Older People and their Household-Related Life Satisfaction in Germany

Older People and their Household-Related Life Satisfaction in Germany

By

Xiangjun Ren

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

accom	accommodation
CI.	Confidence interval
e.g.	exempli gratia
EQLS.	European Quality of Life Survey
EU.	European Union
FTF.	face-to-face
GDP.	Gross Domestic Product
GNP.	Gross National Product
NASA.	National Aeronautics and Space Administration
OECD.	Organization for Economic Co-operation and Development
One-way ANOVA.	one-way analysis of variance

LIST OF CHARTS AND TABLES

Charts

Tables

Acknowledgements

Ever since the first glance into the darkness filled with shining stars, the descendants of our *Homo sapiens* have never ceased their curiosity and exploration of the incredible world, or themselves. Chasing the doctoral degree is like sailing alone in the boundless universe to find one's own star. I would like to give my highest appreciation to Professor Dr. Birgit Pfau-Effinger, who may be not the brightest star, but for me, she is Polaris in the universe of sociology. Far more than an excellent scientist, she is a tutor, friend and family member; she provided all she could in helping and guiding me and my family not only academically, but also in daily life. This book could not have been written without her selfless support over the years. Besides, I am so grateful for the support from all of my family members, especially my parents. Their patience, care and love have always been the best comfort for me in any of my difficulties. Specifically, I am also grateful to my son who is absolutely the most adorable cutie in my world. He vouchsafes in me a spirit of faith and courage; I would give up everything and fight everything for him.

This book has been developed on the basis of my long-lasting doctoral thesis and I have received lots of help from many experts and workmates from Universität Hamburg and other research institutes. Hereby, I would like to thank Professor Stefanie Kley for providing extremely valuable suggestions that have improved my research methods and statistical analysis in this thesis. Likewise, I would like to thank Professor Melike Wulfgramm and Professor Klaus Petersen who invited me for a short visit to the University of Southern Denmark and inspired me in my research methods. I would like to give my utmost appreciation to all of my workmates in the research team (Dr. Ralf Och, Dr. Patricia Frericks, Dr. Grages Christopher,

Dr. Reimer Thordis, Dr. Thuid Eggers, Dr. Julia Höppner, Dr. Marcel Sebastian, Julia Gutjahr and Ruirui Zhou), as they also contributed a lot during the whole research period of this book. Together in workshops, colloquiums and conferences, we shared the most wonderful time. Meanwhile, I would like to thank Dr. Ulf Beckmann, Ms Marisa Shabaz from the Graduate School of Universität Hamburg and Ms Frauke Johannsen, Ms Christina Fischer who works/worked as the secretary of the research team of Professor Birgit Pfau-Effinger. Their support was undoubtably significant for my stay and study in Germany as an international student. Then, I would like to thank Xing, Jinhui, Jiang, Tianyu, Kong, Fanlong and Luo, Yiqun, the best friends in my life course. Their company provided significant stimulation and pulled me out of depression. What should not be neglected, finally, is the role of my predecessors in related research areas who contributed theories and methods and constructed the basis of this book.

Nine years of experience in chasing the doctoral degree have gained me more than academic skills; they have transformed me socially and I have learned from various life lessons, which will be invaluable for my further academic career. Despite the work of this book being complete, it is only a first step into sociology – the boundless universe for sociologists. With the guidance of Polaris, I'm growing fearless and won't stop sailing towards infinity.

ABSTRACT

People have long been concerned about how good ones can live their lives early in thousands of years since ancient time, what is known as "quality of life" or "well-being". More than the measurement of material levels of living by the national GDP or GNP, quality-of-life research has developed into cross-disciplinary research, in addition to the development of social indicator research in the US since the 1960s. Accordingly, life satisfaction has become a main theme in this field, used interchangeably with the terms "quality of life", "well-being" and "happiness".

Stepping into the 21st century, most European countries are facing increasingly severe ageing problems due to the joint influence of a low fertility rate sustained for decades and the improvement of medical technology. These ageing problems are also accompanied by low economic growth in society and a bottleneck in welfare. Meanwhile, by reason of a decrease in physical function, an increase in health risk and the extenuation in income elasticity due to retirement, the older group and their later life quality have become the main concern for many scholars, politicians, and even the general public.

Under the impact of welfare policy "de-famililiazation" over decades, the effect of social policy in improving older people's life quality is vanishing. The role of the family is becoming significant again and has drawn the attention of society. The role of the family, however, has been highly restricted by plenty of social transitions in the long run, such as a well-developed industrial society, the transition of social culture and changes in people's living arrangements. Therefore, the small-size family is usual at the European scale, especially Germany as one representative country. Among older families, there is an extremely large proportion of

"one generation family" and "single family" structures. In this circumstance, the function of a family cannot meet our expectations in securing older people and their later life and in improving later life quality.

This book chooses older Germans as a target group; it focuses on their life satisfaction from the perspective of the household and tries to find the key determinants that impact their household-related life satisfaction from all household-related factors. Within this book, the author defines an innovative dimension of "household-related life domain" and develops an innovative definition of "household-related life satisfaction". Data used in this book were collected from three waves of the European Quality of Life Survey (2007, 2012 and 2016) in Germany, which amassed a total of 1,735 older respondents. Through a series of quantitative methods, this book analyses the relationship between household-related life satisfaction and household determinants. As was expected, household income, insufficient accommodation, marital status, support from family and contact with family have a significant impact on the household-related life satisfaction of older Germans. Unexpectedly, household size, number of children and care responsibilities are factors that have barely shown a correlation with the life satisfaction of older Germans. In the final part, this book analyses the discrepancies between different groups and finds significant differences among age groups, health conditions and between males and females.

This book focuses on household-related factors that may cause a significant impact on later life and provides an innovative perspective in measuring older people's life satisfaction in the context of the household. Despite the targeted group in this book being older Germans, the result may still be valuable for other countries with a similar social background, culture value, and policy support.

This book consists of seven chapters. Chapter one presents an introduction to this book with a brief description of the whole framework and the contents of each chapter. Chapter two gives an overview of the background to this research. This chapter firstly introduces the life

satisfaction of older people, the problems connected with population ageing and the social changes in the condition of later life. Then it explains the quantitative fundamental of this book in terms of the surveys, database, applied methods, variables, covariates and additional information not being used in this research. Chapter three provides an overview of previous research regarding life satisfaction and its relationship to quality-of-life studies and studies about life satisfaction. Then, it presents the findings of previous research regarding the outcomes of later life, life satisfaction, and household-related factors for older people. This part also demonstrates the research gap regarding life satisfaction in older people. Chapter four introduces the theoretical framework and the main concepts of this empirical study. It explains why the study distinguishes between overall life satisfaction and domain satisfaction, and furthermore, it offers an innovative approach to the concept of household-related life satisfaction in older people. This chapter also introduces the main hypotheses, which are evaluated on the basis of the empirical study. Chapter five introduces the results of the empirical study, which are based on correlation analysis, linear regression, one-way analysis of variance (ANOVA) and cross-tabulation analysis to determine interactions between the independent variables and the dependent variable—older people's household-related life satisfaction. Furthermore, the discrepancies between age groups, genders and health conditions are shown in this chapter. Chapter six explains how the data analysis findings support the main hypotheses of the study and presents a further discussion of a possible explanation for the results. Chapter seven presents the final conclusion.

CHAPTER ONE

INTRODUCTION

Population ageing turns more and more countries into a "gray society" with a series of problems for not only the economy, but society as well. Older people are usually considered as the vulnerable group after retirement since they are less stressed by their workloads and work-family imbalances than working-age adults on the one hand, but they are more constrained by declining incomes and rising health risks on the other. Under this circumstance, scholars, and even the whole of society, draw attention to the life quality and subjective well-being of older people in their later life, especially their household-related later life. The extent to which older people lead satisfying lives when they are no longer employed is an important issue, and this is when their private lives become increasingly important. This book focuses on the life satisfaction of older German people based on their household-related life domains and asks which factors among household-related factors in a family, significantly influence the life satisfaction of older people in Germany?

The term "*older people"* is defined here as those aged 65 and over who have retired from the labour market. The term "*household-related life satisfaction"* in this book is defined as people's subjective evaluations of their current situation in relation to the material, physical and psychological aspects of their family and household lives. To accommodate the concept of household-related life satisfaction, this book defines "*household-related life domain"* more broadly than merely one's family life. Based on the main research question, the research introduces several hypotheses regarding the

potential determinants of household-related life satisfaction, which is evaluated through empirical quantitative research of older people in Germany. This book proposes that, theoretically, household-related life satisfaction is an accurate and reliable indicator of the satisfaction of older people within their household-related lives. Additionally, it is assumed that marriage, ownership of accommodation and number of rooms within the accommodation, frequency of contact with family members and support from family members in difficult situations are positively associated with older people's life satisfaction, whereas performing housework and providing informal care for family members is negatively associated with older people's life satisfaction.

The focus of this study is older people in Germany; this nation is typical of a highly developed post-industrial society with a well-developed welfare state that offers a relatively high degree of social security for older people. The results of this research may provide general conclusions for highly developed post-industrial European societies with similar cultural backgrounds and situations for their elderly population. The data for this research were collected from three waves of the European Quality of Life Survey (2007, 2012 and 2016) in Germany, which amassed a total of 1,735 older respondents. This empirical research utilises family life satisfaction and accommodation satisfaction as indicators for the main dependent variable, which is household-related life satisfaction; furthermore, it employs correlation analysis, linear regression, one-way analysis of variance (ANOVA) and cross-tabulation analysis to determine the role of household-related factors in older people's household-related life satisfaction.

Cross-checks via correlation analysis and linear regression testified to the validity and reliability of the household-related life satisfaction measurement. A linear regression, a one-way ANOVA and a cross-tabulation analysis testified to the significance of several household-related factors in older German people's household-related life satisfaction. The

household income level, types of accommodation; the lack of a balcony, garden or terrace in one's accommodation; a shortage of space in one's accommodation; the possibility of being unable to afford one's accommodation; marital status, contact frequency with family members, support from family members in financial difficulties, support from family members when seeking a job and performing a fair share of housework are significant factors that influence older Germans' satisfaction with family life. Specifically, a lower household income; the lack of a balcony, garden or terrace in one's accommodation; a shortage of space in one's accommodation; a high possibility of being unable to afford one's accommodation; and an unfair share of housework are associated with a lower household-related life satisfaction, whereas being married or living with a partner; ownership of the accommodation; as well as support from family members in financial difficulties are associated with a higher household-related life satisfaction among older people.

Moreover, contact frequency with family members and support from family members (when one is ill, needs advice or is depressed) are also connected to household-related life satisfaction to some extent. Frequency of contact (both face-to-face and remote) with family members outside the household affects older people's household-related life satisfaction. However, daily or almost-daily contact may lead to a slight decrease in older people's household-related life satisfaction. Due to well-developed welfare policies in Germany, support from family members is less important for older German's life satisfaction in some difficult situations. Factors including household size, household type, number of children, number of rooms in one's household, caring for a child or grandchild, caring for elderly or disabled relatives and the state of one's housing are insignificant factors in the household-related life satisfaction of older people in Germany.

By controlling for different groups during the statistical analysis, differences regarding household-related life satisfaction are found between social groups based on gender, age and overall health conditions. The results of a

one-way ANOVA on average household-related life satisfaction among different older groups in Germany indicate that older women are more dissatisfied than older men, senior citizens aged 85 and over (the oldest age group studied, hereafter referred to as *the oldest-old*) have lower life satisfaction than younger groups, and poorer health conditions are associated with lower household-related life satisfaction.

This book analyses the role of household-related factors on older people's life satisfaction. To date, there has been little research regarding the effect of the state of one's housing on life satisfaction. This book offers a new contribution to both theory and research, as an integrated approach incorporates the complexity of household factors, such as relationships, income, personal situations and housing, in the household-related life satisfaction of older people in Germany. Furthermore, this book is innovative in its analysis of the effect of age groups, gender and health conditions on the life satisfaction of older people. Taking older Germans as the example, this book elaborates the mechanism of household factors in affecting later life for some of the European countries that have lots in common. For raising well-being in later life, there is still a long way to go.

CHAPTER TWO

BACKGROUND

Research towards life quality has become a unique branch in sociology and has been well developed since the 1960s. Life satisfaction is recognized as one of the main indicators for measuring an individual's life quality. On the basis of the central research question of the book, this chapter introduces the research background specifically. In this chapter, an elaboration of ageing problems explains why an older cohort has been selected as the target group. The elaboration of life satisfaction towards older people and the research gap for current research emphasize the reason that life satisfaction has been chosen as the measuring indicator. The elaboration of changes in the social context, culture and living arrangements of individuals reveals the necessity of research from a household-related perspective. Besides, this chapter briefly summarizes this research and elaborates specifically the quantitative methods to help readers in better understanding the contents, methods and research approaches.

I. Life Satisfaction of Older People

In a mid-20th-century industrial society, the concept of life satisfaction was designed as a benchmark of a great society (Noll, 2000). Because of the ageing societies in European welfare states, research regarding the life satisfaction of older people has substantially increased. Disciplines such as sociology, economics and psychology have contributed to the development of theory and research in the field. To explain the differences in various levels of life satisfaction, multidimensional approaches were developed that

included physical and psychological determinants at both the institutional and individual levels instead of focusing on a single, subjective dimension at solely the individual level (Kroll, 2008).

Additionally, scientists have researched the life satisfaction of older people. This focus has been strengthened with the development toward an ageing society, and research on this issue has been widespread since the early 1990s (Ardelt, 1997; Fisher, 1995; Levenson et al., 1993). Over the decades, modern life satisfaction studies of older people have become well developed, and the majority of life areas have been covered. However, the main focus of previous life satisfaction studies of older people has been mainly related to health (Aldwin & Park, 2007; Bader & Rogers, 2002; Kutubaeva, 2019; Lewinsohn et al., 1988; Liu & Upenieks, 2020; Walsh, 2016), marriage (Borg et al., 2006; Bowling et al., 1996; Buber & Engelhardt, 2008; Fukukawa et al., 2000; Kutubaeva, 2019; Litwin, 1996; Thomas et al., 2017; Walsh, 2016) and income (Cid et al., 2007; Fernández-Ballesteros et al., 2001; Lukaschek et al., 2017; Wallace, 2008). Although many studies concentrate on different life areas of older people, there remains a lack of integrated research regarding older people and their life satisfaction based on household-related factors.

Some researchers have argued that other factors that may influence older people's life satisfaction have not been sufficiently considered; for example, family life, the condition of one's accommodation and happiness should also be included to determine life satisfaction in older people (Diener, 1984; Diener, Oishi & Lucas, 2009; Veenhoven, 2012).

It is common to analyse life satisfaction in older people based on overall life satisfaction, which includes social policies and public services as well as one's health, economic situation, social life, household factors and standard of living. According to data from the European Quality of Life Surveys (EQLSs), average overall life satisfaction in 2016 decreased to the same level as 2007, although it rose between 2008 and 2012 in older German people (European Quality of Life Survey, 2016).

II. Problems Connected with Ageing

Since the 1970s, lasting improvements in socioeconomic status and GDP per capita, daily nutrition ingestion, and medical technology (data sources: OECE, 2018) in the majority of European countries have extended Europeans' life expectancy (OECD, 2018b). However, changes in attitudes toward reproduction mean that birth rates are relatively low in the majority of European countries (European Commission, 2014). Additionally, the first wave of baby boomers from the 1950s have entered old age since 2010, which significantly impacts population structures. Consequently, throughout Europe, the share of older people has substantially increased in affluent post-industrial societies (Kinsella & He, 2009; Kutubaeva, 2019). This trend, which began in the mid-20th century in many developed countries, is connected with a wide range of economic, social and political problems (OECE, 2018). Furthermore, the impact of ageing retroactively affects the life quality of the elderly cohort. In recent years, the percentage of older people in Germany increased more quickly than the European average, and the German population has become one of the oldest among European countries (Nowossadeck et al., 2014). Debates in German society pertain to the potential for substantial future problems regarding the sustainability of the German welfare state's pension and long-term care systems (Hamm et al., 2008; Parskawetz & Lindh, 2007; Börsch-Supan, 2008; Maier & Afentakis, 2013).

Old-age vulnerability is different from that of working-age groups because of financial restrictions after retirement, increased care needs and more medical requirements (Callan et al., 2008; Walsh, 2016; Xu, 2019). The increased risk of health deterioration that accompanies ageing further impacts older people's daily lives, reduces independence and may lead to a lower well-being (Baltes & Smith, 2003). Especially in times of public crisis, such as COVID-19, older people have higher social risks than those in other age groups (Bidzan-Bluma et al., 2020; Daly et al., 2021). In addition to

their material and physical downturns, older people are vulnerable to the loss of loved ones as well as changes in relationships and social networks (Walsh, 2016).

III. Social Changes in the Conditions of Later Life

The later lives of older people have changed considerably in recent decades in many areas. As a consequence of well-developed nutrition, living standards and medical care, health conditions and life expectancy in the majority of post-industrial countries have been rising for decades (OECD, 2018b). Additionally, the later life competency of the elderly has improved along with the improvement in health conditions. Welfare policies, especially in pensions and long-term care, play important roles in framing these changes as potentially negative. The support from the pension system allows older people to improve their autonomy and to be relatively independent from their families. However, there have also been some reductions in pensions as well as privatisation and marketisation of the pension system (Ebbinghaus, 2015). It should also be noted that the pension amount in many developed post-industrial societies differs between older men and older women: the pensions of older men are often far higher than those of older women, which is the case in Germany (Meyer & Pfau-Effinger, 2013).

Work and family are regarded as the most significant dimensions of people's lives; both domains satisfy people's material and emotional demands. As the basic unit of a society, family satisfies the majority of individuals regarding their basic needs in living, security and emotional demands, whereas participation in paid work fulfils the need for income and public connection. In retirement, parenting stress, which produces feelings of exhaustion and conflict, has typically ceased its negative impact on family relationships and life satisfaction (Avison et al., 2007; Craig & Churchill, 2019; Crnic et al., 2005). Furthermore, adult children may

provide support for their older parents due to changes in the relationship between generations and in living arrangements (Brzozowski, 2013; Chen & Short, 2008; Clark & Oswald, 2002; de Jong Gierveld et al., 2012; Haller & Hadler, 2006; Qualls & Zarit, 2009). As opposed to their working-age life stage, older people witness their social networks becoming narrower and more simplified. Family elements construct the majority of individuals' lives across all life domains and become the primary and most important determinants for the older cohorts' life satisfaction as they retire from the labour market (Milkie et al., 2008; Thomas et al., 2017). Household-related factors, such as accommodation, marital status, quality of relationships and household structure may have a significant impact on the lives of older people (Argyle, 1996; Diener et al., 1999; Easterlin, 2004; Frey & Stutzer, 2002; Hettlage, 2002; Layard, 2005; Myers, 2000).

Ultimately, there is a decrease in household size in European countries. This is seen as the result of a general trend towards individualisation during modernisation (Beck, 1986). In Germany, the household size decreased from three persons per household, on average, in the 1950s to two persons per household, on average, by 2014 (Statistisches Bundesamt, 2014), which is one of the lowest among European countries (data source: OECD Family Database, 2016). Of the 40.2 million households in Germany, 34.4% are two-person households and 40.8% are one-person households (Statistisches Bundesamt, 2014). The average number of generations in a household has decreased; consequently, the percentage of older people living alone or only with their spouse has increased, as seen in the sharp rise in recent decades in the number of one-person households and households without children (Statistisches Bundesamt, 2015).

Furthermore, the transformation of culture and values between generations in recent decades has changed the living arrangements of the elderly (Brody, 2004; Lee & Mjelde-Mossey, 2004). The share of older people who choose to live alone, rather than with their children or other relatives, has strongly increased; others live alone involuntarily or as a couple, since they do not

have children or their children live in a separate household. In these circumstances, older people must manage the majority of issues by themselves, endure mental loneliness and overcome physical problems on their own. Changes also occur in household relationships. Deteriorating marital, intergenerational and sibling relationships decrease contact frequency with family members, which eliminates some psychological and physical support for older people, increases their loneliness and stress and impacts their later lives negatively (Fokkema & Naderi, 2013; Hartwell & Benson, 2007; Kawachi & Berkman, 2001; Thomas et al., 2017; Umberson & Montez, 2010). These changes as well as the loss of a spouse and deteriorating health increase older people's feelings of isolation and psychological loneliness, and thus, they express a lower life satisfaction (Clair et al., 2017; Davidson & Rossall, 2015; Landeiro et al., 2017; Nichols & Riemer, 2009; Sibley et al., 2016; Valtorta & Hanratty, 2012).

As a consequence of ageing in German society, the number of older people who receive publicly financed care services has substantially increased, while spouses and children assume less responsibility in caregiving. However, a substantial portion of older Germans who need care still receive care only from a family member. Many researchers are critical about care from family members, since this is typically provided by women, and family care is therefore seen as a form of gender inequality (Eggers et al., 2020; Daly, 2021).

IV. Introduction of the Research

To determine which factor(s) affect the life satisfaction of older people, this research analyses the findings of the author's empirical study, which focuses on the life satisfaction of those aged 65 and over in Germany based on their perspectives of family life. The main research question is as follows: among the household-related factors in a family, which factors significantly influence the life satisfaction of older people in Germany? The focus of the

study is older German people, who are typical in a highly developed post-industrial society that has a well-developed welfare state and offers a relatively high degree of social security for older people. The study is based on a sample of over 1,700 older people (aged 65 and over) from the EQLSs over 10 years and measures the impact of household-related factors on older people's life satisfaction. To answer the main research question and examine its main hypotheses, the author evaluates the role of household-related variables utilising correlation analysis, linear regression and cross-tabulation analysis to ascertain the interaction between the independent variables and older people's household-related life satisfaction.

This book focuses on the later lives of older people regarding household and family life. Analysing the relationship between household-related factors and household-related life satisfaction reveals the connection between these elements. *Household-related life satisfaction* in this study is defined as people's subjective evaluations of their current situation in relation to the material, physical and psychological aspects of their family and household lives. To accommodate the concept of household-related life satisfaction, this research defines the household-related life domain more broadly than merely family life. This expanded concept of family life includes factors (such as income and housing) that were regarded as belonging to other life domains in previous studies. Compared to overall life satisfaction, household-related life satisfaction in older people within the broader field of the household-related life domain is more compatible with individuals in later life.

V. Quantitative Fundamental

1. Database

The empirical study on which this research is based used a sample of 1,735 people aged 65 and over from three waves of the EQLS in 2007, 2012 and

2016. The EQLS is a cross-national questionnaire survey which aims to measure European quality of life. This series of surveys has been conducted once every four or five years (2003, 2007, 2012 and 2016) and is pertinent to the lives of European citizens in comprehensive dimensions, including demographic indicators, employment, accommodation, social life, culture, family life, health, education, environment, public services and economic status (Eurofound, 2009; Eurofound, 2012). As the first attempt of the EQLS, the 2003 survey and variables were not well developed and featured a small sample that was insufficient to represent entire groups and the German population as a whole. Furthermore, the design of the survey questions and variables was different than later surveys and is invalid for time series research (see European Quality of Life Survey 2003). This wave of data, consequently, was not included in this study. In the EQLSs from 2007, 2012 and 2016, the questions and variables, through their multidimensional design, covered both the subjective well-being and objective living conditions of individuals from all EU member countries as well as several non-EU countries and regions in interdisciplinary fields. Based on overall population size, 1,000-3,000 interviewees were chosen in each country. More than 70 questions were designed to comprehensively measure quality of life. In the household-related dimension of the survey, more than 20 questions were classified into six sub-dimensions to reveal household economic status, accommodation, relationships, marital status, housework, caregiving and the demographic characteristics of respondents' households. The effective respondents in 2007, 2012 and 2016 were 35,634, 43,636 and 36,908, respectively. In the 2007 wave, 529 respondents were aged 65 and over, with 51% being older males and 49% being older females among all effective samples in Germany. In the 2012 wave, the effective older samples were 996 of the 3,055 Germans in the dataset; 46.8% of these were older males and 53.2% were older females. In 2016, the fourth EQLS, there were only 350 older participants among the 1,631 respondents in Germany, with older males comprising 46.9% and older females comprising

53.1%.

Although the fourth EQLS collected data from fewer elderly participants in Germany, its survey questions were inherited from the previous surveys and maintained the surveys' continuity. To enlarge the sample size and verify the reliability of statistical results, this study used data from all three waves of the EQLS as one database with 1,875 collected participants aged 65 and over. By cross-checking age and current situation, the author discovered that 96 of the participants in the panel were still employees, employers, self-employed or relatives assisting with the family farm or business. Besides, 44 respondents presented missing answers in dependent variables of this research. These cases did not fit with the definition of older people in this research and were out of consideration in the statistical analysis. Hence, the effective sample for this research included 1,735 people aged 65 and over who were out of the labour market.

The EQLS offers an advantage in the quality-of-life field over other surveys due to its wide scale of coverage, specific focus on quality-of-life indicators and description of single indicators from different angles. For example, in this study, measuring only the frequency of housework per week or only the fair share of housework would be insufficient to obtain a result for the relationship between life satisfaction and housework. Moreover, the EQLS provides better options in measuring life satisfaction by life domains, which builds an effective connection between household factors and household-related life satisfaction.

The focus of this study is older people in Germany; this nation is typical of a highly developed post-industrial society with a well-developed welfare state that offers a relatively high degree of social security for older people. The results of this research may provide general conclusions for highly developed post-industrial European societies with similar cultural backgrounds and situations for their elderly population.

2. Methods

Quantitative research methods aim to reveal the relationships between two or more variables, explain the phenomenon, and offer predictions through statistical analyses of collected data (Aliaga & Gunderson, 2002). The hypotheses in the theoretical framework were tested with collected data from the EQLSs, and the author used different quantitative research methods to find the degree to which household-related factors impact one's household-related life satisfaction in later life.

Descriptive analyses are inevitable in both quantitative and qualitative research to demonstrate the basic status of all dependent and independent variables that are adopted in a study. Furthermore, descriptive analyses also provide a reference standard for a study's statistical analyses.

Quantitative research methods have been developed as sporadic multi-disciplinary (e.g., Campbell & Stanley, 1963; Creswell, 1994; Kumar, 1996). Sukamolson (2007) distinguishes three types of survey research methods: correlational research, experimental research and causal-comparative research. Correlational research was the main research method applied in this study to discover the correlations between household factors, test the main hypotheses and measure the differences between groups based on the same factors.

Correlational research

As one of the main quantitative research methods, correlational research is designed to reveal the relationship between two or more dependent and independent variables in target groups; it functions in two ways: as an explorative or a predictive method (Creswell, 2008; Leedy & Ormrod, 2010). Different statistical methods are available for correlational research. Quantitative research methods of correlation analysis, linear regression analysis and cross-tabulation analysis were adopted in this study to determine how household-related factors affect the household-related life

satisfaction of older Germans and how these factors are linked with each other.

All dependent and independent variables in this study were originally quantified into categorical variables (including monthly income and age) so Kendall's τ correlation coefficient could be used to acquire accurate results in the correlation analysis (see Maache & Lepage, 2003). The value of the correlation coefficient moves between -1 and 1, and a negative value indicates an inverse movement of one variable as another changes. The absolute value of the correlation coefficient indicates the degree of correlation: a smaller absolute value signifies a smaller correlation between variables. When the value reaches 0, the correlation between the variables is considered totally irrelevant. Another situation that scarcely occurs is two completely synchronous variables, which requires the absolute value of the correlation coefficient to reach 1 or -1.

Linear regression was used to measure three factors selected from different life domains and their correlation with each life satisfaction indicator; furthermore, testifying the hypothesis would be supported by the findings. Even though, some studies indicate that linear regression is insufficient to reveal the relationship between life satisfaction and its determinants. The author of this study conducted linear regression since the dependent variables of satisfaction were measured on a 10-level ordinal scale and could be regarded as quasi-metric variables (McCullagh, 1980).

The result of linear regression shows whether independent variables significantly impact as determinants through the value *Sig. (P)* and in what degree they affect the dependent variable through the standard coefficient Beta. Furthermore, the *R-square* of linear regression gives the percentage improvement in forecasting the mean of the dependent variable based on all predictor variables, compared to having no information about associations of the dependent variable (Agresti, 2009: 264). Specifically speaking, the value of R-square distributes between 0 and 1. It shows how well the regression model can predict the whole sample; a bigger value of R-square

represents a better fitting degree of the regression model. Through the linear regression, the author testified the specific degree to which household-related factors influenced household-related life satisfaction. It was used to test the bivariate analysis on relationships between each indicator and household-related life satisfaction. The one-way analysis of variance (ANOVA) was widely adopted in this study to test whether there was any significance of the variance between sample groups.

Research design

The statistical analysis of this study comprised six steps. First, a screen of the whole sample on the basis of the established definitions of older people and the household-related life domain was necessary. Due to the difference in questions among the three waves of the EQLS, some of the variables were quantified by different standards. Therefore, data processing with a unitary standard was important to maintain data uniformity. After the second step (descriptive statistical analysis), the author testified the theoretical hypothesis through correlation analysis and linear regression. The testification used marital status, number of rooms in one's housing and self-rated health condition as independent variables from different life domains and measured their correlation with three dependent variables of overall life satisfaction, happiness and household-related life satisfaction (accommodation satisfaction and family life satisfaction). Through the correlation analysis and linear regression of dependent variables with each of the three chosen independent variables, the one with the highest level of significance and the largest correlation coefficient was testified as the most appropriate measurement for the relevant independent variable and for the related life domain. The result provided significant empirical support for the subsequent statistical analysis.

In the next step, correlation analysis was used to perform a preliminary test on the correlations of household factors with household-related life