, based on their findings, that slow travel modes are attractive as they bring about an optimal level of arousal. Whereas car driving is evaluated as stressful, and public transport use as boring, cycling and walking are found to be exciting and pleasurable. An alternative explanation is the benefit of the physical activity involved in walking and cycling. Studies of affect related to physical activity (Ekkekakis et al. 2008) suggest that physical activity leads to enhanced mood, with an intensity of 70 % of the maximum capacity as an optimal level. However, the extent to which physical activity improves mood significantly depends on physical condition.

Ettema and Smajic (2015) note various factors that explain the positive benefits of walking, such as autonomy, environmental mastery, and social interaction.

Ziegler and Schwanen (2011) find that elderly's ability to walk confirms their independence and may add to their self-esteem. Likewise, in the case of children walking to school (Whitzman and Tranter 2012), independent walking gives the children a sense of autonomy and opportunity to choose their own activities and topics of conversation. Thus, walking may contribute to a sense of autonomy and mastery of the environment with positive subjective well-being effects. Yet, these effects are strongest for groups with potentially lower levels of autonomy due to parental supervision (youth) or physical limitations (elderly).

Research also provides evidence of walking as contributing to social ties. Ziegler and Schwanen (2011) report that elderly in small town settings, where many people know each other, use their daily walks to catch up with others and engage in social interaction. Likewise, walking is reported to be correlated with perceived neighborhood cohesion and trust (Du Toit et al. 2007; Sugiyama et al. 2008; Grannis 2009).

While in general walking and cycling are favorable travel modes, yielding the highest satisfaction, it is likely that environmental and personal factors moderate the satisfaction with these modes. In reviewing environmental factors that stimulate cycling, Heinen et al. (2010) mention urban form (with implications for trip distances), network layout, mixed land use, quality and safety of infrastructure (including traffic lights and crossings and surface quality), aesthetics of the landscape, hilliness, weather, and season. Other studies have identified environmental factors that stimulate walking (e.g. Saelens and Handy 2008; Rodríguez et al. 2008).

A notable distinction is made between transportation walking and recreational walking. In a meta-analysis, Saelens and Handy (2008) report that transportation walking positively correlates with higher densities and mixed land use. The reason may be that distances to destinations are shorter because higher densities and mixed land use are likely to bring destinations within walking distance. The effects of connectivity, presence of parks and safety are ambiguous, and no effects are found of infrastructure conditions, traffic conditions, aesthetics, or access to physical activity facilities. In contrast, Saelens and Handy (2008) found that recreational walking is influenced by pedestrian infrastructure and aesthetics, and limited evidence is found for the effects of mixed land use and personal safety. It may be supposed that the environmental characteristics that stimulate walking and cycling will also lead to higher levels of satisfaction when walking or cycling. However, this has been investigated only to a limited extent.

With respect to environmental factors, it is found that the duration of trips by slow modes has negative impacts on travel satisfaction (St-Louis et al. 2014), likely attributed to fatigue effects. St-Louis et al. (2014) also find that season effects play a role in satisfaction with slow modes. Both walking and cycling yield lower satisfaction in the Canadian cold, snowy season, with cyclists being affected the most. In terms of daily weather conditions, Böcker and Thorsson et al. (2014) find lower affect levels for pedestrians and cyclists under dark and shimmery conditions, with temperatures above 25 °C and rainy conditions. Ettema and Smajic (2015) find that the affective evaluation of walking trips is higher if the environment is more varied and lively. Also, walking with company leads to higher affective evaluation. Gatersleben and Uzzell (2007) indicate that experiences of danger and

inconveniences are main negative impacts on walking and cycling satisfaction. Such dangers and inconveniences arise from traffic, other people, or (lack of) provisions.

With respect to personal factors that influence the satisfaction with walking and cycling, St-Louis et al. (2014) report that (in the context of commuting) older people have a higher satisfaction with walking and cycling. However, similar evidence is found for car and public transport in the same and other studies (e.g., Böcker et al. 2014; Ettema et al. 2013). St-Louis et al. (2014) further report that men derive a higher satisfaction from walking. Böcker et al. (2014) report similar effects for walking and cycling. Apart from socio-demographic factors, positive attitudes influence their satisfaction with walking and cycling. Willis et al. (2013) report that those who choose to cycle for the intrinsic reason that they like cycling have the highest satisfaction. Manaugh and El-Geneidy (2013) report that among pedestrians, active environmentalists and those who choose walking for exercise report the highest satisfaction. A similar effect of the environmentalist attitude is reported by Böcker et al. (2014).

In summary, the literature suggests that using active travel modes results in higher travel satisfaction than using the car and, in particular, public transport. One explanation suggested is that active travel offers sufficient stimulation, without leading to overstimulation and stress, as occurs in car travel. Also, the physical activity involved may in itself lead to improved mood. In addition, interaction with the physical and social environment, and the sense of autonomy offered to children when walking may add to the explanation of higher satisfaction with active travel. Given the generally higher satisfaction with active travel modes, the satisfaction may depend on contextual factors, such as weather conditions, liveliness of the environment, travel company, and safety issues.

7.4 Travel Mode Change and Travel Satisfaction

Given the differences in satisfaction with different travel modes and the factors influencing satisfaction, a question emerges about how a change in travel mode may affect satisfaction with travel. This issue is relevant in the context of many policies implemented worldwide to persuade or force individuals to change their travel mode.

From a theoretical point of view, various factors are known to influence (in a more general sense) individuals' response to a change of circumstances. First, it has been found that travelers are reasonably capable of predicting the valence of their future affective response (i.e., if the outcome is experienced as good or bad), but much less capable of forecasting its intensity and duration (Pedersen et al. 2011). One reason for this forecasting bias (Wilson and Gilbert 2003) is that memory of previous experiences is used as a predictor of future experiences of a similar event and more intense experiences are more likely to be remembered. As a consequence,

predictions based on memory tend to overestimate the intensity of both positive and negative emotions.

Another factor explaining why people are bad at forecasting their affective response to an event is the focusing illusion (Schkade and Kahneman 1998). The illusion arises because individuals tend to focus on a limited set of factors related to the event, which may bias their expectation in a positive or negative direction. For instance, car drivers switching to public transport may focus on annoying factors, such as having to wait at the bus stop and fight for a seat, while overlooking the possibility of reading a newspaper on board. When experiencing the actual event, it will turn out that many other aspects influence satisfaction than what has been expected, thus possibly dampening the negative evaluation.

In addition, various factors influence satisfaction after the actual change. One factor is referred to as the hedonic treadmill effect (Loewenstein and Ubel 2008), implying that a change in satisfaction or affective response due to a change in circumstances will gradually diminish such that individuals return to the same base level of happiness as before the change. One cause of this effect is that individuals adjust their aspiration level, so that the difference between the outcome and the aspiration level is reduced, leading to a reduced positive or negative evaluation. However, Diener et al. (2006) report that depending on the context, the hedonic treadmill effect may be incomplete and individuals do not necessarily revert to their base level. A related mechanism is that of adaptation (Ubel et al. 2005), which implies that by looking for other sources of pleasure, individuals will actively seek to improve a setting that invokes negative responses. Lyubomirsky (2011) further note that attending to the new circumstances influences the positive or negative effects of a changed context. Over time, individuals will get used to the new context and attend less to it. As a result, the intensity of the emotional impact diminishes and the effect on well-being and mood is attenuated. This mechanism also explains why adaptation to positive changes occurs quicker than adaptation to negative changes. Schwarz and Xu (2011) describe how expected PA when driving a luxury car was significantly higher than the expected PA of driving a budget car. However, when asking actual drivers of luxury and budget cars, respectively, to report their affect during the last commute trip, no differences are observed. Attention given to the driving characteristics is likely to be much less than the attention given to daily hassles and the chores of the working day to come. Therefore, the drivers report much less experienced PA.

In summary, research suggests that due to memory distortions and the focusing illusion, travelers' expectation of the affect impacts of a mode change is likely to differ from their actual experience in terms of affect intensity. When actually making a change to another mode, it is suggested that the initial affective response may change when the new mode is used repeatedly. This may be due to changes in the aspiration level, lowered levels of attention, and mental adaptation processes. Finally, it should be noted that the affective response obviously depends on the direction of change (i.e., toward a more or less attractive setting). While the direction may be clear in many contexts (such as winning a lottery or becoming unemployed), it is less clear in the context of mode choice, where people have

individual preferences for a travel mode. Unfortunately, few studies have directly investigated affective response to mode change. We now review the few studies that have been reported.

Abou-Zeid et al. (2012) describe how a sample of 30 Swiss car commuters responded to a one-week switch to public transport. They asked participants to rate their satisfaction on a 5-point scale. Overall, lower satisfaction was reported for public transport than the car, which is consistent with the participants' initial car preference. Two additional findings emerged. First, those reporting a higher satisfaction with public transport were more likely to occasionally use this mode after the experiment. Second, participants' satisfaction with their car commute increased directly after switching. This may be due to an increased focus on the positive aspects of car use, invoked by their public transport use. After 4–5 months, however, their satisfaction with their car commute returned to the initial level, due to decreased attention. A replication of the experiment in the US (Abou-Zeid and Ben-Akiva 2012) mirrored the results, although with a more heterogeneous outcome. One group clearly reported a lower satisfaction with public transport use as compared to car use and returned to using their cars after the experiment. Another group reported higher satisfaction with public transport as compared to car commutes and remained commuting by public transport. The higher overall satisfaction of switchers and lower satisfaction of non-switchers were consistently mirrored in the rating of aspects, such as overall service, reliability, travel duration, convenience and comfort. In addition, it was found that the difference between switchers and non-switchers regarding their valuation of public transport and car characteristics became larger following the experiment. Apparently, using public transport served to strengthen participants' initial positive attitude toward the travel mode.

Pedersen et al. (2011) conducted an experiment in which car users agreed to switch to public transport for one month. Measures were made of their expected satisfaction, satisfaction during use of public transport and two years after the experiment. As in the US and Swiss experiments, participants reported a higher satisfaction with public transport during the experiment than their expectation prior to the experiment. Two years after, their memory of the satisfaction during public transport use had returned to, and was even slightly lower than, the expected satisfaction before the experiment. This suggests that travelers' perception of an alternative mode may be biased, even after having used the alternative with a positive outcome.

Finally, Martin et al. (2014) used longitudinal data to investigate how changes in commute mode from year to year correlate with changes in subjective well-being. Whereas previous studies investigated changes in the satisfaction of travel itself, Martin et al. (2014) discuss general implications for subjective well-being, which is potentially influenced by many more factors. They report that switching commute mode from car or public transport to walking or cycling is associated with higher subjective well-being. The authors propose an explanation related to the intrinsic enjoyment of physical activity, but they also note that the effects of travel on health may be associated with the higher subjective well-being. The latter would imply an indirect, rather than a direct, effect of travel. It is not clear from the report, whether a

shift in commute mode is related to other changes, such as a change of job, residential relocation, or a shorter commute, which in itself may affect subjective well-being.

In conclusion, scarce research provides first evidence of the existence of expectation and memory biases regarding the satisfaction of travel following a mode shift. This suggests that information and trial programs may serve to make travelers become familiar with a new travel mode and potentially reduce their misperceptions. Also, research suggests that responses to mode shifts are heterogeneous, given existing heterogeneity in travel preferences. Importantly, the online satisfaction (i.e., shortly after the switch) appears to be a significant predictor of sustained mode shift. There is also evidence that a travel mode shift may have implications for well-being at a more general level than the trip itself.

7.5 Societal Implications of Travel Mode Change

This chapter is based on the notion that travelers' experience of a travel mode change, in terms of the emotional response or subjective well-being, is an important indicator to evaluate the social benefits of the travel mode change. Obviously, however, a change of travel mode clearly has wider implications for individuals and society. First, at the level of the individual, a change of travel mode may not only affect the trip experience but may have implications on the level of time use and activity participation. A longer commute resulting from a switch from a car to public transport may limit the time available for other activities, such as recreation and social interaction, which may have negative impacts on subjective well-being, even if the trip itself evokes a positive emotional response. Also, a mode shift may have implications for the flexibility to change travel plans in the case of unforeseen events, again with implications for subjective well-being. On the other hand, it can increasingly be argued that travel may also offer the opportunity to engage in activities, such as reading or using ICT devices while on board public transport.

A second effect of mode change at the individual level, not directly captured by travel satisfaction, is the effect of travel on health. Positive health effects of physical activity when walking, cycling, or using public transport, and negative health effects of stress during car driving may impact physical well-being over and above the direct effect of travel satisfaction. In addition, different travel modes may, depending on the geographical setting, have different accident risks with different degrees of physical harm. Obviously, such health hazards pose a threat to both physical and subjective well-being.

Travel mode change has implications beyond the individual. Obvious examples include differences in the emissions of greenhouse gases, pollutants, and noise. In addition, changes in travel mode may contribute to a decreased claim on urban space needed for roads and parking places. Yet, sustainable travel modes, such as

walking or cycling, may also lay a significant claim on scarce urban space in specific settings. Finally, the health effects of a mode change not only accrue on the individual level, but also on the societal level in the form of reduced costs of the healthcare system.

7.6 Conclusion, Discussion, and Future Research Directions

In this chapter we have discussed how travel by different travel modes is primarily related to subjective well-being and is also related to health or physical well-being. Studies carried out in different geographic contexts consistently show that satisfaction with active travel modes is higher than travel by car and public transport, and that satisfaction with travel is lowest for different forms of public transport. These differences are explained by a variety of factors, which stem from fundamental differences between the travel modes in terms of the intensity of physical activity, mental involvement in the act of travel itself, exposure to and interaction with the vehicle and the wider travel surroundings and the degree of control over travel circumstances. Taken together, the overview suggests that active modes are an attractive alternative to car travel, provided that the travel distance is acceptable. Public transport can be a good alternative to car travel, if requirements of seat availability, accessibility, safety, and cleanliness are met. Also, travelers mostly appreciate rail transport more than the bus. Another attractive characteristic of public transport may be the opportunity to be involved in other activities while traveling.

Regarding the shift from one travel mode to another, limited information is available. Some evidence indicates that when switching to public transport, most car commuters experience lower satisfaction with travel by car. Yet, those who experience public transport more positively than the car are likely to keep using it. Other evidence suggests, however, that car commuters' experience of public transport is better than they anticipate, but that they tend to "forget" this after some time. Switchers from car to active travel, on average, report higher levels of subjective well-being after the switch.

In the context of policies that advocate a shift from car travel to public transport and active travel, the findings we reviewed have a number of implications. First, they suggest that heterogeneity exists in the evaluation of travel modes, such that some evaluate a switch to public transport to be positive whereas others experience it to be negative. At the same time, this suggests that not everyone uses the travel mode that provides the highest subjective well-being. As a consequence, policies that provide information about the implications of travel mode use or stimulate travelers to use alternative modes (e.g., via trial tickets) may lead to more travelers using the mode most beneficial for their subjective and physical well-being, which

would lead to social benefits. Second, the immediate effect of a forced mode change will often be negative as suggested by the finding that many switchers from car to public transport experience public transport to be negative, then become even more positive about car use. Although theories of hedonic adaptation suggest that the negative effects should diminish over time, additional research is needed to determine the pace and to what extent travelers over time will return to their original levels of travel satisfaction. In particular, we advocate for more longitudinal studies in which changes in travel satisfaction and overall subjective well-being are monitored in a period spanning from before the change to a considerable time after the change. Developments in travel satisfaction and well-being can then be understood from both the original and new travel context, from individuals' personal circumstances and their attitudes and value orientations. These types of studies would also provide interesting opportunities for testing the effects of interventions following the travel mode change, aimed at sustaining positive well-being effects, such as stimulating awareness of positive outcomes (e.g., Lyubomirsky 2011).

Finally, we note that while our review has focused on conventional travel modes such as the private car, public transport, cycling and walking, new forms of transportation are being developed. For instance, with car-sharing systems, more effort is needed to access to a car, and more uncertainty may arise with respect to the availability and waiting times. Also, cars in such systems may be less personalized in terms of the attributes on board. Automated vehicles also share the characteristics of conventional cars (privacy, door-to-door service), but differ importantly in terms of the mental effort and concentration needed, and the opportunity to be involved in other activities. E-bicycles that have started to penetrate the market differ from conventional bicycles in terms of required physical activity, speed, and possibly experienced safety. Such new forms of travel may lead to different outcomes of subjective well-being resulting from these different characteristics. More research will be needed to learn about the travel satisfaction derived from these new modes and may also help to optimize the design of the new forms of transportation. For certain newly introduced travel modes, such as e-bikes, electric vehicles and shared cars, empirical studies are already possible. While existing methods, such as the STS scale, are sufficient for measuring travel satisfaction with these modes, it is likely that additional explanatory variables need to be taken into account. For shared cars, issues such as wait times, ease of ordering, access time, and tidiness may be more important than for private cars, requiring studies of users' perception of them. For electric cars, driving characteristics, constraints stemming from charging time and limited charging stations, different noise level and range may be relevant issues. For e-bikes, the speed and safety experience could be relevant (especially for elderly), requiring more research into users' perceptions of them. Studies of satisfaction with these modes are feasible today, and would greatly enhance our insight into the effects of using these modes.

References

Abou-Zeid, M., & Ben-Akiva, M. (2012). Travel mode switching: Comparison of findings from two public transportation experiments. *Transport Policy, 24*, 48–59.

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

Ampt, E. S. (2004). Understanding voluntary travel behaviour change. *Transport Engineering in Australia, 9*, 53–66.

Axhausen, K., & Gärling, T. (1992). Activity-based approaches to travel analysis: Conceptual frameworks, models, and research problems. *Transport Reviews, 12*, 323–341.

Bamberg, S. (2014). Psychological contributions to the development of car use reduction interventions. In T. Gärling, D. Ettema, & M. Friman (Eds.), *Handbook of sustainable travel*. Dordrecht: Springer.

Böcker, L., & Thorsson, S. (2014). Integrated weather effects on cycling shares, frequencies, and durations in rotterdam, the Netherlands. Weather, climate, and society, *6*(4), 468–481.

Brownstone, D., & Small, K. A. (2005). Valuing time and reliability: Assessing the evidence from road pricing demonstrations. Transportation Research Part A: *Policy and Practice*, *39*(4), 279–293.

Busseri, M. A., & Sadava, S. W. (2011). A review of the tripartite structure of subjective well-being: Implications for conceptualization, operationalization, analysis, and synthesis. *Personality and Social Psychology Review, 15*, 290–314.

Byrne, B. (2010) *Structural equation modeling with AMOS. Basic concepts, applications and programming* (2nd ed.). Routledge, NY.

Brög, W., Erl, E., Ker, I., Ryle, J., & Wall, R. (2009). Evaluation of voluntary travel behaviour change: Experiences from three continents. *Transport Policy, 16*, 281–292.

Cao, J. (2013). The association between light rail transit and satisfactions with travel and life: Evidence from Twin cities. *Transportation, 40*, 921–933.

Carrasco, J. A., Miller, J. E., & Roorda, J. M. (2005). A tour-based model of travel mode choice. *Transportation, 32*, 399–422.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75.

Diener, E., Sandvik, E., & Pavot, W. (1991). Happiness is the frequency, not the intensity, of positive versus negative affect. In F. Strack, M. Argyle, & N. Schwarz (Eds.), Subjective well-being: *An interdisciplinary perspective* (pp. 119–139). New York: Pergamon.

Diener, E., & Suh, E. (1997). Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research, 40*, 189–216.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*, 276–302.

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist*, *61*(4), 305.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy: A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology, 29*, 94–122.

Du Toit, L., Cerin, E., Leslie, E., & Owen, N. (2007). Does walking in the neighbourhood enhance local sociability?. Urban Studies, *44*, 1677–1695.

Ekkekakis, P., Backhouse, S. H., Gray, C., & Lind, E. (2008). Walking is popular among adults but is it pleasant? A framework for clarifying the link between walking and affect as illustrated in two studies, *Psychology of Sport and Exercise*, *9*, 246–264.

Ettema, D., & Smajic, I. (2015). Walking, places and wellbeing. *The Geographical Journal*, *181* (2), 102–109.

Ettema, D., Friman, M., Gärling, T., Olsson, L. E., & Fujii, S. (2012). How in-vehicle activities affect work commuters' satisfaction with public transport. *Journal of Transport Geography, 24*, 215–222.

Ettema, D., Gärling, T., Eriksson, L., Friman, M., Olsson, L. E., & Fujii, S. (2011). Satisfaction with travel and subjective wellbeing: Development and tests of a measurement tool. *Transportation Research Part F, 14*, 167–175.

Ettema, D., Gärling, T., Olsson, L. E., & Friman, M. (2010). Out-of-home activities, daily travel, and subjective well-being. *Transportation Research Part A: Policy and Practice, 44*, 723–732.

Ettema, D., Gärling, T., Olsson, L. E., Friman, M., & Moerdijk, S. (2013). The road to happiness: Measuring Dutch car drivers' satisfaction with travel. *Transport Policy, 27*, 171–178.

Ettema, D., & Timmermans, H. J. P. (Eds.). (1997). *Activity-based approaches to travel analysis*. Oxford: Elsevier Science Ltd.

Eurostat (2012). *Europe in figures*. Luxembourg: Publications Office of the European Union.

Fellesson, M., & Friman, M. (2008). Perceived satisfaction with public transport services in nine European cities. *Journal of Transportation Research Forum, 47*, 93–103.

Friman, M., Fujii, S., Ettema, D., Gärling, T., & Olsson, L. E. (2013). Psychometric analysis of the satisfaction with travel scale. *Transportation Research Part A, 48*, 132–145.

Gatersleben, B. (2014). *Our handbook.*

Gatersleben, B. (2007). Affective and symbolic aspects of car use.

Gatersleben, B., & Uzzell, D. (2007). Affective appraisals of the daily commute: Comparing perceptions of drivers, cyclists, walkers and users of public transport. *Environment and behavior, 39*, 416–431.

Grannis R (2009), From the ground up. Translating Geography into Community through neighbor networks, Princeton University Press.

Hartig, T. (2007). Congruence and conflict between car transportation and psychological restoration. In T. Gärling & L. Steg (Eds.), *Threats from car traffic to the quality of urban life: Problems, causes, and solutions* (pp. 103–122). Amsterdam, The Netherlands: Elsevier.

Heinen, E., Van Wee, B., & Maat, K. (2010). Commuting by bicycle: An overview of the literature. *Transport Reviews: A Transnational Transdisciplinary Journal*, *30*, 59–96.

Hensher, D. A. (2000). Urban public transport challenges. *The Drawing Board: An Australian Review of Public Affairs, 1*, 47–62.

Hess, S., Daly, A., Rohr, C., & Hyman, G. (2007). On the development of time period and mode choice models for use in large scale modelling forecasting systems. *Transportation Research A: Policy and Practice, 41*, 802–826.

Housholds National Travel Survey. (2013). Statistics South Africa. P0320. Pretoria: South Africa.

Jain, J., & Lyons, G. (2008). The gift of travel time. *Journal of Transport Geography*, *16*(2), 81–89.

Jakobsson Bergstad, C., Gamble, A., Hagman, O., Polk, M., Gärling, T., Ettema, D., et al. (2012). Influences on subjective well-being of affect associated with routine out-of-home activities. *Applied Research in Quality of Life*, *7*, 49–62.

Jakobsson Bergstad, C., Gamble, A., Hagman, O., Polk, M., & Gärling, T. (2011). Affective-symbolic and instrumental-independence psychological motives mediating effects of socio-demographic variables on daily car use. *Journal of Transport Geography*, *19*, 33–38.

Jakobsson, C. (2007). Instrumental motives for private car use. In T. Gärling & L. Steg (Eds.), Threats from car traffic to the quality of urban life: Problems, causes, and solutions (pp. 205–217). Amsterdam, The Netherlands: Elsevier.

Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *Journal of Economic Perspectives*, *20*, 3–24.

Kahneman, D. (1999). Objective happiness. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 3–25). New York: Russell Sage Foundation.

Kahneman, D. (2000a). Evaluation by moments: Past and future. In D. Kahneman & A. Tversky (Eds.), *Choices, values, and frames* (pp. 693–708). New York: Cambridge University Press.

Kahneman, D. (2000b). Experienced utility and objective happiness: A moment-based approach. In D. Kahneman & A. Tversky (Eds.), *Choices, values and frames* (pp. 673–692). New York: Cambridge University Press.

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*(38), 16489–16493.

Kahneman, D., & Sugden, R. (2005). Experienced utility as a standard of policy evaluation. *Environmental and Resource Economics, 32*, 161–181.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. (2004). A survey method for characterizing daily life experience: The day reconstruction method (DRM). *Science, 306*, 1776–1780.

Kahneman, D., Wakker, P., & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *Quarterly Journal of Economics, 112*, 375–405.

Kent, J. L. (2014). Still Feeling the Car–The Role of Comfort in Sustaining Private Car Use, *Mobilities*, 1–22.

Krueger, A. B., &Schkade, D. A. (2008). The reliability of subjective well-being measures. *Journal of Public Economics 92*, 1833–1845.

Kuppens, P., Tuerlinckx, F., Russell, J. A., & Barrett, L. F. (2013). The relation between valence and arousal in subjective experience. *Psychological Bulletin, 139*, 917–940.

Leyden, K. M., Goldberg, A., & Michelbach, P. (2011). Understanding the pursuit of happiness in ten major cities. *Urban Affairs Review, 47*, 861–888.

Loewenstein, L., & Ubel, P. A. (2008). Hedonic adaptation and the role of decision andexperience utility in public policy. *Journal of Public Economics, 92*, 1795–1810.

Lyubomirsky, S. (2011). Hedonic adaptation to positive and negative experiences. In S. Folkman (Ed.), *The Oxford handbook of stress, health, and coping* (pp. 200–226). New York: Oxford University Press.

Manaugh, K., & El-Geneidy, A. (2013). Does distance matter? Exploring the links among values, motivations and satisfaction in walking trips. *Transportation Research Part A: Policy and Practice, 50*, 198–208.

Martin, A., Goryakin, Y., & Suhrcke, M. (2014). Does active commuting improve psychological wellbeing? Longitudinal evidence from eighteen waves of the British Household Panel Survey. *Preventive Medicine,* Available online August 23, 2014.

McFadden, D. (2001). Disaggregate behavioral travel demand's RUM side—a 30 years retrospective. In D. A. Hensher (Ed.), *Travel behavior research* (pp. 17–63). Amsterdam: Elsevier.

McMahon, D. M. (2008). The pursuit of happiness in history. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 80–93). New York: Guildford Press.

Mees, P. (2010). *Transport for suburbia: Beyond the automobile age*. London: Earthscan.

Mokhtarian, P. L., (2005). Travel as a desired end, not just a means. Transportation Research Part A: *Policy and Practice*, *39*(2), 93–96.

Mokhtarian, P. L., & Salomon, I. (2001). How derived is the demand for travel? Some conceptual and measurement considerations. *Transportation Research Part A: Policy and Practice, 35*, 695–719.

Mokhtarian, P. L., Salomon, I., & Redmond, L. S. (2001). Understanding the demand for travel: It's not purely 'derived'. *Innovation, 14*, 355–380.

Newman, P., & Kenworthy, J. (1999). *Sustainability and cities: Overcoming automobile dependence*. US: Island Press.

Newman, J. P., & Bernardin, L. V. (2010). Hierarchical ordering of nests in a joint mode and destination choice model. *Transportation, 37*, 677–688.

Novaco, R. W., & Gonzales, O. I. (2009). Commuting and well-being. In Y. Amichai-Hamburger (Ed.), *Technology and well-being* (pp. 174–205). New York: Cambridge University Press.

Novaco, R. W., Stokols, D., & Milanesi, L. (1990). Objective and subjective dimensions of travel impedance as determinants of commuting stress. *American Journal of Community Psychology, 18*, 231–257.

Olsson, L. E., Gärling, T., Ettema, D., Fujii, S., Lekedal, H., & Friman, M. (2011). *Relationship between satisfaction with daily travel and subjective well-being in three urban areas in Sweden: Description of survey questionnaire, sample characteristics, and preliminary results*. Karlstad University Studies, 2011:23, Karlstad, Sweden.

Olsson, L. E., Gärling, T., Ettema, D., Friman, M., & Fujii, S. (2013). Happiness and satisfaction with work commute. *Social Indicators Research, 111*(1), 255–263.

Ory, D. T., & Mokhtarian, P. L. (2005). When is Getting there Half the Fun? Modeling the Liking for Travel. *Transportation Research Part A*, *39*, 97–123.

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment, 5*, 164–172.

Pedersen, T., Friman, M., & Kristensson, P. (2011). Affective forecasting: Predicting and experiencing satisfaction with public transportation. *Journal of Applied Social Psychology, 41* (8), 1926–1946.

Pucher, J., & Kurth, C. (1996). Verkehrsverbund: The success of regional public transport in Germany, Austria and Switzerland. *Transport Policy*, *2*, 279–291.

Rapino, M. A., & Field, A. K. (2012). *Mega commuting in the U.S. Time and distance in defining long commutes using the 2006-2010 American Community Survey*. Poster presented at the Presented at the Association for Public Policy Analysis and Management (APPAM) Fall Conference, Baltimore, MD, November 8–10, 2012.

Redman, L., Friman, M., Gärling, T., & Hartig, T. (2013). Quality attributes of public transport that attract car users. *Transport Policy, 25*, 119–127.

Richter, J., Friman, M., & Gärling, T. (2011). Soft transport policy measures: Gaps of knowledge and research needs. *International Journal of Sustainable Transportation, 5*, 199–215.

Rissel, C., Curac, N., Greenaway, M., & Bauman, A. (2012). Physical activity associated with public transport use—a review and modelling of potential benefits. *International Journal of Environmental Research and Public Health, 9*, 2454–2478.

Rodríguez, D.A., S. Aytur., A. Forsyth et al. (2008), Relation of modifiable neighborhood attributes to walking. *Preventive medicine 47*(3), pp.260–264.

Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology, 39*, 1161–1178.

Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review, 110*, 145–172.

Saelens, B.E., & Handy, S.L. (2008), Built environment correlates of walking: A review. *Medicine and science in sports and exercise*, *40*(7 SUPPL.1), pp.S550–S566.

Schkade, D. A., & Kahneman, D. (1998). Does living in California make people happy? A focusing illusion in judgments of life satisfaction. *Psychological Science, 9*, 340–346.

Schwartz, N., Kahneman, D., & Xu, J. (2009). Global and episodic reports of hedonic experience. In R. Belli, F. Stafford & D. Alwin (eds.), *Calendar and Diary Methods in Life Course Research*, (pp. 156–176). Thousand Oaks, CA: Sage.

Schwarz, N., & Xu, J. (2011). Why don't we learn from poor choices? The consistency of expectation, choice, and memory clouds the lessons of experience. *Journal of Consumer Psychology*, *21*(2), 142–145.

UITP database. (2012). Statistics brief—World metro figures. Retrieved September 22, 2014.

Schimmack, U. (2008). The structure of subjective well-being. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 97–123). New York: Guilford Press.

St-Louis, E., Manaugh, K., van Lierop, D., & El-Geneidy, A. (2014). The happy commuter: A comparison of commuter satisfaction across modes. *Transportation Research Part F, 26*, 160–170.

Steg, L. (2005). Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research Part A: Policy and Practice*, *39*(2), 147–162.

Stone, A. A., Shiffman, S. S., & DeVries, M. W. (1999). Ecological momentary assessment. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 26–39). New York: Russell-Sage.

Sugiyama, T., Leslie, E., Giles-Corti, B., Owen, N. (2008). Associations of neighbourhood greenness with physical and mental health: Do walking, social coherence and local social interaction explain the relationships?. *Journal of Epidemiology and Community Health*, *62*, 1–6.

Suzuki, H., Fujii, S., Gärling, T., Ettema, D., Olsson, L. E., & Friman, M. (2014). Rules for aggregating satisfaction with stages of work commute. *Transportation, 41*, 495–506.

Ubel, P. A., Loewenstein, G., & Jepson, C. (2005). Disability and sunshine: Can hedonic predictions be improved by drawing attention to focusing illusion or emotional adaptation? *Journal of Experimental Psychology: Applied, 11*, 111–123.

Västfjäll, D., Friman, M., Gärling, T., & Kleiner, M. (2002). The measurement of core affect: A Swedish self-report measure. *Scandinavian Journal of Psychology, 43*, 19–31.

Västfjäll, D., & Gärling, T. (2007). Validation of a Swedish short self-report measure of core affect. *Scandinavian Journal of Psychology, 48*, 233–238.

Veenhoven, R. (1984). *Conditions of happiness*. Boston: Reidel.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 47*, 1063–1070.

Wen, L. M., & Rissel, C. (2008). Inverse associations between cycling to work, public transport, and overweight and obesity: Findings from a population based study in Australia. *Preventive Medicine, 46*, 29–32.

Whitzman, C., Tranter, P. J. (2012), Children's independent mobility and active travel: The relative influence of social, built and policy environments, paper presented in AAG Annual Meeting, February 2012, New York.

Willis, D., Manaugh, K., & El-Geneidy, A. (2013). Uniquely satisfied: Exploring cyclists trip satisfaction. *Transportation Research Part F: Traffic Psychology and Behaviour, 18*, 136–147.

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. *Advances in Experimental Social Psychology, 35*, 345–411.

Yik, M., Russell, J. A., & Steiger, J. H. (2011). A 12-point circumplex structure of core affect. *Emotion, 11*, 705–731.

Ziegler, F., Schwanen, T. (2011), 'I like to go out to be energized by different people': An exploratory analysis of mobility and wellbeing in later life. *Ageing and Society*, *31*, 758–781.

Chapter 8
The Association Between Travel and Satisfaction with Travel and Life: Evidence from the Twin Cities

Jason Cao and Donggen Wang

Abstract Satisfaction with life (SWL) is a global judgment of life, which includes family, work, social life among others. Although previous studies have explored the impact of the major life domains on SWL, few have focused on travel. Travel presumably affects satisfaction with travel (SWT), which in turn contributes to SWL. Using data from residents in the Minneapolis–St. Paul metropolitan area (Twin Cities), we employ structural equations models to explore the relationships between travel and SWT/SWL. As expected, SWT has a positive association with SWL. Vehicle miles driven is positively associated with SWL but negatively associated with SWT, and therefore, its total effect on life satisfaction is insignificant. Most measures of travel have negative associations with SWL through SWT, consistent with the theory of disutility of travel. However, the detrimental effect is not large. Because having a driver's license is positively associated with SWL, planning strategies should be developed to meet the daily needs of those without a license and to improve their life satisfaction in an automobile-oriented society.

Keywords Quality of life · Travel satisfaction · Travel behavior · Subjective well-being · Life satisfaction

8.1 Introduction

Well-being has attracted much research attention across a variety of disciplines, including economics, psychology, sociology, and geography (Kahneman et al. 1999; Diener 2009; Nussbaum 2011; Schwanen and Wang 2014). Different views

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of well-being span a subjective or objective perspective and a hedonic or eudaimonic understanding. The combination of a subjective perspective with a hedonic understanding has prevailed in empirical studies of well-being (Schwanen and Wang 2014). Subjective well-being refers to individuals' cognitive and emotional well-being, which can be directly measured through reliable psychometric scales (Ettema et al. 2010). Subjective well-being is considered multi-dimensional and involves a relatively long-term cognitive component and a relatively short-term affective component (Diener 2009). Specifically, the affective component (positive affect and negative affect) is concerned with immediate experience, and the cognitive component often refers to satisfaction with life or life satisfaction. Subjective well-being has been a hot research topic in the fields of economics and psychology for decades (Easterlin 1974; Diener et al. 1993; Kahneman et al. 2006; Easterlin et al. 2010). Nevertheless, while the psychology literature usually considers both components of subjective well-being, studies in economics focus on life satisfaction or happiness (Diener et al. 1995; Veenhoven and Hagerty 2006). Global life satisfaction constitutes domain-specific satisfaction or subjective well-being (Ettema et al. 2010). Employment and career, family life, personal health, social relationships, and the residential environment are considered to be the five major life domains determining individuals' quality of life (Campbell 1976; Yang 2008).

Many studies have examined the determinants of life satisfaction or subjective well-being. Personality traits (which are supposed to be genetically determined), positive life circumstances and performance of goal-related activities have been reported to explain variations in the subjective well-being between individuals (Lyubomirsky et al. 2005; Deci and Ryan 2008; Bergstad et al. 2011). Various personal characteristics are usually found to have significant impacts on subjective well-being (for a systematic review, refer to Diener et al. 1999; Dolan et al. 2008). As a facilitator of engagement in goal-related activities, travel is believed to be an important contributor to subjective well-being (Ettema et al. 2010). Travel is expected to be directly and indirectly associated with subjective well-being. It facilitates individuals' participation in daily activities, which explains about 40 % of happiness (Lyubomirsky et al. 2005). The link between travel and life satisfaction has recently attracted much research attention (Bergstad et al. 2011; Choi et al. 2013; Nordbakke and Schwanen 2013). Accessibility, mobility, and travel behavior are believed to be important determinants of life satisfaction (Choi et al. 2013). Apart from theoretical deliberations about the possible contribution of travel to subjective well-being (e.g., Ettema et al. 2010), some empirical studies have been conducted to investigate the well-being effects of travel. However, existing studies have focused on commuting time and mobility (or transport disadvantages), while other dimensions of daily travel, such as travel intensity and transport modes, have not been studied thoroughly. This study intends to help fill this research gap.

The objective of this chapter is to investigate the impacts of travel behavior for work and non-work purposes on travel satisfaction and life satisfaction, controlling for demographic characteristics. In this study, travel satisfaction and life satisfaction are measured using long-term, cognitive well-being. Travel behavior is more of a reflection of habitual behavior in terms of a typical week rather than a particular

day. We apply the structural equations modeling approach to a sample of individuals living in the Minneapolis–St. Paul metropolitan area. This chapter is structured as follows. The next section reviews studies on the association between travel and life satisfaction. Section 8.3 explains the research methodology. Section 8.4 presents analytical results and discusses the research findings. The last section concludes the chapter.

8.2 Literature Review

The association between travel and life satisfaction has gradually been recognized over the past several years. Accessibility, mobility, and travel behavior are influential factors of life satisfaction (Choi et al. 2013). Ettema et al. (2010) developed a theoretical framework, which regards travel subjective well-being as a domain of global subjective well-being and specifies how travel influences subjective well-being. Travel subjective well-being includes both a cognitive component (i.e., travel satisfaction) and an affective component associated with travel experiences. Instrumental (such as travel time and cost) and non-instrumental (such as safety, comfort and enjoyment) factors of daily travel are assumed to contribute to subjective well-being through not only facilitating the participation in activities and realization of goals, but also the generation of emotional experiences of travel. Similarly, De Vos et al. (2013) argue that the potential to move through space contributes to well-being through freedom and facilitation of activity engagement. They address the link between travel behavior and subjective well-being and argue that travel behavior may influence subjective well-being in five ways: the positive or negative feelings experienced during travel, the enabling of activity participation, the activities conducted during travel, the undirected travel, and the mobility or potential travel. Carp (1988) suggests that the life satisfaction of the elderly depends on the congruence between personal needs and community resources, and mobility is a key factor in determining the degree of the congruence. The quality of mobility in terms of its feasibility, safety and sense of personal control positively contributes to the quality of life in the twilight years for an individual by facilitating their needs to live independently. Nordbakke and Schwanen (2013) review major approaches to interpreting well-being and empirical findings on the linkage between mobility and well-being for individuals in later life. They argue that mobility is associated with well-being in multiple ways and the association is context dependent and shaped by the particularities of time and place. Reardon and Abdallah (2013) discuss the relationship between transport and well-being more generally. They contend that transport contributes to well-being through facilitating the economy, environment and social relationships, and through supporting individuals' physical activities and psychological reactions.

Apart from general discussions about the association between travel and well-being, some studies also explore travel-related determinants of life satisfaction. Transport disadvantage and commuting time are two main travel-related factors that

have been examined. Since travel is associated with social status (Ory and Mokhtarian 2005) and autonomy (Ieda and Muraki 1999; Ziegler and Schwanen 2011), difficulties with transport are believed to have a great impact on both social inclusion and subjective experiences and thus subjective well-being. For example, research has found that transport disadvantage may lead to social exclusion and time poverty, which reduce subjective well-being (Currie and Delbosc 2010), but improved mobility can reduce the risk of social exclusion and thus increase well-being (Stanley et al. 2011). The impacts of transport disadvantages on well-being tend to be mixed in empirical studies. Delbosc and Currie (2011a, b) report that the association among transport disadvantage, social exclusion and well-being is significant in some regions but not in others.

Commute time is typically considered a stressful and negative experience. However, there are at least two reasons that commuting may not harm subjective well-being. First, some people consider commuting to be a desirable experience because it is often a transition between the home and work environments (Ory et al. 2004). Second, from an economic perspective, a rational commuter should be fully compensated for his/her commuting costs through either higher salaries or lower housing expenses (Stutzer and Frey 2008). However, empirical studies provide mixed evidence for these arguments. While Ory et al. (2004) find that about half of the commuters in three San Francisco Bay Area neighborhoods are relatively satisfied with their commute time, most studies find negative (Stutzer and Frey 2008; Choi et al. 2013) or insignificant (White et al. 2013) effects of commute time on life satisfaction.

Overall, existing studies on the well-being effects of travel focus on commute time and transport disadvantages. Other dimensions of travel including travel intensity, transport mode usage, and so on have not received much research attention. An exception is Bergstad et al. (2011) who found that car use positively contributes to travel satisfaction, which in turn leads to higher life satisfaction. However, more empirical studies are needed to gain a full intellectual understanding about the linkage between travel and life satisfaction.

8.3 Methodology

8.3.1 Conceptual Model and Modeling Approach

Figure 8.1 illustrates our conceptual model. Both satisfaction with travel (SWT) and satisfaction with life (SWL) are latent variables underlying observed indicators. SWT and SWL are endogenous whereas travel behavior and demographics are exogenous. We assume that travel behavior and demographics affect both SWT and SWL and satisfaction with travel domain influences overall life satisfaction. Because of the interactions among variables, structural equations models (SEMs) are used to examine the relationships.

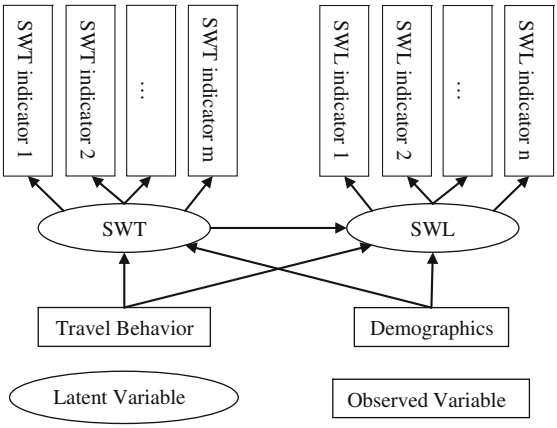

Fig. 8.1 Conceptual model

SWL = Satisfaction with Life; SWT = Satisfaction with Travel

An SEM can include measurement models and/or path analysis. When latent variables are present, measurement models can be used to extract latent constructs underlying observed indicators through confirmatory factor analysis. Path analysis depicts the relationships among variables. Endogenous variables can be both dependent and independent variables in multiple equations whereas exogenous variables just serve as independent variables. Refer to Byrne (2010) for a detailed introduction and mathematical presentation of SEMs.

SEMs can capture total effects, which include direct and indirect effects. For example, if Variable X impacts Variable Y_2 and there are no any mediating variables, this effect ($X \rightarrow Y_2$) is a direct effect from X to Y_2; however, if X affects Y_2 through a mediating variable Y_1, this effect ($X \rightarrow Y_1 \rightarrow Y_2$) is an indirect effect from X to Y_2 (Cao et al. 2007).

8.3.2 Data and Variables

To test the hypotheses in Fig. 8.1, we self-administered a survey in May 2011 to randomly-selected households in five neighborhoods in the Twin Cities (Fig. 8.2). The data description was heavily drawn from Cao (2015). We chose three urban neighborhoods and two suburban neighborhoods. The urban neighborhoods are along Hiawatha Avenue, Nicollet Avenue and Bloomington Avenue in South Minneapolis and include the areas within about a half-mile of the corridors from Lake Street to 50th Street. The three neighborhoods share some attributes such as regional location, built environment characteristics, and demographics. Hiawatha Avenue is served by light rail transit (LRT) and local buses, whereas express and local buses are throughout the other two neighborhoods. Coon Rapids and Burnsville are suburban communities: the former is about 14 miles directly north of

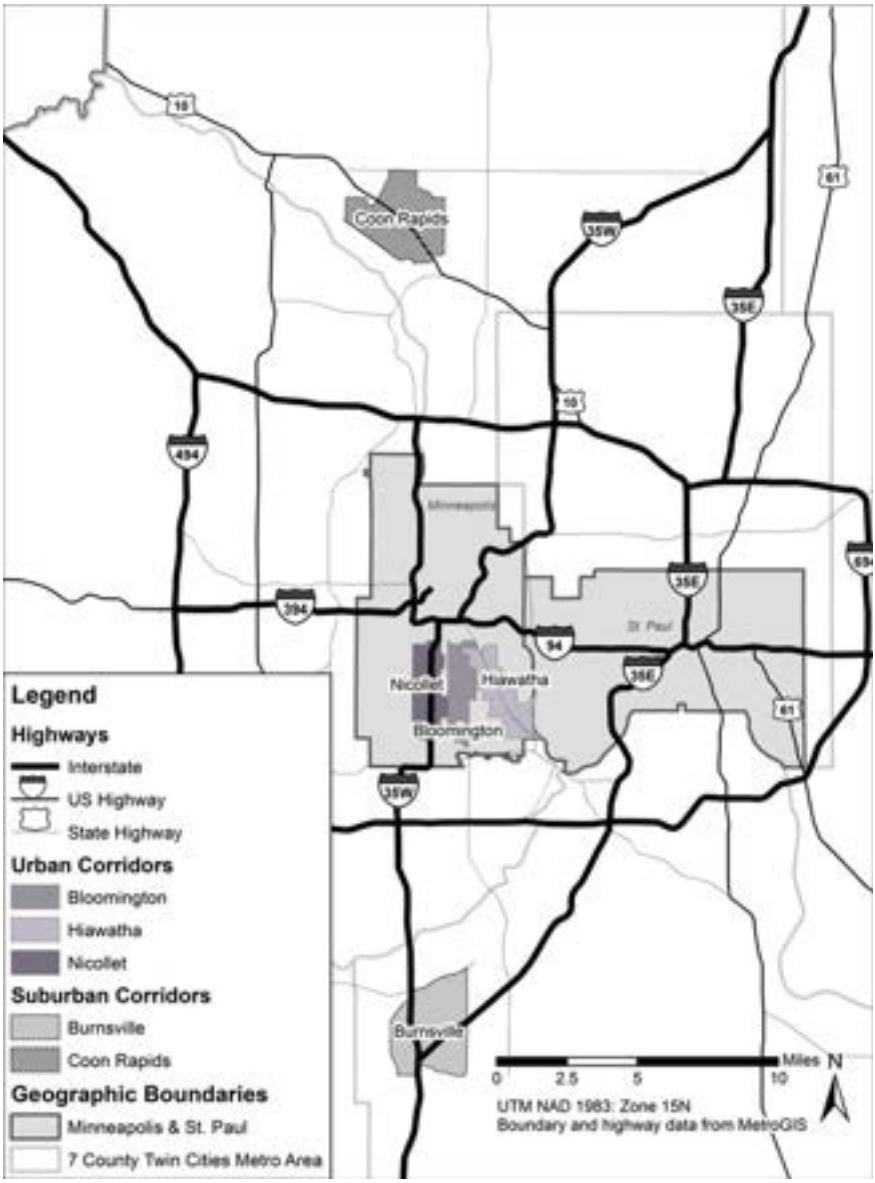

Fig. 8.2 Neighborhood location

downtown Minneapolis and the latter is 17 miles directly south of downtown. We chose the suburban neighborhoods to resemble the demographics of urban neighborhoods. The suburban neighborhoods were mostly developed in the 1970s. Transit access is limited and there are many cul-de-sacs in the neighborhoods

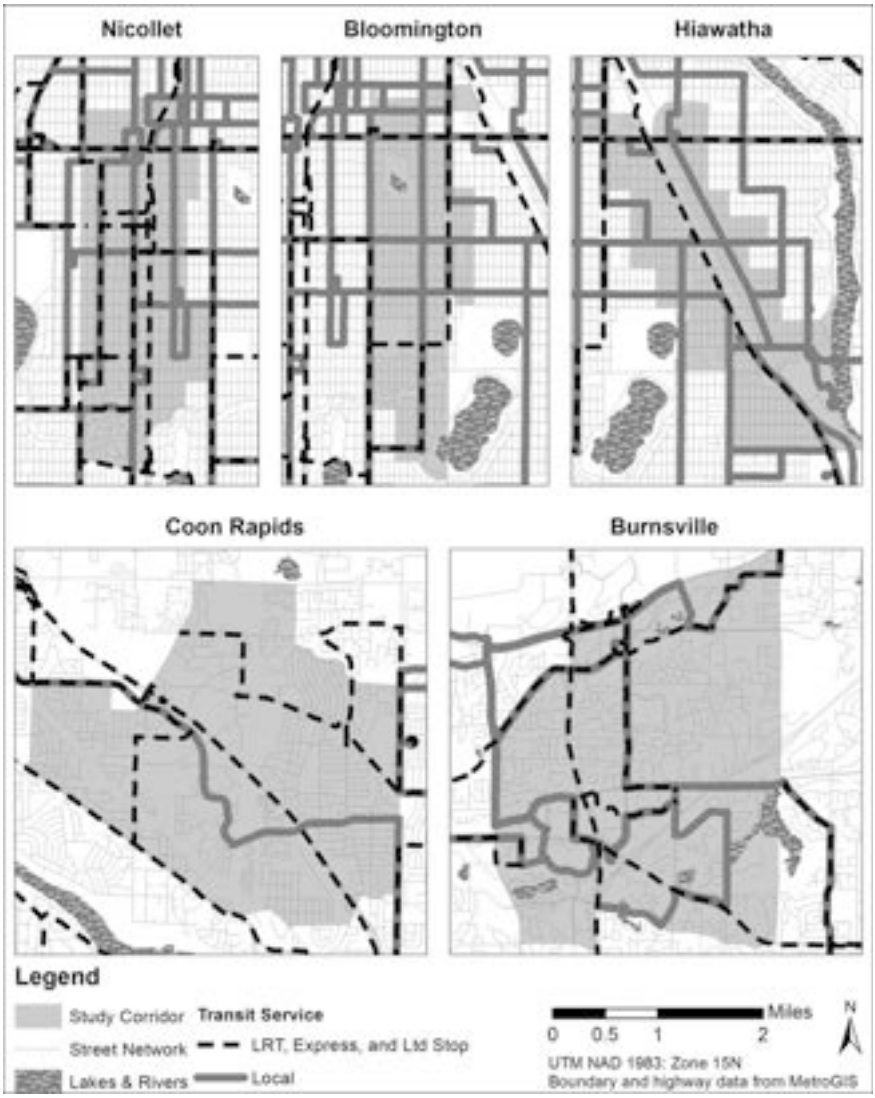

Fig. 8.3 Maps of neighborhoods

(Fig. 8.3). Because of the differences in the built environment settings, respondents' travel behavior is expected to differ by neighborhood type.

We pretested the survey by students and staff members from the University of Minnesota and neighbors and friends of the first author. We incorporated feedback from pretesters in the final survey instrument. The survey was mailed in May 2011 and two reminder postcards were followed one and two weeks later. Through a lottery draw, ten $50 gift cards were provided as the incentive for completing the

survey. The addresses were purchased from AccuData Integrated Marketing, a commercial data provider (http://www.accudata.com). We ordered 1000 addresses from each of Nicollet, Bloomington, Coon Rapids, and Burnsville neighborhoods and 2000 random addresses for the Hiawatha neighborhood. The Hiawatha neighborhood was oversampled because the survey was primarily to test the Hiawatha LRT effect on travel behavior. The original database included 5884 valid addresses. The number of responses totaled 1303, a 22.2 % response rate. This is considered a good rate for a ten-page survey because the typical response rate for a survey mailed to the general population ranges from 10 to 40 % (Sommer and Sommer 1997). A comparison between the sample characteristics and the 2010 Census is shown in Table 8.1. Overall, there are more homeowners in the sample than the population, although the similar percentages of owners across neighborhoods. Respondents tend to have a smaller household size than the population, and households with children are undersampled. However, because our study is to examine the relationships between other variables and satisfaction with travel and life rather than on describing satisfaction per se, these differences are not expected to critically affect the outcomes (Babbie 2007).

The variables used in this study consist of four groups: life satisfaction, travel satisfaction, travel behavior, and demographics. Life satisfaction is an overall evaluation of life, which includes family life, work life, leisure life, and so on (Forward 2003; Poortinga et al. 2004). We measure it using the widely-used Satisfaction with Life Scale (SWLS) of Diener et al. (1985). The five SWLS statements include: "In most ways my life is close to my ideal"; "I am satisfied with my life"; "So far I have achieved the important things I want in life"; "The conditions of my life are excellent"; and "If I could live my life over again, I would change almost nothing." Respondents rated these statements on a seven-point scale from "Strongly Disagree" (1) to "Strongly Agree" (7). We measure travel satisfaction using the Satisfaction with Travel Scale (SWTS), developed by Bergstad et al. (2011). They "measure satisfaction with daily travel without focusing on any particular travel mode" (p. 6). The SWTS include five statements: "I am completely satisfied with my daily travel"; "My daily travel makes me feel good"; "My travel facilitates my daily life"; "I do not want to change anything regarding my daily travel"; and "When I think of my daily travel, the positive aspects outweigh the negative." Respondents also rated these on the seven-point scale.

Travel behavior includes both vehicle miles driven (VMD) and trip frequencies. In the survey, respondents reported the distance they drove in a typical seven-day week. For trip frequency, respondents were asked to indicate the number of days they used different means of transport (including driving alone, carpooling, transit, walking and biking) to commute in a typical month with good weather, based on a six-point scale ranging from "Never", "Less than once per month", "1–3 times per month", "Once per week", "2–3 days per week", to "4–5 days per week". We recoded them approximately "0", "0.5", "2", "4.3", "10.75", and "19.35" times per month, respectively. Accordingly, we obtained commute frequencies by the five

Table 8.1 Sample characteristics versus 2010 census

	Hiawatha		Nicollet		Bloomington		Coon Rapids		Burnsville	
	Census	Sample	Census	Sample	Census	Sample	Census	Sample	Census	Sample
Number of people	24,166	508	36,808	197	27,055	241	24,866	175	27,975	182
Percent of female	50 %	52 %	49 %	49 %	50 %	51 %	51 %	49 %	52 %	49 %
Mean household size	2.27	2.15	2.50	2.21	2.65	2.26	2.53	2.42	2.31	2.24
Percent with kids	26 %	23 %	43 %	22 %	35 %	24 %	32 %	29 %	35 %	22 %
Percent of owner	68 %	83 %	49 %	82 %	62 %	84 %	77 %	86 %	58 %	84 %

Table 8.2 Travel behavior by neighborhood type for all respondents

Travel behavior variables	Urban		Suburban
	Hiawatha	Nicollet + Bloomington	
Vehicle miles driven	111	119	171
Driving frequency for nonwork trips	25.56	28.79	29.78
Transit frequency for nonwork trips	4.44	3.76	1.48
Walking frequency for nonwork trips	11.48	13.75	5.12
Biking frequency for nonwork trips	7.1	9.08	1.67
Driving frequency for commute trips	4.48	4.79	5.49
Carpooling frequency for commute trips	1.4	1.41	1.15
Walking frequency for commute trips	1.4	1.48	1.25
Biking frequency for commute trips	1.76	1.82	1.17
Transit frequency for commute trips	2.26	2.04	1.32
All differences among the three types of neighborhoods are significant at the 0.05 level			

modes. Respondents also responded to the following question: "In a typical month with good weather, how often do you drive or ride as a passenger in a private vehicle [or take public transit, walk, bike] from your home to each of the following places for purposes other than work/school?" The destinations/purposes include a religious or civic building (e.g., library), a service provider (e.g., bank, barber), a store or place to shop, restaurant or coffee place, a place for entertainment/recreation, a place to exercise (e.g., a gym or a park) and a place to pick up or drop off a passenger. The choice set consists of "Never", "Less than once per month", "Once or twice per month", "About once every two weeks", "About once per week", and "Two or more times per week". Similarly, they were recoded as "0", "0.5", "1.5", "2.15", "4.3", and "12.9" times per month, respectively. Non-work frequency by a particular mode is obtained by summing the frequencies for the seven purposes. Overall, travel behavior variables include VMD, five commute trip frequencies by different modes, and four nonwork trip frequencies by different modes. As shown in Table 8.2, all travel behavior variables differ by neighborhood type. They are expected to explain the variation in SWT and SWL.

The survey also consisted of questions about demographic characteristics, including gender, age, education, employment status, mobility constraints, income, household structure, and so on.

8.4 Results

We developed two SEMs: Model 1 is for all respondents and Model 2 is for commuters only. In Model 1, we tested only a subset of travel behavior variables (VMD and the four nonwork trip frequencies) whereas in Model 2 we tested all of

Table 8.3 Structural equations model for all respondents

	Travel satisfaction		Life satisfaction	
	Coefficient	*P*-value	Coefficient	*P*-value
Endogenous variables				
Travel satisfaction	NA		0.483	0.000
Life satisfaction	NA		NA	
Exogenous variables				
Travel behavior				
Walking frequency for nonwork trips			0.061	0.023
Vehicle miles driven	−0.231	0.000	0.096	0.000
Driving frequency for nonwork trips	−0.059	0.026		
Biking frequency for nonwork trips	−0.073	0.047		
Demographics				
Having walking constraints	−0.084	0.015		
Having a driver's license	0.102	0.005	0.061	0.077
Age	0.245	0.000	−1.220	0.000
Age*age			1.152	0.000
Fulltime worker			−0.088	0.012
Household income			0.265	0.000
Number of bikes			0.094	0.003
Number of observations = 1028. Bootstrap replications = 50				
All coefficients are standardized. See appendix table for measurement models				
NA means that there is no direct link between variables. The empty cells mean coefficients are insignificant at the 0.10 level				
Goodness-of-fit measures: RMSEA = 0.053 < 0.08; SRMR = 0.033 < 0.08; CFI = 0.941				

the 10 travel behavior variables. All aforementioned demographic variables were tested in the models. However, we kept only the variables that are significant at the 0.10 level to obtain parsimonious models. Maximum likelihood estimation is commonly used to develop SEMs. The estimation method assumes that data follow a multivariate normal distribution, but our data may deviate from the assumption; therefore, a bootstrap estimation was used to obtain the variance-covariance matrix of the estimates.

Table 8.3 illustrates the SEM results for all respondents. First, the goodness-of-fit measures under Table 8.3 indicate that the model is acceptable. Root Mean Square Error of Approximation (RMSEA) measures the estimated discrepancy between the model-implied and true population covariance matrix, corrected for degrees of freedom; values less than 0.05 indicate a good fit, and values as high as 0.08 represent a reasonable fit. Standardized Root Mean Squared Residual (SRMR) measures the discrepancy between the sample covariance matrix and the model covariance matrix; values less than 0.08 indicate an acceptable fit.

The Comparative Fit Index (CFI) assumes a noncentral X^2 distribution for the worst (independence) model discrepancy; it varies between 0 and 1, with values closer to 1 indicating a good fit. Second, all latent variables have significant associations with their respective observed indicators (See appendix). As we expected, the latent SWT is positively associated with the latent SWL.

Several demographic variables are significantly associated with SWT and SWL at the 0.10 level. Respondents who have a physical or anxiety condition that seriously limits or prevents them from walking tend to have a lower travel satisfaction than others. That is, impaired mobility constrains individuals' control over their travel. Having a driver's license is positively associated with both travel satisfaction and life satisfaction. Thus, having a sense of "freedom to travel" leads to happier travel and a happier life (Delbosc 2011). Although travel satisfaction has a positive association with age, life satisfaction is U-shaped in age. In other words, life satisfaction tends to be highest among younger people and older people (Blanchflower and Oswald 2004; MacKerron 2012). Household income is positively associated with life satisfaction, also consistent with previous studies (Blanchflower and Oswald 2004; MacKerron 2012). Full-time workers tend to have a lower life satisfaction than others. This is different from the literature (MacKerron 2012). In this dataset, a full-time worker seems to be a proxy for time constraints because once we manually remove income from the model, it becomes insignificant in the model. The number of bikes in the household, an indicator of an active lifestyle, has a positive association with life satisfaction.

After controlling for demographics, three travel behavior variables (VMD, driving frequency for nonwork trips and biking frequency for nonwork trips) are negatively associated with travel satisfaction. This is consistent with the travel behavior theory that travel is a cost to be minimized. In contrast, VMD has a positive association with life satisfaction. A larger VMD means participating in more activities, which enhance life satisfaction. Put another way, social exclusion lowers life satisfaction (Delbosc and Currie 2011a, b) and social exclusion may result from limited mobility (Kenyon et al. 2002). Walking frequency for nonwork trips is positively associated with life satisfaction. The frequency variable is also likely to indicate living an active lifestyle.

Table 8.4 presents the model for commuters. The commuter model also has an acceptable fit. All variables significantly affecting travel satisfaction in the model for all respondents are still significant for the travel satisfaction of commuters. Additionally, driving frequency for commuting trips is negatively associated with travel satisfaction. For life satisfaction, age, age squared, income, full-time worker status, the number of bikes, VMD, and walking frequency for nonwork trips are still significant for commuters. However, having a driver's license becomes insignificant at the 0.10 level. Education enters the model, with a positive sign and a p-value close to 0.08. In the literature, the impact of education on life satisfaction is inconclusive (MacKerron 2012). Transit frequency for commute trips is negatively

Table 8.4 Structural equations model for all respondents

	Travel satisfaction		Life satisfaction	
	Coefficient	*P*-value	Coefficient	*P*-value
Endogenous variables				
Travel satisfaction	NA		0.436	0.000
Life satisfaction	NA		NA	
Exogenous variables				
Travel behavior				
Vehicle miles driven	−0.210	0.000	0.063	0.077
Driving frequency for nonwork trips	−0.081	0.027		
Biking frequency for nonwork trips	−0.116	0.000		
Walking frequency for nonwork trips			0.063	0.060
Driving frequency for commute trips	−0.180	0.000		
Transit frequency for commute trips			−0.101	0.005
Demographics				
Having walking constraints	−0.089	0.023		
Having a driver's license	0.121	0.000		
Age	0.197	0.000	−1.007	0.000
Age*age			0.857	0.001
Education			0.060	0.078
Full-time worker			−0.078	0.026
Household income			0.259	0.000
Number of bikes			0.082	0.006
Number of observations = 858. Bootstrap replications = 50				
All coefficients are standardized. See appendix table for measurement models				
NA means that there is no direct link between variables. The empty cells mean coefficients are insignificant at the 0.10 level				
Goodness-of-fit measures: RMSEA = 0.049 < 0.08; SRMR = 0.033 < 0.08; CFI = 0.936				

associated with life satisfaction. In an automobile-oriented society, most transit users are transportation-disadvantaged people, who tend to have a lower subjective well-being (Delbosc and Currie 2011a, b).

8.5 Conclusions

Using the 2010 data on the Twin Cities, this study applies structural equations models to explore the direct effects of travel behavior on life satisfaction and their indirect effects on life satisfaction through travel satisfaction. Table 8.5 summarizes standardized total effects of travel behavior variables on life satisfaction. Overall, most travel behavior variables have negative associations with life satisfaction,

Table 8.5 Standardized total effects of travel on life satisfaction

Travel behavior	All respondents		Commuters	
Vehicle miles driven	−0.015	0.671	−0.029	0.440
Walking frequency for nonwork trips	0.062	0.023	0.063	0.060
Driving frequency for nonwork trips	−0.029	0.038	−0.039	0.027
Biking frequency for nonwork trips	−0.035	0.046	−0.051	0.000
Driving frequency for commute trips			−0.078	0.000
Transit frequency for commute trips			−0.101	0.005

reflecting the disutility of travel. Walking frequency for nonwork trips is positively associated with life satisfaction, reflecting an active lifestyle. Although VMD positively affects life satisfaction, its indirect effect on life satisfaction through travel satisfaction makes its total effects insignificant. As a cost, excess driving lowers travel satisfaction. Yet, a larger VMD indicates a higher level of mobility. These opposite impacts result in a neutral effect.

Although many travel behavior variables are correlated with life satisfaction, the standardized coefficients indicate that their effects are not large. That is, as one of many domains, travel behavior is detrimental to life satisfaction at the margin. Because activities contribute to about 40 % of life satisfaction, travel seems to facilitate quality of life if the utility at the destination is considered. In contrast, having a driver's license is positively associated with SWL. A license is a proxy for the "capacity to become mobile" (De Vos et al. 2013, p. 422). It is a key mobility instrument for enhancing SWL. Nevertheless, those without a license are underprivileged in an automobile-oriented society. Planners should consider how to meet the daily needs of transportation-disadvantaged people.

It is worth noting that the observed effects of travel behavior variables on travel satisfaction are their net impacts. Travel may negatively affect travel satisfaction because travel is a disutility; however, it may positively influence travel satisfaction because travel is an activity in itself and has a positive utility (Mokhtarian 2005). Further, the activities at destinations may have a spillover effect on the utility of travel (De Vos et al. 2003, p. 422). Future studies should attempt to use activity-based approaches to decompose the two competing utilities and understand their relative importance for travel.

Acknowledgements Data collection was funded by Transitway Impact Research Program in the Twin Cities. Jessica Schoner helped survey design and administration.

Appendix

Measurement models

Observed Indicators	Constant	Travel satisfaction	Constant	Life satisfaction
Model for all respondents				
I do not want to change anything regarding my daily travel	1.841	0.814		
When I think of my daily travel, the positive aspects outweigh the negative	3.243	0.698		
My travel facilitates my daily life	2.875	0.438		
My daily travel makes me feel good	2.340	0.814		
I am completely satisfied with my daily travel	2.052	0.926		
If I could live my life over again, I would change almost nothing			2.881	0.617
The conditions of my life are excellent			4.182	0.834
So far I have achieved the important things I want in life			3.814	0.801
I am satisfied with my life			4.651	0.849
In most ways my life is close to my ideal			3.782	0.845
Model for commuters				
I do not want to change anything regarding my daily travel	2.117	0.821		
When I think of my daily travel, the positive aspects outweigh the negative	3.489	0.697		
My travel facilitates my daily life	3.126	0.397		
My daily travel makes me feel good	2.679	0.807		
I am completely satisfied with my daily travel	2.411	0.929		
If I could live my life over again, I would change almost nothing			3.145	0.600
The conditions of my life are excellent			4.651	0.825
So far I have achieved the important things I want in life			4.223	0.774
I am satisfied with my life			5.111	0.838
In most ways my life is close to my ideal			4.204	0.827

References

Babbie, E. R. (2007). *The practice of social research*. Belmont, CA: Thomson Wadsworth.

Bergstad, C. J., Gamble, A., Gärling, T., Hagman, O., Polk, M., Ettema, D., et al. (2011). Subjective well-being related to satisfaction with daily travel. *Transportation, 38*(1), 1–15.

Blanchflower, D., & Oswald, A. (2004). Wellbeing over time in Britain and the USA. *Journal of Public Economics, 88*, 1359–1386.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. New York, NY: Routledge.

Campbell, A. (1976). Subjective measures of well-being. *American Psychologist, 31*(2), 117–124.

Cao, X. (2015). Examining the impacts of neighborhood design and residential self-selection on active travel: A methodological assessment. *Urban Geography, 36*(2), 236–255.

Cao, X., Mokhtarian, P. L., & Handy, S. L. (2007). Do changes in neighborhood characteristics lead to changes in travel behavior? A structural equations modeling approach. *Transportation, 34*(5), 535–556.

Carp F. (1988). Significance of mobility for the well-being of the elderly. In Transportation_Research_Board (Ed.), *Transportation in an aging society: Improving mobility and safety for older persons* (pp. 1–20). Washington DC: Transportation Research Board.

Choi, J., Coughlin, J., & D'Ambrosio, L. (2013). Travel Time and Subjective Well-Being. *Transportation Research Record: Journal of the Transportation Research Board, 2357*, 100–108.

Currie, G., & Delbosc, A. (2010). Modelling the social and psychological impacts of transport disadvantage. *Transportation, 37*(6), 953–966.

Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies, 9*, 1–11.

Delbosc, A. (2011). The role of well-being in transport policy. *Transport Policy, 23*, 25–33.

Delbosc, A., & Currie, G. (2011a). The spatial context of transport disadvantage, social exclusion and well-being. *Journal of Transport Geography, 19*(6), 1130–1137.

Delbosc, A., & Currie, G. (2011b). Exploring the relative influences of transport disadvantage and social exclusion on well-being. *Transport Policy, 18*, 555–562.

De Vos, J., Schwanen, T., Van Acker, V., & Witlox, F. (2013). Travel and subjective well-being: A focus on findings, methods and future research needs. *Transport Reviews, 33*(4), 421–442.

Diener, E. (2009). Subjective well-being. In E. Diener (Ed.), *The science of well-being* (pp. 11–58). Netherlands: Springer.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75.

Diener, E., Sandvik, E., Seidlitz, L., & Diener, M. (1993). The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research, 28*(3), 195–223.

Diener, E., Suh, E., Smith, H., & Shao, L. (1995). National differences in reported subjective well-being: Why do they occur? *Social Indicators Research, 34*(1), 7–32.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology, 29*(1), 94–122.

Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. In P. A. David & M. W. Reder (Eds.), *Nations and households in economic growth: Essays in honor of Moses Abramowitz* (pp. 89–125). New York: Academic Press.

Easterlin, R. A., McVey, L. A., Switek, M., Sawangfa, O., & Zweig, J. S. (2010). The happiness-income paradox revisited. *Proceedings of the National Academy of Sciences, 107*(52), 22463–22468.

Ettema, D., Gärling, T., Olsson, L. E., & Friman, M. (2010). Out-of-home activities, daily travel, and subjective well-being. *Transportation Research Part A: Policy and Practice, 44*(9), 723–732.

Forward, S. (2003). *State of the art report on life quality assessment in the field of transport and mobility*. Linoeping, Sweden: Swedish National Road and Transport Research Institute.

Ieda, H., & Muraki, Y. (1999). Can improved mobility raise the elderly's sense of fulfillment? *Japan Railway and Transport Review, 20*, 14–21.

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage Foundation.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science, 312*(5782), 1908–1910.

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.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*(2), 111–131.

MacKerron, G. (2012). Happiness Economics from 35,000 Feet. *Journal of Economic Surveys, 26*, 705–735.

Mokhtarian, P. L. (2005). Travel as a desired end, not just a means. *Transportation Research Part A: Policy and Practice, 39*, 93–96.

Nordbakke, S., & Schwanen, T. (2013). Well-being and mobility: A theoretical framework and literature review focusing on older people. *Mobilities, 9*(1), 104–129.

Nussbaum, M. C. (2011). *Creating capabilities: The human development approach*. Cambridge, MA: The Belknap Press of Harvard University Press.

Ory, D. T., & Mokhtarian, P. L. (2005). When is getting there half the fun? Modeling the liking for travel. *Transportation Research Part A: Policy and Practice, 39*(2–3), 97–123.

Ory, D. T., Mokhtarian, P. L., Redmond, L. S., Salomon, I., Collantes, G. O., & Choo, S. (2004). When is commuting desirable to the individual? *Growth and Change, 35*(3), 334–359.

Poortinga, W., Steg, L., & Vlek, C. (2004). Values, environmental concern, and environmental behavior. *Environment and Behavior, 36*, 70–93.

Reardon, L., & Abdallah, S.(2013). Well-being and transport: Taking stock and looking forward. *Transport Reviews, 33*(6), 634–657.

Schwanen, T., & Wang, D. (2014). Well-being, context, and everyday activities in space and time. *Annals of the Association of American Geographers, 104*(4), 833–851.

Sommer, B. B., & Sommer, R. (1997). *A practical guide to behavioral research: Tools and techniques*. New York: Oxford University Press.

Stanley, J. K., Hensher, D. A., Stanley, J. R., & Vella-Brodrick, D. (2011). Mobility, social exclusion and well-being: Exploring the links. *Transportation Research Part A: Policy and Practice, 45*(8), 789–801.

Stutzer, A., & Frey, B. S. (2008). Stress that Doesn't Pay: The Commuting Paradox. *Scandinavian Journal of Economics, 110*(2), 339–366.

Veenhoven, R., & Hagerty, M. (2006). Rising happiness in nations 1946–2004: A reply to Easterlin. *Social Indicators Research, 79*(3), 421–436.

White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H. (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological Science, 24*(6), 920–928.

Yang, Y. (2008). A tale of two cities: Physical form and neighborhood satisfaction in metropolitan Portland and Charlotte. *Journal of the American Planning Association, 74*(3), 307–323.

Ziegler, F., & Schwanen, T. (2011). 'I like to go out to be energised by different people': An exploratory analysis of mobility and wellbeing in later life. *Ageing and Society, 31*(05), 758–781.

Chapter 9
The Challenges of Land Use and Transport Planning on Urban Residents' Quality of Life: A Panel Data Analysis

Yubing Xiong and Junyi Zhang

Abstract Residents' life choices are closely linked with quality of life (QOL), which can be roughly captured from essential life domains such as residence, health, social, education and learning, employment, family life, leisure and recreation, financial as well as travel behavior. Since different life choices are interdependent, land use and transport policies may influence residents' life aspects and consequentially their QOL. Over time, residents' life choices may change, particularly in response to life events, such as residential location changes or household structure changes. These changes may have an impact on individuals' prospective travel needs and activity patterns, such as engagement in social and leisure activities, further potentially changing residents' QOL as well. Considering that residential choices and travel decisions are part of residents' life choices, it is necessary to conduct a comprehensive and systematic investigation of life choices. Therefore, this study penetrates the concept of other life choices' changes into the residential choices and travel behavior dynamic modeling, after controlling for the effects of changes in socio-demographics (mainly life events factors) over time. The preliminary study is an estimation of a structural equation model based on panel data. First, from a static viewpoint, the other life choices have a considerable effect on residents' quality of life compared with the minor effects of residential choices and travel behavior. Second, from a dynamic viewpoint, the current other life choices and past other life choices play a prominent role in the current quality of life achievement, followed by smaller influences of current and past residential choices, key life events, and minor effects of current and past travel behavior. This study

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confirms the mediating effects of other life choices and suggests that ignoring other life choices relevant to residents' essential life domains, such as health and leisure, and instead of emphasizing the straightforward impacts of land use and transport policies on QOL may not be effective because residents' QOL is greatly influenced by other life choices or life event changes.

Keywords Residential choices · Travel behavior · Other life choices · Quality of life (QOL) · Structural equation model · Japan

9.1 Introduction

Subjectively experienced well-being, such as quality of life (QOL), has recently attracted increased attention in urban studies (De Vos et al. 2013). Achieving an improvement in residents' QOL is identified as a goal of many contemporary planning endeavors and has become central to the formulation of land use and transport policies (Lotfi and Solaimani 2009). Promoting urban residents' QOL is also regarded as a meaningful way to evaluate urban development and social progress. Residents' QOL can be roughly captured from the essential life choices involving relevant travel behavior and the following life domains: residence, social, health, education, employment, family life, financial and leisure and recreation life (Knox 1975; Zhang 2014). The different life choices are usually decided over different time scales under the influence of time and monetary constraints and the various needs of households and their members (Zhang et al. 2012). Therefore, after embedding relevant other life choices, such as social- and leisure-related decisions, into the integrated land use and transport system, the effect of land use and transport on residents' QOL should be reconsidered and re-evaluated. Particularly, over time, changes in residence/workplaces or vehicle ownership may have a significant impact on urban residents' present/prospective QOL. Considering residential choices and travel behavior are just part of residents' life choices and the effects of land use and transport policies on residents' QOL may not be significant after controlling for the intervention of other life choices. Based on the above considerations, a systematic investigation of various life choices, including residential choices and travel behavior, as well as QOL, especially from a dynamic viewpoint, is indispensable. However, many links between essential life choices and QOL, embedded into land use and transport planning, are still scarce, particularly from a dynamic or long-term perspective.

This study aims to examine the changes of other life choices into the dynamic interdependencies among residential choices, travel behavior and QOL based on an analysis of panel data from Japan. To do this, we examine (1) the effects of the determinant factors on residents' QOL from a dynamic viewpoint and (2) the effects of changes in socio-demographics over time (individual attributes and changes of life events). Consistent with numerous other studies, we examine gender and age,

and changes in education level, annual income, employment status and household structure. Further, we explore residential location choices and housing attribute choices, which are measured by distances to important public facilities, such as the nearest bus stop. Travel behavior is defined by vehicle ownership and the main travel modes for various activities. Other life choices are represented by the decisions made in the domains of health (i.e., time playing sports such as golf), social (i.e., frequency of participation in community activities), family life (i.e., time spent with family members), financial (i.e., household income allocation on the transport cost), education and learning (i.e., education level) and leisure and recreation life (i.e., time spent at entertainment facilities). Moreover, residents' QOL is measured by life satisfaction and happiness as a whole. There are three main policy implications of this study. First, knowing the critical factors of life choices on residents' QOL from a dynamic viewpoint helps predict residents' prospective QOL, which can further guide and regulate their current life decisions to attain a higher level of QOL. Second, clarifying the influences of residential choices and travel behavior on other relevant life choices allows one to better evaluate the effects of land use and transport policies by explicitly incorporating policy outcomes into the evaluation process. Third, this study can inform policy makers about how residents' QOL might be altered in response to new transport/urban strategies.

Section 9.2 provides a brief review of existing studies to better position the present study in literature. Section 9.3 explains the survey of life choice and quality of life. Section 9.4 outlines the structural equation model with latent variables used to test the hypothesis and provides a detailed explanation and discussion of the model estimation results. Finally, Sect. 9.5 includes a summary of the findings of this study and a discussion of issues for further research.

9.2 Literature Review

Transport researchers have followed trends from other disciplines and increasingly placed more attention on subjectively experienced well-being and how this relates to travel behavior. This study focuses on quality of life (QOL) analysis. QOL refers to one's satisfaction with life and feelings of contentment or fulfillment with one's experience in the world. It is about how people view or what they feel about their lives. Japan is widely known as a country where people experience a good QOL. However, Inoguchi and Fujii (2009) declared that the Japanese society is undergoing a variety of profound changes, and these changes influence how people live and what they experience and value in the private and public spheres of their lives. To determine which domains affect the overall QOL the most, they classified sixteen specific life domains into three groups. The first group called the "material life sphere," consists of housing, standard of living, household annual income, education and job domains. The second group is the "post-material life sphere," which contains health, friendships, marriage, family life, leisure and spiritual life domains. The third group called the "public life sphere," includes neighbors, public

safety, environment, the welfare system and the democratic system. The Japanese tend to be most satisfied with the post-material sphere, and it has a significant impact on their QOL. Friendships and spiritual life in the post-material sphere of life are important determinants. Similarly, a study by Sing (2009) found that Hong Kong people have a great desire for material life (linked with financial allocation decisions), which negatively impacts their QOL. However, the above findings differ slightly from a case study in China in which Shu and Zhu (2009) discovered that Chinese people's high levels of satisfaction with their interpersonal, material and nonmaterial life domains have direct, positive influences on their QOL. As a result, it is important to break QOL down into the different life domains in the specific studies.

QOL is connected with various life domains. From the residence domain, Wang and Li (2004) found that the residential satisfaction of young adults is influenced by individual local identity, financial capability, residence type and an environment index on comfort, convenience and health. The study, based on data from Beijing, China, also found that housing ownership is key to a higher residential satisfaction level. Within leisure research, Brajša-Žganec et al. (2011) identified that engaging in important leisure activities contributes to QOL, while the pattern of leisure activities somewhat varies by age and gender. Linked to one's financial life, Clark et al. (2008) provide a literature review on the effect of income on QOL, and they conclude that the relationship is generally positive. Additionally, Headey et al. (2008) were able to demonstrate that household income allocation is a stronger predictor of life satisfaction than household income alone. As for social life, Diener and Seligman (2002) found that social relationships are major distinguishing factors for college students' happiness—those who are happiest tend to have stronger relationships with friends, family and partners than those who are the unhappiest. Regarding family life, Campbell et al. (1976) found that satisfaction in this area is a strong and significant predictor of overall QOL. In terms of job life, Alexopoulos et al. (2014) verified that higher levels of stress and longer working hours are related to job satisfaction, which influences the worker's QOL, and the magnitude of these associations vary depending on age and gender.

Additionally, a number of researchers are exploring the linkage between travel and subjective well-being (Banister and Bowling, 2004; De Vos et al., 2013). In particular, studies explore the linkages between QOL, travel and residential location choices. Ritsema Van Eck et al. (2005) found that high-density neighborhoods offer individuals the best opportunity to accomplish daily activities due to having shorter distances between locations and greater accessibility. They further highlight the necessity of a lifestyle-oriented approach for planning the spatial configurations of residential areas. Individuals in high-density settings can fulfill their daily obligations (e.g., picking up children to and from school) with less effort, and they can, within a given travel time budget, access a greater range of rewarding (leisure/social) activities enabling personal growth and flourishing, such as visiting the theater, engaging in education/courses and meeting friends and other social contacts. Additionally, it is well known that travel behavior is both constrained and enabled by life events (Sharmeen et al. 2014), life cycle stages (Lee and

Goulias, 2014), life courses (Scheiner 2014) and longer-term choices regarding lifestyle, residential location (Van Acker et al. 2010), which are related to QOL (De Vos et al. 2013). Scheiner (2014) notes that some key events including the birth of a child, job participation and changes in residential choices, such as accessibility, are found to have significant effects on travel mode choices. Abou-Zeid and Ben-Akiva (2012) indicate that well-being is shaped by residential attributes, the dimensions of activities and trips—the type of activity, the duration of activities, the persons with whom they are undertaken, the transport mode used and so forth. Conversely, such negative feelings as stress attainment can lead to immediate adjustments in people's activity and travel patterns and can have a spillover effect on their subsequent travel behavior. There are also feedback effects on the residential location choice. These reverse effects may be that people decide to change their residential location, dispose of or acquire vehicles or reconfigure their motility and activity patterns to increase their QOL. Hence, it is important to consider the multiple time-scales implicated in the relationships between travel behavior, residential choices and QOL because QOL is temporally complex and has short-term and long-term dimensions.

Recently Zhang (2014) and Zhang et al. (2012) proposed a life-oriented approach that argues that people's decisions about various life domains are not independent of each other and thus an understanding of life choices should not be constrained by the boundary of any single discipline. However, limited research has been conducted to comprehensively identify the factors crucial for QOL from the perspective of life choices. The above review suggests that it is important to avoid policies that seek to enhance QOL via travel behavior in isolation. A set of integrative policies where the relationship between transport and QOL is considered in conjunction with the associations of QOL with residential, employment, public service provisions and so on is required. Therefore, particular attention should be paid to the ways in which other life choices mediate the relationships between QOL, travel behavior and residential choices, not only from a cross-sectoral view but also from a dynamic or long-term view. Based on the proposed life-oriented approach, this study embeds the concept of other life choices' changes into residential choices and travel behavior dynamic modeling, after controlling for changes in socio-demographics (including the changes of key life events) over time, on the pathways to a long-term QOL attainment. This research identifies how life choices and QOL data can be used in travel behavior models and in land use and transport project appraisals.

9.3 Data and Conceptual Framework

Using the life-oriented approach discussed in the previous section, this study has two main purposes. First, from the static viewpoint, the study is to examine the determinant life choices and quantify the corresponding effects on residents' QOL. Second, from the dynamic viewpoint, the study is to explore whether and to what

Table 1 The sample characteristics of the two-wave panel survey data in 2010 and 2014

Variables	Classes	*N* = 422 (%)	
		2010	2014
Gender	Male	56.64	56.64
	Female	43.36	43.36
Age	0–17	0.95	0
	18–34	18.72	10.90
	35–54	56.87	56.16
	55–64	10.66	15.17
	≥65	12.8	17.77
Education level	With bachelor begree, or over	52.13	71.33
	No bachelor degree	47.87	28.67
Household annual income	Low (<200)	6.40	7.11
(Unit: million Yen)	Medium (200–599)	49.05	47.39
	High (≥600)	44.55	45.50
Employment Status	With full/Part-time job	69.67	71.56
	Housewife/Students/No job	30.33	28.44
Household structure	Single	18.48	19.67
	Two people	27.01	26.54
	Three people	21.80	20.38
	Four people or over	32.69	33.41

extent the present QOL and present life choices are affected by life decisions made in the past. Accordingly, we used a two-wave panel data from two web-based surveys conducted in 2010 and 2014, and 422 respondents from three levels of cities in Japan were extracted out. These two surveys covered megacities, medium-sized cities and local cities. Megacities include Tokyo, Yokohama, Osaka, and Nagoya 4 regions, Medium-sized cities contains Sapporo, Sendai, Saitama, Kawasaki, Kyoto, Kobe, Hiroshima, and Fukuoka, and the remaining local cities (around 170 ones). The data set contains numerous life choice variables covering relevant travel behavior and eight life domains: residence, health, social, education and learning, employment, family life, leisure and recreation and financial. The selected socio-demographic variables include personal and household characteristics, as shown in Table 9.1. Results indicate that in both samples, males are slightly overrepresented, and most respondents are middle-aged, from 35 to 54 years old. Additionally, the percentages of higher education attainment, high household annual income and job participation increased among samples in 2014 from 2010 to varying degrees.

Further, a structural equation model was employed to represent the dynamics of residential choices, travel behavior, other life choices and QOL, after controlling for the effects of changes in socio-demographics (in addition to age and gender, mainly including the changes in key life events) over time. The proposed structural model takes state dependence of all life choices into account. Overall, it is assumed that

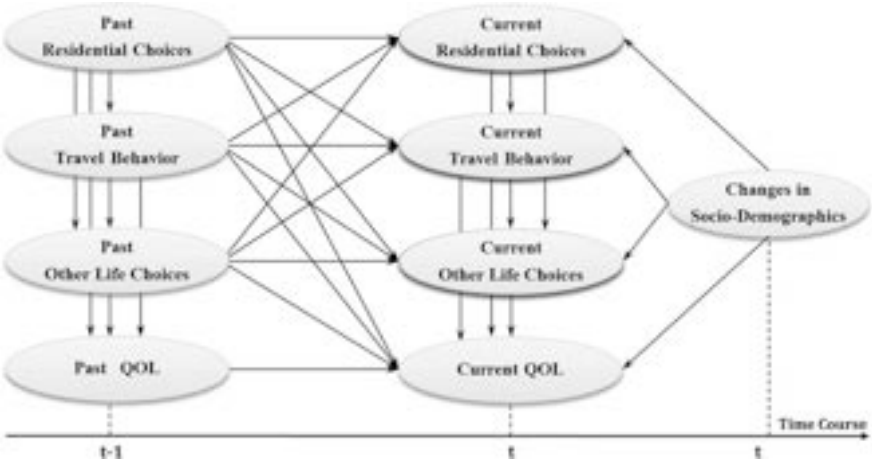

Fig. 1 The Conceptual Framework of Panel Data Analysis between 2010 and 2014

the present residential choices, travel behavior, other life choices and QOL are influenced by decisions made in the past. In particular, the current residential choices (travel behavior), in addition to the effects of changes in socio-demographics over time, are not only affected by the past corresponding residential choices, but also are influenced by the past travel behavior and past other life choices. Further, the present other life choices are not only influenced by the current residential choices, travel behavior and changes in socio-demographics, but also are influenced by the past residential choices, travel behavior and the past corresponding choices. Most importantly, it is anticipated that the present QOL, and the effects of changes in socio-demographics, which is propelled by present and past life choices, are simultaneously boosted by the past QOL. The conceptual framework is presented in Fig. 9.1.

The expected contribution of this study to the literature is to present and verify a conceptual framework of embedding the dynamics of other life choices into the classical dynamics of residential choices and travel behavior, which are essential to the representation of the higher QOL achievement as a whole. Specifically, questions related to life choices are addressed in the nine dimensions that are linked to the residents' QOL: residence, health, social, education and learning, employment, family life, leisure and recreation, financial and relevant travel behavior. Here travel behavior is a cross-domain behavior, which is defined by vehicle ownership and main travel mode choices to various facilities. The residential choices include residence location choice and housing attribute choice, which were investigated by distances to different important public facilities, such as the city hall (city center) and the nearest bus stop, housing type, dwelling duration and tenure (ownership, rent).

Particularly, as time goes on, the current QOL is expected to be shaped by the past QOL. Herein, the residents' QOL is measured by life satisfaction and happiness, and therefore, it is essential to obtain the data represented for both of them. Specifically, for life satisfaction data, we asked respondents how satisfied they are with life as a whole and each life domain, showing the corresponding answers according to 1–5 points (1 = very dissatisfied to 5 = very satisfied). In terms of happiness data, we asked respondents how happy they are currently, choosing the corresponding levels from 0 to 10 (0 = very unhappy to 10 = very happy). Therefore, we obtained more than 140 variables in total. Zhang (2014) provides details of data content. As for the analysis method, a structural equation model with latent variables was built to capture the complicated interdependencies between QOL, residential choices and travel behavior by explicitly incorporating the influence of other life choices over time. Based on the Chi-square test results of life choice variables in 2010 and 2014, we selected the significantly different variables for model analysis. The Chi-square test results are shown in Table 9.2, and only statistically significant variables are presented and described.

9.4 Results and Discussion

The structure equation model analysis used the maximum likelihood estimation procedure based on the software, AMOS 20.0. The estimated results are discussed in this section, where the direct, indirect and total effects of exogenous variables on endogenous variables are described. Table 9.3 shows the results of the interdependencies of socio-demographics, residential choices, travel behavior, other life choices and quality of life (QOL) between 2010 and 2014. The goodness-of-fit measures reveal that the model is acceptable (GFI = 0.699, AGFI = 0.652, and RMSEA = 0.016). The parsimony indicator (PNFI = 0.556) also indicates that the models have a modest applicability (Sharmeen et al. 2014). Figure 9.1 shows the direct effects of 39 latent variables, and 16 out of the 29 are statistically significant. Corresponding to those insignificant direct effects, two indirect effects are found to be significant. The estimated results consistently support our main assumed conceptual structure.

The results from a static view, which examines the direct and indirect effects on the past QOL, shows that the past other life choices (−0.276) have a prominent, direct effect on past QOL, compared with the past residential choices (0.158). Indirectly, the estimation results uncover that past travel behavior (0.033) has a primary influence on the past QOL, which demonstrates that the effect of travel behavior on QOL may be mediated by other life choices. These results imply that excluding other life choices relevant to key life domains, such as health and leisure, and only emphasizing the straightforward impacts of transport policies on QOL may not be fruitful because residents' QOL is affected by other life choices more than changes in transport situations. Second, from the dynamic view, as time goes on, looking at the significant direct and indirect effects on the current QOL, the

Table 2 The Chi-square test results of the two-wave panel life choices variables in 2010 and 2014

Variables	Pearson Chi-Square	Asymp. Sig. (2-sided)
Socio-demographics		
Age	–	–
Gender	–	–
Education level (bachelor = 1, 0)	32.906	***
Employment status (with job = 1, 0[a])	0.365	**
Household annual income[b]	4.372	***
Household structure (No. of family members)	4.968	***
Other life choices		
Percentage of household transport cost	18.254	**
Frequency of family meals weekly	36.772	***
Frequency of community activity participation	22.731	***
Time use in amusement park daily	12.787	**
Time use in doing sports daily	16.823	**
Residential choices		
Distance from the city hall (city center) within 1 km (Yes = 1, 0)	1.639	*
Distance from nearest bus stop within 0.5 km (Yes = 1, 0)	2.511	**
Distance from nearest railway station within 1 km (yes = 1, 0)	0.484	*
Residence duration (years you lived in the current house)	51.235	**
Residence type (living in the apartment = 1, 0[c])	0.801	*
Tenure (Own = 1, 0)	1.708	**
Travel behavior		
Household vehicle ownership	3.484	**
Main travel mode is public transit (yes = 1, 0)	1.914	**
Main travel mode is car (yes = 1, 0)	0.324	*
Main travel mode is walking/cycling (yes = 1, 0)	0.331	**

Note *significant at the 90 % level; ** significant at the 95 % level; *** significant at the 99 % level

[a]The value of 'Zero' refers to the resident without job, housewives and students

[b]Household annual income level: 1:<1, 2: 1–2, 3: 2–3, 4: 3–4, 5: 4–5, 6: 5–6, 7: 6–7, 8: 7–8, 9: 8–9, 10: 9–10, 11: 10–15, 12: >15 (unit: 1 million Yen)

[c]The value of "Zero" associated with "residence type" refers to whether the resident lives in a detached house or other type of home

results also successfully capture that the past QOL (0.826) shows a direct dominant influence, followed by past other life choices (−0.409), current other life choices (0.316), past travel behavior (−0.141), changes in socio-demographics (0.084), current residential choices (0.083), past residential choices (−0.045) and current travel behavior (0.031). Indirectly, there are also some significant effects of past

Table 3 Estimation Results of Cause-Effect Relationships based on a Structural Equation Model

Exogenous Variables / Endogenous Variables	Changes in Socio-Demographics			Past Residential Choices			Past Travel Behavior			Past Other Life Choices			Current Residential Choices			Current Travel Behavior			Current Other Life Choices			Past QOL			Current QOL		
	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
Latent Variables																											
Past Travel Behavior				-0.051		-0.051																					
Past Other Life Chocies				-0.004	0.006*	0.002*	0.12*		0.12*																		
Current Residential Choices	-0.271*		-0.271*	0.114*	-0.01	0.104*	0.039	0.055*	0.094*	0.403*	0.023	0.426*															
Current Travel Behavior	0.1	0.015	0.115	0.029	-0.037	-0.008	0.534*	-0.009	0.525*	0.1	-0.016	0.084	-0.054		-0.054												
Current Other Life Choices	-0.088	0.042	-0.046	0.029	-0.012	0.018	0.036	-0.088	-0.051	0.98*	-0.063	0.917*	-0.142	-0.002	-0.144	0.03		0.03									
Past QOL				0.158*	-0.003	0.155*	0.044	0.033*	0.078*	-0.276*		-0.276*															
Current QOL	0.084*	-0.034	0.05*	-0.045*	0.148*	0.104*	-0.141*	0.105*	-0.036*	-0.409*	0.1	-0.309*	0.083*	-0.047	0.036*	0.031*	0.009	0.04*	0.316*		0.316*	0.826*	0.002	0.829*			
Changes in Socio-Demographics																											
Age in 2014	-0.186*		-0.186*																								
Gender in 2014	0.031		0.031																								
Changes of education level between 2010 and 2014 (Yes=1, 0)	0.233*		0.233*																								
Changes of household annual income between 2010 and 2014 (Yes=1, 0)	0.717*		0.717*																								
Changes of employment status between 2010 and 2014 (Yes=1, 0)	0.207*		0.207*																								
Changes of household structure between 2010 and 2014 (Yes=1, 0)	0.61*		0.61*																								
Past Residential Choices																											
Distance from the City Hall (city center) within 1 km in 2010				0.165*		0.165*																					
Distance from nearest Bus Stop within 0.5 km in 2010				0.698*		0.698*																					
Distance from nearest Railway Station within 1 km in 2010				0.275*		0.275*																					
Residence Duration in 2010				0.024		0.024																					
Residence Type in 2010				0.718*		0.718*																					
Tenure in 2010				0.767*		0.767*																					
Past Travel Behavior																											
Household Vehicle Ownership in 2010					-0.019	-0.019	0.382*		0.382*																		
Main travel mode is Walking/Cycling in 2010					0.047	0.047	-0.924*		-0.924*																		
Main travel mode is Public Transit in 2010					-0.02	-0.02	-0.39*		-0.39*																		
Main travel mode is Car in 2010					-0.034	-0.034	0.678*		0.678*																		
Past Other Life Choices																											
Percentage of household transport cost in 2010					-0.016*	-0.016*		0.009*	0.009*	-0.075*		-0.075*															
Frequency of family meals weekly in 2010					0.015*	0.015*		-0.027	-0.027	0.221*		0.221*															
Time Use in amusement park daily in 2010					0.023*	0.023*		0.02	0.02	0.169*		0.169*															
Time Use in doing sports daily in 2010					0.036	0.036		-0.007*	-0.007*	0.058		0.058															
Frequency of community activity participation in 2010					0.001*	0.001*		-0.091*	-0.091*	0.754*		0.754*															
Current Residential Choices																											
Distance from the City Hall (city center) within 1 km in 2014		-0.068*	-0.068*		0.026*	0.026*		-0.024*	-0.024*		0.106*	0.106*	0.25*		0.25*												
Distance from nearest Bus Stop within 0.5 km in 2014		-0.024*	-0.024*		0.009*	0.009*		-0.008*	-0.008*		0.038*	0.038*	0.09		0.09												
Distance from nearest Railway Station within 1 km in 2014		-0.088*	-0.088*		0.034*	0.034*		-0.03*	-0.03*		0.138*	0.138*	0.324*		0.324*												
Residence Duration in 2014		0.12*	0.12*		-0.046	-0.046		0.042	0.042		0.188*	0.188*	0.442*		0.442*												
Residence Type in 2014		-0.191*	-0.191*		0.073*	0.073*		-0.066*	-0.066*		0.299*	0.299*	0.703*		0.703*												
Tenure in 2014		0.188*	0.188*		-0.072	-0.072		0.065*	0.065*		0.295*	0.295*	0.692*		0.692*												
Current Travel Behavior																											
Household Vehicle Ownership in 2014		0.032	0.032		-0.002	-0.002		0.147*	0.147*		0.024	0.024		-0.015	-0.015	0.281		0.281									
Main travel mode is Car in 2014		0.071	0.071		-0.005	-0.005		0.325*	0.325*		0.052	0.052		-0.033	-0.033	0.619*		0.619*									
Main travel mode is Public Transit in 2014		0.048	0.048		-0.003	-0.003		-0.221*	-0.221*		0.035	0.035		-0.023	-0.023	-0.421*		-0.421*									
Main travel mode is Walking/Cycling in 2014		-0.107	-0.107		0.007	0.007		-0.488*	-0.488*		-0.078	-0.078		0.05	0.05	-0.93*		-0.93*									
Current Other Life Choices																											
Percentage of household transport cost in 2014		0.005	0.005		-0.002	-0.002		0.005	0.005		-0.095*	-0.095*		0.015	0.015		-0.003	-0.003	-0.104		-0.104						
Frequency of family meals weekly in 2014		0.004	0.004		-0.002	-0.002		0.005	0.005		-0.089	-0.089		0.014	0.014		-0.003	-0.003	0.097*		0.097*						
Time Use in amusement park daily in 2014		0.009	0.009		-0.004	-0.004		0.01	0.01		0.186*	0.186*		0.029	0.029		-0.006	-0.006	0.202*		0.202*						
Time Use in doing sports daily in 2014		0.007	0.007		-0.003	-0.003		0.02	0.02		0.239	0.239		0.025	0.025		-0.002	-0.002	0.001*		0.001*						
Frequency of community activity participation in 2014		-0.04	-0.04		0.015	0.015		-0.045	-0.045		0.807*	0.807*		-0.126	-0.126		0.026	0.026	0.88		0.88						
Past QOL																											
Life Satisfaction in 2010					0.128*	0.128*		0.064*	0.064*		-0.229*	-0.229*										0.828*		0.828*			
Happiness in 2010					0.122*	0.122*		0.061*	0.061*		-0.218*	-0.218*										0.791*		0.791*			
Current QOL																											
Life Satisfaction in 2014		0.038*	0.038*		0.078*	0.078*		-0.027*	-0.027*		-0.233*	-0.233*		0.027*	0.027*		-0.03*	-0.03*		0.238*	0.238*		0.624*	0.624*	0.753*		0.753*
Happiness in 2014		0.041*	0.041*		0.084*	0.084*		-0.029*	-0.029*		-0.249*	-0.249*		0.029*	0.029*		-0.032*	-0.032*		0.255*	0.255*		0.668*	0.668*	0.806*		0.806*

Note *significant at the 95 % level

residential choices (0.148) and past travel behavior (0.105). The current QOL is clearly influenced by the past QOL, and the results further found that the effects of other life choices play a prominent role in residents' QOL, both in the past and in the future. This suggests that for more residents, a greater emphasis on the leisure, social, family and health-oriented communications, is a shortcut to their overall QOL enhancement. The result dynamically reflects that other life choices, in addition to residential choices, travel behavior and socio-demographics are indispensable for the current QOL improvement. Therefore, failing to understand the life choices, both comprehensively and longitudinally, may lead to bias in examining the impact of land use and transport policies on QOL enhancement.

9.4.1 Changes in Socio-Demographics and QOL

Offering insights into the six indicators of the latent variable of changes in socio-demographics, the results depict that changes in socio-demographics are mainly featured by the life events change variables, such as changes of household annual income (0.717), followed by changes of household structure (0.61), changes of education level (0.233) and changes of employment status (0.207), as well as a current individual attributes, such as age (−0.186). Further, from the total effects, the results showed that changes in socio-demographics have a substantive influence on current residential choices (−0.271) and current QOL (0.05). Specifically, from the positive signs of changes in socio-demographics on current QOL and the above sample characteristics, the results determined that the level of residents' QOL could be enhanced if they improve their education level, dedicate themselves to one career, change their household annual income and change their household structure, meaning that QOL-oriented lifestyles may trigger the occurrence of life events. However, due to the data and model limitations here, specific details about how the residents' change in their household structure, such as having a baby or increasing household annual income, can improve their level of QOL are not known. Moreover, the results reflect that in response to the residents' education level changes, household annual income changes, employment status changes and household structure changes, residents prefer to live in a rental apartment close to the city center with good accessibility to transit, instead of owning a detached house. However, this trend decreases with age. Consistent with the literature, it is implied that to some extent, changes of key life events have an impact on QOL enhancement, and life domains and life events must not be considered in isolation, which is in line with the findings of Scheiner (2014).

9.4.2 Residential Choices and QOL

Statically, turning first to the six indicators of residential choices in the past, the residential choices are represented by residents' decisions about the housing attributes and residential location/environment characteristics. In accordance with Chen et al. (2008), trade-offs between housing qualities and property, activity opportunities, and transport accessibility have long been recognized as fundamental considerations for both the decision to move and the selection of a residence. Specifically, tenure (0.767) is a prominent factor for characterizing residents' residential choices, followed by the residence type (0.718) referring to apartment or detached house, as well as location/environment choices, such as the distance to the nearest bus stop within 0.5 km (0.698), distance to the nearest railway station within 1 km (0.275) and distance to the city center within 1 km (0.165). It is implied that high-density and transit-oriented residential environments are crucial to residents' residential location choices. Yet, the above findings are slightly different from the results in 2014. The present residents' residential choices are similarly largely characterized by decisions about the housing attributes, compared with decisions about the residential location/environment. Residence type (0.703) plays a dominant role, along with tenure (0.692) and residence duration (0.442), which also characterizes the residents' residential choices, followed by distance to the nearest railway station within 1 km (0.324) and distance to the city center within 1 km (0.25). However, distance to the nearest bus stop within 0.5 km failed to affect the decision about the current residents' residential choices. It is implied that compared with access to a bus stop, the residents currently care more about accessibility to railway stations. Further the magnitudes of effects from the latent variable of past residential choices have significant direct impacts on past QOL (0.158) and significant indirect effects on past other life choices (0.006). Specifically, as for the considerable total impact of residential choices on other life choices, factors including living in their own apartment; living close to the city center, railway stations and bus stops; having less transport expenditures; more frequently having dinner with family members; going to the amusement park and more engagement in the community activities is beneficial for enhancing residents' family, leisure and social life. As such, compact and diverse land use planning is good for the residents' leisure, social and family life because it makes residents more satisfied and happy. Therefore, the findings suggest that the land use policies aiming to directly improve residents' QOL by changing housing situations or relocating the residence may not achieve their goals due to the mediated effects of other life domains, such as leisure.

The latent variable of current residential choices only partially captures the significant direct effects on the current QOL (0.083). Both in the past and currently, residents living in high-density or transit-oriented land use patterns—especially with diverse facilities—feel more satisfied and happier with their different life domains. Surprisingly, after controlling for the influence of other life choices over time, the consistently observed influence of residential choices on travel behavior in

the literature was not observed in this case study, neither in the past nor the present, which re-confirms the necessity and importance of using a the life-oriented approach. This suggests that the observed influence of residential choices on travel behavior in the literature may be spurious because those studies do not account for other life choices. As a result, more detailed and comprehensive research is required.

Examining the impacts of the past residential choices on the current life choices and current QOL dynamically finds that past residential choices only have a significant direct effect on current residential choices (0.114) and current QOL (0.045), a significant indirect effect on current QOL (0.303) and have no significant effect on the current travel behavior and other life choices. In particular, as for the considerable total effect of past residential choices on current residential choices, the results demonstrate that as time passes, residents retain their preferences for similar housing attributes and residential environments. However, this could be due to inertia. Most importantly, it is interesting to examine that the past residential choices affect the future expectations of the prospective QOL attainment. Residents living in high-density or transit-oriented land use patterns in the past still feel more satisfied and happy over time.

9.4.3 Travel Behavior and QOL

Of the four indicators of travel behavior in the past, main travel mode by walking/cycling (0.924) plays a dominant role in characterizing residents' travel behavior, followed by main travel mode by car (0.678), main travel mode by public transit (0.39) and household vehicle ownership (0.382). This finding is fairly consistent with the current time, as it is only slightly different due to trivial effects of current household vehicle ownership. Car acquisition plays a vital role in the residents' travel mode choices in the past. Statically, the total impacts of past travel behavior only has a significant effect on past other life choices (0.12) and past QOL (0.078), but has no effect on past residential choices. In particular, the more vehicles residents own and the more trips they take by car, the more household income is allocated toward transport costs. On the contrary, the more residents choose to walk/cycle or travel by public transit, the higher the likelihood they will engage in community activities and health-oriented sports activities, which is further beneficial for higher QOL attainment. This is consistent with the findings of current travel behavior in which walking/cycling more, using public transit more and driving less make residents happier and more satisfied. Dynamically, past travel behavior has significant and concordant influences on current travel behavior (0.525) and less influence on current residential choices (0.094) and current QOL (−0.036). Specifically, in terms of the effects of past travel behavior on current residential choices, residents who prefer car use to public transit or active transport (walking and cycling) feel happier and more satisfied residing far from the city center with disperse land use patterns convenient for driving, as well as owning detached

houses. Conversely, residents who enjoy walking/cycling and traveling by public transit feel more satisfied and happy living in high-density and transit-oriented neighborhoods, even when renting an apartment. It is further confirmed that self-selection has an impact on explaining residents' QOL, which is consistent with Cao's (Cao and Ettema 2014) findings. Moreover, it is statically implied that transport policies aimed to directly enhance residents' QOL by reducing car use and promoting public transit and active transit may not be efficient because QOL may be affected by life choices other than changes in transport conditions. As such, more deep investigation is required.

9.4.4 Other Life Choices and QOL

Observing from the five indicators of other life choices in the past relevant to family life, social, health, leisure and recreation and financial domains, the distinguishing characteristics of the latent variable is mainly affected by the social-related choice, such as the frequency of community activity participation (0.754), which varies with current other life choices that are dominantly characterized by leisure-related choices, such as time spent in an amusement park (0.202). The total effects of past other life choices plays a significant role in the current other life choice (0.917), current residential choices (0.426), current QOL (−0.309) and past QOL (−0.276). Specifically, the considerable total impact of past other life choices on the current responding ones demonstrates that spending more time on different activities, such as social-, and leisure-related activities in the past, results in a higher likelihood of doing more corresponding activities in the future and reducing the prospective transport costs, perhaps due to inertia. The total effect of past other life choices on the current residential choices shows that the more time spent in different facilities and the less money on transport sector in the past, the higher likelihood one has of moving closer to the city center and to compact neighborhoods with good transit accessibility and walking environments. As time passes, past life choices play a relevant role in current life choices. Moreover, it is confirmed that engaging in more health-, leisure- and social-related activities improves the past and current QOL significantly. Additionally, the past and current QOL is boosted greatly when residents spend more time on leisure-, health- and social-related activities. According to the results, isolated land use and transport policies aimed at improving residents' QOL by changing their housing situation and transport conditions may not be fruitful and effective because QOL is affected comprehensively by other life choices more than changes in residential and travel situations.

9.5 Conclusion

Motivated by residents' time-varying life choices, especially in response to residential location changes or employment changes over time, this study made an initial attempt to examine whether the influence of residential choices and travel behavior on residents' quality of life can be observed and how much influence it has after controlling for the effects of other life choices and key life events over time. As such, we linked the dynamics of residential choices and travel behavior with other life choices involving health, social, education and learning, employment, family life, financial and leisure and recreation domains jointly to contribute to a shift in focus by moving from short-term behavioral analysis to mid-term dynamic analysis. We also extend the boundary of the dynamics of residential choices and travel behavior on quality of life by incorporating the influence of other life choices and key life events, which further provides insight into predicting residents' prospective life decisions. This complicated system was preliminarily done by estimating a structural equation model based on a panel data. And the findings are shown as follow.

First, from a static viewpoint, other life choices can be seen having considerable effects on residents' quality of life compared with the minor effects of residential choices and travel behavior. Especially as time passes, from a dynamic viewpoint, the results show that current other life choices and past other life choices play a dominant role in current quality of life achievement, compared with the slight influences of current and past residential choices, key life events, and the slight effect of current and past travel behavior. As such, ignoring other life choices relevant to residents' key life domains, such as health and leisure, and key life events, such as household structure changes, and only emphasizing the straightforward impacts of land use and transport policies on quality of life may not be fruitful because residents' QOL is greatly affected by other life choices more than changes in residential and transport situations. Second, we found that residents living in a high-density land use pattern, especially with diverse facilities, or in a transit-oriented neighborhood feel more satisfied and happier with their lives. This notably answers how land use patterns influence residents' quality of life and provides insight into the worsening regional depopulation issue in Japan. Third, the consistently observed influence of residential choices on travel behavior in the literature cannot be observed in this case study neither in the static view nor in the dynamic view, after controlling for the influence of other life choices over time. This suggests that the observed influence of residential choices on travel behavior in the literature may be spurious because of the absence of considering other life choices and key life events.

The above analysis utilized the life-oriented approach (Zhang, 2014), and the results indicate that this approach provides a new method for capturing the effects of life choices on the prospective quality of life. The life-oriented approach offers an understanding of life choices, including residential choices and travel behavior, and should not be constrained by the boundary of any single discipline. The ignorance

and inability of understanding and capturing travel behavior from the life choice perspective may lead to a failure of consensus building for policies to better support residents' lives. When residents' quality of life is concerned, various behavioral aspects should be simultaneously represented. In this regard, the structural equation model with latent variables is a flexible and powerful tool to incorporate various cause-effect relationships in a unified and consistent modeling framework. Meanwhile, behaviorally oriented modeling approaches that can accommodate a larger set of discrete and continuous choice variables should be developed.

Several important research issues should be noted. First, residents' quality of life is highly different at specific stages of their life course, especially in response to residential location changes and employment changes. Further longitudinal data should be collected and a time series analysis should be conducted. Second, more advanced choice models should be built to jointly represent residential choices, travel behavior and other life choices, as well as quality of life for incorporating decision-making mechanisms into the analysis. Third, the effects of land use and transport policies on residents' quality of life should be re-evaluated based on the conceptual framework proposed in this study and future development of better choice models. Finally, to arrive at more comprehensive conclusions, more case studies should be conducted, not only in developed countries, but also in developing countries, which are experiencing more dynamic changes economically, socially and culturally.

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References

Abou-Zeid, M., & Ben-Akiva, M. (2012). Well-being and activity-based models. *Transportation, 39*(6), 1189–1207.

Alexopoulos, E. C., 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.*

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

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., Converse, P. E., & Rodgers, W. L. (1976). The quality of American life: Perceptions, evaluations, and satisfactions. *Russell Sage Foundation*.

Clark, A. E., Frijters, P., & Shields, M. A. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, 95–144.

Chen, J., Chen, C., & Timmermans, H. (2008). Accessibility trade-offs in household residential location decisions. *Transportation Research Record: Journal of the Transportation Research Board, 2077*, 71–79.

Cao, J., & 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.

Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological Science, 13*(1), 81–84.

De Vos, J., Schwanen, T., Van Acker, V., & Witlox, F. (2013). Travel and subjective well-being: A focus on findings, methods and future research needs. *Transport Reviews, 33*(4), 421–442.

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.

Inoguchi, T., & Fujii, S. (2009). The quality of life in Japan. *Social Indicators Research, 92*(2), 227–262.

Knox, P. L. (1975). *Social Well-being: A spatial perspective*. Oxford: Oxford University Press.

Lotfi, S., & Solaimani, K. (2009). An assessment of urban quality of life by using analytic hierarchy process approach. *Journal of Social Sciences, 5*, 123–133.

Lee, J. H., & Goulias, K. G. (2014) Examining differences and commonalities of life cycle stages in daily contacts and activity-travel time allocation. In *Compendium of Papers CD-ROM*, *The 93rd Annual Meeting of Transportation Research Board, Washington, D.C.*, January 12–16 2014.

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.

Shu, X., & Zhu, Y. (2009). The quality of life in China. *Social Indicators Research, 92*(2), 191–225.

Sing, M. (2009). The quality of life in Hong Kong. *Social Indicators Research, 92*(2), 295–335.

Sharmeen, F., Arentze, T., & Timmermans, H. J. P. (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.

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.

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.

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

Zhang, J. (2014). Revisiting residential self-selection issues: A life-oriented approach. *Journal of Transport and Land Use* (in press).

Zhang, J., Tsuchiya, Y., Hinohara, H., & Chikaraishi, M. (2012). *Citizens' life behavior and quality of life: Survey and modeling*. Paper presented at the IATUR (International Association for Time Use Research) 34th Annual Conference, Matsue, Japan, August 22–24 2012.

Part IV
Neighborhood and Subjective Wellbeing

Chapter 10
Place, Geographical Context and Subjective Well-being: State of Art and Future Directions

Fenglong Wang and Donggen Wang

Abstract Well-being has recently been a focus for both social policies and academic studies. Along different dimensions (e.g., objective vs. subjective; hedonic vs. eudaimonic) of well-being, the hedonic view of well-being has drawn much scholarly attention, especially in economics and psychology. While well-being studies in the area of geography are still in their infancy, many scholars have noticed the spatial differences in subjective well-being (SWB) and the importance of the place-based context on well-being. To promote studies on the multifarious links between the geographical context and SWB, this chapter systematically introduces the concepts, measures, and theories of SWB and then provides an overview of the studies concerning geographical context and well-being. We conclude the chapter with a description of the issues related to the linkages between SWB and geographies that need future research.

Keywords Subjective well-being · Geography · Literature review

Subjective well-being (SWB), also known as happiness or quality of life (QoL),[1] has been widely examined in economics (e.g., Easterlin 2003; Dolan et al. 2008; Frey and Stutzer 2010; Layard and Layard 2011), psychology (e.g., Campbell et al. 1976; Diener et al. 1999; Kahneman et al. 1999; Seligman 2002; Diener 2009c), sociology (e.g., Veenhoven 1996; Helliwell and Putnam 2004) and gerontology (e.g., Larson 1978; George 2010). In recent years, SWB has also attracted increasing scholarly attention in geography (e.g., Fleuret and Atkinson 2007; Ballas 2013), transportation research (e.g., Ettema et al. 2010; De Vos et al. 2013; Nordbakke and Schwanen 2013; Reardon and Abdallah 2013) and ecological studies (e.g., van Kamp et al. 2003; Brereton et al. 2008). Scholars from these disciplines have realized that SWB is not only an important indicator of personal health and QoL, but also a decisive index for making public policies (e.g., Stiglitz et al. 2009; Frey and Stutzer 2012).

[1]However, QoL not only denotes subjective experiences (e.g., Galbraith 1958) but also includes various objective factors (Ballas 2013).

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The motivation of happiness has also been used to interpret individuals' choices and behaviors (Deutsch-Burgner et al. 2014).

Existing studies of SWB mostly focus on the determinants of well-being. The most widely examined determinants are genetic factors and personal socioeconomics (e.g., Wilson 1967; Diener et al. 1999; Dolan et al. 2008). For example, researchers have concluded that genetic factors and personal socioeconomics account for around 50 and 10 % of the variance of individual's happiness, respectively (Lyubomirsky et al. 2005). However, the linkages between SWB and its determinants are context-dependent and shaped by the particularities of time and place (Nordbakke and Schwanen 2013). For example, some studies argue that interstate differences account for a share of variation in life satisfaction similar to "the individual cross-sectional effect;" researchers have found that residents in rural regions or small towns are generally happier than those in large cities (e.g., Berry and Okulicz-Kozaryn 2011), particularly those from wealthier countries (Easterlin et al. 2011). Therefore, an increasing number of studies have realized that it is important to examine the effects of geographical contexts on SWB.

A growing body of studies has investigated the spatial differences and geographical determinants of SWB at different scales. For example, psychologists have examined international differences in SWB and tried to explain the spatial variation from the perspective of economic development and cultural differences (e.g., Diener et al. 1995a; Diener and Biswas-Diener 2002; Kahneman et al. 2006; Howell and Howell 2008; Diener 2009b). Economists and sociologists have also examined the effects of regional characteristics on life satisfaction (e.g., Clark 2003; Oswald and Wu 2010; Easterlin et al. 2011). Noticeably, geographers have begun to pay increasing attention to SWB (Schwanen and Wang 2014). For example, geographers have explored the links between climate, pollution, and life satisfaction (e.g., Brereton et al. 2008; MacKerron and Mourato 2009); regional geographers and spatially inclined researchers have investigated the spatial variations in SWB (e.g., Morrison 2007; Berry and Okulicz-Kozaryn 2011; Ballas and Tranmer 2012) and the effects of geographical factors, such as accessibility (Morrison 2011), income level (Aslam and Corrado 2012), and green space (Ambrey and Fleming 2014). Several pioneering geographers have even reviewed existing studies and provided theoretical frameworks for future studies (e.g., Pacione 2003; Fleuret and Atkinson 2007; Sugiyama and Thompson 2007; Marans and Stimson 2011; Ballas 2013; Ballas and Dorling 2013). However, very few empirical studies have explained, "to what extent does *where* we live affect how we feel" (Ballas and Dorling 2013), and geographers' engagements with well-being and happiness have generally lagged behind studies in the areas of economics, psychology and sociology (Schwanen and Wang 2014). It is also noticeable that "studies of happiness at local levels are relatively limited due to the paucity of relevant data" (Ballas and Dorling 2013), and most existing studies focus on the differences in SWB at the macro (international or regional) level. The existing literature reviews either focus on objective environmental quality and health-related well-being (Pacione 2003; Fleuret and Atkinson 2007; Marans and Stimson 2011) or only include a small part of

geographical factors, such as spatial inequality and the neighborhood environment (Sugiyama and Thompson 2007; Ballas 2013; Ballas and Dorling 2013).

This chapter aims to provide a more comprehensive review of the existing findings on the geographical differences and determinants of SWB. This chapter enriches the geographical knowledge of SWB by including the existing findings from both geography and other related fields and extends previous literature reviews by synthesizing the existing findings from different geographical scales. The empirical evidence of spatial patterns and environmental determinants of SWB within the urban level are especially emphasized because they tend to be neglected by existing studies.

This chapter is organized as follows. Section 10.2 presents the historical background of and conceptual perspectives on SWB and discusses the major definitions, theoretical perspectives and measures of SWB. Section 10.3 summarizes the spatial patterns of and regional differences in SWB. Section 10.4 focuses on the empirical findings of the effects of geographical context on SWB. The chapter concludes by identifying several important issues for future studies.

10.1 Concepts and Theories of Subjective Well-Being

Well-being has a long history in philosophical thinking. It is usually regarded as the ultimate goal of both an individual life and national policies. According to Nordbakke and Schwanen (2013), well-being can be viewed through three dimensions. First, there is a subjective-objective distinction. The subjective perspective holds that well-being is an individual's subjective perception of how s/he lives (Veenhoven 2002); however, the objective stance contends that well-being is evaluated by a series of welfare indicators and criteria of objective circumstances (Phillips 2006). Second, based on the philosophical perspective adopted, there are both hedonic and eudaimonic approaches to well-being. The hedonic approach follows utilitarian thoughts represented by Aristippus, Locke, and Bentham. This stream of studies argues that one's well-being is established on the basis of the pleasure or satisfaction s/he experiences and the pain or dissatisfaction s/he feels (Diener 2009c). In contrast, the eudaimonic approach is founded on the reflections of philosophers including Epicurus and Aristotle and highlights goal-directed activities, the meaning of life, and the state of self-realization (Ryff 1989; Ryan and Deci 2001). Third, according to its stability, well-being can be divided into a universalist or a contextualist stance. While the universalists tend to interpret well-being as stable compared with the standards applicable in different countries, the contextualists claim that the levels and components of well-being change according to one's aspirations and cultural context.

Veenhoven (2000) proposes a similar classification of the QoL with three dimensions. The first distinction is between objective and subjective QoL. While the former denotes the degree to which the standards of a good life as defined by an outsider are met, the latter refers to self-appraisals according to implicit criteria. The

second distinction is between the opportunities or potential (life chance) for a good life and the actual good life itself (life result). While the former is more relevant to the capability, the latter highlights the state of current conditions. The third distinction is between external and internal qualities of life. The former focuses on environmental conditions while the latter emphasizes personal abilities or psychological outcomes.

Based on Nordbakke and Schwanen's (2013) system of classification, the concept of SWB examined in this chapter mainly emphasizes the subjective, hedonic and contextualist aspects of well-being.[2] According to Veenhoven's (2000) conceptual framework, SWB mainly refers to the "subjective," "internal," (personal) and "result" (end/state) dimensions of QoL. The next section briefly explains why this concept is important and how should it be understood.

10.1.1 Rising of Studies on Subjective Well-Being

There is a long history of thoughts on SWB or happiness. The first-known attempt to interpret happiness started in China in 600 BC (Zhang and Veenhoven 2008; Ballas and Dorling 2013). A few decades later, the Hellenistic philosophers, such as Aristotle, discussed the meaning of happiness. In the fourth and fifth centuries AD, Western discussions of a "good life" were mainly focused on true happiness after death. However, it was not until the Enlightenment in the seventeenth century that Western thinkers began to shift their attention to how people actually feel in their earthly lives. Beginning in the 1950s, psychologists and economists began examining the meanings, measures, and components of SWB. However, the major considerations in these two disciplines are quite different.

In psychology, studies of SWB mainly originate from advocates of "positive psychology." Psychologists in the 1990s realized that the psychological studies that had been conducted since the Second World War were overwhelmingly focused on negative psychological states and had largely ignored positive SWB (Diener 1984; Myers and Diener 1995; Ickovics and Park 1998; Seligman 1999; Seligman and Csikszentmihalyi 2000). However, studies found that positive and negative affects are independent across individuals (Bradburn and Caplovitz 1965; Diener and Emmons 1984; Diener et al. 1985b), suggesting that healing negative feelings does not necessarily lead to an increase in positive experiences. Since people not only avoid misery but also seek positive incentives, a positive psychology that aims to measure, understand, and strengthen positive strengths and experiences is in urgent need. As a result of this recognition, SWB has gained increasing attention in psychology in recent decades.

[2]Some definitions of SWB also incorporate eudaimonic aspects, such as the sense of "achievement" (e.g., Morrison 2007). However, the eudaimonic components are more commonly examined under the term "psychological well-being" (Ryff 1989) instead of SWB.

The burgeoning of SWB studies in economics stems from two major concerns. First, some economists consider SWB as a more meaningful indicator for evaluating development than GPD. Since people may react differently to the same living conditions based on their own aspirations, needs, and previous experiences (Diener et al. 1999), scholars have questioned how well economic output data (e.g., GDP) alone could represent the quality of national life (Campbell 1976; Easterlin 1995). Based on this concern, some scholars have called for national indicators of happiness in addition to existing economic and social indicators (Diener 2000; Cummins et al. 2003; Diener and Seligman 2004; Kahneman et al. 2004a). An example in practice is that the King of Bhutan has adopted a measure of gross national happiness over GDP as the indicator of development. Since 1973, the European Union has also included life satisfaction as a basic national performance indicator (cited from De Jong et al. 2002). Second, as shown in many studies, people do not always make decisions to pursue maximum utility (Kahneman and Tversky 1979; Ariely 2008), making it less accurate to infer what people desire or how satisfied they are with their choices (Kahneman and Krueger 2006). Therefore, SWB, as a kind of experienced utility, is more appropriate for reflecting individuals' experiences of their decisions (Kahneman et al. 1997; Kahneman and Krueger 2006; Ettema et al. 2010) and evaluating the impacts of policies on people's well-being (Archer et al. 2013). In some circumstances, SWB may be more predictive of people's behaviors (Abou-Zeid and Ben-Akiva 2012; Burgner et al. 2014).

In sum, philosophers in different times and cultures have explained the concept of happiness or SWB over the course of history. Starting in the second-half of the twentieth century, SWB has become a major topic in psychological and economic studies because it captures formerly ignored aspects that are pursued by most people and explain individuals' behaviors.

10.1.2 Components and Dimensions of Subjective Well-Being

The literature on SWB focuses on "how and why people experience their lives in positive ways" (Diener 2009c). According to these studies, SWB is usually defined as "the degree to which an individual positively evaluates the overall quality of his/her life" (Ettema et al. 2010). It is commonly assumed that SWB mainly consists of three components: overall satisfaction with life, the presence of positive affects and the absence of negative feelings (Diener 1984; Diener et al. 1999; 2009c; Ettema et al. 2010; De Vos et al. 2013). The first component is usually interpreted as the cognitive evaluation of various domains of life for a relatively long period; the other two components are usually taken as affective emotions within a shorter time frame. Satisfaction with specific life domains is sometimes considered another component of SWB (Diener 2009c). Affective components of SWB can be further differentiated into separate dimensions. One of the most widely adopted dimensional models of (core) affect has focused on two underlying dimensions: valence and activation. Russell (1980, 2003), for example, argues that

the variation in emotional experience can be described by the orthogonal dimensions of pleasantness and arousal. Based on Russell's (1980) work, Diener et al. (1985b) propose two similar dimensions to measure personal affective structure: the frequency (or amount of time) and the intensity of different emotional affects. Many studies have revealed that the frequency of (or duration weighted) emotional experience is more strongly related to global well-being measures than emotional intensity (Diener et al. 1991; Schimmack and Diener 1997; Suzuki et al. 2013). Nevertheless, other scholars contend that the duration of affective episodes is less important, and people tend to give special weight to peak (or extreme) affects and end affects in their retrospective evaluations of past affective episodes (Fredrickson and Kahneman 1993; Kahneman et al. 1997; Fredrickson 2000).

10.1.3 Measures of Subjective Well-Being

Different scales are designed to measure SWB. A systematic collection of these scales was compiled by Diener (2009a) and Veenhoven.[3] Generally, existing scales can be divided according to the cognitive-affective distinction (Table 10.1). The most widely used scale to measure life satisfaction is the Satisfaction With Life Scale (SWLS) developed by Diener et al. (1985a). This scale contains five items about people's perceptions of their lives. Besides the SWLS, some single-item scales, such as the Self-Anchoring Ladder (Cantril 1965), Terrible-Delighted Scales (Andrews and Withey 1976) and Happiness Line Measure (Ivens 2007), are also widely used in existing studies. It is noticeable that the cognitive components of SWB, such as satisfaction with an activity episode, can also be measured in the short term (White and Dolan 2009c). As for the affective components of SWB, a widely employed scale is the core affect scale developed by Russell (1980) and Västfjäll et al. (2002). This scale is usually used to evaluate momentary emotional feelings together with the Day Reconstruction Method (Kahneman et al. 2004b). However, this scale can also be used to measure long-term affective experience by accounting for the frequency of different affects (e.g., Ettema et al. 2011).

While the single-item scales show moderately high temporal reliability, they are usually believed to be less reliable than the multi-item scales for several reasons. First, the variance due to the specific wording of the item cannot be averaged (Diener 2009c); therefore, compared with multi-item scales, the internal consistency of single-item measures should be lower, and the measurement errors should be larger. Second, single-item measures tend to be skewed by acquiescence problems because the item is always scored in one direction (Diener 2009c). Third, single-item scales are less capable of covering all aspects of SWB. As a result, multi-item scales such as the SWLS are recommended and widely used in existing studies.

[3]Veenhoven maintains the World Database of Happiness (http://worlddatabaseofhappiness.eur.nl/), which contains an archive of various measures of subjective well-being.

Table 10.1 Scales measuring subjective well-being

Dimensions	Examples	Example item[a]
Cognitive		
Long-term	Single-item self-anchoring ladder (Cantril 1965)	On which step of the ladder would you say you personally feel you stand at this time?
	Single-item terrible-delighted scales (Andrews and Withey 1976)	Which face (or word) is most like you about your life at the moment?
	Single-item happiness line measure (Ivens 2007)	Where are you (at the line moving towards the "happy" face) this week?
	Five-item satisfaction with life scale (Diener et al. 1985a)	In most ways my life is close to my ideal
	Four-item subjective happiness scale (Lyubomirsky and Lepper 1999)	Compared with most of my peers, I consider myself 1 (less happy) to 7 (more happy)
Momentary	Single-item overall episode satisfaction (White and Dolan 2009)	All things considered, how satisfied are you with this episode?
Affective		
Long-term	Ten-item affect balance scale (Bradburn 1969)	Did you feel particularly excited or interested in something during the past few weeks?
	Forty-item affectometer (Kammann and Flett 1983)	How often have you felt depressed in the past few weeks?
	Affect intensity measure (Larsen 1985)	How do you react to this "Sad movies deeply touch me"? (1 never to 6 always)
	Scale of positive and negative experience (Diener et al. 2010)	How much did you experience the feelings of "positive" during the past four weeks?
Momentary	Day reconstruction method (Kahneman et al. 2004b)	How did you feel happy during this episode?
	Twelve-item swedish core affect scale (Västfjäll et al. 2002)	What is your general experience at the particular moment? (1 sad to 9 glad)

[a]Items without a question mark are scored according to the respondent's agreement with the statement or the point the participant selects on the scale

10.1.4 Theoretical Perspectives on Subjective Well-Being

A series of theoretical perspectives have been developed to explain the formation and dynamics of people's SWB. One of the most commonly adopted perspectives to explain the formation of SWB (especially satisfaction) is the *discrepancy theory* or its variant forms (Churchill and Surprenant 1982; Pascoe 1983). The discrepancy theory holds that satisfaction or happiness is a function of the perceived gaps (or discrepancies, dissonance, incongruence) between what one has and wants (or aspires, desires, prefers, needs) (Festinger 1957; Michalos 1985; Schulz 1995). Consistent with the discrepancy theory, Shin and Johnson (1978) define happiness as "a global assessment of a person's QoL according to his own chosen criteria."

Chekola (1975: pp. 12) argues that the most plausible view of happiness is to define it as the "orderly and harmonious satisfaction of one's desires and goals." Campbell et al. (1976: 231) define one's level of satisfaction as "the perceived discrepancy between aspiration and achievement, ranging from the perception of fulfillment to that of deprivation." Sometimes, the discrepancy may take the form of "relative deprivation," where the reference point is determined through a comparison with others or previous conditions (Runciman 1961; Michalos 1985; Cummins and Nistico 2002). This theoretical perspective has also been applied to define domain satisfaction, such as residential satisfaction (e.g., Aigbavboa 2013), which is usually conceptualized as the degree of congruence between the actual and desired residential conditions (e.g., Galster and Hesser 1981; Yang 2008). The vast majority of consumer satisfaction studies usually adopt the expectancy disconfirmation theory, a descendent of the discrepancy theory (Oliver 1977, 1980; Tse and Wilton 1988; Parker and Mathews 2001). The expectancy disconfirmation theory posits that satisfaction is a result of the disconfirmation of beliefs in expected and perceived performance or experiences (Oliver 1980).

Another widely used theory is the *activity theory* (Diener 2009c). This theory maintains that happiness is a by-product of human activity rather than the endpoint of achievements or goal fulfillment. According to this theory, people tend to live a happy life if they are involved in interesting and engaging activities. Based on this perspective, Kim-Prieto et al. (2005) propose a sequential temporal framework for SWB, in which one's global judgments of well-being are formed based on recalling immediate emotional reactions to events. Echoing activity theory, empirical studies suggest that daily activities and emotional experiences significantly contribute to SWB. For example, researchers have found that activities account for around 40 percent of the variation in SWB (Lyubomirsky et al. 2005). The effects of leisure time and physical activities are especially significant for the elderly (Ku et al. 2007; Pawlowski et al. 2011). The affective experiences associated with routine activities also have a substantial impact on life satisfaction (Gamble and Gärling 2012; Bergstad et al. 2012).

The two theories above tend to adopt a *bottom-up* approach to SWB, meaning that one's global judgment of SWB is composed of satisfaction with various life domains (e.g., Cummins 1996; Rojas 2006) and daily affective experiences. The most common life domains include health, finances, work, leisure, housing, and the environment (van Praag et al. 2003). The widely adopted methods to aggregate emotional feelings in various activity episodes include frequency-based (Kammann and Flett 1983), intensity-based (Larsen and Diener 1987), and peak-end rules (Kahneman and Krueger 2006). However, other scholars tend to adopt a *top-down* view of SWB (Diener 1984; Headey et al. 1991). For example, the Greek philosopher Democritus contended that "the important thing (for a happy life) is not what a man has, but how he reacts to what he has." In recent decades, the top-down approach maintains that an individual's personality traits and other genetic dispositions may color one's perceptions and experiences and influence the way a person reacts to the event. Since these genetically determined dispositions are rather stable, people tend to have a set point of happiness (Costa and McCrae 1980; Lykken and

Tellegen 1996), which is assumed to be fixed, stable over time and immune to influence or control. This is usually known as set-point theory (Headey and Wearing 1989; Williams and Thompson 1993; Headey 2008; Headey et al. 2010). Supporting this theory, researchers have found that genetic factors are far more useful than life circumstances for predicting SWB (Stones and Kozma 1986; Costa et al. 1987), and these factors account for nearly 50 % of the variance of an individual's happiness (Lykken and Tellegen 1996; Lyubomirsky et al. 2005; Steel et al. 2008). As a result, some scholars argue that SWB should be interpreted more as a trait than a state (Ormel 1983; Kevin McNeil et al. 1986).

There are also some important theoretical perspectives to explain the dynamics of SWB. The most widely known perspective in existing studies is the *adaptation theory*. This theory argues that the reaction of psychological systems to constant stimuli, such as noise, increases in income, disability and bereavement, fades with time (Frederick and Loewenstein 1999) and a change in happiness (both the joys and sorrows) gradually returns to the baseline after the life event (Diener et al. 2006; Lucas 2007; Lyubomirsky 2010). The theory originates from the hedonic treadmill model proposed by Brickman and others (Brickman and Campbell 1971; Brickman et al. 1978), who found that lottery winners are not any happier than people in a control group. Scholars usually explain hedonic adaptation based on cognitive mechanisms and processes such as habituation. It is generally argued that people adapt to affectively relevant stimuli to protect organisms and enhance perceptions by reducing the internal response to the constant states (e.g., pain) and directing attention to the new changes (Frederick and Loewenstein 1999). This process is important for both protecting people from potentially dangerous psychological consequences and encouraging them to react more strongly to novel opportunities and threats in a variety of environments and to allocate more attention to important needs. However, because people soon become accustomed to positive stimuli, it would be feckless to attempt to improve SWB by changing life circumstances. It would also be difficult to predict people's emotions or behaviors under different circumstances (Frederick and Loewenstein 1999). A representative of this view is the AREA (attend, react, explain, and adapt) model of affective adaption, which is proposed based on the principles of antagonism, reference point, and attention (Wilson and Gilbert 2008). The specific strategies of adaptation include adjustment of anticipation (Clark et al. 2008), dynamic goal setting (Shmotkin 2005), activity adjustment (Menzel et al. 2002) and even the process of explanation and the search for meaning (Taylor 1983). The process and degree of hedonic adaptation may also be moderated by social support, forewarning, uncertainty, reminders, perceived responsibility, and meaning (Frederick and Loewenstein 1999).

The top-down approach to SWB and the adaptation theory all predict that life events have only a transitory effect on life satisfaction. This has been partially supported by empirical studies of the impacts of life events such as unemployment (Lucas et al. 2004), marriage and divorce (Lucas et al. 2003; Lucas and Clark 2006; Zimmermann and Easterlin 2006; Gardner and Oswald 2006), income changes (Easterlin 2003; Di Tella et al. 2010), disability (Oswald and Powdthavee 2008), or

different life events altogether (e.g., Clark et al. 2008; Frijters et al. 2011; Luhmann et al. 2012). According to these studies, the process of adaptation usually takes one to two years (e.g., Diener et al. 2006; Gardner and Oswald 2006; Zimmermann and Easterlin 2006), and some even suggest that an event is irrelevant to life satisfaction 3 months later (e.g., Chamberlain and Zika 1992; Suh et al. 1996). However, it is noticeable that the majority of empirical evidence suggests that hedonic adaptation to various life events seems incomplete. For instance, many studies show that while SWB is stable over time, it is still sensitive to life events or changes in the environment after the effects of personality are controlled (Atkinson 1982; Headey and Wearing 1989; Chamberlain and Zika 1992; Nes et al. 2006). Many longitudinal surveys also indicate that a substantial share of respondents' levels of life satisfaction do not return to the baseline level despite the occurrence of adaptation (e.g., Lucas et al. 2003, 2004; Fujita and Diener 2005; Diener et al. 2006; Lucas 2007; Oswald and Powdthavee 2008).

In addition to these theoretical perspectives, the *self-determination theory* is also widely used in studies of well-being. This theory is designed to explain optimal motivation and personality development based on positive starting assumptions about the default state of human nature (Ryan and Deci 2011). It highlights the importance of humans' innate psychological needs as fundamental to their self-motivation, personality integration, and positive processes. This theory identifies three needs that appear to be essential for facilitating optimal functioning of the natural propensities for growth and integration: a need for competence, relatedness, and autonomy (Ryan and Deci 2000). The fulfillment or enhancement of these basic needs tends to increase people's happiness, enjoyment, and vitality. In this regard, the self-determination theory seems to be similar to the *discrepancy theory*. However, the self-determination theory also discriminates between intrinsic motivation and extrinsic motivation. The former refers to doing an activity for the inherent satisfaction of the activity itself and the latter refers to the performance of an activity to attain a separate outcome (Ryan and Deci 2000). The self-determination theory argues that the attainment of intrinsic aspirations is more influential for life outcomes including happiness (Niemiec et al. 2009). From this point of view, this theory is similar to the top-down perspective of SWB. It is also noticeable that the self-determination theory distinguishes happiness (as a subjective experience of a positive versus negative mood) from wellness (concerned with full and vital functioning) and thus bridges eudaimonic and hedonic well-being.

These theoretical perspectives have different implications for interpreting the effects of geographical factors on SWB. First, the discrepancy theory implies that one's SWB is influenced by whether the place fits his/her needs or aspirations. This is the main argument in the person-environment fit theory, which has been used to interpret the formation of domain satisfaction, such as residential satisfaction (e.g., Kahana et al. 2003). Because relative standards, such as social norms and reference peers, may also be considered as the standard of comparison in discrepancy theory, we also expect that people will be less satisfied if their neighbors are better off than them. This is usually known as the social comparison theory (Suls et al. 2002), which has also been applied to explain differences in SWB (e.g., Buunk et al. 1990;

Diener and Lucas 2000) and effects of the social environment on satisfaction with life domains, such as travel satisfaction (e.g., Abou-Zeid and Ben-Akiva 2011). Second, the activity theory suggests that people's SWB should be influenced by the geographical context through its impacts on daily activities. Supporting this argument, Sugiyama and Thompson (2007) contend that the outdoor environment mainly influences people's SWB by facilitating and supporting daily activities. Ettema and Smajic (2015) also find that the walking environment has a substantial influence on pedestrians' levels of affect. The arguments in time geography are also related to the activity theory of SWB. Third, while the bottom-up view of SWB indicates that various geographical factors influence SWB and are mediated by satisfaction with various domains (such as residence and health), the top-down perspective of SWB tends to emphasize cultural or even genetic differences in different regions. For example, there is evidence suggesting that people in individualistic countries are generally happier than their counterparts in collectivist countries (Diener et al. 1995b). A high correlation is also found in SWB between Americans and citizens from their 20 ancestral nations (Rice and Steele 2004). Fourth, the adaptation theory may explain the dynamics or stability in SWB for migrants. Since people may adapt to different environments rapidly, it is not surprising that most people are moderately happy regardless of in what environment they live or to what environment they move. Fifth, by relating environmental factors to intrinsic motivation (particularly the issue of autonomy versus control), the self-determination theory explains the role of interpersonal context in promoting or undermining psychological wellness and effective functioning. This theory should also be used to explore the effects of geographical factors on hindering self-motivation and personal well-being. For example, the environmental docility hypothesis (Lawton 1990) posits that environmental features have increasing effects on the elderly as their competencies decline.

10.2 Spatial Differences in Subjective Well-Being

Studies of SWB have long been dominated by aspatial thinking, namely that the average level of SWB should be similar in different places once we control for personal characteristics (Morrison 2007). This argument is especially prevalent among economists, who usually assume that people can "vote with their feet" by moving to regions with a better QoL when mobility costs are low and information about what it would be like to live in another place is accurate (Faggian et al. 2012). As a result, the more desirable places eventually become too congested and expensive, and equilibrium is reached, leading to the same average level of well-being in all regions. Supporting this proposition, Ballas and Tranmer (2012) fail to find a statistically significant geographical variation in happiness after controlling for socioeconomic and demographic variables. However, the arguments

above should be interpreted with caution. Because the spatial and institutional barriers are not negligible, the adjustment to localized QoL factors can be very slow (Faggian and Royuela 2010), and the spatial distribution of SWB should be uneven in the long term.

Many empirical studies have also noticed significant differences in SWB among different cultures, nations, and regions. The majority of the existing studies are at the country level (Okulicz-Kozaryn 2011). Recent studies have also identified spatial patterns of SWB within a city (Wang and Wang, in press). The rest of this section will briefly review the empirical findings on spatial patterns of SWB at different geographical scales. To differentiate the varying measures of SWB adopted in different studies, the terms are defined as follows: *life satisfaction* denotes the cognitive component of SWB and is usually measured by the question: "All things considered, how satisfied are you with your life as a whole these days?"; *happiness* mostly denotes the cognitive components of SWB and is generally measured by the question: "Generally speaking, how happy are you these days?"; *well-being* is usually measured by the composite indexes such as Gallup–Healthways Well-being Index, Personal Well-being Index and General Health Questionnaire; and *SWB* denotes both the cognitive and affective components of SWB.

10.2.1 International Differences in Subjective Well-Being

Researchers have argued that the country where one lives has inescapable consequences for one's life through job opportunities, quality of health care and even the risk of becoming a victim of crime (Morrison et al. 2011). Supporting this argument, scholars from different disciplines have discovered significant variances and substantial differences in the reported SWB across nations (e.g., Veenhoven 1993; for a summary, see Kalmijn and Veenhoven 2005). National differences are usually examined by comparing the aggregate score of SWB for different nations (e.g., Diener et al. 1995b) or by testing the fixed-country effects when modeling individual life satisfaction (e.g., Aslam and Corrado 2012). Sometimes, inequality indicators are also used to measure differences in SWB among nations (e.g., Kalmijn and Veenhoven 2005). Generally, the average level of life satisfaction and other components of SWB is higher in wealthy nations than poor nations (Diener and Biswas-Diener 2002; Hagerty and Veenhoven 2003). People from different cultures may also report different components of happiness. For instance, researchers found that Italian and Cuban subjects differ in the frequency of their citation of happiness components such as money, work and partners (Galati et al. 2006). People in different counties also tend to have varying levels and divergent patterns of affective and cognitive components of SWB (Rojas and Veenhoven 2013). A study of the Inughuit, the Amish and the Maasai also suggests significant cultural differences in the components of life satisfaction: while the Amish reported lower satisfaction with self-related domains, the Maasai and Inughuit were

relatively less satisfied with material domains (Biswas-Diener et al. 2005). Panelli and Tipa (2007) also find cultural and environmental specificity in the concept of well-being for specific populations such as the Maori.

10.2.2 Subnation Level Differences in Subjective Well-Being

Recently, the differences in SWB at the subnational level (among different states, provinces or urban-rural regions) have also been highlighted. For instance, Plaut et al. (2002) argue that people's well-being is linked to regionally prevalent ideas and practices and thus are regionally patterned. Based on a nationally representative survey of middle-aged Americans, they confirm that significant differences exist in people's well-being profiles (in terms of life satisfaction, health-focused, autonomy-focused, self-focused and emotion-focused well-being) among regions with different cultural contexts. While the west–south-central region stands out in terms of the positive affect and lack of negative affects, the prevalent emotion in the west-north-central region is feeling calm and satisfaction. Oswald and Wu (2010, 2011) have also examined regional differences in both life satisfaction and mental health across the United States. They estimate that the interstate differences account for up to 0.12 life satisfaction points in cardinal terms, which is "similar in size to the individual cross-sectional effect on life satisfaction." It is noticeable that many researchers have also examined the urban-rural disparities in life satisfaction. Generally, people living in large urban areas tend to be less satisfied with their QoL (Wish 1986; Glaeser et al. 2000). For example, Morrison (2011) reveals that the average level (fixed effect) of SWB in Auckland, New Zealand, ranks at the bottom, implying that living in a large city is associated with lower cognitive well-being. Life satisfaction levels are also shown to be lower in the major cities such as Dublin (Brereton et al. 2008) or "inner London" (Ferrer-i-Carbonell and Gowdy 2007). Knight and Gunatilaka (2010) show that happiness is higher in rural China compared with urban China. Luechinger (2010) and Ferreira et al. (2013) suggest that residents living in towns and cities are significantly less. Sørensen (2014) also indicates that rural residents tend to report significantly higher life satisfaction than urbanites after controlling for personal socioeconomic factors. However, the findings are not consistent. For instance, it is interesting to note that households in urban areas have higher levels of life satisfaction than households in rural areas of poorer countries (Easterlin et al. 2011). Shucksmith et al. (2009) found no significant differences in SWB exist among rural and urban dwellers in the European Union.

10.2.3 Intra-urban Differences in Subjective Well-Being

Some studies have also investigated the differences in SWB at the intra-urban or neighborhood level, but the number of studies is small. For instance, a study of the progression of life satisfaction indicates that the intercounty differences account for about 8 % of the differences in life satisfaction (Gerstorf et al. 2010). A recent study of Beijing, China also find significant difference in life satisfation between urban and suburban residents and the inter-districts differences account for around 10 % of variation in life satisfaction. Similarly, research based on the Household, Income, and Labor Dynamics in Australia (HILDA) survey reveals that close to 10 percent of the variance in life satisfaction could be accounted for by unobserved differences across neighborhoods (Shields et al. 2003). Studies have found that people living in neighborhoods with different socioeconomic situations tend to have varying levels of life satisfaction (e.g., Dittmann and Goebel 2010) and happiness (e.g., Ludwig et al. 2012).

10.2.4 Summary and Discussion

Substantial differences in both the levels and components of SWB exist at different geographical scales. The size of regional effects on SWB is similar to the personal socioeconomic variables. According to the studies reviewed above, four issues are worth noting. First, most of the existing studies have been conducted on the cognitive components of SWB (especially life satisfaction) at the national or regional level. As such, limited attention has been paid to the spatial patterns of the affective components of SWB or the intra-urban distribution of SWB. Second, there may be cultural measurement bias and mismatch between the standards of the good life across cultures, making the self-reported happiness across nations incomparable (Veenhoven 2009). However, this effect should not be exaggerated, and comparative research on SWB is still feasible among nations (Veenhoven 2009; Andrews and Inglehart 1979). Third, the scores of SWB may be distorted by the "focusing illusion" effects, in which people tend to exaggerate the contribution of a certain event or circumstance (e.g., income) to happiness because they focus on it (Schkade and Kahneman 1998; Kahneman et al. 2006). Fourth, little is known about what contributes to the regional differences in SWB (e.g., Diener et al. 1995a). This is related to the geographical determinants of SWB, which will be reviewed in the next section.

10.3 Geographical Determinants of Subjective Well-Being

The relationship between the objective circumstances of life and an individual's sense of well-being is always an important question in the study of SWB (Campbell 1976; Cummins 2000; Marans and Stimson 2011). However, previous studies tend to focus more on personal characteristics, such as personality and socioeconomics (Diener et al. 1999; Dolan et al. 2008), and equate life circumstances with personal and household socioeconomics (Lyubomirsky et al. 2005). In contrast, only a limited number of studies have examined the effects of geographical context on SWB. As a result, while profound associations between regional factors and individual outcomes have long been documented (Gerstorf et al. 2010), the exact geographical factors that lead to regional differences in SWB have not been intensively examined (Diener et al. 1995b). Nevertheless, recently a growing body of research has started to address this issue. Early studies mainly attribute international differences in SWB to economic and cultural differences in different nations. However, these studies have difficulty explaining the disparities of SWB within a country. As a result, the latest studies examine the effects of the urban physical (both natural and built) and social environment and neighborhood facilities on SWB. The rest of this chapter will provide a systematic review of existing findings on the geographical determinants of SWB at different scales.

10.3.1 National and Regional-Level Determinants of Subjective Well-Being

The most widely examined factors of SWB at the national and regional levels include economic development, cultural differences and climate. First, many studies have examined the effects of economic development on SWB. For example, a large number of studies have shown that people in wealthy nations tend to report greater SWB than people in poor nations (e.g., Diener et al. 1995a; Haller and Hadler 2006), and the national or regional GDP has positive effects on an individual's life satisfaction (e.g., Gerstorf et al. 2010; Elgar et al. 2011; Aslam and Corrado 2012; Mellander et al. 2012; Lin et al. 2014). However, it is noticeable that there may be geographical variation in the effects of economic development on the SWB (for a review, see Howell and Howell 2008). For example, it is revealed that the correlation between income, and SWB is stronger in poorer countries (Veenhoven 1991; Stanca 2010), especially life satisfaction (e.g. , Morrison et al. 2011; Aslam and Corrado 2012). Some studies even suggest that the association between national income and life satisfaction may be an inverse "U" shape (Helliwell 2003), and life satisfaction may be lower in richer states, with other factors serving as controls (Oswald and Wu 2010). The phenomenon that increased income does not lead to increased happiness in the long run is usually known as the "Easterlin Paradox" (Easterlin 1974). An explanation of this paradox is the co-variation of people's

aspirations (Easterlin 2003) or the social comparison effects with others. For instance, it is shown that household income (relative to the regional average) has positive effects on life satisfaction (Aslam and Corrado 2012), indicating that people tend to be more satisfied with their lives if they are better off than others. Research has shown that faster GDP growth than neighboring countries induces positive trends in life satisfaction (Bjørnskov et al. 2008b). However, income inequality within a county does not necessarily diminish SWB (e.g., Haller and Hadler 2006; Knight and Gunatilaka 2010). Some other indicators of economic development have also been examined. For example, the unemployment rate and infant mortality rate tend to have negative effects on life satisfaction (e.g., Bjørnskov et al. 2008a; Gerstorf et al. 2010). Yet, people tend to be less pessimistic (in terms of well-being or life satisfaction) when the regional unemployment rate is high, suggesting that "unemployment hurts, but it hurts less when there are more unemployed people around" (Clark 2003; Powdthavee 2007; Ballas and Tranmer 2012).

Second, the social and cultural context of different countries also contributes to international differences in SWB (Arrindell et al. 1997; Diener 2000). For example, people from individualistic cultures tend to be happier than others (e.g., Diener et al. 1995b). However, other studies reveal that individualistic values can be negatively related to SWB (principle component score) in Asian countries such as Japan (Ogihara and Uchida 2014). Rice and Steele (2004) also find significant correlations between the happiness of Americans and that of citizens from their 20 ancestral nations (from which many Americans claim to have ancestors), suggesting that different interpretations of SWB in different cultures have been maintained and passed along as people migrate. Some studies also find that national satisfaction is positively associated with life satisfaction (Morrison et al. 2011). Social connection and religious context are also related to international differences in SWB. For instance, people's life satisfaction tends to be higher if they live in a nation with higher levels of social capital (Helliwell 2003; Helliwell and Putnam 2004). Religious people tend to be more satisfied with their lives (Aslam and Corrado 2012). However, the effects of religiosity on SWB may depend on the specific religion. While Christian majority cultures are usually positively associated with life satisfaction (Bjørnskov et al. 2008a), Muslim cultures tend to be negatively associated with life satisfaction (Heukamp and Ariño 2011).

Third, climate factors and the natural environment also influence SWB. Weather conditions have significant impacts on people's SWB in different regions. For example, Frijters and Van Praag (1998) suggest that climate has significant effects on people's life satisfaction in Russia. Based on the World Database of Happiness, Rehdanz and Maddison (2005) found that higher mean temperatures in the coldest month tend to increase life satisfaction while higher mean temperatures in the hottest month, and more months with very little precipitation tend to reduce life satisfaction. Using the Urban Institute Ireland National Survey on QoL, Brereton et al. (2008) revealed that wind speed has negative effects, and January minimum temperatures and July maximum temperatures have positive impacts on self-reported life satisfaction. Similarly, Fischer and Van de Vliert (2011) show that

people living in a climatically demanding (climatic demand is defined as the sum of the deviations from 22 °C for the lowest and highest temperatures in the coldest month and in the hottest month) environment in a low income country is likely to have higher level of ill-being (including experiences of health problems, burnout, anxiety, and depression). Environmental nuisances, such as air pollution and noise, are also shown to be negatively associated with SWB. For instance, national-level air pollution (in terms of levels of nitrogen dioxide, TSP, lead, and SO_2) is found to have negative influences on life satisfaction for residents (Welsch 2006; Luechinger 2010; Lawless and Lucas 2011; Maddison and Rehdanz 2011). Regional-level air pollution (such as SO_2 emissions and PM10) and the number of environmental disasters are also shown to be negatively associated with life satisfaction (e.g., Smyth et al. 2008; Ferreira et al. 2013) or happiness (Cuñado and de Gracia 2013). Additionally, the NO_2 25-cell mean concentration around one's home has negative impacts on his/her life satisfaction (MacKerron and Mourato 2009). Other studies focus on the *perception* of air pollution on SWB. For example, individual concerns about ozone layer pollution, perceived environmental problems in the house and perceived risk due to exposure to pollutants are shown to have negative effects on personal life satisfaction (Ferrer-i-Carbonell and Gowdy 2007; Li et al. 2014). Noise in the environment is also detrimental for SWB. For example, people are likely to report lower levels of life satisfaction if they are adversely affected by noise pollution or exposed to aircraft noise (Van Praag and Baarsma 2005; Rehdanz and Maddison 2008). Some studies have also examined the effects of population density on SWB. However, the findings tend to be mixed: while some suggest that population density has negative impacts on life satisfaction (e.g., Lawless and Lucas 2011; Murray et al. 2013), others find the opposite evidence (e.g., Brereton et al. 2008).

10.3.2 City-Level Determinants of Subjective Well-Being

Existing studies have also examined the effects of some urban characteristics on SWB, including urban size, economic conditions, facilities, and socialcultural factors. First, urban size and density are influential on individual's SWB. For example, people living in large cities tend to be less happier than those in small cities or rural regions (e.g., Berry and Okulicz-Kozaryn 2011). However, this effect tends to be the opposite in developing countries. For example, Jiang et al. (2012) found that residents in big cities in China tend to have higher level of happiness than those in small or medium cities. As for urban density, researchers usually highlight the benefits of compact development in increasing opportunities for social interaction and walking activities. Therefore, urban population density should have positive effects on life satisfaction. However, because urban density is also likely to increase one's stress and depression (Sundquist et al. 2004; Lederbogen et al. 2011), some studies indicate that residents in denser cities typically have lower

levels of life satisfaction (Cramer et al. 2004). Some also argue that the merits of urban densification for life satisfaction seem to be insignificant in Asian developing countries such as Indonesia (Arifwidodo and Perera 2011).

Second, the conditions of urban economic development are also influential for SWB. For example, some studies suggest that the average city income level, welfare and job opportunities are positively associated with happiness (Balducci and Checchi 2009; Poon and Shang 2014) and well-being (Florida et al. 2013). However, the correlation between income and SWB tends to be heterogeneous in different regions. For example, the coefficient on the average rural or urban household income per capita in the province has a positive sign for rural China and a negative sign for urban China (Knight and Gunatilaka 2010). Moreover, due to the social comparison effect, high levels of average income may also exert negative effects on residents' SWB. For example, some empirical evidence shows that urban average income levels are negatively related to well-being (Smyth et al. 2011) and district-level unemployment status is positively associated with well-being (Ballas and Tranmer 2012).

Third, the urban built environment in terms of accessibility, facilities, and land use are also important determinants of SWB. Most studies suggest that living in an urban center is beneficial for life satisfaction. For instance, people living in an urban center tend to have higher levels of life satisfaction (Arifwidodo and Perera 2011), and the distance from the respondent's home to the central business district is negatively related to life satisfaction (MacKerron and Mourato 2009). Commute time has negative effects on life satisfaction (Lawless and Lucas 2011) and proximity to an airport (within 30 km) tends to have positive effects on life satisfaction (Brereton et al. 2008). Walking distance to a public transport stop is negatively associated with life satisfaction (Rehdanz and Maddison 2008). However, there is also opposing evidence. For example, studies in Germany have found that the distance to the center of the nearest city is irrelevant to life satisfaction after other variables are controlled (Rehdanz and Maddison 2008; Arifwidodo and Perera 2011; Bergstad et al. 2012), and in rural Ireland, people are even more satisfied with their lives if they consider access to local facilities and services as a problem (Brereton et al. 2011). Accessibility to various facilities in the city may also influence residents' SWB. For instance, the availability of amenities, such as schools and hospitals, and the accessibility to shopping malls, banks, and public transport facilities have significantly positive effects on life satisfaction (Arifwidodo and Perera 2011; Morrison 2011). Green space in cities is also conducive to residents' life satisfaction (e.g., Smyth et al. 2008; White et al. 2013; Ambrey and Fleming 2014). Some other factors, such as perceived urban safety, are also significantly related to self-reported happiness (Poon and Shang 2014).

10.3.3 Neighborhood-Level Determinants of Subjective Well-Being

SWB is also extensively impacted by the residential environment. It is argued that there is a "neighborhood effect" on life satisfaction because individuals in the same neighborhood tend to face similar environments or have similar characteristics, or are affected by each other (Shields et al. 2003, 2009). Theoretically, existing studies usually examine the "neighborhood effect" based on the concept of "person–environment fit" (Kahana et al. 2003), "environmental support" (Sugiyama and Thompson 2007), or "spaces of well-being" (Fleuret and Atkinson 2007). Existing empirical studies mainly focus on the effects of the neighborhood physical and social environment and housing conditions on SWB.

First, existing studies have examined the effects of neighborhood facilities and open space on SWB. For example, studies have found that access to neighborhood facilities or services and the number of such facilities positively contribute to life satisfaction both directly and indirectly through neighborhood satisfaction (e.g., McCrea et al. 2005; Morrison 2011; Arifwidodo and Perera 2011). Similarly, the perceived transport disadvantage in terms of the difficulty of accessing activities tends to have negative impacts on SWB (Delbosc and Currie 2011). However, living close to a main road may have adverse effects on life satisfaction, probably because of the noise affects (Brereton et al. 2008). It is also indicated that the proximity, pleasantness, and safety of open spaces are relevant to life satisfaction (Sugiyama et al. 2009). Previous studies have also shown that green space has an important restorative and recreational function (Hartig et al. 2003; Björk et al. 2008; van den Berg et al. 2010) and exposure or connectedness to green space is helpful for improving mood and cognitive functioning (Berman et al. 2008; Nisbet et al. 2011). As a result, green space in/near the neighborhood may contribute to life satisfaction. As argued by Mitchell (2013), "people who actually visit and use green spaces, whether for exercise, or just to get away from it all for a while, do seem to have better mental health and more life satisfaction." Proximity (within 2 km) or access to running water or the coast also tends to increase happiness (Gandelman et al. 2012) and life satisfaction (Brereton et al. 2008). Additionally, other positive physical features, such as maintenance of the estate, street lighting, and neighborhood quietness (absence of noise pollution), influence happiness (Gandelman et al. 2012) and life satisfaction (Sirgy and Cornwell 2002).

Second, some important social factors of the neighborhood, such as socioeconomic status, safety, and social interaction, also contribute to SWB. For example, the socioeconomic status of the neighborhood and its surrounding geographical settings are shown to have positive influences on life satisfaction (Dittmann and Goebel 2010). The percentage of migrants and the poor in the neighborhood is related to lower life satisfaction (Shields et al. 2009) or happiness (Ludwig et al. 2012). Neighborhood environment may also influence residents' SWB through the social comparison effect (Layard 2005). According to Festinger (1954) and Runciman (1966), individuals are driven by a desire for self-evaluation through

comparison with their "near equals," such as their neighbors. Many studies have provided supporting evidence to this effect. For example, researchers have found that having neighbors with higher earnings is associated with lower levels of self-reported happiness (Luttmer 2005) and having a more positive status than neighbors is linked to higher levels of life satisfaction (Dittmann and Goebel 2010). Another critical determinant of SWB is the perceived safety of the neighborhood. For example, studies have found that the perceived safety of the neighborhood has significant, positive effects on life satisfaction (Arifwidodo and Perera 2011; Lelkes 2006). Living in an unsafe neighborhood (with crime or vandalism) or in a deprived area is detrimental to life satisfaction (Guite et al. 2006; Dittmann and Goebel 2010; Pedersen and Schmidt 2011). If one conceives of social protection as a social problem or one feels vulnerable, s/he tends to have a lower level of life satisfaction (Smyth et al. 2008; Adams and Serpe 2000). However, some studies show that perceived safety is irrelevant to self-reported happiness (Balducci and Checchi 2009). Social interaction and cohesiveness of the neighborhood are also critical predictors of SWB. For example, residents in sociable neighborhoods report substantially higher levels of life satisfaction (Evans and Kelly 2002); social cohesiveness, in terms of visits from/to and close contacts with neighbors, also has positive effects on life satisfaction (Dittmann and Goebel 2010).

Third, housing conditions or the interior environment also exert great impacts on SWB (Wernick 2008; Frey 2012). For instance, Ibem and Amole (2013) disclose that the size and state of repair of the residence, housing services, and management of the housing estates are all positively associated with life satisfaction. Echoing this finding, it is shown that smaller housing floor areas or higher housing stress (having fewer rooms than residents or feeling over-crowded in the home) is negatively linked to positive affect (Gove et al. 1979) and life satisfaction (Rehdanz and Maddison 2008; MacKerron and Mourato 2009). However, it is noticeable that there is also evidence of an insignificant association between housing space and life satisfaction (e.g., White et al. 2013). Housing quality is usually positively related to life satisfaction (Brereton et al. 2008; Rehdanz and Maddison 2008) and negatively associated with psychological distress (Evans et al. 2000). As indicators of housing conditions or equipment, housing prices, and private rentals tend to have positive effects on life satisfaction (Rehdanz and Maddison 2008; Arifwidodo and Perera 2011) or well-being (Ballas and Tranmer 2012) while building age is generally negatively associated with life satisfaction (Rehdanz and Maddison 2008). Since homeownership is usually associated with a sense of social status (Diaz-Serrano 2009), it tends to have positive effects on well-being (Ballas and Tranmer 2012) and happiness (Hu 2013; Poon and Shang 2014). However, it is worth noting that some studies have not found significant effects of home ownership on life satisfaction (Brereton et al. 2011; Arifwidodo and Perera 2011). Building type may also influence life satisfaction. For instance, people living in public housing are usually less satisfied with their lives (Brereton et al. 2008). However, there is also evidence showing that the effects of building type are insignificant on life satisfaction (e.g., Rehdanz and Maddison 2008).

10.3.4 Summary and Comments

Existing studies generally suggest that the geographical context at different scales has important impacts on SWB. Important predictors of SWB at national and regional levels include economic indicators, cultural differences, and climate. Important determinants of SWB at the city level consist of economic conditions, facilities and sociocultural factors; the neighborhood environment and housing conditions also have decisive impacts on SWB. Variables at the macro level are usually objective indicators, such as GDP per capita and air pollution; neighborhood environmental factors are usually individual's perceptions. More studies have been conducted at the national and regional level,[4] and relatively limited attempts have been made to consider the impact of micro-settings, such as the residential environment (Ludwig et al. 2012), likely due to the lack of available data. However, people's judgment of SWB is usually context-dependent and restricted to a specific geographical scale (e.g., van Kamp et al. 2003); therefore, findings at different geographical scales can be different. For example, researchers have found that contextual variables are differentially related to SWB at the county level and state level in terms of their strength and direction (Luhmann et al. 2014). This makes the findings of SWB at different geographical scales inconclusive. As a result, it is necessary to systematically investigate the effects of various geographical factors on SWB at different levels. It is also noticeable that existing studies mainly focus on the determinants of life satisfaction. Nevertheless, very few studies have examined the geographical determinants of affective components (e.g., positive affects) of SWB. Geographers' engagement with SWB has also lagged behind the efforts made by economists and psychologists (Ballas 2013; Schwanen and Wang 2014).

10.4 Concluding Remarks

Subjective well-being, also known as happiness or QoL, has become an important topic in both psychology and economics. It is also drawing increasing attention from geography, transportation research, and other disciplines. The purpose of this chapter is to review the existing findings on geographical differences in and determinants of SWB. It has clearly shown that there are significant spatial differences in SWB at different levels of regions, and various geographical factors have important effects on an individual's SWB. Specifically, economic indicators, cultural differences, climate, urban facilities, the neighborhood environment and housing conditions all have important impacts on SWB. Most of the existing studies have focused on the cognitive components of SWB (i.e., life satisfaction), and more

[4]Because we focus on the explanation of intra-urban difference in SWB, the number of studies at the intra-urban level reviewed above is not necessarily smaller than the number of studies conducted at the macro levels.

studies have been conducted at the national and regional levels. To conclude this chapter, we discuss issues on which further research is needed.

First, more attention should be paid to issues of geographical scale and the variety of geography. The findings from one geographical scale might not apply to other scales. For example, while living in a rich country is usually associated with a higher level of SWB, richer neighbors may reduce one's happiness because of the social comparison effect. Similarly, although diversity and the percentage of migrants in a city usually indicate more opportunities and higher levels of well-being, the heterogeneity of a neighborhood may reduce residents' SWB. Therefore, more studies should examine the effects of a specific factor (e.g., income) at different geographical scales. It is noteworthy that geographical context is quite diverse. People usually spend time in different places, such as their home, office, friends' homes and recreational places. However, most of the existing studies on the effects of geographical factors on SWB, with the exception of time-geographical studies (e.g., Ettema and Smajic 2015; Schwanen and Wang 2014), focus on only the residential environment.[5] It would be fruitful to discuss the role of different places and contexts in SWB in future studies. It is also noticeable that studies at different scales have different implications for policy making. As Lawless and Lucas (2011) contend, an examination of the determinants of SWB at the regional level is beneficial because it does a better job isolating the external predictors of well-being and inspiring policy decisions. We would argue that findings at the urban or neighborhood levels are even more related to urban planning and community policy. However, relatively few studies have explored how geographical factors influence people's SWB at the urban and neighborhood levels. Therefore, more studies should be conducted at the micro level.

Second, geographers should be more involved in research on the effects of geographical context on SWB. It is noticeable that the existing studies reviewed above were mainly from economists, psychologists and even ecologists. In contrast, geographical studies of SWB are rare and have been dominated by "objective" data from the census and measures of the local environment (Morrison 2011). We would argue that geographers, who analyze the spatial patterns and effects of geographical context on people's daily life and perceptions, could make a distinctive contribution to clarify the findings and reduce the controversy about the association between the geographical context and SWB. More geographical studies are needed to explain how and why people's SWB varies among regions (Stanca 2010; Morrison 2007).

Third, a more detailed investigation of the underlying mechanisms should be made. While some theories have been introduced (such as the social comparison theory) and several theoretical frameworks have been proposed (e.g., Sugiyama and Thompson 2007), not much is known about the underlying mechanisms of the geographical effects on SWB. Most empirical studies have examined only the association between various geographical factors and SWB. As a result, the applicability of these studies is limited for two reasons. First, existing empirical

[5]We would like to thank Dr. Dick Ettema for pointing out this issue.

studies have provided conflicting evidence. For instance, while some suggest that people in large cities are less happy, others show opposite findings. The question is should policy makers encourage the development of large or small cities? Second, some findings are too general for policy makers. For example, while significant differences have been found in SWB among different climates or cultures, we cannot make relevant policies before we know what exactly contributes to these differences. Therefore, future studies should make more of an effort to uncover how different geographical factors influence people's SWB.

Fourth, more attention should be paid to the measurement issue in existing studies. As mentioned above, existing studies emphasize the cognitive components of SWB. However, cognitive and affective components are distinct, and the research findings for one component may not be reflective of other components (Schimmack et al. 2008). For example, Morrison (2007) indicates that respondents' sensitivity to place in general is lower for satisfaction than it is for happiness. Therefore, it is important to distinguish between cognitive and affective components of SWB and pay more attention to the affective components of SWB. It is also worth noting that people's perception of the environment may be different from objective indicators. For instance, it is contended that the same environment may offer different opportunities and pose different levels of difficulty for different people (Sugiyama et al. 2009). Therefore, it is necessary to conduct more studies on the effects of the *perceived* geographical context on SWB.

Finally, it would be fruitful to examine the effects of the geographical context on SWB with a dynamic background. While the geographical context has a far-reaching impact on SWB for the individuals living within it, people can also change their SWB by moving to a new place. As a result, when we do not consider the cost of moving and the limitations of information, the distribution of SWB tends to be even. However, existing studies on the outcomes of residential mobility provide a mixed picture of how people's SWB changes after a move (e.g., Oishi and Schimmack 2010; Nowok et al. 2013; Sloan 2013). Therefore, it is important to expend more effort to examine the dynamics of SWB associated with a change in geographical context. Studies on this topic may not only provide more reliable knowledge about the effects of the geographical context on SWB but may also help make more effective policies to improve people's SWB.

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Appendix: Existing Literature on Geographical Determinants of SWB

Studies	Data	Measure	Method	Determinants
Socio-economic development and cultural context				
Diener et al. (1995b)	Compiled surveys in 55 nations by Veenhoven and by Michalos	Happiness and LS	Correlation	Income (+), individualism (+), human rights (+), societal equality (+) → LS
Haller and Hadler (2006)	World value survey	LS and happiness	Multilevel regression	Country-level GNP (+), gini–index (+), growth of GDP (+) → SWB; social expenditure (+) → LS
Gerstorf et al. (2010)	German socioeconomic panel study	How satisfied are you with your life concurrently, all things considered?	Growth curve model	County-level GDP (+), county-level rate of unemployment (-) → LS
Elgar et al. (2011)	World values survey	All things considered, how satisfied are you with your life as a whole these days?	Multilevel linear regression	Gross national income (GNI) per capita (+), country-level average social capital (interaction) → LS
Aslam and Corrado (2012)	European social survey	All things considered, how satisfied are you with your life as a whole nowadays?	Multilevel modeling with random and fixed effects	Region-level average household income (+), trust (+), religiosity (+), health (+) → LS
Mellander et al. (2012)	The gallup world poll (2009)	LS	Correlation and OLS	Country-level GDP per capita (+), Post-industrial/creative class factor (+) → LS
Lin et al. (2014)	World database of happiness	Happiness	OLS and spatial autoregressive regression	Nation-level GDP per capita (+), unemployment rate (*), control of corruption (+), life expectancy at birth (+) → happiness
Helliwell (2003)	World values survey	All things considered, how satisfied are you with your life as a whole these days?	OLS and ordered probit with robust standard errors	Nation-level social capital in terms of participation in voluntary organizations (+), national income per capita (inverse U-shape), average level of interpersonal trust (+), quality of governance (+), average educational attainment (+) → LS

(continued)

Studies	Data	Measure	Method	Determinants
Stanca (2010)	World values survey	LS and happiness	OLS, spatial lag model and spatial error model	Effect of income on well-being is larger in countries with lower GDP per capita, negative effect of being unemployed is stronger in countries with higher unemployment rate or higher GDP per capita
Bjørnskov et al. 2008a	World values survey	All things considered, how satisfied are you with your life as a whole these days?	Extreme bounds analysis	Review of existing determinants; openness (+), investment price (+), postcommunism (−), bicameral parliament (+), Christian majority (+), infant mortality (−) → LS
Bjørnskov et al. 2008b	Semi-annual Eurobarometer surveys (1973–2002)	On the whole how satisfied are you with the life you lead?	Panel regression model	GDP per capita relative to neighboring countries (+), government consumption relative to neighboring countries (+) → trends in LS
Helliwell and Putnam (2004)	World values survey, the US benchmark survey, etc.	SWB	Multilevel analysis	Nation/community-level average membership (+), governance quality (+) → SWB
Rice and Steele (2004)	World values surveys and general social surveys	Happiness	Correlation and regression	Happiness for the citizens in a nation (+) → LS for the Americans with ancestors from that nation
Morrison et al. (2011)	A World Poll conducted by the Gallup Organization	Cantril's (1965) self-anchoring striving scale	Multilevel modeling	National satisfaction (+) → LS
Heukamp and Ariño (2011)	World values survey	All things considered, how satisfied are you with your life as a whole these days?	OLS	Nation-level nationality rate (+), life expectancy (+), level of corruption (−), Muslim culture (−), Latitude (−) → LS
Ogihara and Uchida (2014)	A sample of undergraduate students in Japan and the US and women workers in Japan	SWB	ANOVA and OLS	Individualistic values were negatively related to SWB in Japan but not in the US
Climate and pollution				
Rehdanz and Maddison (2005)	World database of happiness	LS	OLS with panel-corrected least squares	National proportion of population under 15 years (+), proportion of Buddhist (−), mean temperature in hottest month (−), mean temperature in coldest month (+), months when average mean precipitation is below 30 mm (−) → LS

(continued)

Studies	Data	Measure	Method	Determinants
Fischer and Van de Vliert (2011)	Meta-analytically compiled data	SWB	Path model	Demanding climates (−) → SWB
Murray et al. (2013)	European values study	All things considered, how satisfied are you with your life as a whole these days?	OLS, ordered logit and IV	Region-level costal line dummy (−), population density (−), size (*), standard deviation of average annual temperature (−), annual relative humidity (−), percentage sunshine (+), precipitation (*), standard deviation of total rain days (−) → LS
Welsch (2006)	World database of happiness	LS	GLS regression	Country-level nitrogen dioxide concentration (−), lead concentration (*), total suspended particulate concentration (−) → LS
Luechinger (2010)	Eurobarometer	LS	OLS and instrumental variable estimates	Nation-level air pollution (concentration of SO_2) (−), urbanization (*), real GDP per capita (+), % of agricultural sector in GDP (+), Mean temperature (+) → LS
Lawless and Lucas (2011)	Behavioral risk factor surveillance system (2005–2008)	In general, how satisfied are you with your life?	Correlation	County-level population (−), population density (−), commute time (−) → LS
Cuñado and de Gracia (2013)	European social survey	How happy are you?	OLS	Region-level July minimum temperature (−), PM10 (−), CO_2 (−) → happiness
Ferreira et al. (2013)	European social survey	All things considered, how satisfied are you with your life as a whole nowadays?	OLS	Regional-level air pollution (concentration of SO_2) (−), unemployment rate (−), annual mean precipitation (+), temperature (*) → LS
MacKerron and Mourato (2009)	A web survey	All things considered, how satisfied are you with your life as a whole nowadays?	Ordered probit and OLS regression	Room space (+), NO_2 concentration (+), noise in street or block (*), sunny weather (*), approximation to CBD (−) → LS
Brereton et al. (2008)	A survey in Ireland	Which of these answers best describes your life as a whole?	OLS and ordered probit regressions	Wind speed (−), temperature (+), population density (+), proximity to landfill (−), proximity to coast (+), proximity to airport (+), proximity to major road (−) → LS

(continued)

Studies	Data	Measure	Method	Determinants
Li et al. (2014)	A survey in China	Happiness (overall and domain)	Structural equation model	Perceived risk due to intensity of exposure and hazard of pollutants (−), living in moderately and heavily polluted districts (+) → happiness
Urban characteristics				
Berry and Okulicz-Kozaryn (2011)	The general social survey (1972–2008)	Taken all together, how would you say things are these days?	Ordinal logistic regression model with fixed-effect	Small towns/country > suburbs > small city (50–250 k) > large city (>250 k)
Cramer et al. (2004)	A survey in Oslo in 1994	SWB	OLS	Population density in living area (−) → SWB
Leyden et al. (2011)	Quality of life survey in 10 cities	How happy are you now?	Ordered logit model	Neighborhood connection (+), city-level volunteer opportunities (+), job opportunities (+), access to urban facilities (+), quality of governance (+), maintenance of urban public sphere (+) → happiness
Florida et al. (2013)	A survey conducted by the Gallup Organization	Gallup–healthways well-being index	Correlation and regression	Metropolitan-level wage income (+), unemployment rate (−), housing-to-wage ratio (+), human capital (+), population density (*), average commute time (*) → SWB
Poon and Shang (2014)	China general social survey 2006	Happiness	OLS	City income per capita (+), urban safety (+), openness of urban environment (+), home ownership (+) → happiness
Smyth et al. (2011)	A survey in six Chinese cities in 2007	Personal well-being Index	OLS	City-level average income of urban residents (−), atmospheric pollution (SO_2/particles) (−), passenger vehicles (−) → SWB
Knight and Gunatilaka (2010)	2002 national household survey	Generally speaking, how happy are you these days?	OLS	Perceived nation- and city-level fairness of income distribution (+), per capita income in province (−), social problem such as unemployment, corruption and social polarization (−) → urban happiness

(continued)

Studies	Data	Measure	Method	Determinants
Ballas and Tranmer (2012)	British household panel survey	General health questionnaire	Multilevel modeling	District-level unemployment status (+) → SWB
Balducci and Checchi (2009)	A survey of ten metropolitan cities	How happy are you now?	OLS and ordered probit	Urban level culture factor (+), welfare factor (+), safety factor (*), lack of pollution factor (*), living conditions factor (+), community life factor (−) → happiness
Shucksmith et al. (2009)	European quality of life survey	Subjective quality of life (Mean of LS and happiness)	Multilevel model	Difficulties with access to health services (−) → SWB
Smyth et al. (2008)	Data collected by China Mainland Marketing Research Company	How satisfied do you feel with your life these days?	OLS	Province-level SO_2 emissions (−), *N* of environmental disasters (−), city-level green area per capita (+), improvement in neighborhood environment (+), perceived income inequality (−), social problem (−) → LS
White et al. (2013)	British household panel survey	How dissatisfied or satisfied are you with your life overall?	Fixed-effects regression	District-level % of green space (+), education (+) → LS
Ambrey and Fleming (2014)	Household, income and labor dynamics in Australia survey	All things considered, how satisfied are you with your life?	OLS and ordered logit model	District-level population density (*), public green space (+), proximity to coastline (+), commute time (−), proximity to airport (−) → LS
Housing and neighborhood environment				
Fleuret and Atkinson (2007)	Conceptual framework	Health-related well-being	–	Spaces of capability, integrative spaces, spaces of security and therapeutic spaces → health-related well-being
Sugiyama and Thompson (2007)	Theoretical framework	–	–	Environmental support → outdoor activity → QoL
Mccrea et al. (2005)	A survey in in Australia	LS	Path model	Regional service (+) → regional satisfaction (+) → LS; housing temperature (+), housing age (−), housing ownership (+) → housing satisfaction (+) → LS; neighborhood interaction (+), crime (−), services (+) → neighborhood satisfaction (+) → regional satisfaction (+) and housing satisfaction (+) → LS

(continued)

Studies	Data	Measure	Method	Determinants
Morrison (2011)	Quality of life survey	SWB	Ordered-probit model	Neighborhood accessibility to retail, banking, public transport and education provider (+), sense of community (+), neighborhood safety (+) → SWB
Arifwidodo and Perera (2011)	A survey in Indonesia	How dissatisfied or satisfied are you with your life overall?	Ordered-probit and OLS	District density (−), self-rated air pollution (−), safety in the neighborhood (+), dummy of city center (+), homeownership (−), neighborhood solid waste problem (−), number of schools and hospitals (+) → LS
Delbosc and Currie (2011)	A survey in Australia	SWB (LS, personal well-being index, PA, NA)	Correlation	Perceived travel disadvantage in terms of "Frequency of difficulties accessing activities" and "Number of activities cannot do" due to transport problems (−) → SWB
Sugiyama et al. (2009)	A mail survey in the Britain	Satisfaction with life scale (SWLS)	Logistic regression	Pleasantness of open spaces (+), safety of open spaces (+), distance to open spaces (−) → LS
Pedersen and Schmidt (2011)	European community household panel (1994–2001)	Satisfaction with work or main activity	Fixed-effect conditional logit models	Review of links between income and SWB; neighborhood pollution (−), neighborhood crime (−) → satisfaction with main activity
Sirgy and Cornwell (2002)	A mail survey	How do you feel about your life as a whole?	Structural equation model	Satisfaction with physical features (+) → neighborhood and housing satisfaction; satisfaction with social features (+) → neighborhood and community satisfaction; satisfaction with economic features (+) → housing and home satisfaction → LS; home satisfaction (+), community satisfaction (+) → LS
Shields et al. (2009)	Household, income and labor dynamics in australia survey	All things considered, how satisfied are you with your life?	Regression with fixed effects	neighborhood % lone parents (−), % NESB immigrants (−), over 65 factor (−), social interaction (+) → LS

(continued)

Studies	Data	Measure	Method	Determinants
Dittmann and Goebel, 2010	German Socioeconomic Panel	How satisfied are you with your life in general?	OLS and Fixed-effect panel model	Neighborhood status (+), fear of crime (*), social cohesion (+), positive status than neighbors (+) → LS
Ludwig et al. (2012)	A sample of low income public housing residents in the US	Taken all together, how would you say things are these days?	Instrumental variables regression	Census tract-level % of the poor (−), % of minority (−), *N* of moves (+) → happiness
Kingdon and Knight (2007)	SALDRU national household survey of 1993	Taking everything into account, how satisfied is this household with the way it lives these days?	Ordered probit and OLS	Living in a metropolitan city (−), Cluster/district-level unemployment rate (*), mean years of education (*), per capita income (+), home ownership (+), community facilities (*) → LS
Ferrer-i-Carbonell and Gowdy (2007)	British household panel survey	How dissatisfied or satisfied are you with your life overall	Ordered probit regression	Housing environmental problems (−), cares about ozone layer (−) → LS
Morrison (2007)	2004 quality of life survey	Happiness, LS, QoL	Ordered probit regression	Housing tenure (*), dummies of different cities → SWB
Guite et al. (2006)	A postal survey in London	Mental health	Univariate logistic regression	Housing environment (+), design and maintenance of the estate (+), neighborhood noise (+), density (−), fear of crime (−), social participation (+) → mental health
Ibem and Amole (2013)	A sample of public housing residents in Nigeria	How satisfied are you with life generally in your current residence?	OLS	Housing tenure, state of repair of residence, factors of satisfaction with housing environment (+) → LS
Rehdanz and Maddison (2008)	German socioeconomic panel	How satisfied are you with your life, all things considered?	Ordered probit model	Perception of air pollution (−), noise (−), housing expenses (−), housing condition (+), building type (*), size of property (+), building age (−), distance to city center (*), distance to public transport stop (−), state-level rate of unemployment (−), state GDP per capita (*) → LS

*LS denotes for life satisfaction; (+) and (−) denotes positive and negative effects, respectively; (*) denotes the effect is insignificant; QoL denotes quality of life; PA and NA denotes positive and negative affect, respectively

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.

Abou-Zeid, M., & Ben-Akiva, M. (2012). Well-being and activity-based models. *Transportation, 39*(6), 1189–1207.

Adams, R. E., & Serpe, R. T. (2000). Social integration, fear of crime, and life satisfaction. *Sociological Perspectives, 43*(4), 605–629.

Aigbavboa, C. O. (2013). *An integrated beneficiary centred satisfaction model for publicly funded housing schemes in South Africa*. PhD Thesis, University of Johannesburg, Johannesburg, South Africa.

Ambrey, C., & Fleming, C. (2014). Public greenspace and life satisfaction in urban Australia. *Urban Studies, 51*(6), 1290–1321.

Andrews, F., & Inglehart, R. (1979). The structure of subjective well-being in nine western societies. *Social Indicators Research, 6*(1), 73–90.

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: Americans' perceptions of life quality*. New York: Plenum Press.

Archer, M., Paleti, R., Konduri, K., Pendyala, R., & Bhat, C. (2013). Modeling the connection between activity-travel patterns and subjective well-being. *Transportation Research Record: Journal of the Transportation Research Board, 2382*(-1), 102–111.

Ariely, D. (2008). *Predictably irrational: The hidden forces that shape our decisions*. New York: HarperCollins.

Arifwidodo, S., & Perera, R. (2011). Quality of life and compact development policies in Bandung, Indonesia. *Applied Research in Quality of Life, 6*(2), 159–179.

Arrindell, W. A., Hatzichristou, C., Wensink, J., Rosenberg, E., van Twillert, B., Stedema, J., & Meijer, D. (1997). Dimensions of national culture as predictors of cross-national differences in subjective well-being. *Personality and Individual Differences, 23*(1), 37–53.

Aslam, A., & Corrado, L. (2012). The geography of well-being. *Journal of Economic Geography, 12*(3), 627–649.

Atkinson, T. (1982). The stability and validity of quality of life measures. *Social Indicators Research, 10*(2), 113–132.

Balducci, A., & Checchi, D. (2009). Happiness and quality of city life: The case of Milan, the richest Italian City. *International Planning Studies, 14*(1), 25–64.

Ballas, D. (2013). What makes a 'happy city'? *Cities, 32*(1(0)), S39–S50.

Ballas, D., & Dorling, D. (2013). The geography of happiness. In S. A. David, I. Boniwell, & A. C. Ayers (Eds.), *The Oxford handbook of happiness* (pp. 465–481). Oxford: Oxford University Press.

Ballas, D., & Tranmer, M. (2012). Happy people or happy places? A multilevel modeling approach to the analysis of happiness and well-being. *International Regional Science Review, 35*(1), 70–102.

Bergstad, C., Gamble, A., Hagman, O., Polk, M., Gärling, T., Ettema, D., et al. (2012). Influences of affect associated with routine out-of-home activities on subjective well-being. *Applied Research in Quality of Life, 7*(1), 49–62.

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science, 19*(12), 1207–1212.

Berry, B. J. L., & Okulicz-Kozaryn, A. (2011). An urban-rural happiness gradient. *Urban Geography, 32*(6), 871–883.

Biswas-Diener, R., Vittersø, J., & Diener, E. (2005). Most people are pretty happy, but there is cultural variation: The Inughuit, The Amish, and The Maasai. *Journal of Happiness Studies, 6*(3), 205–226.

Björk, J., Albin, M., Grahn, P., Jacobsson, H., Ardö, J., Wadbro, J., et al. (2008). Recreational values of the natural environment in relation to neighbourhood satisfaction, physical activity, obesity and well-being. *Journal of Epidemiology and Community Health, 62*(4), e2.

Bjørnskov, C., Dreher, A., & Fischer, J. V. (2008a). Cross-country determinants of life satisfaction: exploring different determinants across groups in society. *Social Choice and Welfare, 30*(1), 119–173.

Bjørnskov, C., Gupta, N., & Pedersen, P. (2008b). Analysing trends in subjective well-being in 15 European countries, 1973–2002. *Journal of Happiness Studies, 9*(2), 317–330.

Bradburn, N. M., & Caplovitz, D. (1965). *Reports on happiness: A pilot study of behavior related to mental health,* Aldine, Chicago.

Bradburn, N. M. (1969). *The structure of psychological well-being*. Chicago: Aldine.

Brereton, F., Bullock, C., Clinch, J. P., & Scott, M. (2011). Rural change and individual well-being: The case of Ireland and rural quality of life. *European Urban and Regional Studies, 18*(2), 203–227.

Brereton, F., Clinch, J. P., & Ferreira, S. (2008). Happiness, geography and the environment. *Ecological Economics, 65*(2), 386–396.

Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In M. H. Appley (Ed.), *Adaptation-level theory: A symposium* (pp. 287–302). New York: Academic Press.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology, 36*(8), 917–927.

Burgner, K. D., Ravulaparthy, S., & Goulias, K. (2014). Place happiness: Its constituents and the influence of emotions and subjective importance on activity type and destination choice. In *Transportation research board 93rd annual meeting*. Washington, DC.

Buunk, B. P., Collins, R. L., Taylor, S. E., VanYperen, N. W., & Dakof, G. A. (1990). The affective consequences of social comparison: Either direction has its ups and downs. *Journal of Personality and Social Psychology, 59*(6), 1238–1249.

Campbell, A. (1976). Subjective measures of well-being. *American Psychologist, 31*(2), 117–124.

Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*. New York: Russell Sage Foundation.

Cantril, H. (1965). *Pattern of human concerns*. New Brunswick, NJ: Rutgers University Press.

Chamberlain, K., & Zika, S. (1992). Stability and change in subjective well-being over short time periods. *Social Indicators Research, 26*(2), 101–117.

Chekola, M. G. (1975). *The concept of happiness*. PhD Thesis, University of Michigan, presented on the World Database of Happiness.

Churchill, G. A, Jr, & Surprenant, C. (1982). An investigation into the determinants of customer satisfaction. *Journal of Marketing Research (JMR), 19*(4), 491–504.

Clark, A. E. (2003). Unemployment as a social norm: Psychological evidence from panel data. *Journal of Labor Economics, 21*(2), 323–351.

Clark, A. E., Diener, E., Georgellis, Y., & Lucas, R. E. (2008). Lags and leads in life satisfaction: A test of the baseline hypothesis. *The Economic Journal, 118*(529), F222–F243.

Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology, 38*(4), 668–678.

Costa, P. T., McCrae, R. R., & Zonderman, A. B. (1987). Environmental and dispositional influences on well-being: Longitudinal follow-up of an American national sample. *British Journal of Psychology, 78*(3), 299–306.

Cramer, V., Torgersen, S., & Kringlen, E. (2004). Quality of life in a city: The effect of population density. *Social Indicators Research, 69*(1), 103–116.

Cummins, R. (1996). The domains of life satisfaction: An attempt to order chaos. *Social Indicators Research, 38*(3), 303–328.

Cummins, R. (2000). Objective and subjective auality of life: An interactive model. *Social Indicators Research, 52*(1), 55–72.

Cummins, R., Eckersley, R., Pallant, J., van Vugt, J., & Misajon, R. (2003). Developing a national index of subjective well-being: The Australian unity well-being index. *Social Indicators Research, 64*(2), 159–190.

Cummins, R., & Nistico, H. (2002). Maintaining life satisfaction: The role of positive cognitive bias. *Journal of Happiness Studies, 3*(1), 37–69.

Cuñado, J., & de Gracia, F. (2013). Environment and happiness: New evidence for Spain. *Social Indicators Research, 112*(3), 549–567.

De Jong, G. F., Chamratrithirong, A., & Tran, Q. G. (2002). For Better, For Worse: Life Satisfaction Consequences of Migration. *International Migration Review, 36*(3), 838–863.

De Vos, J., Schwanen, T., Van Acker, V., & Witlox, F. (2013). Travel and subjective well-being: A focus on findings, methods and future research needs. *Transport Reviews, 33*(4), 421–442.

Delbosc, A., & Currie, G. (2011). The spatial context of transport disadvantage, social exclusion and well-being. *Journal of Transport Geography, 19*(6), 1130–1137.

Deutsch-Burgner, K., Ravualaparthy, S., & Goulias, K. (2014). Place happiness: Its constituents and the influence of emotions and subjective importance on activity type and destination choice. *Transportation*, 1–18.

Di Tella, R., Haisken-De New, J., & MacCulloch, R. (2010). Happiness adaptation to income and to status in an individual panel. *Journal of Economic Behavior & Organization, 76*(3), 834–852.

Diaz-Serrano, L. (2009). Disentangling the housing satisfaction puzzle: Does homeownership really matter? *Journal of Economic Psychology, 30*(5), 745–755.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*(3), 542–575.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist, 55*(1), 34–43.

Diener, E. (2009a). Assessing well-being. In *Social indicators research series*. London: Springer.

Diener, E. (2009b). Culture and well-being: The collected works of Ed Diener. In *Social indicators research series*. New York: Springer.

Diener, E. (2009c). The science of well-being: The collected works of Ed Diener. In *Social indicators research series*. London: Springer.

Diener, E., & Biswas-Diener, R. (2002). Will money increase subjective well-being? *Social Indicators Research, 57*(2), 119–169.

Diener, E., Diener, M., & Diener, C. (1995a). Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology, 69*(5), 851–864.

Diener, E., & Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology, 47*(5), 1105–1117.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985a). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–75.

Diener, E., Larsen, R. J., Levine, S., & Emmons, R. A. (1985b). Intensity and frequency: Dimensions underlying positive and negative affect. *Journal of Personality and Social Psychology, 48*(5), 1253–1265.

Diener, E., & Lucas, R. (2000). Explaining differences in societal levels of happiness: Relative standards, need fulfillment, culture, and evaluation theory. *Journal of Happiness Studies, 1*(1), 41–78.

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist, 61*(4), 305–314.

Diener, E., Sandvik, E., & Pavot, W. (1991). Happiness is the frequency, not the intensity, of positive versus negative affect. *Subjective Well-Being: An Interdisciplinary Perspective, 21*, 119–139.

Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest, 5*(1), 1–31.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302.

Diener, E., Suh, E., Smith, H., & Shao, L. (1995b). National differences in reported subjective well-being: Why do they occur? *Social Indicators Research, 34*(1), 7–32.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., D-w, Choi, Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research, 97*(2), 143–156.

Dittmann, J., & Goebel, J. (2010). Your house, your car, your education: The socioeconomic situation of the neighborhood and its impact on life satisfaction in Germany. *Social Indicators Research, 96*(3), 497–513.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology, 29*(1), 94–122.

Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. In P. A. David & M. W. Reder (Eds.), *Nations and households in economic growth: Essays in honor of moses Abramowitz* (pp. 89–125). New York: Academic Press.

Easterlin, R. A. (1995). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization, 27*(1), 35–47.

Easterlin, R. A. (2003). Explaining happiness. *Proceedings of the National Academy of Sciences, 100*(19), 11176–11183.

Easterlin, R. A., Angelescu, L., & Zweig, J. S. (2011). The impact of modern economic growth on urban-rural differences in subjective well-being. *World Development, 39*(12), 2187–2198.

Elgar, F. J., Davis, C. G., Wohl, M. J., Trites, S. J., Zelenski, J. M., & Martin, M. S. (2011). Social capital, health and life satisfaction in 50 countries. *Health & Place, 17*(5), 1044–1053.

Ettema, D., Gärling, T., Eriksson, L., Friman, M., Olsson, L. E., & Fujii, S. (2011). Satisfaction with travel and subjective well-being: Development and test of a measurement tool. *Transportation Research Part F: Traffic Psychology and Behaviour, 14*(3), 167–175.

Ettema, D., Gärling, T., Olsson, L. E., & Friman, M. (2010). Out-of-home activities, daily travel, and subjective well-being. *Transportation Research Part A: Policy and Practice, 44*(9), 723–732.

Ettema, D., & Smajic, I. (2015). Walking, places and wellbeing. *The Geographical Journal, 181*(2), 102–109.

Evans, M. D. R., & Kelly, J. (2002). *Family and community influences on life satisfaction. Report to the department of family and community services*. Melbourne: Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Evans, G. W., Wells, N. M., Chan, H.-Y. E., & Saltzman, H. (2000). Housing quality and mental health. *Journal of Consulting and Clinical Psychology, 68*(3), 526–530.

Faggian, A., Olfert, M. R., & Partridge, M. D. (2012). Inferring regional well-being from individual revealed preferences: The 'voting with your feet' approach. *Cambridge Journal of Regions, Economy and Society, 5*(1), 163–180.

Faggian, A., & Royuela, V. (2010). Migration flows and quality of life in a metropolitan area: The case of Barcelona-Spain. *Applied Research in Quality of Life, 5*(3), 241–259.

Ferreira, S., Akay, A., Brereton, F., Cuñado, J., Martinsson, P., Moro, M., & Ningal, T. F. (2013). Life satisfaction and air quality in Europe. *Ecological Economics, 88*, 1–10.

Ferrer-i-Carbonell, A., & Gowdy, J. M. (2007). Environmental degradation and happiness. *Ecological Economics, 60*(3), 509–516.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117–140.

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

Fischer, R., & Van de Vliert, E. (2011). Does climate undermine subjective well-being? A 58-nation study. *Personality and Social Psychology Bulletin, 37*(8), 1031–1041.

Fleuret, S., & Atkinson, S. (2007). Well-being, health and geography: A critical review and research agenda. *New Zealand Geographer, 63*(2), 106–118.

Florida, R., Mellander, C., & Rentfrow, P. J. (2013). The happiness of cities. *Regional Studies, 47*(4), 613–627.

Frederick, S., & Loewenstein, G. (1999). Hedonic adaptation. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 302–329). New York: Russell Sage Foundation.

Fredrickson, B. L. (2000). Extracting meaning from past affective experiences: The importance of peaks, ends, and specific emotions. *Cognition and Emotion, 14*(4), 577–606.

Fredrickson, B. L., & Kahneman, D. (1993). Duration neglect in retrospective evaluations of affective episodes. *Journal of Personality and Social Psychology, 65*(1), 45–55.

Frey, S. L. (2012). Subjective well-being and the built environment: An international evaluation. Florida: The Florida State University.

Frey, B. S., & Stutzer, A. (2010). *Happiness and economics: How the economy and institutions affect human well-being*. Princeton: Princeton University Press.

Frey, B., & Stutzer, A. (2012). The use of happiness research for public policy. *Social Choice and Welfare, 38*(4), 659–674.

Frijters, P., Johnston, D. W., & Shields, M. A. (2011). Life satisfaction dynamics with quarterly life event data. *Scandinavian Journal of Economics, 113*(1), 190–211.

Frijters, P., & Van Praag, B. M. S. (1998). The effects of climate on welfare and well-being in Russia. *Climatic Change, 39*(1), 61–81.

Fujita, F., & Diener, E. (2005). Life satisfaction set point: Stability and change. *Journal of Personality and Social Psychology, 88*(1), 158–164.

Galati, D., Manzano, M., & Sotgiu, I. (2006). The subjective components of happiness and their attainment: A cross-cultural comparison between Italy and Cuba. *Social Science Information, 45*(4), 601–630.

Galbraith, J. K. (1958). *The affluent society.* Houghton Mifflin Harcourt, Boston.

Galster, G. C., & Hesser, G. W. (1981). Residential satisfaction: Compositional and contextual correlates. *Environment and Behavior, 13*(6), 735–758.

Gamble, A., & Gärling, T. (2012). The relationships between life satisfaction, happiness, and current mood. *Journal of Happiness Studies, 13*(1), 31–45.

Gandelman, N., Piani, G., & Ferre, Z. (2012). Neighborhood determinants of quality of life. *Journal of Happiness Studies, 13*(3), 547–563.

Gardner, J., & Oswald, A. J. (2006). Do divorcing couples become happier by breaking up? *Journal of the Royal Statistical Society: Series A (Statistics in Society), 169*(2), 319–336.

George, L. K. (2010). *Still happy after all these years: Research frontiers on subjective well-being in later life*. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences.

Gerstorf, D., Ram, N., Goebel, J., Schupp, J., Lindenberger, U., & Wagner, G. G. (2010). Where people live and die makes a difference: Individual and geographic disparities in well-being progression at the end of life. *Psychology and Aging, 25*(3), 661–676.

Glaeser, E. L., Henderson, V., & Inman, R. P. (2000). The future of urban research: nonmarket interactions. *Brookings-Wharton papers on urban affairs*, 101–149.

Gove, W. R., Hughes, M., & Galle, O. R. (1979). Overcrowding in the home: An empirical investigation of its possible pathological consequences. *American Sociological Review, 44*(1), 59–80.

Guite, H. F., Clark, C., & Ackrill, G. (2006). The impact of the physical and urban environment on mental well-being. *Public Health, 120*(12), 1117–1126.

Hagerty, M., & Veenhoven, R. (2003). Wealth and happiness revisited–growing national income does go with greater happiness. *Social indicators research, 64*(1), 1–27.

Haller, M., & Hadler, M. (2006). How social relations and structures can produce happiness and unhappiness: An international comparative analysis. *Social Indicators Research, 75*(2), 169–216.

Hartig, T., Evans, G. W., Jamner, L. D., Davis, D. S., & Gärling, T. (2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology, 23*(2), 109–123.

Headey, B. (2008). The set-point theory of well-being: Negative results and consequent revisions. *Social Indicators Research, 85*(3), 389–403.

Headey, B., Muffels, R., & Wagner, G. G. (2010). Long-running German panel survey shows that personal and economic choices, not just genes, matter for happiness. *Proceedings of the National Academy of Sciences, 107*(42), 17922–17926.

Headey, B., Veenhoven, R., & Wearing, A. (1991). Top-down versus bottom-up theories of subjective well-being. *Social Indicators Research, 24*(1), 81–100.

Headey, B., & Wearing, A. (1989). Personality, life events, and subjective well-being: Toward a dynamic equilibrium model. *Journal of Personality and Social Psychology, 57*(4), 731–739.

Helliwell, J. F. (2003). How's life? Combining individual and national variables to explain subjective well-being. *Economic Modelling, 20*(2), 331–360.

Helliwell, J. F., & Putnam, R. D. (2004). The social context of well–being. *Philosophical Transactions of the Royal Society of London. Series B, Biological sciences, 359*(1449), 1435–1446.

Heukamp, F., & Ariño, M. (2011). Does country matter for subjective well-being? *Social Indicators Research, 100*(1), 155–170.

Howell, R. T., & Howell, C. J. (2008). The relation of economic status to subjective well-being in developing countries: A meta-analysis. *Psychological Bulletin, 134*(4), 536–560.

Hu, F. (2013). Homeownership and subjective well-being in urban China: Does owning a house make you happier? *Social Indicators Research, 110*(3), 951–971.

Ibem, E. O., & Amole, D. (2013). Subjective life satisfaction in public housing in urban areas of Ogun State, Nigeria. *Cities, 35*, 51–61.

Ickovics, J. R., & Park, C. L. (1998). Paradigm shift: Why a focus on health is important. *Journal of Social Issues, 54*(2), 237–244.

Ivens, J. (2007). The development of a happiness measure for schoolchildren. *Educational Psychology in Practice, 23*(3), 221–239.

Jiang, S., Lu, M., & Sato, H. (2012). Identity, inequality, and happiness: Evidence from Urban China. *World Development, 40*(6), 1190–1200.

Kahana, E., Lovegreen, L., Kahana, B., & Kahana, M. (2003). Person, environment, and person-environment fit as influences on residential satisfaction of elders. *Environment and Behavior, 35*(3), 434–453.

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: Foundations of hedonic psychology*. New York: Russell Sage Foundation.

Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *The Journal of Economic Perspectives, 20*(1), 3–24.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. (2004a). Toward national well-being accounts. *The American Economic Review, 94*(2), 429–434.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004b). A survey method for characterizing daily life experience: The day reconstruction method. *Science, 306*(5702), 1776–1780.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science, 312*(5782), 1908–1910.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under Risk. *Econometrica, 47*(2), 263–291.

Kahneman, D., Wakker, P. P., & Sarin, R. (1997). Back to Bentham? Explorations of experienced utility. *The Quarterly Journal of Economics, 112*(2), 375–406.

Kalmijn, W., & Veenhoven, R. (2005). Measuring inequality of happiness in nations. In search for proper statistics. *Journal of Happiness Studies, 6*(4), 357–396.

Kammann, R., & Flett, R. (1983). Affectometer 2: A scale to measure current level of general happiness. *Australian Journal of Psychology, 35*(2), 259–265.

Kevin McNeil, J., Stones, M. J., & Kozma, A. (1986). Subjective well-being in later life: Issues concerning measurement and prediction. *Social Indicators Research, 18*(1), 35–70.

Kim-Prieto, C., Diener, E., Tamir, M., Scollon, C., & Diener, M. (2005). Integrating the diverse definitions of happiness: A time-sequential framework of subjective well-being. *Journal of Happiness Studies, 6*(3), 261–300.

Kingdon, G. G., & Knight, J. (2007). Community, comparisons and subjective well-being in a divided society. *Journal of Economic Behavior & Organization, 64*(1), 69–90.

Knight, J., & Gunatilaka, R. (2010). The rural-urban divide in China: Income but not happiness? *The Journal of Development Studies, 46*(3), 506–534.

Ku, P., McKenna, J., & Fox, K. R. (2007). Dimensions of subjective well-being and effects of physical activity in Chinese older adults. *Journal of Ageing, 15*(4), 382–397.

Larsen, R. J. (1985) Theory and measurement of affect intensity as an individual difference characteristic. *Dissertation Abstracts International, 45*(7-B), 2297.

Larsen, R. J., & Diener, E. (1987). Affect intensity as an individual difference characteristic: A review. *Journal of Research in Personality, 21*(1), 1–39.

Larson, R. (1978). Thirty years of research on the subjective well-being of older Americans. *Journal of Gerontology, 33*(1), 109–125.

Lawless, N., & Lucas, R. (2011). Predictors of regional well-being: A county level analysis. *Social Indicators Research, 101*(3), 341–357.

Lawton, M. P. (1990). Residential environment and self-directedness among older people. *American Psychologist, 45*(5), 638–640.

Layard, R. (2005). *Happiness: Lessons from a new science*. London: Allen Lane.

Layard, P. R. G., & Layard, R. (2011). *Happiness: Lessons from a New Science*. London: Penguin.

Lederbogen, F., Kirsch, P., Haddad, L., Streit, F., Tost, H., Schuch, P., et al. (2011). City living and urban upbringing affect neural social stress processing in humans. *Nature, 474*(7352), 498–501.

Lelkes, O. (2006). Knowing what is good for you: Empirical analysis of personal preferences and the "objective good". *The Journal of Socio-Economics, 35*(2), 285–307.

Leyden, K. M., Goldberg, A., & Michelbach, P. (2011). Understanding the pursuit of happiness in ten major cities. *Urban Affairs Review, 47*(6), 861–888.

Li, Z., Folmer, H., & Xue, J. (2014). To what extent does air pollution affect happiness? The case of the Jinchuan mining area, China. *Ecological Economics, 99*, 88–99.

Lin, C.-H. A., Lahiri, S., & Hsu, C.-P. (2014). Happiness and regional segmentation: Does space matter? *Journal of Happiness Studies, 15*(1), 57–83.

Lucas, R. E. (2007). Adaptation and the set-point model of subjective well-being: Does happiness change after major life events? *Current Directions in Psychological Science, 16*(2), 75–79.

Lucas, R., & Clark, A. (2006). Do people really adapt to marriage? *Journal of Happiness Studies, 7*(4), 405–426.

Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). *Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status, 84*(3), 527–539.

Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science, 15*(1), 8–13.

Ludwig, J., Duncan, G. J., Gennetian, L. A., Katz, L. F., Kessler, R. C., Kling, J. R., & Sanbonmatsu, L. (2012). Neighborhood effects on the long-term well-being of low-income adults. *Science, 337*(6101), 1505–1510.

Luechinger, S. (2010). Life satisfaction and transboundary air pollution. *Economics Letters, 107*(1), 4–6.

Luhmann, M., Hofmann, W., Eid, M., & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology, 102*(3), 592–615.

Luhmann, M., Murdoch, J. C., & Hawkley, L. C. (2014). Subjective well-being in context: County- and state-level socioeconomic factors and individual moderators. *Social Psychological and Personality Science*, *6*(2), 148–156.

Luttmer, E. F. P. (2005). Neighbors as negatives: Relative earnings and well-being. *The Quarterly Journal of Economics, 120*(3), 963–1002.

Lykken, D., & Tellegen, A. (1996). Happiness is a stochastic phenomenon. *Psychological Science, 7*(3), 186–189.

Lyubomirsky, S. (2010). Hedonic adaptation to positive and negative experiences. In S. Folkman (Ed.), *The Oxford handbook of stress, health, and coping* (pp. 200–224). New York: Oxford University Press.

Lyubomirsky, S., & Lepper, H. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research, 46*(2), 137–155.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*(2), 111–131.

MacKerron, G., & Mourato, S. (2009). Life satisfaction and air quality in London. *Ecological Economics, 68*(5), 1441–1453.

Maddison, D., & Rehdanz, K. (2011). The impact of climate on life satisfaction. *Ecological Economics, 70*(12), 2437–2445.
Marans, R. W., & Stimson, R. (2011). Investigating quality of urban life. In *Social indicators research series*. Dodrecht: Springer.
McCrea, R., Stimson, R., & Western, J. (2005). Testing a moderated model of satisfaction with urban living using data for Brisbane-South East Queensland Australia. *Social Indicators Research, 72*(2), 121–152.
Mellander, C., Florida, R., & Rentfrow, J. (2012). The creative class, post-industrialism and the happiness of nations. *Cambridge Journal of Regions, Economy and Society, 5*(1), 31–43.
Menzel, P., Dolan, P., Richardson, J., & Olsen, J. A. (2002). The role of adaptation to disability and disease in health state valuation: A preliminary normative analysis. *Social Science and Medicine, 55*(12), 2149–2158.
Michalos, A. (1985). Multiple discrepancies theory (MDT). *Social Indicators Research, 16*(4), 347–413.
Mitchell, R. (2013). Is physical activity in natural environments better for mental health than physical activity in other environments? *Social Science and Medicine, 91*, 130–134.
Morrison, P. S. (2007). Subjective well-being and the city. *Social Policy Journal of New Zealand, 31*, 74–103.
Morrison, P. S. (2011). Local expressions of subjective well-being: The New Zealand experience. *Regional Studies, 45*(8), 1039–1058.
Morrison, M., Tay, L., & Diener, E. (2011). Subjective well-being and national satisfaction: Findings from a worldwide survey. *Psychological Science, 22*(2), 166–171.
Murray, T., Maddison, D., & Rehdanz, K. (2013). Do geographical variations in climate influence life-satisfaction? *Climate Change Economics, 4*(1), 1350004-1-21.
Myers, D. G., & Diener, E. (1995). Who is happy? *Psychological Science, 6*(1), 10–19.
Nes, R. B., Røysamb, E., Tambs, K., Harris, J. R., & Reichborn-Kjennerud, T. (2006). Subjective well-being: Genetic and environmental contributions to stability and change. *Psychological Medicine, 36*(07), 1033–1042.
Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality, 43* (3), 291–306.
Nisbet, E., Zelenski, J., & Murphy, S. (2011). Happiness is in our nature: Exploring nature relatedness as a contributor to subjective well-being. *Journal of Happiness Studies, 12*(2), 303–322.
Nordbakke, S., & Schwanen, T. (2013). Well-being and mobility: A theoretical framework and literature review focusing on older people. *Mobilities, 9*(1), 104–129.
Nowok, B., van Ham, M., Findlay, A. M., & Gayle, V. (2013). Does migration make you happy? A longitudinal study of internal migration and subjective well-being. *Environment and Planning A, 45*(4), 986–1002.
Ogihara, Y., & Uchida, Y. (2014). Does individualism bring happiness? Negative effects of individualism on interpersonal relationships and happiness. *Frontiers in Psychology, 5*, 135.
Oishi, S., & Schimmack, U. (2010). Residential mobility, well-being, and mortality. *Journal of Personality and Social Psychology, 98*(6), 980–994.
Okulicz-Kozaryn, A. (2011). Geography of European life satisfaction. *Social Indicators Research, 101*(3), 435–445.
Oliver, R. L. (1977). Effect of expectation and disconfirmation on postexposure product evaluations: An alternative interpretation. *Journal of Applied Psychology, 62*(4), 480–486.
Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*(4), 460–469.
Ormel, J. (1983). Neuroticism and well-being inventories: Measuring traits or states? *Psychological Medicine, 13*(01), 165–176.
Oswald, A. J., & Powdthavee, N. (2008). Does happiness adapt? A longitudinal study of disability with implications for economists and judges. *Journal of Public Economics, 92*(5–6), 1061–1077.

Oswald, A. J., & Wu, S. (2010). Objective confirmation of subjective measures of human well-being: Evidence from the U.S.A. *Science, 327*(5965), 576–579.

Oswald, A. J., & Wu, S. (2011). Well-being across America. *Review of Economics and Statistics, 93*(4), 1118–1134.

Pacione, M. (2003). Urban environmental quality and human well-being—A social geographical perspective. *Landscape and Urban Planning, 65*(1–2), 19–30.

Panelli, R., & Tipa, G. (2007). Placing well-being: A maori case study of cultural and environmental specificity. *EcoHealth, 4*(4), 445–460.

Parker, C., & Mathews, B. P. (2001). Customer satisfaction: Contrasting academic and consumers' interpretations. *Marketing Intelligence & Planning, 19*(1), 38–44.

Pascoe, G. C. (1983). Patient satisfaction in primary health care: A literature review and analysis. *Evaluation and Program Planning, 6*(3–4), 185–210.

Pawlowski, T., Downward, P., & Rasciute, S. (2011). Subjective well-being in European countries—On the age-specific impact of physical activity. *European Review of Aging and Physical Activity, 8*(2), 93–102.

Pedersen, P. J., & Schmidt, T. D. (2011). Happiness in Europe: Cross-country differences in the determinants of satisfaction with main activity. *The Journal of Socio-Economics, 40*(5), 480–489.

Phillips, D. (2006). *Quality of life: Concept, policy and practice*. London: Routledge.

Plaut, V. C., Markus, H. R., & Lachman, M. E. (2002). Place matters: Consensual features and regional variation in American well-being and self. *Journal of Personality and Social Psychology, 83*(1), 160–184.

Poon, J. P. H., & Shang, Q. (2014). Are creative workers happier in Chinese cities? The influence of work, lifestyle, and amenities on urban well-being. *Urban Geography, 35*(4), 567–585.

Powdthavee, N. (2007). Are there Geographical variations in the psychological cost of unemployment in South Africa? *Social Indicators Research, 80*(3), 629–652.

Reardon, L., & Abdallah, S. (2013). Well-being and transport: Taking stock and looking forward. *Transport Reviews, 33*(6), 634–657.

Rehdanz, K., & Maddison, D. (2005). Climate and happiness. *Ecological Economics, 52*(1), 111–125.

Rehdanz, K., & Maddison, D. (2008). Local environmental quality and life-satisfaction in Germany. *Ecological Economics, 64*(4), 787–797.

Rice, T. W., & Steele, B. J. (2004). Subjective well-being and culture across time and space. *Journal of Cross-Cultural Psychology, 35*(6), 633–647.

Rojas, M. (2006). Life satisfaction and satisfaction in domains of life: Is it a simple relationship? *Journal of Happiness Studies, 7*(4), 467–497.

Rojas, M., & Veenhoven, R. (2013). Contentment and affect in the estimation of happiness. *Social Indicators Research, 110*(2), 415–431.

Runciman, W. G. (1961). Problems of research on relative deprivation. *European Journal of Sociology/ Archives Européennes de Sociologie, 2*(02), 315–323.

Runciman, W. G. (1966). Relative deprivation & social justice: Study attitudes social inequality in 20th century England. University of California Press, Berkeley.

Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology, 39*(6), 1161–1178.

Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review, 110*(1), 145–172.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*(1), 141–166.

Ryan, R., & Deci, E. (2011). A self-determination theory perspective on social, institutional, cultural, and economic supports for autonomy and their importance for well-being. In V. I. Chirkov, R. M. Ryan, & K. M. Sheldon (Eds.), *Human autonomy in cross-cultural context* (pp. 45–64). Netherlands: Springer.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081.
Schimmack, U., & Diener, E. (1997). Affect intensity: Separating intensity and frequency in repeatedly measured affect. *Journal of Personality and Social Psychology, 73*(6), 1313–1329.
Schimmack, U., Schupp, J., & Wagner, G. (2008). The influence of environment and personality on the affective and cognitive component of subjective well-being. *Social Indicators Research, 89*(1), 41–60.
Schkade, D. A., & Kahneman, D. (1998). Does living in California make people happy? A focusing illusion in judgments of life satisfaction. *Psychological Science, 9*(5), 340–346.
Schulz, W. (1995). Multiple-discrepancies theory versus resource theory. *Social Indicators Research, 34*(1), 153–169.
Schwanen, T., & Wang, D. (2014). Well-being, context, and everyday activities in space and time. *Annals of the Association of American Geographers, 104*(4), 833–851.
Seligman, M. E. P. (1999). Positive social science. *Journal of Positive Behavior Interventions, 1*(3), 181–182.
Seligman, M. E. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. New York: Free Press.
Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*(1), 5–14.
Shields, M., Wheatley Price, S., & Wooden, M. (2009). Life satisfaction and the economic and social characteristics of neighbourhoods. *Journal of Population Economics, 22*(2), 421–443.
Shields, M., Wooden, M., & Household, I. (2003). *Investigating the role of neighbourhood characteristics in determining life satisfaction*. Melbourne: Melbourne Institute of Applied Economic and Social Research.
Shin, D. C., & Johnson, D. M. (1978). Avowed happiness as an overall assessment of the quality of life. *Social Indicators Research, 5*(1–4), 475–492.
Shmotkin, D. (2005). Happiness in the face of adversity: Reformulating the dynamic and modular bases of subjective well-being. *Review of General Psychology, 9*(4), 291–325.
Shucksmith, M., Cameron, S., Merridew, T., & Pichler, F. (2009). Urban-rural differences in quality of life across the European Union. *Regional Studies, 43*(10), 1275–1289.
Sirgy, M. J., & Cornwell, T. (2002). How neighborhood features affect quality of life. *Social Indicators Research, 59*(1), 79–114.
Sloan, M. (2013). *The post-move satisfaction of individuals moving within New Zealand*. PhD dissertation, Victoria University of Wellington, Wellington, New Zealand.
Smyth, R., Mishra, V., & Qian, X. (2008). The environment and well-being in urban China. *Ecological Economics, 68*(1–2), 547–555.
Smyth, R., Nielsen, I., Zhai, Q., Liu, T., Liu, Y., Tang, C., et al. (2011). A study of the impact of environmental surroundings on personal well-being in urban China using a multi-item well-being indicator. *Population and Environment, 32*(4), 353–375.
Sørensen, J. F. L. (2014). Rural-urban differences in life satisfaction: Evidence from the European Union. *Regional Studies, 48*(9), 1451–1466.
Stanca, L. (2010). The geography of economics and happiness: Spatial patterns in the effects of economic conditions on well-being. *Social Indicators Research, 99*(1), 115–133.
Steel, P., Schmidt, J., & Shultz, J. (2008). Refining the relationship between personality and subjective well-being. *Psychological Bulletin, 134*(1), 138–161.
Stiglitz, J., Sen, A., & Fitoussi, J.-P. (2009). *Report by the Commission on the measurement of economic performance and social progress*. www.stiglitz-sen-fitoussi.fr. (Last accessed May 11, 2014).
Stones, M. J., & Kozma, A. (1986). Happiness and activities as propensities. *Journal of Gerontology, 41*(1), 85–90.
Sugiyama, T., & Thompson, C. W. (2007). Outdoor environments, activity and the well-being of older people: Conceptualising environmental support. *Environment and Planning A, 39*(8), 1943–1960.

Sugiyama, T., Thompson, C. W., & Alves, S. (2009). Associations between neighborhood open space attributes and quality of life for older people in Britain. *Environment and Behavior, 41* (1), 3–21.

Suh, E., Diener, E., & Fujita, F. (1996). Events and subjective well-being: Only recent events matter. *Journal of Personality and Social Psychology, 70*(5), 1091–1102.

Suls, J., Martin, R., & Wheeler, L. (2002). Social comparison: Why, with whom, and with what effect? *Current Directions in Psychological Science, 11*(5), 159–163.

Sundquist, K., Frank, G. l., & Sundquist, J. (2004). Urbanisation and incidence of psychosis and depression: Follow-up study of 4.4 million women and men in Sweden. *The British Journal of Psychiatry, 184*(4), 293–298.

Suzuki, H., Fujii, S., Gärling, T., Ettema, D., Olsson, L., & Friman, M. (2013). Rules for aggregated satisfaction with work commutes. *Transportation*, 1–12.

Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38*(11), 1161–1173.

Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction formation: An extensive. *Journal of Marketing Research (JMR), 25*(2), 204–212.

van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. P. (2010). Green space as a buffer between stressful life events and health. *Social Science and Medicine, 70*(8), 1203–1210.

van Kamp, I., Leidelmeijer, K., Marsman, G., & de Hollander, A. (2003). Urban environmental quality and human well-being: Towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning, 65*(1–2), 5–18.

Van Praag, B. M. S., & Baarsma, B. E. (2005). Using happiness surveys to value intangibles: The case of airport noise. *The Economic Journal, 115*(500), 224–246.

van Praag, B. M. S., Frijters, P., & Ferrer-i-Carbonell, A. (2003). The anatomy of subjective well-being. *Journal of Economic Behavior & Organization, 51*(1), 29–49.

Västfjäll, D., Friman, M., Gärling, T., & Kleiner, M. (2002). The measurement of core affect: A Swedish self-report measure derived from the affect circumplex. *Scandinavian Journal of Psychology, 43*(1), 19–31.

Veenhoven, R. (1991). Is happiness relative? *Social Indicators Research, 24*(1), 1–34.

Veenhoven, R. (1993). *Happiness in nations: Subjective appreciation of life in 56 Nations 1946–1992*. Rotterdam: Erasmus University Press.

Veenhoven, R. (1996). Developments in satisfaction-research. *Social Indicators Research, 37*(1), 1–46.

Veenhoven, R. (2000). The four qualities of life. *Journal of Happiness Studies, 1*(1), 1–39.

Veenhoven, R. (2002). Why social policy needs subjective indicators. *Social Indicators Research, 58*(1–3), 33–46.

Veenhoven, R. (2009). Comparability of happiness across nations. *School of Sociology and Social Work Journal, 704*, 211–234.

Welsch, H. (2006). Environment and happiness: Valuation of air pollution using life satisfaction data. *Ecological Economics, 58*(4), 801–813.

Wernick, J. (2008). *Building happiness: Architecture to make you smile*. London: Black Dog.

White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H. (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological Science, 24*(6), 920–928.

White, M. P., & Dolan, P. (2009). Accounting for the richness of daily activities. *Psychological Science, 20*(8), 1000–1008.

Williams, D. E., & Thompson, J. K. (1993). Biology and behavior: A set-point hypothesis of psychological functioning. *Behavior Modification, 17*(1), 43–57.

Wilson, W. R. (1967). Correlates of avowed happiness. *Psychological Bulletin, 67*(4), 294–306.

Wilson, T. D., & Gilbert, D. T. (2008). Explaining away: A model of affective adaptation. *Perspectives on Psychological Science, 3*(5), 370–386.

Wish, N. B. (1986). Are we really measuring the quality of life? Well-being Has subjective dimensions, as well as objective ones. *American Journal of Economics and Sociology, 45*(1), 93–99.

Yang, Y. (2008). A tale of two cities: Physical form and neighborhood satisfaction in metropolitan Portland and Charlotte. *Journal of the American Planning Association, 74*(3), 307–323.

Zhang, G., & Veenhoven, R. (2008). Ancient Chinese philosophical advice: Can it help us find happiness today? *Journal of Happiness Studies, 9*(3), 425–443.

Zimmermann, A. C., & Easterlin, R. A. (2006). Happily ever after? Cohabitation, marriage, divorce, and happiness in Germany. *Population and Development Review, 32*(3), 511–528.

Chapter 11
Neighbourhood Determinants for Life Satisfaction of Older People in Beijing

Bingqiu Yan, Xiaolu Gao and Werner Breitung

Abstract Demographic change and ageing societies are an increasingly critical issue for researchers and policymakers across the world and in particular in China, where the government's population control strategies have since the late 1970s substantially changed social and demographic structures. At the same time, the traditional role of families in caring for elderly people is diminishing. In this situation, the neighbourhood as a living environment and as a platform for service provision is growing in importance for the elderly. Building on the authors' previous proposition that age-friendly urban planning needs to take differences between neighbourhood types into account, the objective of this study is to identify which neighbourhood factors concretely contribute to the life satisfaction of seniors in different Beijing neighbourhoods. For this purpose, we used structural equation modelling (SEM) and found social support to be the primary neighbourhood factor affecting life satisfaction amongst the urban elderly in Beijing. We then differentiated between aged neighbourhoods with a high number of older people and others with less elderly residents, and found dwelling conditions and community-provided senior services to be additional critical indicators of satisfaction in the former and accessibility to services in the latter. Accordingly, we suggest tailoring government interventions that aim at age-friendly environments differently in different neighbourhoods.

Keywords Ageing · Life satisfaction · Neighbourhood factors · Social support · Senior service · Living environment · Beijing

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11.1 Introduction

The Chinese society is rapidly ageing as a result of increasing life expectancy and declining fertility and mortality rates. According to the Sixth National Population Census of the People's Republic of China, there were 178 million Chinese citizens over the age of 60, which accounts for 13.3 % of the total population in 2010 and the number is predicted to rise to 243 million by 2020 and to double by 2030 (CPC Central Committee and State Council 2011). This sharp increase in the number of elderly population has been accompanied by a substantial change in the role of families in caring for the older people. On the one hand, traditional family values are under threat in the context of modernization, westernization and consumerism; on the other hand, the officially propagated one-child family led to a situation where a couple of two people would have to take care of four parents and potentially eight grandparents. This is a big burden, even for people who still adhere to the traditional values.

Therefore, the supply of institution-based services and especially of home-based and community-based services is outstripped by the rising demand. The shortage of elderly care services is particularly severe in megacities like Beijing and in rural areas that are losing young population (Gao 2013). In view of this shortage, the Chinese government has in 2001 initiated the Starlight Programme of Elderly Community Social Services to improve neighbourhood-based senior services. The funding of 13.4 billion CNY has been provided by the national lottery. In Guangzhou, for example a senior service facility of 100–120 m^2 was planned for each neighbourhood, a senior service centre of 300–350 m^2 for each sub-district and a nursing home in each rural town (Xie 2008). However, a great gap still exists between the seniors' needs and the amount and quality of community services provided (Li et al. 2009). This is also true for the supply of health care services. The Chinese health care sector is under great pressure of rising costs. It has become clear that high quality and costly specialist clinics increasingly have to be supplemented by smaller neighbourhood-based facilities. The country's ongoing health care reform therefore aims at a more hierarchical system with central hospitals as well as neighbourhood clinics.

There is obviously a strong focus on the neighbourhood as the basis for creating more age-friendly Chinese cities. This is for two reasons. First, gerontology research found that the neighbourhood is of particular importance for older people, who are less mobile and do not have to go to work anymore (Oswald and Wahl 2005). For them, the neighbourhood is the spatial scale in which most of their life is lived. The quality of the neighbourhood is therefore more critical for the elderly than for younger people (Hooyman and Kiyak 1988). Neighbourhoods are major arenas of everyday life, which frame their residents' identities and shape qualities of life by their assets and challenges. Especially older people rely to a large extent on neighbourhood assets. This is why it is viewed as desirable to allow people to 'age in place', i.e. in their familiar living environment (Andrews and Phillips 2005).

It is interesting to note that globally the neighbourhood has been found to decline in importance for social networking and social support. As people are getting more mobile, they generally rely less on neighbourhood assets than on outside resources. From this perspective, it might be assumed that the ageing of our societies could lead to revaluation of the neighbourhood scale for urban life and urban planning, which could have far-reaching impacts on the structure of cities.

Second, especially in the Chinese context, the neighbourhood is not only a place to which the individual feels attached, but it is also a major agent of local governance. This was most obvious in the socialist *danwei* compounds, but it is also true in the contemporary commercial housing estates, which are governed by private management companies, local residents' committees and homeowner associations. The neighbourhood is therefore the natural platform for service provision and policy implementation.

Moreover, in China, the neighbourhood in which people live, largely defines their position in the society. Although social contacts within these generally gated neighbourhoods are weak, residents do have a strong sense of belonging—if only to the commercial neighbourhood as a brand (Zhu et al. 2012). The neighbourhood scale is then also the scale in which social difference and segregation are played out. While most neighbourhoods are relatively homogeneous internally, they differ greatly between each other (Breitung 2012). Differences in individual status (economic, *hukou*, migration background) are widely reflected in the variance between neighbourhoods. Yan and Gao (2013) have pointed to the problem of different demands for care among diverse groups of older people living in different neighbourhood types, as the challenges of ageing depend on factors such as economic status and migration history, and these relate to the type of neighbourhood. In conjunction with the role of neighbourhood governance, this also means opportunities for targeted solutions in community work, service provision and elderly-friendly design improvements.

Although the existing literature emphasizes the significant influence that living environments exert upon elderly people, we know little about the exact factors contributing to this influence. The World Health Organization's (WHO) 'age-friendly city' concept outlines a series of significant aspects of older peoples' daily lives (WHO 2007). These factors include outdoor and indoor spaces, transportation and housing, which are key features of a city's physical environment; as well as social participation, neighbourhood communication and other social environment factors, which affect the mental well-being of seniors (WHO 2007). Social geographers, urban planners and architects studying the living environments for older people have addressed the creation of 'enabling environments' and the importance of barrier-free settings (Carp and Christensen 1986; Chong 2003; Jirovec et al. 1985; Kaplan 1985; Perez et al. 2001; Phillips et al. 2005; Rosenberg 1998). The differences of people and community environments in different areas are also well documented (Cai 2010; Temelová and Dvořáková 2012; Somenahallia and Shiptonb 2013), but for the purpose of providing appropriate elderly living environments in cities the knowledge of elderly satisfaction in relation to different residential neighbourhoods is inadequate.

Therefore, this chapter aims to clarify how a defined range of factors, especially those relating to the senior's living environments, affects their quality of life. We also seek to offer insights for city planning in various geographical settings in Beijing to promote 'ageing in place'.

The notion of 'satisfaction' is of crucial relevance to this study. Pursuant to the previous studies undertaken on the theme, 'satisfaction' is defined as a global judgment made by an individual in relation to a perceived discrepancy between aspiration and achievement (Campbell et al. 1976; Diener 1994). Life satisfaction of the elderly is here taken to refer to a self-assessment of their later life in relation to both achieved goals and the perceived ability to cope with daily life. Apart from the physical, psychological, social and economic status of the elderly, gerontologists and health geographers demonstrated that the level and breadth of available community services, as well as the living environment in a broad sense, significantly influenced elder person's satisfaction (Fernández-Ballesteros 2001; Mottus et al. 2012; Prieto-Flores et al. 2011). Lawton and Simon (1968), from the perspective of environmental gerontology, introduced the Person–Environment Fit (P–E Fit) model, which has been applied to understand the satisfaction of older people with regard to physical and social environments (Lawton 1983; Rowles and Bernard 2013). We notice, however, that most previous discussions have looked at the general influencing factors of people's life satisfaction, but few efforts have been made to capture the influences of specific factors in different kinds of neighbourhoods. Our research therefore focuses on identifying the impact of concrete factors, including especially those related to the neighbourhood.

11.2 Determinants of the Life Satisfaction of Urban Community-Living Seniors

The satisfaction for community-living seniors set out in this study takes into account factors of health and economic status, dwelling style and family and social relationships. The critical task lies in identifying the relationship between these factors, i.e. whether they work as independent interpreters of satisfaction and whether and how they interact with each other.

The factors are subject to a complex series of interrelationships. For instance, the personal attributes of the elderly affect the way how they perceive physical and social surroundings (Mottus et al. 2012). According to gerontologists such as Andersen (1995), Atchley (2000), Evans (2009) and Michalos et al. (2001), health plays a fundamental role in determining the life satisfaction experienced by elderly people. Others confirm that the impacts of health and economic status on satisfaction are strongly correlated (Aureli and Baldazzi 2002; Farquhar 1995). Worsening physical and mental conditions reduce the capacity to work and thus the economic status (Hall 1976; Shen 1986). Conversely, the theory of hierarchical needs tells us that savings in excess of living expenses and medical care have a

direct influence on the survival, safety and higher level needs of people (Zastrow and Kirst-Ashman 2009). Studies by Michalos et al. (2001) and Gao (2005) demonstrated that income level, pension and medical insurance also closely correlated to the health, social relationships and social participation of the elderly.

Social factors (family, friends, colleagues, neighbours), physical factors (dwellings, neighbourhood) and psychological factors influence seniors and their relationships to their living environments (WHO 2007). In social gerontology, the 'environmental press and competence model' is used to represent and explain these relations, where the term 'environmental press' refers to the demands that social and physical environments place on older people to which they must adapt or otherwise respond (Lawton 1983). Using such a model, Hooyman and Kiyak (1988) found that the environments play a more dominant role in the lives of the elderly than those of the young. Departing from the notion that all factors related to life satisfaction correlate, we established a framework of life satisfaction, where the direction of arrows indicates presumed relationships between factors (Fig. 11.1).

In the model, the basic health and economic conditions of the elderly constitute the *first-level* factors. Conditions relating to the social environments such as family and neighbourhood support and social communication are *second-level* factors. Living environments, including dwelling condition, neighbourhood environment, accessibility to social and health services, are identified as *third-level* factors.

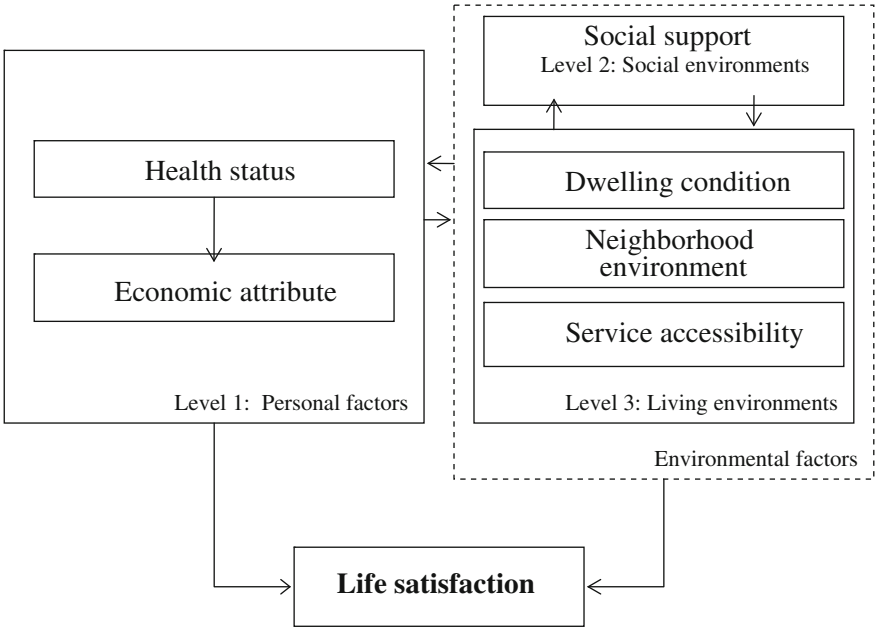

Fig. 11.1 Determinants of life satisfaction of urban community-living seniors

Table 11.1 Characteristics of sample neighbourhoods

Neighbourhood name	Neighbourhood type	Typical profile of elderly residents	Location	Population[a]	Percentage of seniors (%)[b]	Valid sample
Guangqumen Beili	Low-income rental public housing	Entitled groups, low-income families	Central city (within 2nd ring)	3000	35	62
Baizhifang	Danwei provided commodity housing	Retirees from state-owned enterprises	Central city (within 2nd ring)	6000	19	101
Wanshoulu No. 5	Work unit compound	Retirees of state-owned firms or public institutions	Central city (between 2nd and 3rd ring)	7000	17	84
Shichahai	Courtyard housing	Established inhabitants	Inner city (within 2nd ring)	5000	16	97
Huilongguan Longteng 6	Affordable housing	Relocated inner city residents and retirees coming from other provinces to live with children	Urban periphery (outside 5th ring)	7000	9	98
Guomei Jiayuan	Commodity housing	Retirees moving in for improving living conditions or coming to live with children	Urban periphery (outside 4th ring)	18,000	7	94

[a]Data provided by residents' committees

[b]Sub-district data from 6th National Population Census of Beijing. Because low-income rental public housing and affordable housing are special policy housing, we obtained this data from the residents' committees, then revised by the sub-district census data

Table 11.2 Descriptive statistics of the sample attributes across all six neighbourhoods

Unobservable variables	Measured variables	Answer options in the questionnaires
Personal	Age (years)	55–70 (60 %); 70–80 (30 %); 80+ (10 %)
	Gender	Male (40 %); female (60 %)
	Education	Middle school (45 %); high school (32 %); junior college (12 %); college and above (11 %)
Self-reported health status	Physical health	Good (38 %); Fair (52 %); Poor (10 %)
	Mental health	Good (57 %); Fair (40 %); Poor (3 %)
Economic situation	Monthly income (¥)	<3000 (50 %); 3000–5000 (36 %); >5000 (14 %)
	Self-paid expenses for care service (¥/month)	<500 (45 %); 500–1000 (21 %); >1000 (34 %)
	Financial burden	Hard (15 %); a little (46 %); none (38 %)
Social support level	Caregiver	Spouse (64 %); children (27 %); other (9 %)
	Living arrangement	Alone (10 %); with spouse or parents (43 %); co-residence (47 %)
	Neighbourhood communication	Often (32 %); sometimes (51 %); seldom (17 %)
	Proportion of seniors in neighbourhood	<10 % (36 %); 10–30 % (52 %); >30 % (12 %)
Living condition	Length of residency in neighbourhood (years)	<10 (45 %); 10–30 (22 %); >30 (55 %)
	Dwelling size (m^2)	<30 (16 %); 30–60 (30 %); 60–90 (17 %); >90 (37 %)
	Tenure	Rental (18 %); owned (62 %); others (20 %)
Evaluation of neighbourhood environment	Outdoor space	Very good (22 %); good (40 %); fair (24 %); bad (14 %)
	Elderly care facilities	Very good (5 %); good (17 %); fair (40 %); bad (38 %)
	Medical facilities	Very good (13 %); good (42 %); fair (26 %); bad (19 %)
	Barrier-free environment	Very good (7 %); good (32 %); fair (33 %); bad (28 %)
	Community services	Very good (3 %); good (28 %); fair (45 %); bad (24 %)
Access to services	Travel convenience	Very good (43 %); good (38 %); fair (13 %); bad (6 %)
Well-being in general	Life satisfaction	Very satisfied (30 %); satisfied (50 %); fair (15 %); dissatisfied (5 %)

11.3 Study Area and Data

We adopted a geospatially stratified sampling approach to reduce the possibility of sampling overlap and improve accuracy. In detail, we looked at different communities in urban areas first and drew representative communities, then sampled residents in the chosen communities. With prior knowledge being used, it makes variance smaller within strata than within the overall population, therefore producing better strata efficiency than systematic sampling or random sampling method (Cao and Wang 2008; Dunn and Harrison 1993).

Urban geography research on China's large cities discovered the important effect of institutional transformation, and of housing and land use policies on the spatial and social differentiation of neighbourhoods. It showed that the socio-economic attributes, the behaviour and the place identities of people vary significantly across neighbourhoods (Cai 2010; Knox and Pinch 2000; Wu 1992) and that differentiated neighbourhood governance contributed to these differences (Breitung 2012).

For our research on elderly residents, we selected six typical neighbourhoods in Beijing (Table 11.1), each representing a different type with respect to size, location, socio-demographic profile, production and governance modes and 'dependency rate' (Beijing 1 % Population Sample Survey Office 2007; Zeng and Wang 2004).

In August 2011, we conducted a survey in the six neighbourhoods: 605 elderly residents (women over 55 and men over 60 years old) were randomly selected in open spaces and confirmed to be residents of the respective neighbourhood. Although homebound elderly people, for example disabled or with Alzheimer's disease, were undersampled, the surveys still resulted in a valid sample of 536 respondents. In addition to questions on life satisfaction, the questionnaire had six parts: (a) health, (b) economic status, (c) social support, (d) living conditions, (e) neighbourhood environment and (f) accessibility to social and health services. Comparing the profile of the respondents (Table 11.2) with statistics of the urban population recorded in the Beijing Statistical Yearbook of 2011 (Beijing Municipal Statistics Bureau 2012), we found that the proportion of senior citizens over the age of 80 was slightly lower in the sample that in the official statistics (14.6 % vs. 18.2 %). This was probably because old elderly persons (80 +) were more likely to remain at home or in assisted living (nursing) facilities. No other significant differences existed between the sample group and the whole population (Gao et al. 2012). Based on these figures, it seems that the sample was well representative even though the demand of the old elderly would somewhat be underestimated.

11.4 Methods

We used standard equation modelling (SEM) to validate our hypothesis. SEM is an extension of multiple regression, path analysis, factor analysis and covariance analysis. It is useful for expressing the relationship between multiple variables with

a set of linear equations. By replacing observable variables with a smaller set of unobservable factor constructs, the problem of multi-collinearity is avoided (Hoyle 1995; Kline 2011). The unobserved variables (also called latent variables) are estimated based on measured or observed variables. The whole dataset is split into subsets by a categorical variable called moderator (in our case, the proportion of people over 60), in order to investigate whether there is a difference between the subsets. Models of the subsets are then run separately to test the hypothesized relationships (Hesketh and Skrondal 2004; Koufteros and Marcoulides 2006).

In this study, the subjective life satisfaction of the respondents is the dependent variable. In the first column of Table 11.2, health status, economic situation, social support, living condition, neighbourhood environment and accessibility of services are the unobservable variables, while physical health, mental health, income, etc., are observed variables. Most observed variables are on the individual level, only the proportion of elderly people refers to is a neighbourhood variable. This variable serves as the moderator. We follow the UN standard of 'ageing society' and set it at 10 % of the total population over the age of 60, thereby dividing our sample into two subsets, the aged (four inner city neighbourhoods) and non-aged neighbourhoods (the two at the urban periphery). The term "aged" notably refers to the population, but in fact these four are also the older neighbourhoods in terms of building stock.

The survey data was analysed with the AMOS module of SPSS. We used Path Analysis and SEM to examine the relationship between the variables covered in our survey, and to estimate the influence of various variables on life satisfaction. Then we examined the model for the two subsets separately. The equation parameters were estimated with the maximum likelihood estimation method, and the reliability of model coefficients was tested by removing 20 % of the sample from each model.

11.5 The Path Structure of Life Satisfaction Amongst the Elderly

Through repeated adjustments and tests, we obtained the model in Fig. 11.2, which has a chi-square value of 132.08, df of 133, RMSEA of 0.003, CFI of 0.918 and a significance level of >0.05. The path coefficients quantify the direct effects of the unobservable variables. Among them, *social support* (social relations, neighbourhood communication, etc.) had the largest direct effect on life satisfaction (0.191), followed by *economic status* (0.118) and *service accessibility* (0.113). Moreover, two prominent impact paths were identified: *health* → *social support* → *neighbourhood environment* → *life satisfaction*; and *health* → *economic status* → *living condition/services accessibility* → *life satisfaction*. The influences of the observed variables were estimated and the proportion of elderly people in the neighbourhood had a significant effect on life satisfaction (Table 11.3).

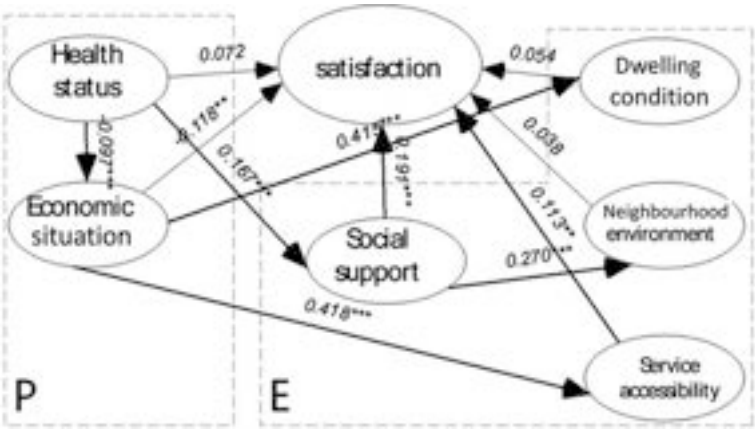

Fig. 11.2 Variable path diagram of life satisfaction among community-living seniors. (1) One-way *arrows* stand for standardized regression weights; (2) *** Indicates significance at the 0.01 level and ** at the 0.05 level

The following tables show the separate SEM analyses for aged and non-aged neighbourhoods (Tables 11.4 and 11.5). The goodness-of-fit indicators of the models were satisfactory. We also tested the reliability of coefficients by removing 20 % of the samples, which proved the estimations satisfactory. The respective path structures (Figs. 11.3 and 11.4) are this time displayed with only the significant paths (at $p < 0.05$ level).

The path model of the ***aged neighbourhoods*** (Fig. 11.3) is quite similar to the overall model (Fig. 11.1). Social support factors including neighbourhood communication, living arrangement and caregiver were again the most important factors. Standardized estimates of caregiver and living arrangement were 0.1, and those of neighbourhood communication and community activity were 0.35 and 0.87 respectively (Table 11.4). The results of the correspondence analysis (see note) (Fig. 11.5) further indicated the importance of neighbourhood relationships, social communication and community activities for the life satisfaction of senior citizens. These factors deserve particular attention in view of family downsizing and the 'empty nest' phenomenon in Chinese cities.

Health status, economic situation, dwelling condition and neighbourhood environment also exerted significant influence on life satisfaction. There are two major paths (Fig. 11.3): *health → social support → neighbourhood environment → life satisfaction*; and *economic status → living condition → life satisfaction*. The first path illustrates that health status makes a unique contribution to satisfaction amongst elderly people. About 40 % of the respondents are above 70 years old and only 35 % considered themselves healthy. In many cases, their mobility is limited, which may be one reason that social support is influenced by bad health. The second path illustrates the importance of dwelling conditions, often in connection with economic limitations, in the older inner city neighbourhoods. The population

Table 11.3 Estimates of the SEM analysis

Item		Definition	Std. Estimate	S.E.	C.R.	*P*
Physical health	←	Self-reported health status	0.263			
Mental health	←		0.978	0.447	6.405	***
Financial burden	←	Economic situation	0.044			
Expenses for care service	←		0.185	0.717	2.996	0.003
Living arrangement	←	Social support	0.078	0.02	2.743	0.006
Neighbourhood communication	←		0.418	0.039	7.342	***
Caregiver	←		0.105	0.03	2.832	0.005
Community activity	←		0.831			
Proportion of seniors in the neighbourhood	←		**0.138**	**0.033**	**2.75**	**0.006**
Dwelling size	←	Dwelling condition	0.887			
Length of residency in neighbourhood	←		0.616	0.06	12.392	***
Tenure	←		0.356	0.041	7.688	***
Outdoor space	←	Neighbourhood environment	0.088	0.03	2.832	0.005
Medical facilities	←		0.206	0.044	4.915	***
Elderly care facilities	←		0.99	0.059	30.138	***
Community services	←		1.086			
Barrier-free environment	←		0.267	0.062	6.032	***
Travel convenience	←	Accessibility of services	0.986	0.043	18.152	***
Economic situation	←	Self-reported health status	0.094	1.005	2.563	***
Social support	←		0.169			
Dwelling condition	←	Economic situation	0.419	3.887	3.751	***
Accessibility of services	←		0.412	4.058	3.526	***
Neighbourhood environment	←	Social support	0.275	0.054	5.181	***
Life satisfaction	←	Social support	0.197	0.04	3.913	***
	←	Accessibility of services	0.109	0.041	1.961	0.05
	←	Self-reported health status	0.071	0.218	1.534	0.025
	←	Economic situation	0.114	1.654	1.768	0.017
	←	Dwelling condition	0.054	0.051	14.616	***
	←	Neighbourhood environment	0.038	0.058	3.015	0.003

***Indicates significance at the 0.001 level

Table 11.4 Estimates of the SEM analysis for aged neighbourhoods

			Std. Estimate	S.E.	C.R.	*P*
Physical health	←	Self-reported health status	0.373			
Mental health	←		1	0.291	6.946	***
Monthly income	←	Economic situation	1	1.115	23.593	***
Financial burden	←		0.045			
Dwelling size	←	Dwelling condition	1			
Tenure	←		0.185	0.065	3.133	0.002
Outdoor space	←	Neighbourhood environment	0.088	0.044	2.099	0.036
Elderly care facilities	←		1	0.077	23.335	***
Community services	←		1.079			
Medical facilities	←		0.224	0.057	3.986	***
Barrier-free environment	←		0.305	0.086	5.302	***
Neighbourhood communication	←	Social support	0.353	0.046	5.396	***
Living arrangement	←		0.115	0.046	1.83	0.037
Caregiver	←		0.105	0.044	2.099	0.036
Community activity	←		0.827			
Social support	←	Health status	0.203	.276	2.811	.005
Neighbourhood environment	←	Social support	0.274	0.068	4.115	***
Dwelling condition	←	Economic situation	0.372	1.971	6.434	***
Life satisfaction	←	Social support	0.211	0.056	3.097	0.002
	←	Self-reported health status	0.094	0.204	1.416	0.015
	←	Dwelling condition	0.093	0.046	1.571	0.011
	←	Neighbourhood environment	0.080	0.049	0.626	0.053
	←	Economic situation	0.052	1.665	0.829	0.407

***Indicates significance at the 0.001 level

density is relatively high in these neighbourhoods, and dwelling as well as outside space for walking and recreation is limited. Nearly 60 % of our respondents in the aged neighbourhoods live in dwellings of below 60 m^2 (Table 11.6), and in many cases these dwellings are old and in need of renovation.

In the ***non-aged neighbourhoods***, the paths are significantly different (Fig. 11.4). The economic situation and especially dwelling conditions are much less crucial in these relatively modern neighbourhoods outside the inner city, but social support is even more topical there, and service accessibility is the most

Table 11.5 Estimates of the SEM analysis for non-aged neighbourhoods

			Std. estimate	S.E.	C.R.	*P*
Monthly income	←	Economic situation	1			
Financial burden	←		0.187	0.054	2.601	0.009
Caregiver	←	Social support	0.2	0.059	2.373	0.018
Neighbourhood communication	←		0.573	0.063	6.07	***
Elderly care facilities	←	Neighbourhood environment	0.96			
Medical facilities	←		0.337	0.049	4.888	***
Life satisfaction	←	Economic situation	0.073	0.054	1.104	0.027
	←	Neighbourhood environment	0.042	0.029	0.603	0.046
	←	Accessibility of services	0.245	0.069	3.502	***
	←	Social support	0.232	0.064	2.306	0.021

***Indicates significance at the 0.001 level

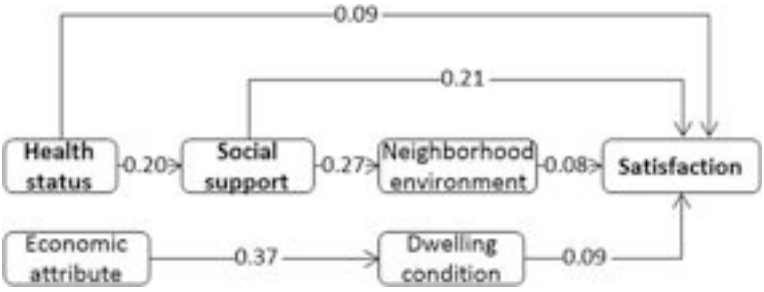

Fig. 11.3 The factor paths of life satisfaction in aged neighbourhoods

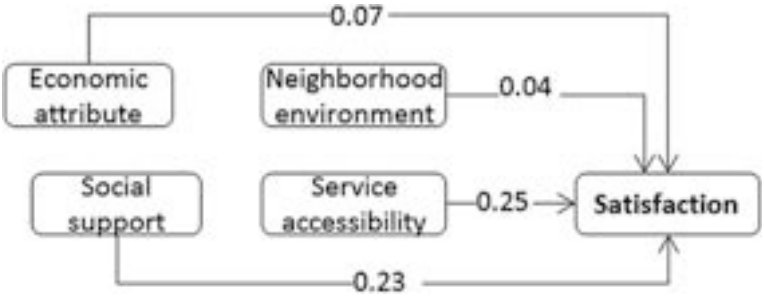

Fig. 11.4 The factor paths of life satisfaction in non-aged neighbourhoods

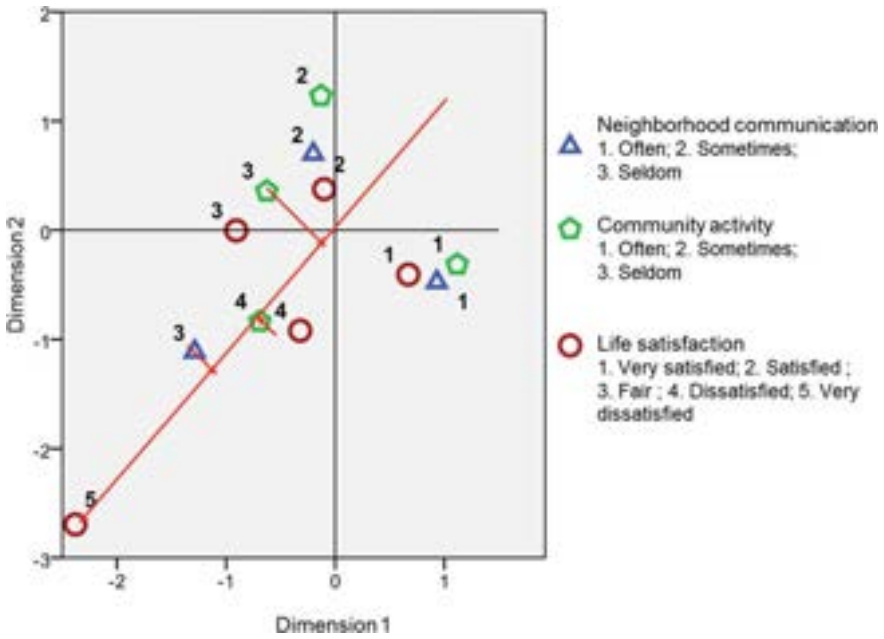

Fig. 11.5 Relationship of neighbourhood communication and community activity with life satisfaction

Table 11.6 Dwelling size and monthly income in different neighbourhoods

Neighbourhood type	Dwelling size (m^2)					Monthly income (yuan)			
	<30	30–60	60–90	90–120	>120	<1000	1000–3000	3000–5000	5000–10000
Danwei provided commodity housing	20.80	54.05	19.27	2.05	2.83	4.17	43.33	35.83	16.66
Low-income rental housing	7.02	71.93	21.05	0.00	0.00	6.32	32.63	42.11	18.95
Courtyard housing	63.04	18.09	13.72	3.11	2.05	3.06	55.10	34.69	7.14
Work unit compound	4.30	11.33	58.06	5.50	20.81	7.81	56.25	26.56	9.38
Total	23.79	38.85	28.03	2.67	6.42	5.34	46.83	34.80	13.03
Affordable housing	0.00	2.02	68.69	29.29	0.00	16.00	34.00	38.00	12.00
Commodity housing	0.00	8.25	58.32	8.69	24.74	19.59	32.99	38.14	9.28
Total	0	5.135	63.505	18.99	12.37	17.80	33.50	38.07	10.64

significant factor. While the inner city has a high density of service facilities, even within walking distance or at least accessible by public transport, the outer districts are often planned for automobile users. They have much less access to public transport, are less walkable and lack service facilities, especially those for older people. The deficit of senior services is not only due to the lower number of elderly in these districts. It should be noted that a quarter of the respondents in the two non-aged communities have moved to Beijing to live there with their children. Under the current social welfare system, their medical insurance is often restricted to their places of *hukou* registration. Therefore, many elderly migrants cannot reimburse their medical costs occurring in Beijing. In fact, approximately 40 % of the respondents in the affordable housing community did not have any medical insurance at all. For them, access is not only a transport issue. In addition, we found that non-Beijing seniors were also much more dissatisfied than local elderly with respect to social relationships.

Additionally to social support and service accessibility, neighbourhood environment and neighbourhood communication were further significant factors in the non-aged neighbourhoods.

11.6 Conclusions

What became clear through our analysis is the need to consider the neighbourhood level and especially the variation between neighbourhood types when discussing and addressing issues of ageing in Chinese cities. On the one hand, the neighbourhood is the most important arena for older people's life and a key channel for service provision and government intervention. On the other hand, and this is the main message of this chapter, different neighbourhoods represent different types of elderly (e.g. migrant vs. non-migrant), different urban experiences and different needs and shortcomings. Consequently, any community and government attempts towards age-friendliness must be neighbourhood-specific and based on the concrete needs of the people in the respective neighbourhoods.

In this view, our research went beyond stating the obvious fact that the neighbourhood as such matters. We examined, with a hierarchical and structural life satisfaction model of home-living elderly people, the impact of various concrete factors from basic attributes (first-level), social characteristics (second-level), to living environments (third-level), and the interaction of the factors. This has deepened our understanding of the broad variety of so-called neighbourhood factors, which may in one case refer to social communication, in another case to the built environment and in a third to the provision of services.

Our study in Beijing has concretely demonstrated the differences between aged and non-aged neighbourhoods. Of course, this is only one possible differentiation, although a highly relevant one. Future research should also deepen other aspects, e.g. the differences between migrant and local or wealthy and poorer communities. With regard to aged versus non-aged neighbourhoods, we found that in both types

the level of social support is a very crucial factor, but that in the aged neighbourhoods dwelling conditions and health are of high concern, whereas in the non-aged neighbourhoods service accessibility has the highest priority.

Accordingly, neighbourhood-based strategies for age-friendly cities should be developed and tailored to the different needs. The high significance of social support reconfirms the advantage of promoting ageing in place and community-based care. The withdrawal of family-centred support may well lead to a renaissance of the neighbourhood in terms of social support. It is clear that especially in the inner city neighbourhoods, the promotion of both healthy lifestyles and healthy residential conditions should be priorities. Community engagement of elderly and neighbourhood communication can improve the mental health and life satisfaction of elderly people. In the newer, more peripheral neighbourhoods, social support and accessibility to services are the crucial issues. Here, especially the needs of senior migrants from other regions should be attended, and equal access to medical and senior services provided.

The creation of age-friendly neighbourhoods in China will be part of broader urban developments, in which the cities adapt to demographic, social and economic changes. It is crucial that the concerning developments are founded on in-depth investigations into the people's needs, into the social and spatial differentiation of these needs, and also into the different ways how these needs change over time in different neighbourhoods.

Notes Correspondence analysis is an exploratory data analytic technique to analyse the categorical data, providing a graphic method of exploring the relationship between the rows variables and columns variables in a contingency table. Similar with principal component analysis, it provides a means to summarize a set of data in two-dimensional graphical form by transforming the data into a two-dimensional space where the largest amount of variability in the data points is captures in the first dimension (x-axis), the next largest amount of variability in the second dimension (y-axis).

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References

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36*(3), 1–10.

Andrews, G. J., & Phillips, D. R. (2005). *Ageing and place: Perspectives, policy, practice*. London: Routledge.

Atchley, R. C. (2000). *Social forces and aging: an introduction to social gerontology*. San Francisco: Wadsworth Publishing Company.

Aureli, E., & Baldazzi, B. (2002). Unequal perceived quality of life among elderly Italians. *Social Indicators Research, 60*, 309–334.

Beijing 1 % Population Sample Survey Office. (2007). *2005 Beijing 1 % population sample survey*. Beijing: China Statistics Press.
Beijing Municipal Statistics Bureau. (2012). *Beijing statistical yearbook 2011*. Beijing: China Statistics Press. (In Chinese).
Breitung, W. (2012). Enclave urbanism in China: Attitudes towards gated communities in Guangzhou. *Urban Geography, 33*(2), 278–294.
Cai, Y. W. (2010). *Activity space of urban elderly in China*. Beijing: Science Press. (In Chinese).
Campbell, A., Converse, P. E., Rodgers, W. L. (1976). *The quality of american life: Perceptions, evaluations, and satisfactions*. New York: Russell Sage Foundation.
Cao, Z. D., & Wang, J. F. (2008). Strata efficiency and optimization strategy of stratified sampling on spatial population. *Progress in Geography, 27*(3), 152–160. (In Chinese).
Carp, F. M., & Christensen, D. L. (1986). Technical environmental assessment predictors of residential satisfaction: a study of elderly women living alone. *Research on Aging, 8*, 269–287.
Chong, A. M. L. (2003). Validating the accuracy of the resident satisfaction measure. *Journal of Cross-Cultural Gerontology, 18*, 203–226.
CPC. Central Committee and State Council. (2011). *Construction plan of the social senior care service system (2011–2015), China*. Retrieved from: www.mca.gov.cn/article/zwgk/mzyw/201112/20111200247654.shtml. (In Chinese).
Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research, 31*(2), 103–157.
Dunn, R., & Harrison, A. R. (1993). Two-dimensional systematic sampling of land use. *Applied Statistics, 42*(4), 585–601.
Evans, S. (2009). *Community and aging: Maintaining a quality of life in housing with care settings.* Bristol: Policy Press.
Farquhar, M. (1995). Elderly people's definitions of quality of life. *Social Science and Medicine, 41*(10), 1439–1446.
Fernandez-Ballesteros, R. (2001). Environmental conditions, health and satisfaction among the elderly- some empirical results. *Psicothema, 13*(1), 40–49.
Gao, J. (2005). Review of subjective well-being of old people. *Science of Social Psychology, 2*, 19–37. (In Chinese).
Gao, X. L. (2013). Preference of the urban elderly for caring facilities: Variation across different communities. *China Soft Science, 1*, 103–114. (In Chinese).
Gao, X. L., Yan, B. Q., & Ji, J. (2012). Urban elders' desirable caring patterns and its rationality. *Progress in Geography, 31*(10), 1274–1281. (In Chinese).
Hall, J. (1976). Subjective measures of quality of life in Britain: 1971 to 1975. *Social Trends, 7*, 47–60.
Hesketh, S. R., & Skrondal, A. (2004). Generalized multilevel structural equation modelling. *Psychometrika, 69*(2), 167–190.
Hooyman, N. R., & Kiyak, H. A. (1988). *Social gerontology: A multidisciplinary perspective*. London: Allyn and Bacon.
Hoyle, R. H. (1995). *Structure equation model—Concepts, issues, and applications*. California: Sage Publication.
Jirovec, R. L., Jirovec, M. M., & Bosse, R. (1985). Residential satisfaction as a function of micro and macro environmental conditions among urban elderly men. *Research on Aging, 7*, 601–616.
Kaplan, R. (1985). Nature at the doorstep: residential satisfaction and the nearby environment. *Journal of Architectural and Planning Research, 2*, 115–127.
Kline, R. B. (2011). *Principles and practice of structural equation modelling* (3rd ed.). New York: The Guilford Press.
Knox, P., & Pinch, S. (2000). *Urban social geography: An introduction*. Hong Kong: Pearson Education Asia Limited.
Koufteros, X., & Marcoulides, G. A. (2006). Product development practices and performance: A structural equation modelling-based multi-group analysis. *International Journal of Production Economics, 103*(1), 286–307.

Lawton, M. P. (1983). Environment and other determinants of well-being in older people. *The Gerontologist, 23*, 349–357.

Lawton, M. P., & Simon, B. B. (1968). The ecology of social relationships in housing for the elderly. *The Gerontologist, 8*, 108–115.

Li, D. M., Chen, T. Y., & Li, H. F. (2009). Community-based elderly care service and its effect on life satisfaction of elderly in China. *Chinese Journal of Gerontology, 29*(19), 2513–2515. (In Chinese).

Michalos, A. C., Hubley, A. M., Zumbo, B. D., & Hemingway, D. (2001). Health and other aspects of the quality of life of older people. *Social Indicators Research, 54*, 239–274.

Mottus, R., Gale, C. R., Starr, J. M., & Deary, I. J. (2012). "On the street where you live": Neighborhood deprivation and quality of life among community-dwelling older people in Edinburgh, Scotland. *Social Science & Medicine, 74*(9), 1368–1374.

Oswald, F., & Wahl, H.-W. (2005). Dimensions of the meaning of home. In G. D. Rowles & H. Chaudhury (Eds.), *Home and identity in late life: International perspectives* (pp. 21–45). New York: Springer.

Perez, F. R., Fernandez-Mayoralas, F. G., Rivera, E. P., & Abuin, J. M. R. (2001). Ageing in place: Predictors of the residential satisfaction of elderly. *Social Indicator Research, 54*, 173–208.

Phillips, D. R., Siu, O. L., Yeh, A. G., & Cheng, K. H. (2005). The impacts of dwelling conditions on older persons' psychological well-being in Hong Kong: The mediating role of residential satisfaction. *Social Science and Medicine, 60*, 2785–2797.

Prieto-Flores, M., Fernandez-Mayoralas, G., Forjaz, M. J., Rojo-Perez, F., & Martinez-Martin, P. (2011). Residential satisfaction, sense of belonging and loneliness among older adults living in the community and in care facility. *Health & Place, 17*(6), 1183–1190.

Rosenberg, M. W. (1998). Medical or health geography? Populations, people and places. *International Journal of Population Geography, 4*, 211–216.

Rowles, G. D., & Bernard, M. (2013). *Environmental gerontology*. New York: Springer Publishing Company.

Shen, Z. (1986). *Psychology and mental health of the elderly*. Beijing: Peking University Press. (In Chinese).

Somenahalli, S., & Shipton, M. (2013). Examining the distribution of the elderly and accessibility to essential services. *Procedia-Social and Behavioral Sciences, 104*(2), 942–951.

Temelová, J., & Dvořáková, N. (2012). Residential satisfaction of elderly in the city centre: The case of revitalizing neighborhoods in Prague. *Cities, 29*(5), 310–317.

WHO. (2007). *Global age-friendly cities: A guide.* Retrieved from: www.who.int/ageing.

Wu, F. L. (1992). Urban community types and their characteristics in China. *Urban Problem, 5*, 24–27. (In Chinese).

Xie, Z. X. (2008). Starlight program of elderly community social services' dilemma and solution. *Social Work, 9*, 29–38. (In Chinese).

Yan, B. Q., & Gao, X. L. (2013). Analysis on the satisfaction of Beijing's elderly people for caring services with structural equation model. *International Conference on Spatial Planning and Sustainable Development* (SPSD2013), Beijing, China.

Zastrow, Z., & Kirst-Ashman, K. K. (2009). *Understanding human behaviour and the social environment* (8th ed.). Singapore: Cengage Learning.

Zeng, Y., & Wang, Z. L. (2004). Family and changes of living arrangement of the elderly in China. *Chinese Journal of Population Science, 5*, 2–8. (In Chinese).

Zhu, Y. S., Breitung, W., & Li, S. M. (2012). The changing meaning of neighbourhood attachment in Chinese commodity housing estates: Evidence from Guangzhou. *Urban Studies, 49*, 2439–2457.

Chapter 12
Emotional Well-being of Social Housing Residents in Guangzhou, China: How Does Neighborhood Context Matter?

Ye Liu, Yuqi Liu, Jiaxuan Feng and Zhigang Li

Abstract China's social housing programs have been expanding at an unprecedented pace over the past few years. A burgeoning body of the literature has been focused on the enactment and implementation of current social housing policies in China. However, only a handful of studies have attempted to evaluate social housing residents' quality of life in China, and very little attention has been paid to their emotional well-being. As social housing has been playing an increasingly important role in China's urban housing system, it is necessary to examine the level and determinants of social housing residents' emotional well-being. This study examines the contextual and individual factors influencing social housing residents' emotional well-being, using survey data collected from 13 social housing estates in Guangzhou, China and Structural Equation Modeling (SEM) approaches. We particularly focus on the effects of both neighborhood environments and individual characteristics and experiences on residents' emotional well-being. The results of the SEM model indicate that, when other variables are controlled, the perceptions of neighborhood social cohesion exert a significant impact on social housing residents' emotional well-being, and that the effects of the ratings of neighborhood amenities and the share of social housing in local housing stock are statistically negligible. The results also reveal that housing conditions and personal social ties within the

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neighborhood play an important role in regulating social housing residents' emotions. Those who have access to a larger living space and better housing conditions and who have more social capital in the neighborhood tend to report better emotional state. In addition, social housing residents' ratings of emotional well-being vary with demographic and socioeconomic characteristics, as one's gender, marital status, and income are associated with his/her physical health, therefore being associated with his/her emotional well-being. This study enriches our understanding of social housing residents' emotional well-being in China by evaluating the effect of neighborhood physical and social environments. It also contributes to the policy aiming at substantively improving the well-being of the poor in China.

Keywords Emotional well-being · Social housing residents · Neighborhood environment · Structural equation model · China

12.1 Introduction

China's social housing programs have been expanding at an unprecedented pace over the past few years. The central and local governments in China constructed 16.3 million units of social housing during the "Eleventh Five-Year Plan" period (2006–2010) and set a target of constructing 36 million units of social housing during the "Twelfth Five-Year Plan" period (2011–2015).[1] The massive provision of social housing is considered to be one approach to help combat the global financial crisis since 2008 and to achieve the goal of a harmonious society (Chen et al. 2014 Naughton 2011). A burgeoning body of the literature has been focused on the enactment and implementation of current social housing policies in China (Chen et al. 2014; Huang 2012; Wang and Murie 2011; Zou 2014). However, only a handful of studies have attempted to evaluate social housing residents' quality of life in China (Li and Song 2009; Li et al. 2014), and very little attention has been paid to their subjective well-being. Since social housing has had an increasingly important role in China's urban housing system, it is important to examine the level and determinants of social housing residents' subjective well-being.

Previous studies on deprived neighborhoods in Western countries have indicated that neighborhood economic conditions and individual well-being are strongly linked, and that neighborhood physical and social environments play a key role in mediating the impact of poverty on an individual's physical and mental health (Aminzadeh et al. 2013; Fone et al. 2007). Recent research efforts have been devoted to the determinants and effects of the concentration of poverty in China's low-income neighborhoods (Wu et al. 2010; He et al. 2010; Wu 2012).

[1]Please see http://news.xinhuanet.com/video/2011-10/27/c_122204343.htm and http://finance.sina.com.cn/g/20111028/090610711083.shtml.

Nevertheless, to what extent and in what ways neighborhood environments influence residents' subjective well-being in low-income neighborhoods in general and in social housing estates in particular are still under-researched. In this study, we focus on a particular aspect of subjective well-being: emotional well-being. Emotional well-being refers to "the emotional quality of an individual's everyday experience—the frequency and intensity of experiences of joy, stress, sadness, anger, and affection that make one's life pleasant or unpleasant" (Kahneman and Deaton 2010: 16489).

This study aims to fill the research gap by examining the contextual and individual factors influencing social housing residents' emotional well-being. We particularly focus on the effects of both neighborhood environments and individual characteristics and experiences on residents' emotional well-being. The results are based on survey data collected from 13 social housing estates in Guangzhou, China, and Structural Equation Modeling (SEM) approaches. This study contributes to the literature by providing a first insight into the emotional well-being of social housing residents in China and by taking into account the effect of neighborhood-related factors when studying individual well-being in the Chinese context. This study also enriches our understanding of social housing residents' quality of life, therefore providing an opportunity to evaluate existing social housing projects in China from a humanistic perspective.

12.2 Literature Review

A large body of the literature has shed light on the association between one's subjective well-being and his/her individual characteristics and experiences, such as demographic characteristics, socioeconomic status, and personal social capital (Clark et al. 2008; Blanchflower and Oswald 2008; Dolan et al. 2008; Diener et al. 1999). The association between socioeconomic status and happiness has been controversial for decades (Dolan et al. 2008; Blanchflower and Oswald 2004; Easterlin 1995). While it was widely believed that those with higher incomes tend to be happier, Easterlin (1995) argued that happiness at the national level does not increase with wealth. Another strand of the literature has indicated that social support among neighbors has a critical role in one's mental state (Cohen and Wills 1985; Delongis et al. 1988; Dolan et al. 2008; Berkman et al. 2000). For example, the buffering model posited that social supports and social resources protect people from adverse effects of stressful events, thus contributing to their well-being (Cohen and Wills 1985; Ensel and Lin 1991).

A growing body of research has focused on the effect of neighborhood-related contextual factors such as economic conditions, physical environments and the social milieu on residents' subjective well-being (O'Campo et al. 2009). Some studies have indicated that neighborhood disadvantage is associated with high rates of depression and mental illness (Silver et al. 2002; Ross 2000; Fone et al. 2007). Other studies have showed that neighborhood physical and built environments are associated with residents' mental health (Macintyre et al. 2002). Neighborhood esthetics and amenities

tend to benefit individuals living in the neighborhood through the improvement of physical and mental healths (Ellaway et al. 2001; Macintyre et al. 2002; van den Berg et al. 2010). In contrast, poor physical environments such as excessive noise, heavy traffic, and poor sanitation are found to be associated with the odds of anxiety and depression (Sooman and Macintyre 1995; Guite et al. 2006).

In addition, some studies have shown that neighborhood social environments exert a strong influence on residents' subjective well-being (Ziersch et al. 2005; Wilson et al. 2004; Fone et al. 2007). Social cohesion is hypothesized to have a positive influence on mental health because neighborhoods with a higher level of social cohesion generally have a higher degree of social organization and more access to community services that influence one's emotional state. Those living in neighborhoods with a higher level of social cohesion generally also have more opportunities to receive affective and emotional support from their neighbors (Fone et al. 2007; O'Campo et al. 2009). Some evidence has shown that one's fear of crime and perception of anti-social behaviors are inversely associated with his/her sense of well-being (Stafford et al. 2007; Ellaway et al. 2001; Ziersch et al. 2005). For example, a study conducted in Los Angeles showed that adolescents who perceived their neighborhoods to be threatening were more likely to suffer from depression, anxiety, oppositional defiant disorder, and conduct disorder (Aneshensel and Sucoff 1996).

While a plethora of the literature has investigated how both contextual and individual factors influence subjective well-being in developed countries, only a handful of studies have focused on the impact of contextual factors, especially neighborhood-related factors, on well-being and happiness in the Chinese context (Schwanen and Wang 2014; Wen et al. 2010; Wen and Wang 2009; Yip et al. 2013; Liu et al. 2015). Existing studies about the relationship between neighborhood environments and residents' well-being in China are mostly focused on either rural migrants living in the city (Wen et al. 2010; Wen and Wang 2009; Liu et al. 2014) or residents of different ages (Yip et al. 2013; Shen 2014). For example, Wen and Wang (2009) studied the factors of loneliness and satisfaction among rural–urban migrants, indicating that discrimination against migrant workers exerted a strong negative influence on migrants' mental well-being. Wen et al. (2010) compared mental well-being between rural–urban migrants and urban natives, suggesting that migrants were less affected than natives by external environmental factors. To date, only a few studies have been conducted that examine the subjective well-being of social housing residents in China. Disadvantaged people who are eligible for social housing have different backgrounds, lifestyles, socioeconomic statuses and abilities to cope with stress than general urban residents, and there is a distinction between social housing estates and other types of neighborhoods (e.g., commodity housing estates) in terms of the built environments, demographic profiles, social milieus, and accessibility to social services (Yip et al. 2013; Li et al. 2014). For these reasons, the associations between the neighborhood context and individual well-being are supposed to distinguish between social housing residents and other urban natives as well as migrant workers. The present study, therefore intends, to investigate the effect of neighborhood environments and individual characteristics, and experiences on social housing residents' emotional well-being.

12.3 Data and Methodology

12.3.1 Data and Measures

Our data come from a survey conducted in 13 social housing estates in Guangzhou in September 2013 (Fig. 12.1). Our respondents were sampled using a multi-stage stratified sampling method. In the first stage, we generated a list of about 30 social housing estates constructed between 1986 and 2010 in Guangzhou and collected basic information about these estates. We then selected 13 estates, which were stratified across location and time of construction. In the second stage, we randomly chose around 45 households on average within each estate and interviewed the head of a household or his/her spouse. Respondents were restricted to residents in the neighborhood older than the age of 18. The survey finally yielded a total of 581 valid questionnaires.

This study focuses specifically on the self-rated *emotional well-being* of social housing residents. Emotional well-being can be measured through a series of indicators of both positive and negative emotions, moods, and feelings (Kahneman and Deaton 2010). A measure of *emotional well-being* was constructed with a scale of nine items: the sense of safety, optimism about the future, the feeling of happiness, self-confidence, the feeling of relaxation, the feeling of getting bored, depression, anxiety, and mental stress. The first five items are associated with positive emotions, moods, and feelings, while the last four items are related to negative emotions, moods, and feelings. This nine-item measure was extracted from Self-Rated Health

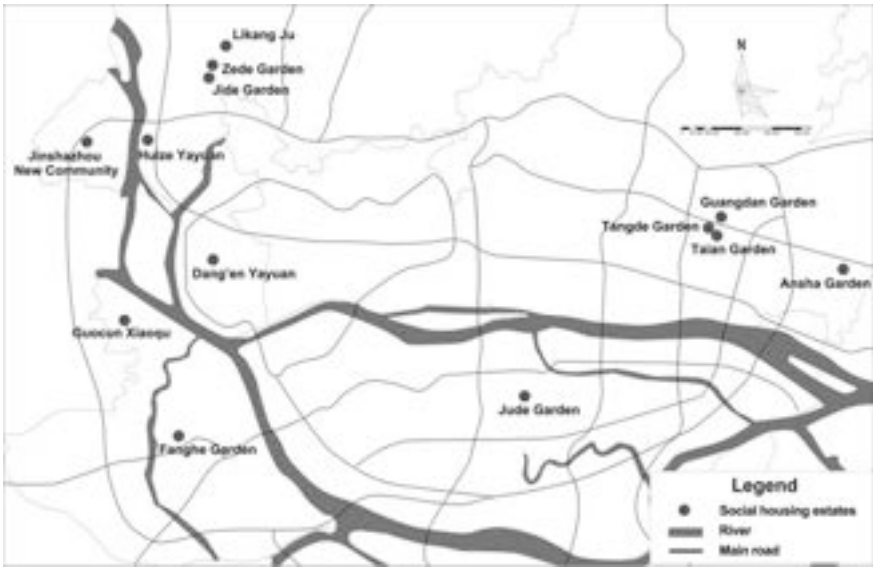

Fig. 12.1 The location of sampled social housing estates in Guangzhou

Measurement Scale (SRHMS), which was a modified version of MOS 36-Item Short Form Health Survey (SF-36) and particularly designed for studies in China (Xu et al. 2000). The SF-36 has been widely used to assess physical, social, and mental health status (Ware and Sherbourne 1992). Therefore, we used a set of indicators related to emotional well-being drawn from SRHMS in the survey.

We hypothesize that social housing residents' emotional well-being is affected by (1) individual characteristics and experiences and (2) neighborhood environments. Four sets of variables were used to capture individual characteristics and experiences. The first set refers to respondents' self-reported *physical health*, which was measured by a scale of six items: vision, hearing, digestive competence, vigor, sleeping quality, and body aches. The second set measures the respondent's *demographic and socioeconomic characteristics* and thus includes age, gender, marital status, and monthly household income. The third set includes three indicators related to the respondent's *personal social networks within the neighborhood*: the number of friends living in the same neighborhood, the frequency of socializing with neighbors living in the same building and the frequency of socializing with people from the neighborhood. The last set is related to respondents' housing experiences and housing conditions. This includes two objective indicators of *the length of residence* in the neighborhood and *living space per capita* and a set of subjective indicators of *perceived housing conditions*. Respondents' perceived housing conditions were measured by a five-point scale (ranging from 1 to 5) that consisted of the following six items: ventilation, lighting, corridor space, quietness, the quality of buildings, and the house-plan design.

Three sets of variables were used to capture the effects of neighborhood physical and social environments. The first is associated with the respondent's ratings of six aspects of *neighborhood amenities*, including public space, property management services, public services, community security, educational facilities, and sanitation. The second set of variables measures the respondent's perceptions of *neighborhood social cohesion*. Specifically, respondents were asked to indicate the degree of mutual support among neighbors, the degree of neighborly interaction in the neighborhood, and the degree of social housing residents' integration in the whole area. Some evidence has shown that the perceived neighborhood environment is superior to the objective neighborhood characteristics in the study of residents' subjective well-being (Ross 2000; Sooman and Macintyre 1995; Caughy et al. 2003), as residents' perceptions of environments play a mediating role in the relationship between actual environments and residents' well-being. As a result, we used subjective perceptions rather than objective measures of environments in our study. The third set of variables refers to the share of social housing in the total housing stock in the neighborhood. It is hypothesized that residents living in socially mixed neighborhoods tend to have better emotional states than those living in highly impoverished neighborhoods, as people living in impoverished neighborhoods suffer psychologically from social disorder in their neighborhoods (Ross 2000). The descriptive statistics of variables used in our SEM model are shown in Tables 12.1 and 12.2.

Table 12.1 Summary statistics of exogenous variables

Variable names	Frequency	Percentage
Individual-related variables		
Demographic and socioeconomic characteristics		
Age (years)	49.90[a]	12.14[b]
Gender (%)		
Male	215	37.0
Female	366	63.0
Marital status (%)		
Individual-related variables:Single, divorced, and widowed	111	19.1
Married	470	80.9
Monthly household income (%)		
<500	26	4.5
500–999	39	6.7
1000–1999	103	17.7
2000–2999	86	14.8
3000–3999	98	16.9
4000–4999	70	12.0
5000–5999	62	10.7
6000–6999	42	7.2
>7000	55	9.5
Personal social networks within the neighborhood		
The number of friends living in the same neighborhood (%)		
>20	209	36.0
10–20	172	29.6
5–9	101	17.4
1–4	71	12.2
None	28	4.8
How often do you socialize with neighbors in the same building? (%)		
Always	95	16.4
Very often	203	34.9
Sometimes	194	33.4
Rarely	85	14.6
Never	4	0.7
How often do you socialize with the people of this neighborhood? (%)		
Always	60	10.3
Very often	216	37.2
Sometimes	202	34.8
Rarely	96	16.5
Never	7	1.2
Housing experiences and housing conditions		
The length of residence in the neighborhood (years)	5.11[a]	4.32[b]

(continued)

Table 12.1 (continued)

Variable names	Frequency	Percentage
Living space per capita (m^2)	19.92[a]	8.45[b]
Perceived housing conditions[c]		
Ventilation	3.99[a]	0.82[b]
Lighting	4.01[a]	0.81[b]
Corridor space	3.86[a]	0.84[b]
Quietness	3.58[a]	0.10[b]
Quality of buildings	3.22[a]	1.02[b]
House-plan design	3.51[a]	0.88[b]
Neighborhood-related variables		
Ratings of neighborhood amenities[c]		
Neighborhood public space	3.61[a]	0.88[b]
Property management services	3.30[a]	0.91[b]
Pubic services	3.33[a]	0.87[b]
Community security	3.32[a]	0.89[b]
Educational facilities	3.52[a]	0.85[b]
Sanitation	3.13[a]	0.99[b]
Perceptions of neighborhood social cohesion		
The degree of mutual supports among neighbors (%)		
Very high	35	6.0
High	192	33.0
Moderate	324	55.8
Low	26	4.5
Very low	4	0.7
The degree of neighborly interaction (%)		
Very high	3	0.5
High	14	2.4
Moderate	203	34.9
Low	300	51.6
Very low	61	10.5
The degree of residents' integration in the whole area (%)		
Very high	8	1.4
High	42	7.2
Moderate	327	56.3
Low	177	30.5
Very low	27	4.7
The share of social housing in the total housing stock (%)	80.75	19.6

Notes [a]Mean value of the sample
[b]Standard deviation of the sample
[c]Ranging from "1 = very unsatisfied" to "5 = very satisfied"

Table 12.2 Summary statistics of endogenous variables

Variable names	Mean	S. D.
Ratings on physical health[a]		
Vision[b]	3.30	0.97
Hearing[b]	3.68	0.82
Digestive competence[b]	3.52	0.84
Vigor[b]	3.48	0.89
Sleeping quality[b]	3.37	0.93
Body aches[b]	3.32	1.14
Ratings on emotional well-being[c]		
Feel safe[d]	3.83	0.73
Feel optimistic about the future[d]	3.87	0.77
Feel happy[d]	3.79	0.81
Feel self-confident[d]	3.82	0.82
Feel relaxed[d]	3.84	0.80
Feel bored[e]	3.89	0.88
Feel depressed[e]	3.77	0.85
Feel anxious[e]	4.00	0.84
Feel stressful[e]	3.97	0.91

Notes [a]The average value for physical health is 3.45
[b]Ranging from "1 = very bad" to "5 = very good"
[c]The average value for mental well-being is 3.86
[d]Ranging from "1 = never" to "5 = always"
[e]Ranging from "1 = always" to "5 = never"

12.3.2 Methods

The SEM technique is preferred to the simple-equation modeling because the former is able to simultaneously specify the relationships between latent constructs and observed indicators and to decompose the effects of factors into both direct and indirect components (Kline 2010). As an individual's emotional well-being is supposed to be affected by a variety of latent constructs, such as physical health and the perception of neighborhood environments, and physical health is assumed to mediate the effect of individual characteristics on emotional well-being, it is necessary to use SEM methods in our analysis.

Given that one's physical health might be subject to his/her demographic and socioeconomic characteristics, housing conditions, and housing experiences, the SEM model in this study includes two endogenous latent variables (emotional well-being and physical health), four exogenous latent variables (personal social networks within the neighborhood, perceived housing conditions, the ratings of neighborhood amenities, and perceived neighborhood social cohesion) and six exogenous observable variables (age, gender, marital status, household income, the length of residence, and living space per capita). The SEM model was estimated in

the software package AMOS 20.0 using the maximum likelihood estimator. To improve the goodness-of-fit, we modified the model in a reasonable manner by dropping, adding, and revising causal links according to modification indices (Kline 2010). The final model was obtained after the model modification.

12.4 Results

Figure 12.2 and Tables 12.3 and 12.4 show the results of the final model. The goodness-of-fit measures (RMSEA = 0.029, CFI = 0.925, AGFI = 0.902, and CMIN/DF = 1.530) suggest that the overall model fit is good. The relationship between latent variables and their indicators (i.e., factor loadings) is reported in Table 12.3. Nearly all standardized factor loadings in the measurement model are above 0.5. This indicates that our design of the measurement model is reasonably correct. The Squared Multiple Correlation (SMC) coefficient for the ratings of emotional well-being is 0.441, indicating that a large proportion of variation in social housing residents' emotional well-being can be captured by our model.

Figure 12.2 and Table 12.4 present the effects of exogenous variables on endogenous variables and the effects between endogenous variables. Overall, the perceptions of neighborhood social cohesion, personal social networks, living space per capita, perceived housing conditions, and physical health exert a direct effect on

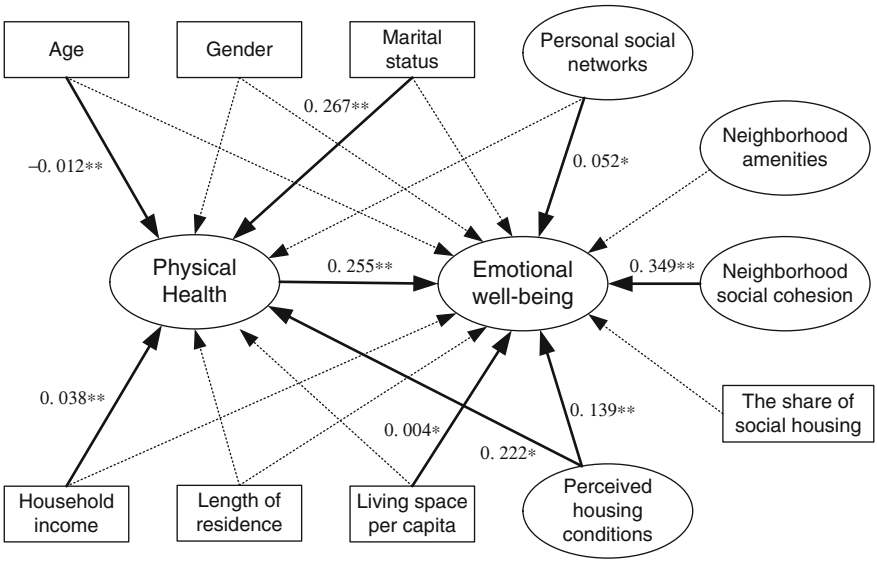

Fig. 12.2 The path diagram of structural model Notes: *Arrows* represent direct effects. A *solid line* indicates a significant link at the 0.05 level. A *dashed line* indicates a statistically insignificant link. * $p < 0.05$, ** $p < 0.01$

Table 12.3 Factor loadings for the measurement model

Variables	Loading
Exogenous variables	
Demographic and socioeconomic characteristics	
Age (observed variable, continuous)	n/a
Gender (observed variable, 0 = male, 1 = female)	n/a
Marital status (observed variable, 0 = single, divorced, or widowed, 1 = married)	n/a
Monthly household income (observed variable, continuous)	n/a
Personal social networks within the neighborhood (latent variable)	
The number of friends living in the same neighborhood	0.535***
Socializing with neighbors in the same building	0.792***
Socializing with the people of this neighborhood	0.895***
Housing experiences and housing conditions	
The length of residence (observed variable, continuous)	n/a
Living space per capita (observed variable, continuous)	n/a
Perceived housing conditions (latent variable)	
House ventilation	0.582***
Lighting	0.587***
Corridor space	0.655***
Quietness	0.648***
Quality of buildings	0.669***
House-plan design	0.728***
Ratings of neighborhood amenities (latent variable)	
Neighborhood public space	0.608***
Property management services	0.747***
Pubic services	0.799***
Community security	0.768***
Educational facilities	0.529***
Sanitation	0.549***
Perceptions of neighborhood social cohesion (latent variable)	
Mutual support among neighbors	0.590***
Neighborly interaction	0.819***
Residents' integration in the whole area	0.610***
The share of social housing in the total housing stock (observed variable, continuous)	n/a
Endogenous variables	
Ratings of physical health (latent variable)	
Vision	0.501***
Hearing	0.609***
Digestive competence	0.716***
Vigor	0.808***
Sleeping quality	0.700***

(continued)

Table 12.3 (continued)

Variables	Loading
Body aches	0.605***
Ratings of emotional well-being (latent variable)	
Feel safe	0.742***
Feel optimistic about the future	0.791***
Feel happy	0.763***
Feel self-confident	0.784***
Feel relaxed	0.868***
Feel bored	0.468***
Feel depressed	0.471***
Feel anxious	0.494***
Feel stressful	0.486***

Note ***$p < 0.001$; n/a = Not applicable (due to no latent variable)

Table 12.4 Total, direct, and indirect effects between endogenous variables and of exogenous variables on endogenous variables

	Total effect		Direct effect		Indirect effect	
Ratings of physical health (SMC = 0.109)						
Age	−0.012	**	−0.012	**	–	
Gender	−0.091		−0.091		–	
Marital status	0.267	**	0.267	**	–	
Monthly household income	0.038	**	0.038	**	–	
Personal social networks	0.089		0.089		–	
The length of residence	0.008		0.008		–	
Living space per capita	0.002		0.002		–	
Perceived housing conditions	0.222	*	0.222	*	–	
Ratings of emotional well-being (SMC = 0.441)						
Age	−0.001		0.002		−0.003	
Gender	−0.036		−0.013		−0.023	**
Marital status	0.105	*	0.037		0.068	**
Monthly household income	0.019	*	0.009		0.010	**
Personal social networks	0.074	*	0.052	*	0.022	
The length of residence	0.003		0.001		0.002	
Living space per capita	0.005	**	0.004	*	0.001	
Perceived housing conditions	0.195	**	0.139	**	0.056	*
Ratings of neighborhood amenities	0.038		0.038		–	
Perception of neighborhood social cohesion	0.349	**	0.349	**	–	
Share of social housing in local housing stock	0.000		0.000		–	
Physical health	0.255	**	0.255	**	–	

Notes *$p < 0.05$, **$p < 0.01$, – = No link specified in the model

residents' emotional well-being, while gender, marital status, monthly household income, and perceived housing conditions influence residents' emotional well-being indirectly through the impact on their physical health.

First, with respect to the neighborhood physical and social environments, residents who perceive their neighborhoods to be cohesive report better emotional well-being than those who perceive their neighborhoods to be isolated, with a direct effect of 0.349. In contrast, residents' perceived neighborhood amenities and the share of social housing in total housing stock do not significantly affect their emotional well-being. Second, regarding variables associated with housing experiences and housing conditions, there are significant effects of living space per capita and perceived housing conditions on residents' ratings of the emotional state (with total effects of 0.005 and 0.195, respectively, and direct effects of 0.004 and 0.139, respectively). This indicates that residents who enjoy a larger living space and better housing conditions tend to have a better emotional state. Third, residents who have more social ties within the neighborhood tend to have a better emotional state (with a total effect of 0.074 and a direct effect of 0.052), probably because those who receive material and emotional supports from their friends in the neighborhood are more capable of coping with stress and anxiety and more satisfied with their life.

Fourth, social housing residents' ratings of emotional state vary with individual demographic and socioeconomic characteristics, although the effects of demographic and socioeconomic characteristics are indirect. Specifically, residents who are married and who have higher household incomes tend to be physically healthier; therefore, they report better moods and emotions. Similarly, male respondents tend to have higher ratings of physical health and emotional well-being than female respondents. Fifth, not unexpectedly, one's physical health has a significant and positive effect on his/her emotional well-being (with a total effect of 0.255). Social housing residents who are healthier tend to report better emotions.

12.5 Conclusion and Discussion

The rapid expansion of social housing projects in recent years merits an examination of the well-being of their residents. In this study, using questionnaire data collected in 13 social housing estates in Guangzhou and SEM approaches, we examined the factors influencing social housing residents' emotional well-being, with a particular focus on the effects of neighborhood environments and individual characteristics and experiences. The results of the SEM model have indicated that, when other variables are controlled, the perceptions of neighborhood social cohesion exert a significant impact on social housing residents' emotional well-being, and that the effects of the ratings of neighborhood amenities, and the share of social housing in the local housing stock are statistically negligible. The results also reveal

that housing conditions and personal social ties within the neighborhood play an important role in regulating social housing residents' emotions. Those who have access to a larger living space and better housing conditions and who have more social capital in the neighborhood tend to report better emotional states. In addition, social housing residents' ratings of emotional well-being vary with demographic and socioeconomic characteristics, as one's gender, marital status, and income are associated with his/her physical health, and are therefore, associated with his/her emotional well-being.

A growing body of the literature has attempted to examine the roles of place and neighborhood in the subjective well-being in developed countries (Macintyre et al. 2002; Fone et al. 2007; O'Campo et al. 2009). In contrast, researchers interested in the subjective well-being of Chinese people have paid scant attention to neighborhood environments, with a few exceptions such as Wen et al. (2010) and Yip et al. (2013). The findings of this study suggest that an increase in neighborhood social cohesion results in an improvement of social housing residents' emotional well-being. This is consistent with our hypothesis that one's emotional quality is strongly influenced by his/her neighborhood social milieu. In contrast, the effects of neighborhood amenities and the overall economic condition of the area are statistically insignificant. This is probably because neighborhood amenities and economic conditions do not vary substantially from one social housing estate to another in Guangzhou and because social housing residents generally have low requirements for physical environments and the general economic situation of the area. Further qualitative research is needed to examine the pathways by which neighborhood environments are related to emotional well-being in Guangzhou's social housing estates.

Our research findings have several policy implications for improving social housing residents' well-being and happiness. First, our empirical evidence suggests that neighborhood cohesion and neighboring bonds contribute to residents' emotional well-being. To increase the well-being of social housing residents, both the community organizing and governance of social housing estates should be centered around cultivating neighboring bonds and enabling mutual support among neighbors. Second, residents' living space and housing conditions are strongly associated with their emotional well-being. This suggests that living space and housing conditions should be given priority in the regeneration of existing social housing neighborhoods and in the design and construction of new social housing estates. Third, despite not directly influencing emotional well-being, social housing residents' socioeconomic status does have an effect on their physical health, which is an important determinant of their mental health. Therefore, it is advisable to place combating poverty and unemployment at the heart of improving social housing residents' well-being.

References

Aminzadeh, K., Denny, S., Utter, J., Milfont, T. L., Ameratunga, S., Teevale, T., & Clarke, T. (2013). Neighbourhood social capital and adolescent self-reported wellbeing in New Zealand: A multilevel analysis. *Social Science and Medicine, 84*, 13–21.

Aneshensel, C. S., & Sucoff, C. A. (1996). The neighborhood context of adolescent mental health. *Journal of Health and Social Behavior, 37*, 293–310.

Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science and Medicine, 51*, 843–857.

Blanchflower, D. G., & Oswald, A. J. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics, 88*, 1359–1386.

Blanchflower, D. G., & Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? *Social Science and Medicine, 66*, 1733–1749.

Caughy, M. O., O'Campo, P. J., & Muntaner, C. (2003). When being alone might be better: Neighborhood poverty, social capital, and child mental health. *Social Science and Medicine, 57*, 227–237.

Chen, J., Yang, Z., & Wang, Y. P. (2014). The new Chinese Model of public housing: A step forward or backward? *Housing Studies, 29*, 534–550.

Clark, A. E., Frijters, P., & Shields, M. A. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature, 46*, 95–144.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.

Delongis, A., Folkman, S., & Lazarus, R. S. (1988). The impact of daily stress on health and mood: Psychological and SOCIAL RESOURCES AS MEDIATORS. *Journal of Personality and Social Psychology, 54*, 486–495.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*, 276–302.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology, 29*, 94–122.

Easterlin, R. A. (1995). Will raising the incomes of all increase the happiness of all. *Journal of Economic Behavior & Organization, 27*, 35–47.

Ellaway, A., Macintyre, S., & Kearns, A. (2001). Perceptions of place and health in socially contrasting neighbourhoods. *Urban Studies, 38*, 2299–2316.

Ensel, W. M., & Lin, N. (1991). The life stress paradigm and psychological distress. *Journal of Health and Social Behavior, 32*, 321–341.

Fone, D., Dunstan, F., Lloyd, K., Williams, G., Watkins, J., & Palmer, S. (2007). Does social cohesion modify the association between area income deprivation and mental health? A multilevel analysis. *International Journal of Epidemiology, 36*, 338–345.

Guite, H. F., Clark, C., & Ackrill, G. (2006). The impact of the physical and urban environment on mental well-being. *Public Health, 120*, 1117–1126.

He, S., Wu, F., Webster, C., & Liu, Y. (2010). Poverty concentration and determinants in China's urban low-income neighbourhoods and social groups. *International Journal of Urban and Regional Research, 34*, 328–349.

Huang, Y. Q. (2012). Low-income housing in Chinese cities: Policies and practices. *China Quarterly*, 941–964.

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*, 16489–16493.

Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). New York: The Guilford Press.

Li, D. Z., Chen, H. X., Hui, E. C. M., Yang, H., & Li, Q. M. (2014). A methodology for ex-post assessment of social impacts of an affordable housing project. *Habitat International, 43*, 32–40.

Li, S. M., & Song, Y. L. (2009). Redevelopment, displacement, housing conditions, and residential satisfaction: A study of Shanghai. *Environment and Planning A, 41*, 1090–1108.
Liu, Y., Li, Z., Liu, Y. & Chen, H. (2015). Growth of rural migrant enclaves in Guangzhou, China: Agency, everyday practice and social mobility. *Urban Studies*. doi:10.1177/0042098014553752.
Macintyre, S., Ellaway, A., & Cummins, S. (2002). Place effects on health: How can we conceptualise, operationalise and measure them? *Social Science and Medicine, 55*, 125–139.
Naughton, B. (2011). China's economic policy today: The new state activism. *Eurasian Geography and Economics, 52*, 313–329.
O'Campo, P., Salmon, C., & Burke, J. (2009). Neighbourhoods and mental well-being: What are the pathways? *Health & Place, 15*, 56–68.
Ross, C. E. (2000). Neighborhood disadvantage and adult depression. *Journal of Health and Social Behavior, 41*, 177–187.
Schwanen, T., & Wang, D. G. (2014). Well-being, context, and everyday activities in space and time. *Annals of the Association of American Geographers, 104*, 833–851.
Shen, Y. Y. (2014). Community building and mental health in mid-life and older life: Evidence from China. *Social Science and Medicine, 107*, 209–216.
Silver, E., Mulvey, E. P., & Swanson, J. W. (2002). Neighborhood structural characteristics and mental disorder: Faris and Dunham revisited. *Social Science and Medicine, 55*, 1457–1470.
Sooman, A., & Macintyre, S. (1995). Health and perceptions of the local environment in socially contrasting neighbourhoods in Glasgow. *Health & Place, 1*, 15–26.
Stafford, M., Chandola, T., & Marmot, M. (2007). Association between fear of crime and mental health and physical functioning. *American Journal of Public Health, 97*, 2076–2081.
van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. P. (2010). Green space as a buffer between stressful life events and health. *Social Science and Medicine, 70*, 1203–1210.
Wang, Y. P., & Murie, A. (2011). The new affordable and social housing provision system in China: Implications for comparative housing studies. *International Journal of Housing Policy, 11*, 237–254.
Ware, J. E., Jr., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Medical Care, 30*, 473–483.
Wen, M., Fan, J., Jin, L., & Wang, G. X. (2010). Neighborhood effects on health among migrants and natives in Shanghai, China. *Health & Place, 16*, 452–460.
Wen, M., & Wang, G. (2009). Demographic, psychological, and social environmental factors of loneliness and satisfaction among rural-to-urban migrants in Shanghai, China. *International Journal of Comparative Sociology, 50*, 155–182.
Wilson, K., Elliott, S., Law, M., Eyles, J., Jerrett, M., & Keller-Olaman, S. (2004). Linking perceptions of neighbourhood to health in Hamilton, Canada. *Journal of Epidemiology and Community Health, 58*, 192–198.
Wu, F. (2012). Neighborhood attachment, social participation, and willingness to stay in China's low-income communities. *Urban Affairs Review, 48*, 547–570.
Wu, F., He, S., & Webster, C. (2010). Path dependency and the neighbourhood effect: Urban poverty in impoverished neighbourhoods in Chinese cities. *Environment and Planning A, 42*, 134–152.
Xu, J., Wang, B., Hu, M., Yang, Y., Chen, H., & Xie, Y. (2000). The develoment and evaluation of self-rated health measurement scale-prior test version. *Chinese Journal of Behavioral Medical Science, 9*, 65–68.
Yip, N. M., Leung, T. T. F., & Huang, R. G. (2013). Impact of community on personal well-being in urban China. *Journal of Social Service Research, 39*, 675–689.
Ziersch, A. M., Baum, F. E., Macdougall, C., & Putland, C. (2005). Neighbourhood life and social capital: The implications for health. *Social Science and Medicine, 60*, 71–86.
Zou, Y. H. (2014). Contradictions in China's affordable housing policy: Goals vs. structure. *Habitat International, 41*, 8–16.

Chapter 13
The Moderating Effect of Community Interaction on Individual Well-Being During Hot Days

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Abstract Environmental issues due to global climate change have important impacts on individual well-being. For example, the elderly and those who live in disadvantaged communities are more likely to be vulnerable in hot days. Exposure to heat and the associated pollutants increases their risk of illness. Previous studies have demonstrated an association between demographic and social–psychological characteristics with individual well-being. However, the moderating effect of community factors in the relationship between the impact of high temperatures and individual well-being has not yet been fully examined. This chapter aims to explore the moderating effect of community attachment on individual well-being during hot days. Data are drawn from a large-scale survey collected in 2013 using face-to-face interviews with a representative sample of Taiwanese adults aged 18 or older. Individual well-being is measured through a five-item scale to indicate self-reported physical and mental conditions. Demographic characteristics and variables of cognitive evaluation and conditions associated with health are found to have significant effects on well-being. In addition, the moderating effect of community interaction on individual well-being during hot days is confirmed. The findings of this chapter are expected to contribute to reducing the impact of high temperatures on those with a high risk of vulnerability.

Keywords Individual well-being · Community interaction · Heat wave · Social vulnerability

The moderating effect of community interaction on individual well-being during hot days

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13.1 Introduction

The impacts of extreme weather on humans have become increasingly significant due to global climate change in recent decades. Occurrences of hazards and natural disasters, such as droughts, wildfires, floods, and landslides, have also become more frequent (Keim 2008; Chen et al. 2010). In addition, environmental deterioration associated with rapid industrialization and modernization has worsened air quality and, in turn, raised temperatures. The impact caused by high temperatures or heat waves may be more serious and result in increased vulnerability for people in tropical and sub-tropical areas, such as Taiwan, given the long-lasting hot weather. Mortality risk associated with high temperature increases as the temperature rises in the metropolitan cities of Taiwan where the average daily temperature is above 30 °C during the hot season (Lin et al. 2011).

Individuals with certain sociodemographic characteristics are found to be more vulnerable to climate or environmental changes (Cutter et al. 2003), which is seen as a social vulnerability. Previous studies have indicated that poverty, health status, household characteristics and geographical locations are associated with social vulnerability under the impact of climate change (e.g., Wu et al. 2011). Various strategies have been adopted in response to the high temperatures during hot days, such as minimum exposure to heat or the use of air-conditioning. However, some subpopulations have low response capacities due to age, occupation or geographical environmental factors, making them more vulnerable to heat (Luber and McGeehin 2008; Pan et al. 1995; Wu et al. 2011).

Studies have already examined social vulnerability during hazards and natural disasters (c.f. Chiang et al. 2014; Cutter et al. 2003; Kelly and Adger 2000; Siagian et al. 2014; Willroth et al. 2012) while recent attention has focused more on social vulnerability during hot days. The magnitude of health threats for people with certain socioeconomic characteristics and for residential areas that have people with high vulnerability are examined using empirical data (c.f. Abrahamson and Raine 2009; Barata et al. 2011). In response to social vulnerability, research on adaptive or response capacity to climate change has addressed how lifestyle, learning ability and behavioral change of a community may increase the health risks of its residents (Semenza et al. 2008). Communities with lower incomes and a higher proportion of minority groups, for example, are found to have a lower response capacity and lower levels of well-being (e.g., Barata et al. 2011).

On the other hand, community interactions, participation in community activities and organizations and emotional attachment to local community are found to have positive effects on the well-being of the residents (see Liao 2003). The moderating role that community factors play in the impact of environmental changes on the well-being of local community, however, has not been taken into account in either fields of research. Social interactions, for example, may help enhance mutual trust and, in turn, generate solidarity and willingness to help others as well as improve community resilience under impacts (see Huang et al. 2011; Ireni-Saban 2013).

The risk for those with higher vulnerability during hot days may be reduced if, for instance, social contacts are made during heat the event to provide necessary help.

It is shown that the health risks of the disadvantaged population due to temperature changes can be mitigated through the motivation of community organization and human resources (Howden-Chapman et al. 2005). With respect to social vulnerability, this chapter aims to explore the moderating effect of community interaction on individual well-being during hot days. In particular, we attempt to identify the social and economic characteristics associated with local communities in Taiwan to explore the role of community in reducing the impact of high temperatures on people with higher social vulnerability. Survey data on a nationally representative sample are analyzed to understand the role of community factors in mitigating the influence of hot weather.

13.2 Social Vulnerability, Community Interaction, and Individual Well-being

Previous studies have explored the characteristics of groups with high levels of vulnerability, including sociodemographic variables, household structure, health status, and urbanization level, as well as the perception, attitudes, knowledge, and behaviors associated with high temperatures. It is found that the elderly, less educated, those with lower incomes, the unemployed and those with nontechnical occupations are more vulnerable to the impact of high temperatures (Loughnan et al. 2010; Pan et al. 1995; Vescovi et al. 2005). Moreover, single households, low-income families and poor people living in urban areas are also more vulnerable than their counterparts (Kovats and Akhtar 2008; Loughnan et al. 2010; Vescovi et al. 2005). These subpopulations suffer greater impacts on their health, showing higher risks of cardiovascular and respiratory system diseases, and mortality (Lin et al. 2011; Wu et al. 2011; Zeng et al. 2010).

In response to the impact of hazards and natural disasters, it is suggested that local communities enhance their capacity in both prevention and adaptation strategies (Chen et al. 2010; Keim 2008; Willroth et al. 2012). Research has identified communities, in addition to individuals, with different levels of social vulnerability, mainly using objective contextual indicators. Social and economic conditions at the community/county level, as well as the sociodemographic and family characteristics at the individual level, have been taken into account to understand the elements of social vulnerability (Barata et al. 2011; Cutter et al. 2003; Siagian et al. 2014). As different approaches to the issue of social vulnerability have revealed the key role of the community in response to the impacts of climate change, it is thus suggested that local communities build interactional capacity and promote collective action in response to the risk associated with high temperatures (c.f. Ebi 2009; Ebi and Semenza 2008; Flint and Luloff 2005).

Community provides a fundamental base for interactions and collective actions that involve actors and groups through a problem-solving process. It plays an important role in human experience and well-being because of "its role as the setting and the mechanism of empirical contact between the individual and society" (Wilkinson 1991: 3). Social interaction at the community level encourages conditions that allow for open communication, tolerance, collective action and local celebration (Wilkinson 1991). It is then able to lead to greater well-being for the community and reduced vulnerability when encountering risk and disaster (Bridger and Luloff 1999; Flint and Luloff 2005). As indicated in recent research, social networks during the coping period have a positive effect on the recovery capabilities of the household that has suffered from natural hazards (Willroth et al. 2012). Likewise, social support, as one of the important consequences of social interaction, is also found to contribute to better psychological well-being (Kafetsios 2006; Lin et al. 1999).

Community interactions by means of mutual communication and collective action are found to help mitigate climate impacts (Chiang et al. 2014; Kelly and Adger 2000). Regarded as social capital, social interaction may demonstrate a protective effect on health risk (see Huang et al. 2011) or may not demonstrate a protective effect for the elderly who received incorrect information through their strong social bonds and, in turn, misjudge the impact of extreme weather (Wolf et al. 2010). With respect to the impact of high temperatures and specifically the associated health risks, previous studies have emphasized the necessity of having an adaptive or response capacity (Keim 2008; McMichael and Kovats 2000; Chen et al. 2010). A community-based strategy or guidelines for intervention is suggested to mitigate the impact of extreme weather on the living environment and individual health (Ebi and Semenza 2008; Huang et al. 2011; Keim 2008; McMichael and Kovats 2000; Molnar 2010), although empirical studies are scarce.

Ebi and Semenza (2008) indicated that interventions during hot days, including the involvement of local residents, volunteers, and experts, can enhance a sense of community and interpersonal ties. Their findings suggest that the interaction and participation of community residents, along with the collaboration and involvement of local organizations, are important components of the community response capacity. Such suggestions also support the use of a community-based approach to understand social vulnerability during hot days because social interaction in the local community helps build solidarity among residents, which enhances community attachment (Wilkinson 1986, 1991). It is then of importance to further increase the well-being of those with high social vulnerability under climate changes.

The influences of the rising impact of extreme weather and worsened air quality and high temperatures associated with rapid urbanization on individual well-being have also been a major concern. For example, many studies have highlighted the direct impact of air pollution on life satisfaction, which is often seen as an important element of a broader concept for individual well-being (Luechinger 2009, 2010; MacKerron and Mourato 2009; Welsch 2006). The concept of individual, or subjective, well-being concerns a person's cognitive and affective evaluations of

individual life (Diener et al. 2003). Individual well-being indicates a positive appraisal of life, and the components of individual well-being often include life satisfaction, positive and negative affects (Andews and Withey 1976; also see Proctor 2014) as well as the health-related aspects of physical and mental health (Cummins 2014). With respect to the health risk during hot days, this study employs a scale comprised of positive, negative and health-related evaluations to measure individual well-being.

13.3 Research Design

Data for this study are drawn from face-to-face interviews of a large project that examined social vulnerability and adaptation during hot days.[1] A three-stage stratified systematic sampling is adopted to obtain a nationally representative sample. Strata are first defined by seven urbanization levels and four geographic areas, resulting in ten clusters. Probability proportional to size (PPS) is applied to randomly select the primary sampling unit (PSU) among townships in each stratum (cluster) at the first stage and village or "li" within the selected townships as the secondary sampling unit (SSU), resulting in 44 PSU and 88 SSU, respectively. A within-household sampling approach developed by Hung (2001) was employed to select individuals aged 18 years or older at the third stage. Since the definition of hot days may vary, we used a direct method of collecting survey data in the hot season, which is from May to early October of a year in Taiwan (Lin et al. 2011). Using a computer-assisted personal interviewing (CAPI) system, a total of 2008 surveys were collected in the summer of 2013, with a response rate of 48.7 %. It was purposive to collect survey data, as well as other associated measures, in the warmest season of a year so the experience and behaviors in response to high temperatures could be recorded in a timely manner. To have similar characteristics of the population in Taiwan, survey data were weighted by age, gender, education and geographic areas using the raking approach. Also, missing data for the analyzed variables were replaced with the average values obtained from multiple imputation based on sociodemographic variables with complete data. Therefore, weighted data with imputed values for missing data were used for the following analyses.

Individual well-being includes a scale of five items measuring physical and mental conditions. The respondents are asked how often have they had the following experiences in the past month. The items are: (a) felt pain in body, (b) felt unhappy or depressed, (c) lost confidence in oneself, (d) felt calm and peaceful, and

[1]This project is a sub-project of a larger thematic research project, sponsored by the Sustainability Science Center in Academia Sinica (AS-102-SS-A07) for the collection of survey data; measures of temperature, humidity and air quality; and a time-use diary.

Table 13.1 Principal component analysis of the well-being items

Item	Component loading
Felt pain in body	.47
Felt unhappy and depressed	.82
Lost confidence in oneself	.80
Felt calm and peaceful	.71
Encountered troubles that one cannot solve	.73
% of total variance explained	51.12
Cronbach's alpha	.73

(e) encountered trouble(s) that one cannot solve. Responses to the five items range from 1 = always to 5 = never. The score of item (d) is reversely coded so, like the other items, a higher score indicates a better condition. The results of principal component analysis (PCA) suggest that these five items can be reduced into one common component. This component explains about 51 % of the total variance, with a Cronbach's alpha of .73 (Table 13.1). The test results of KMO measure of sampling adequacy (.80) and Bartlett's test of sphericity ($p < .001$) support the use of PCA for these measures of individual well-being. The component score is then used for further analysis, with a higher score indicating greater well-being.

The measures of social interaction include the number of neighbors the respondents know well, the social support, and the closeness to neighbors in the community to reveal the quantity, consequence and cognitive evaluation of social interaction (Lin et al. 1999). The question about the neighbors who the respondents know quite well asks for the number of neighbors. The evaluation of the relationship with neighbors is measured on a five-point scale, from very estranged to very close, with a higher number indicating a closer relationship. The items for social support in the community ask the respondents how many people in the community they can (a) talk to when they are worried, (b) ask for help to take care of family members when necessary and (c) ask for help when in an emergency. Answers to these questions include five response categories ranging from 1 = 0 to 5 = 8 or more persons. In addition, some respondents indicated that they have not been in such a situation, which suggests that these respondents are the least likely to worry about social support in the community. Therefore, these items are coded with 1 = no one (zero person) to 6 = not in such a situation.

With respect to the health consequences of the impact of hot temperatures, variables associated with cognitive evaluation and self-evaluated health conditions during the hot season are included. The frequency of being in a bad mood, doing things less efficiently and feeling uncomfortable when the temperature is high since June 2013 when the hot season began, are asked with five-point scales, ranging from 1 = never to 5 = three times a month or more. In addition, the ease with which one gets sweaty and has a heatstroke is measured on four-point scales, with 1 indicating not easy at all and 4 indicating very easy. Self-rated physical health and perceived air quality in the neighborhood are measured on five-point scales, with a

higher score indicating a better self-rated health and better air quality, respectively.[2]

As essential determinants, the effects of the sociodemographic characteristics of respondents on individual well-being are examined, including age, age square, gender, education, marital status, employment status, industry, and average family income per month. Contextual characteristics are also included to understand the possible effect of the social and economic conditions of local communities on individual well-being during hot days. These characteristics are measured by clusters of urbanization and objective indicators. The sampled boroughs and townships are divided into six clusters, based on the urbanization typology in Taiwan (Hou et al. 2008). These clusters include the metropolitan core, industrialized township, newly developed township, traditional industry borough, less-developed borough, and aging and remote boroughs, ranged from high to low urbanization levels, respectively. Objective indicators including the proportions of people aged 65 or older, with a college education and above, working in the industry of mining, manufacturing or construction, and low-income families, and the number of people requiring long-term care. Given the availability of the objective indicators, the number of people requiring long-term care and the proportion of low-income families are at the township level (PSU), while the rest of the indicators are at the village or li level (SSU).

A description of the sample is first reported, as well as that of the objective indicators of local communities. In the regression analysis of individual well-being, most of the independent variables are treated as continuous variables except for some of the sociodemographic characteristics. Since the major purpose of this study is to understand the moderating effect of community interaction on individual well-being with consideration to the impact of high temperatures, interactional effects of social support and social interaction in the community on health-related risk variables and the objective characteristics of local communities are examined in the model.

13.4 Description of the Sample and Community Factors

As reported in Table 13.2, the respondents have a mean age of 46 years and include roughly equal proportions of males and females. The majority of the respondents are married or living with a partner (58.6 %) and about 30 % of them are single and never married. The proportions of those with a college degree and those who have a full-time job are the highest in the sample, which are 31.5 and 60.9 %, respectively. Among the respondents, only about 5 % of them work in the industry of agriculture, forestry, fishing and animal husbandry, while one-third of them work in mining,

[2]High temperatures have been found to worsen air quality and have joint effects on mortality (Analitis et al. 2014; Lorenzini et al. 2014). A recent study has also demonstrated the influence of perceived air quality on subjective well-being (Liao et al. 2015). It is therefore reasonable to include this variable in the analysis models.

Table 13.2 Descriptive of analyzed variables (n = 2008)

Variables	Freq./ Mean	%/S. D.
Age	45.96	16.95
Gender		
Male	997	49.6
Female	1001	50.4
Educational level		
Elementary school or less	360	17.9
Junior high school	208	10.3
Senior high school	558	27.8
Junior college	251	12.5
College/University or higher	632	31.5
Marital status		
Single	605	30.1
Married/Living with a partner	1177	58.6
Others	226	11.3
Work status		
Full-time job	1222	60.9
Part-time job, irregular job or others	160	8.0
Do not work	625	31.1
Industry		
Agriculture, forestry, fishing and animal husbandry	95	5.0
Mining, manufacturing, construction	669	34.8
Water supply and remediation activities, electricity and gas supply, wholesale and retail trade, transportation and storage	348	18.2
Others	807	42.0
Urbanization cluster		
Metropolitan core	334	16.6
Industrialized township	573	28.6
Newly developed township	523	26.0
Traditional industry borough	249	12.4
Less-developed borough	248	12.4
Aging or remote borough	80	4.0
Frequency of having bad mood due to hot temperatures		
Never	663	33.2
Less than once a month	251	12.5
Once to three times a month	467	23.4
Once or twice a week	401	20.0
Three times or more a week	217	10.9

(continued)

Table 13.2 (continued)

Variables	Freq./ Mean	%/S. D.
Frequency of doing things less efficiently due to hot temperatures		
Never	885	44.2
Less than once a month	302	15.1
Once to three times a month	425	21.2
Once or twice a week	219	11.0
Three times or more a week	171	8.5
Easiness to become sweaty		
Very easy	868	43.3
Fairly easy	613	30.6
Not easy	479	23.9
Not easy at all	45	2.2
Easiness to have heatstroke		
Very easy	62	3.2
Fairly easy	141	7.1
Not easy	730	36.9
Not easy at all	1043	52.8
Number of people in the community to talk to when being worried		
None	1262	63.3
Only 1 person	124	6.2
2–4 people	286	14.3
5–7 people	49	2.5
8 people or more	17	0.9
Do not have such a situation	257	12.9
Number of people in the community to ask for help to take care of family members when necessary		
None	621	31.7
Only 1 person	144	7.4
2–4 people	505	25.8
5–7 people	101	5.2
8 people or more	67	3.4
Do not have such a situation	521	26.6
Number of people in the community to ask for help when in an emergency		
None	370	18.6
Only 1 person	202	10.1
2–4 people	648	32.5
5–7 people	171	8.6
8 people or more	104	5.2
Do not have such a situation	498	25.0
Self-rated physical health	2.60	1.02

(continued)

Table 13.2 (continued)

Variables	Freq./ Mean	%/S. D.
Perceived air quality in the neighborhood	3.44	1.04
Relationship between you and neighbors	3.29	1.25
Number of neighbors known quite well	5.64	7.32
Individual well-being	20.72	3.39

manufacturing, and construction, which are industries that are more likely to expose one to heat than others, and therefore, deserve attention. Also, 26 % of the respondents have a family income of NT$40,001 to NT$70,000, followed by those of NT$100,001 to NT$150,000.

Regarding the cognitive evaluation during the hot season, more than half of respondents report having a bad mood or doing things less efficiently due to hot temperatures once a month or more often. In addition, about 40 % of them feel uncomfortable at least once a month when the temperatures are high. When asked if they easily become sweaty or have a heatstroke, which are negatively intercorrelated based on clinical research, more than 70 % of respondents indicate it is very or fairly easy for them to become sweaty, while roughly 10 % of them report experiencing heatstroke very or fairly easily. The average rating of the respondents' physical health is 2.60 and the perceived air quality in their neighborhood is rated as 3.44 on average, both on a five-point scale.

With respect to community interaction, the average number of neighbors the respondents know quite well is about 6 and a little more than half of them indicated that they feel close or very close to their neighbors. When examining social support in the community, only about a quarter of the respondents have one or more people in the community to talk to when s/he is worried, around 42 % of them have someone to ask for help to take care of family members when necessary and 56 % of them have someone to ask for help in an emergency. Using principal component analysis, one common component is obtained, which explains about 61 % of the total variance (Table 13.3). The test results of KMO measure of sampling adequacy

Table 13.3 Principal Component Analysis of Social Support in Community

Item: Number of people in the community to…	Component loading
Talk to when you are worried	.65
Ask for help to take care of family members when necessary	.85
Ask for help when in an emergency	.83
% of total variance explained	60.96
Cronbach's alpha	.68

(.61) and Bartlett's test of sphericity ($p < .001$) support the use of PCA on these items. Reliability analysis on the three items yields a Cronbach's alpha of .68. The component score for community support is then used for further analysis, with a higher score indicating a higher level of social support in the community.

13.5 Determinants of Individual Well-Being and Moderation of Community Factors

The main effects of sociodemographic variables, health-related cognition and condition, social support and interactions in the community and objective indicators on individual well-being are first examined using multiple linear regression. Reference categories for sociodemographic variables (except for age) and urbanization cluster are females, college educated or higher, marital status other than single or married, do not work and aging and remote borough, respectively. All other variables are treated as continuous variables in the regression models and the standardized coefficients, or beta, are reported to compare the magnitude of the coefficients.

Among the sociodemographic variables, age square and family income are found to have significant main effects on individual well-being (Table 13.4). Given the negative effect of age square, the relationship between age and individual well-being is shown to be a reversed U-shape. In other words, while older respondents report a lower level of individual well-being than younger respondents, the pattern is the reverse for respondents who are middle aged. Also, those who have a monthly family income of NT$100,000 or less indicate lower well-being than those who have NT$150,000 or more. Variables related to health evaluation or conditions are found to be significantly associated with individual well-being. Respondents, who more often have bad moods, do things less efficiently or feel uncomfortable when the temperatures are high indicate a lower level of well-being than those who report experiencing these less often. Being more prone to having heatstroke is also found to have a negative effect on individual well-being. Conversely, those who rated their physical health better and those who indicate a better air quality in their neighborhood report better well-being than their counterparts.

Among the community factors, a higher number of neighbors the respondents know quite well helps increase individual well-being. In addition, the respondents who feel close to their neighbors have a higher level of well-being than those who do not. Contextual characteristics and objective indicators are also found to have significant effects on individual well-being. The urbanization level of the respondents' residence is significantly associated with individual well-being. Those who live in aging or remote boroughs indicate a better well-being than those who live in more urbanized townships. The respondents living in communities with higher proportions of people aged 65 years or older and of residents employed in mining, manufacturing, and the construction industry at the village/li level are found to have

Table 13.4 Regression results on individual well-being

Variables	β	β
Age	.34	.34
Age square	−.23*	−.22*
Gender: Male	.03	.03
Education: Elementary school or less	.02	.01
Junior high school	−.04	−.04
Senior high school	−.01	−.01
Junior college	.01	.01
Marital status: Single	.05	.05
Married/Living with a partner	.05	.05
Employment status: Full-time job	−.03	−.03
Part-time job, irregular job or others	−.04	−.04
Industry: Agriculture, forestry, fishing and animal husbandry	.07**	.07**
Mining, manufacturing, construction, and gas supply	.02	.02
Water supply, remediation activities, electricity…etc.	.00	−.00
Income: NT$40,000 or less	−.08*	−.08**
NT$40,001–NT$70,000	−.06*	−.07*
NT$70,001–NT$100,000	−.07*	−.07*
NT$100,001–NT$150,000	−.03	−.04
Having a bad mood due to hot temperatures	−.16***	−.16***
Doing things less efficiently due to hot temperatures	−.10***	−.24**
Feeling uncomfortable due to hot temperatures	−.09**	−.08**
Easiness to become sweaty	.01	.01
Easiness to have heatstroke	−.05*	−.05*
Self-rated physical health	.23***	.23***
Perceived air quality in the neighborhood	.06**	.06**
Community support	−.00	−.11**
Number of neighbors known quite well	.04*	.05*
Closeness to neighbors	.05*	−.05
Cluster: Metropolitan core	−.20***	−.20***
Industrialized township	−.24***	−.24***
Newly developed township	−.26***	−.26***
Traditional industry borough	−.12**	−.12**
Less-developed borough	−.18***	−.18***
Proportion of people aged 65 or older	−.11***	−.11***
Proportion of college-educated and above	−.04	−.03

(continued)

Table 13.4 (continued)

Variables	β	β
Proportion of mining, manufacturing and construction industry	−.05	−.04
Number of people requiring long-term care	.04	.04
Proportion of low-income families	.01	.01
Interaction: Close to neighbor * Low efficiency		.17**
Interaction: Community support * Feeling uncomfortable		.13**
Constant	***	***
Adjusted R-square	.24	.25

*$p < .05$; **$p < .01$; ***$p < .000$

a lower level of well-being. The adjusted R-square of the main-effect model is .24 and the test of multi-collinearity does not indicate a problem among the examined variables.

To examine the moderating effects of social interaction, the interaction effects of the measures and health-related evaluations during the hot season and contextual conditions in the community are added to the regression model. Since most of the interaction effects are insignificant, we delete these effects from the regression model starting from the least significant ones. The right column of Table 13.4 reports the beta coefficients of the final results of the model including both the main and significant interaction effects on individual well-being. Variables with significant main effects on individual well-being in the previous model remain the same when interaction effects are added, except for community support and closeness to neighbors. Since both of the variables measuring social interaction are found to have significant interactions with other variables, their interaction effects, rather than the main effect, in the model are discussed. Such findings also indicate their moderating role in mitigating the impact of the hot season on individual well-being. In other words, the effects of health-related conditions on individual well-being when the temperatures are high depend on the level of social support. The adjusted R-square of the model including interaction effects is .25.

To present the interaction effect, we chose certain values of the response categories of the variables used for interaction effects to reveal the differences in their relationships to individual well-being. Both of the end points for the frequency of doing thing less efficiently and feeling uncomfortable due to hot temperatures are used. Three levels of closeness to neighbors are selected, with 1 = estranged, 3 = neither estranged nor close, and 5 = close, to show how the relationship between low efficiency and individual well-being varies among these levels. Similar treatment is used for community support, for which a score of 0 = low, 1 = middle, and 2 = high, to reveal the relationship between uncomfortable feelings in the hot season and individual well-being.

As shown in Fig. 13.1, the negative association between low efficiency when doing things due to hot temperatures and individual well-being is mitigated by the level of closeness to neighbors. It is noticeable that, for those who feel close to their

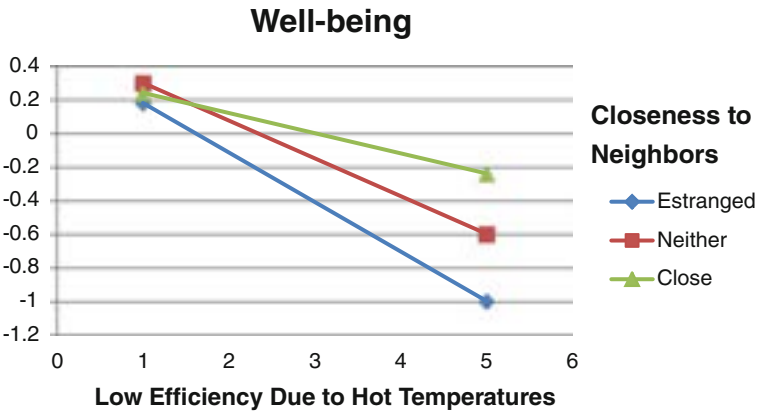

Fig. 13.1 Interaction effect of closeness to neighbors and low efficiency on individual well-being

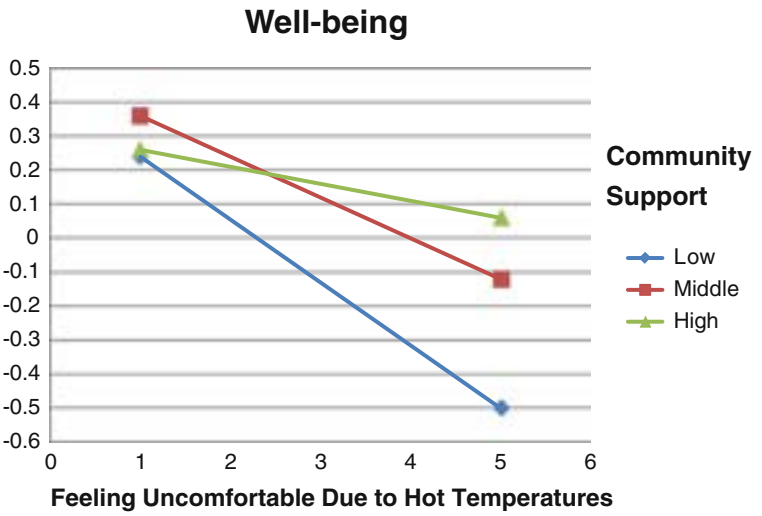

Fig. 13.2 Interaction effect of community support and uncomfortable feelings on individual well-being

neighbors, the negative relationship between low efficiency and well-being is the least steep neither for those who feel estranged or neither estranged nor close to their neighbors. Furthermore, the negative influence of uncomfortable feelings on well-being due to hot temperatures depends on the level of social support one has in the community (Fig. 13.2). For those who have a higher level of community support, the decrease of individual well-being due to uncomfortable feelings in hot weather is less rapid than those who have less social support in the community.

13.6 Conclusion and Discussion

As the impact of global warming increases, the associated health risk for those with high social vulnerability has become a more important issue in recent decades. The well-being of disadvantaged populations, who often have a low response capacity to adverse impacts because of their sociodemographic characteristics and contextual factors, deserves equal attention. From the perspectives of social vulnerability and community interaction, this study assesses individual well-being during hot days, with a focus on examining the moderating role the community plays in the impact of hot temperatures on the well-being of local communities.

Using survey data from a representative sample in Taiwan, this study revealed important determinants of individual well-being under the condition of hot temperatures. Demographic characteristics and variables of cognitive evaluation and conditions associated with health are found to have significant effects on well-being. Respondents employed in agriculture, forestry, fishing or animal husbandry and those with a higher family income indicate a higher level of well-being than their counterparts. In addition, those who rated their physical health and perceived air quality in the neighborhood better also have a higher level of well-being. Conversely, the respondents who more often have bad moods do things less efficiently and feel uncomfortable, and those who more easily have a heatstroke on hot days report a lower level of well-being. Contextual characteristics are found to be associated with the well-being of the residents, with urbanized residences and a higher proportion of people aged 65 years or older in the community having negative associations with individual well-being.

With respect to the association of community interaction with individual well-being, the main and moderating effects of the former on the latter is demonstrated. Being close to neighbors is found to moderate the negative association between the frequency of low efficiency during hot weather and low well-being. In particular, when doing things less efficiently during hot days, the respondents' individual well-being decreases the least for those who are close to their neighbors than for those who are not. Moreover, social support in the local community helps reduce the negative influence of uncomfortable feelings on individual well-being due to hot weather. In other words, the decreasing well-being of those who have high community support is less severe than those who have low community support, when feeling uncomfortable on hot days.

Previous studies have suggested a community-based approach to mitigate the impact of extreme weather and to increase the response capacity of the local community (Ebi and Semenza 2008; Flint and Luloff 2005). The results of this study provide evidence that employing such an approach could benefit the disadvantaged population and aging communities. Intervention programs can be developed with a focus on fostering social interaction and support in local communities so community resources can be mobilized to increase the well-being of local people (Bridger and Luloff 1999).

Contextual characteristics are found to have significant effects on individual well-being, with the proportion of the aged population at the lowest administrative level (i.e., village or "li") and urbanization level of development at the level above (i.e., township or borough). While aging corresponds to poorer physical conditions to certain extent, communities with higher proportions of aged people are more commonly located in rural areas, often due to out-migration of labor force. Rural areas also have a relatively higher proportion of interpersonal interactions (Wilkinson 1991), as well as people employed in agriculture or fishing, both of which are found to have significant effects on individual well-being in different directions. Urban living may not necessarily be associated with better well-being of the residents (Lewis and Lyo 1986; Liao 2009; Schuessler and Fisher 1985). It seems difficult, then, to conclude whether rural or urban living is more beneficial to individuals in terms of well-being. Our results confirm previous studies that have indicated that objective indicators and subjective perception may not have a corresponding pattern in terms of individual well-being (see Liao 2009). We suggest further research on the influence of contextual characteristics at different analytic/administrative levels to more closely examine how people perceive and rate their individual well-being.

References

Abrahamson, V., & Raine, R. (2009). Health and social care responses to the Department of Health heat wave plan. *Journal of Public Health, 31*(4), 478–489.

Analitis, A., Michelozzi, P., & D'Ippoliti, D. (2014). Effects of heat waves on mortality effect modification and confounding by air pollutants. *Epidemiology, 25*(1), 15–22.

Andrews, F. M., & Withey, S. B. (1976). Social indicators of well-being: Americans' perceptions of lifequality. New York: Plenum Press.

Barata, R. B., Ribeiro, M. C. S. A., & Cassanti, A. C. (2011). Social vulnerability and health status: A household survey in the central area of a Brazilian metropolis. *Cadernos de Saude Publica, 27*(2), 164–175.

Bridger, J. C., & Luloff, A. E. (1999). Toward an interactional approach of sustainable community development. *Journal of Rural Studies, 15*, 377–387.

Chen, J.-J., Chen, Y.-J., & Hsu, S.-I. (2010). Social vulnerability for debris flow hazard—A case study of Shang-Ann community in Shueili Township, Nantou County. *Journal of Social and Regional Development, 2*(2), 1–28.

Chiang, Y.-C., Tsai, F.-F., Chang, H.-P., Chen, C.-F., & Huang, Y.-C. (2014). Adaptive society in a changing environment: Insight into the social resilience of a rural region of Taiwan. *Land Use Policy, 36*, 510–521.

Cummins, R. A. (2014). Subjective indicators of well-being. in Michalos, A. C. (ed.) *Encyclopedia of Quality of Life and Well-Being Research* Springer, pp. 6403-6431.

Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly, 84*(2), 242–260.

Diener, E., Oishi, S., & Lucas, R. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology, 54*, 403–425.

Ebi, K. (2009). Facilitating climate justice through community-based adaptation in the health sector. *Environmental Justice, 2*(4), 191–195.

Ebi, K. L., & Semenza, J. C. (2008). Community-based adaptation to the health impacts of climate change. *American Journal of Preventive Medicine, 35*(5), 501–507.

Flint, C. G., & Luloff, A. E. (2005). Natural resource-based communities, risk, and disaster: An intersection of theories. *Society and Natural Resources, 18*, 399–412.

Hou, P., Tu, S., Liao, P., Hung, Y., & Chang, Y. (2008). The typology of townships in Taiwan: The analysis of sampling stratification of the 2005–2006 Taiwan Social Change Survey. *Survey Research—Method and Application (Taipei), 23*, 7–32.

Howden-Chapman, P., Crane, J., Matheson, A., Viggers, H., Cunningham, M., Blakely, T., et al. (2005). Retrofitting houses with insulation to reduce health inequalities: Aims and methods of a clustered, randomized community-based trial. *Social Science and Medicine, 61*(12), 2600–2610.

Huang, C., Vaneckova, P., Wang, X., FitzGerald, G., Guo, Y., & Tong, S. (2011). Constraints and barriers to public health adaptation to climate change. *American Journal of Preventive Medicine, 40*(2), 183–190.

Hung, Y.-T. (2001). *Respondent selection within household*. Taipei: Wu Nan Publications.

Kafetsios, K. (2006). Social support and well-being in contemporary Greek society: Examination of multiple indicators at different levels of analysis. *Social Indicators Research, 76*, 127–145.

Keim, M. E. (2008). Building human resilience: The role of public health preparedness and response as an adaptation to climate change. *American Journal of Preventive Medicine, 35*(5), 508–516.

Kelly, P. M., & Adger, W. N. (2000). Theory and practice in assessing vulnerability to climate change and facilitating adaptation. *Climatic Change, 47*, 325–352.

Kovats, S., & Akhtar, R. (2008). Climate, climate change and human health in Asian cities. *Environment and Urbanization, 20*, 165–175.

Ireni-Saban, L. (2013). Challenging disaster administration: Toward community-based disaster resilience. *Administration and Society, 45*, 651–673.

Lewis, S., & Lyon, L. (1986). The quality of community and the quality of life. *Sociological Spectrum, 6*,397–410.

Liao, P. (2003). Community attachment and quality of life in Taiwan: An application of latent class analysis. *Survey Research, 13*, 113–146.

Liao, P. (2009). Parallels between objective indicators and subjective perceptions of quality of life: A study of metropolitan and county areas in Taiwan. *Social Indicators Research, 91*, 99–114.

Liao, P., Shaw, D., & Lin, Y. (2015). Environmental quality and life satisfaction: Subjective versus objective measures of air quality. *Social Indicators Research*, *124*, 599–616.

Lin, N., Ye, X. L., & Ensel, W. M. (1999). Social support and depressed mood: A structural analysis. *Journal of Health and Social Behavior, 40*, 344–359.

Lin, Y.-K., Wu, Y.-C., Huang, L.-Y., Lin, C.-M., Wu, T.-N., Chou, C. H., et al. (2011). A chronological study of mortality risks associated with extreme temperature for elderly populations in metropolitan areas of Taiwan. *Taiwan Journal of Public Health, 30*(3), 277–289.

Lorenzini, G., Pellegrini, E., & Campanella, A. (2014). It's not just the heat and the drought: the role of ozone air pollution in the 2012 heat wave. *Agrochimica, 58*, 40–52.

Loughnan, M., Nicholls, N., & Tapper, N. (2010). Mortality-temperature thresholds for ten major population centres in rural Victoria, Australia. *Health and Place, 16*, 1287–1290.

Luber, G., & McGeehin, M. (2008). Climate change and extreme heat events. *American Journal of Preventive Medicine, 35*(5), 429–435.

Luechinger, S. (2009). Valuing air quality using the life satisfaction approach. *Economic Journal, 119*, 482–515.

Luechinger, S. (2010). Life satisfaction and transboundary air pollution. *Economics Letter, 107*, 4–6.

MacKerron, G., & Mourato, S. (2009). Life satisfaction and air quality in London. *Ecological Economics, 68*, 1441–1453.

McMichael, A. J., & Kovats, R. S. (2000). Climate change and climate variability: Adaptations to reduce adverse health impacts. *Environmental Monitoring and Assessment, 61*, 49–64.

Molnar, J. J. (2010). Climate change and societal response: Livelihoods, communities, and the environment. *Rural Sociology, 75*(1), 1–16.

Pan, W.-H., Li, L.-A., & Tsai, M.-J. (1995). Temperature extremes and mortality from coronary heart disease and cerebral infarction in elderly Chinese. *The Lancet, 345*, 353–355.

Proctor, C. (2014). Subjective well-being. In Michalos, A. C. (Ed.), *Encyclopedia of Quality of Life and Well-Being Research Springer,* pp. 6437–6441.

Schuessler, K. F., & Fisher, G. A. (1985). Quality of life research and sociology. *Annual Review ofSociology, 11,* 129–149.

Semenza, J. C., Wilson, D. J., Parrra, J., & Bontempo, B. D. (2008). Public perception and behavior change in relationship to hot weather. *Environmental Research, 107*, 401–411.

Siagian, T. H., Purhadi, P., Suhartono, S., & Ritonga, H. (2014). Social vulnerability to natural hazards in Indonesia: Driving factors and policy implications. *Natural Hazards, 70*, 1603–1617.

Vescovi, L., Rebetez, M., & Rong, F. (2005). Assessing public health risk due to extremely high temperature events: Climate and social parameters. *Climate Research, 30*, 71.

Welsch, H. (2006). Environment and happiness: Valuation of air pollution using life satisfaction data. *Ecological Economics, 58*, 801–813.

Wilkinson, K. P. (1986). In search of the community in the changing countryside. *Rural Sociology, 51*(1), 1–17.

Wilkinson, K. P. (1991). *The community in rural American* (pp. 1–12). New York: Greenwood Press. Introduction: Studying the community in rural America.

Willroth, P., Massmann, F., Wehrhahn, R., & Revilla Diez, J. (2012). Socio-economic vulnerability of coastal communities in southern Thailand: The development of adaptation strategies. *Natural Hazards and Earth System Sciences, 12*, 2647–2658.

Wu, P.-C., Lin, C.-Y., Lung, S.-C., Guo, H.-R., Chou, C.-H., & Su, H.-J. (2011). Cardiovascular mortality during heat and cold events: Determinants of regional vulnerability in Taiwan. *Occupational and Environmental Medicine, 68*, 525–530.

Wolf, J. W. N., Adger, I., Lorenzoni, V. Abrahamson, & Raine, R. (2010). Social capital, individual response to heat waves and climate change adaptation: An empirical study of two UK cities. *Global Environmental Change, 20*, 44–52.

Zeng, X., Singh, S. R., Hou, D., & Hou, S. X. (2010). Tumor suppressors Sav/Scrib and oncogene Ras regulate stem-cell transformation in adult Drosophila malpighian tubules. *Journal of Cellular Physiology, 224*(3), 766–774.