

Social support: the answer to a high life satisfaction of elderly in Europe?

A research rapport about the effect of social support on life satisfaction of elderly in European countries

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Social support: The answer to a high life satisfaction of elderly in Europe?

A RESEARCH RAPPORT ABOUT THE EFFECT OF SOCIAL SUPPORT ON LIFE SATISFACTION OF
ELDERLY IN EUROPEAN COUNTRIES.

Institute for Health Policy and Management
Master thesis

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Location & date: Rotterdam, August 13th 2017

Summary

Objective

The general objective of this research is to examine and provide a better understanding of the effect of social support on life satisfaction of elderly people in European countries. This study will investigate how having children and receiving informal care affect the life satisfaction of elderly in European countries.

Methods

For this thesis a panel data approach has been conducted based on the SHARE dataset, which consists data of 20 European countries and Israel collected during a period of nine years (2004 – 2013). The obtained dataset contains a total of 67.328 individuals and 195.272 observations. Using a fixed effect model, the effect of social support on life satisfaction (CASP) of elderly in European countries is examined, while controlling for demographic, socio-economic and health-related variables. The CASP has been operationalized as a scale with a minimum of 2 and a maximum of 48.

Results

In this study associations have been found between having grand-/ children, having daughters, having children living at home, having frequent contact with a child and receiving informal care both within and outside the household and the life satisfaction of elderly people in European countries. Having grand-/ children decreases the life satisfaction with 1.027 and 0.863 points respectively compared to having no grand-/ children. Having a daughter increases the life satisfaction with 0.178 points compared to having a son. Also, having frequent contact with a child increases the life satisfaction with 1.393 points compared to having no frequent contact with a child. However, having a child living at home decreases the life satisfaction with 0.955 points compared to having no children living at home. Finally, receiving no informal care both within and outside the household increases the life satisfaction with respectively 1.658 and 1.396 points compared to receiving informal care within and outside the household.

Discussion

Based on the results the effect of social support on life satisfaction among elderly people in European countries is twofold: on one hand having children as such is associated with lower levels of life satisfaction, where living with a child, having frequent contact with a child and having a daughter is associated with higher levels of life satisfaction. On the other hand, receiving informal care both within and outside the household is associated with lower levels of life satisfaction.

The findings in this research are not all in line with earlier studies in this field of examining the relationship between social support and life satisfaction of elderly in European countries. Meaning it provides new insights regarding this issue. This research is therefore supplementary to existing studies on the effect of social support on life satisfaction of elderly in European countries. Besides, the findings provide a set of interesting insights for scientific researchers, where the findings offer policy makers to change their current focus from informal care towards developing e.g. programs that enable elderly to live longer independently at home.

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Chapter 1 Introduction

1.1 Problem analysis

As life expectancy globally seems to continue to rise, European countries are challenged to accommodate the different consequence of this phenomenon. One of the remarkable consequence is change in the demographic division of the population: lower birth rates and the highest proportion of elderly people (Eurostat 2005). Due to these demographic developments, the growing interest of policy makers in the quality of life of elderly people with or without a disability is understandable (Baltes & Smiths 2003; Walker 2005). One of the many research projects executed in light of EU policies is Multilinks, which studies the effect of demographic changes on the intergenerational solidarity, well-being and social integration (Herlofson et al. 2011).

The quality of life has been defined using different definitions models, of which life satisfaction and well-being received the most attention (Veenhoven 1999; Clarke et al, 2000). The reasons for this attention is that researchers are convinced that it is not possible to fully understand the life satisfaction of people without asking the subjects about their feelings. In contrast to objective indicators, e.g. housing and living conditions, the use of subjective indicators allows to include some evaluation of the persons' circumstances in life (Brown, Bowling & Flynn 2004).

Lower life satisfaction in old age is assumed to be inevitably combined with a worse health status or having physical limitations. Disabilities differ in exacerbation, severity and effects. One form of disability that is often combined with ageing, is getting functional limitations, which may have a huge effect on the well-being of elderly people. Functional limitation can be defined as 'the gap between a persons' ability and environmental requirement (BURDIS 2004:2). Functional limitations are often measured with 'activities of daily living' (ADL) and 'instrumental activities of daily living' (IADL) which seems to be negatively associated with the life satisfaction of elderly (Borg et al. 2006).

Besides health-related factors like disability, there are other factors that may have an effect on life satisfaction, e.g. demographic, socio-economic and social factors. Social support could be referred to as informal care, which is care provided by people within the social environment of the care receiver. The extent of informal care is increasingly significant with the increasing share of disabled elderly people (Van den Berg et al., 2007).

Despite the fact that disabled people see informal care as their primarily significant source of support in their life, the extent of studies focusing on the significant effect of informal care received by the disabled elderly people and its effect on the life satisfaction is still limited (Van Houtven and Norton, 2004). The existing studies on life satisfaction incorporate some finding about other different social factors, but not enough on the effect of informal care on life satisfaction. The aim of this research is to examine what the effect of social support is on the life satisfaction of disabled elderly in Europe.

The aim of this thesis is to contribute to a better understanding and a detailed description of the effect of social support on the life satisfaction among elderly people in European countries. This detailed description can be used as theoretical framework for the

development of different policies, e.g. the future demand for long-term care. In order to conduct this research, an extensive dataset has been obtained from The Survey of Health, Ageing and Retirement in Europe (SHARE).

1.2 Research objective

The general objective of this research is to examine the effect of social support, in terms of having children and receiving informal care, on the life satisfaction among elderly in European countries.

1.3 Research question and sub-questions

In the context of the above mentioned general objective, the research question is formulated as follows:

‘What is the effect of social support on life satisfaction of elderly people in European countries?’

To provide an answer on the research question, the following sub-questions are formulated:

1. To what extent are demographic variables associated with life satisfaction of elderly in European countries?
2. To what extent are socio- economic variables associated with life satisfaction of elderly in European countries?
3. To what extent are health related variables associated with life satisfaction of elderly in European countries?
4. To what extent is social support associated with life satisfaction of elderly in European countries?

1.4 Research overview

The remainder of this thesis is organized as follows: chapter 2 concerns the theoretical framework of this thesis. The definitions of the main concepts and an extensive review of the existing literature is included. The hypotheses that are formulated and the corresponding conceptual model that will be used as guideline for the statistical analyses will also be included in this section. Chapter 3 encloses the methodological information, such as the dataset that will be used, the chosen sample and the descriptive statistics of the sample. Further, chapter 4 will contain the results of the statistical analyses. Finally, the conclusion and discussion of this thesis will be presented in chapter 5.

Chapter 2 Theoretical framework

This chapter addresses the main concepts underlying the research questions. First, the chosen definitions of this study will be addressed. Further, an extensive review of the literature will be given presenting the most important empirical findings concerning the determinants of life satisfaction. Furthermore, the conceptual model exploring the relations between the different main concepts will be presented. Finally, an overview of the corresponding hypotheses will be given.

2.1 Background

The 20th century of Europe is characterized by quickly increasing life expectancy of the whole population. The increasing life expectancy is due to the decrease of mortality by acute diseases, like burns or heart attacks (Mathers et al., 2014). Nowadays, mortality is characterized by chronic diseases, like heart and vascular diseases and chronic obstructive pulmonary disease (COPD). Due to improvements of the different living circumstances and the health care facilities, chronic diseases have been evolving, which lead to increasing share of elderly in Europe (Kinsella 1992). Due to this ageing of the European population, the target population in this research will be European elderly people.

The target population concerns elderly people in Europe. Getting older is often associated with more disabilities, such like physical disability. In this research disability will be described as functional limitations defined as a gap between a person's abilities and environmental requirement (BURDIS 2004:2). In this research disability will be defined as the functional limitations in the daily life of an individual. Functional limitations are usually measured using self-reports of basic activities of daily living (e.g. mobility and self-care) and instrumental activities of daily living (e.g. meal preparation and taking medication) (BURDIS 2004:2).

Experiencing functional limitations in the daily life, will have an effect on the individual's life satisfaction. The most often used terms to describe life satisfaction are subjective well-being (SWB) and happiness (Alexandrova 2005). In the empirical research, it is more common to use the term life satisfaction that can be defined as *"the degree to which a person positively evaluates the overall quality of his/her life as a whole"* (Veenhoven 1996:6). According to Conceicao & Bandura (2008) life satisfaction is a part of subjective well-being where it reflects the difference between the desired subjective well-being and the actual subjective well-being. Meggiolaro & Ongaro (2013) define life satisfaction as an indicator that evaluates the life conditions of elderly people that reflect different and broad domains. In this research, the term life satisfaction will be used to characterize the subjective well-being of elderly.

2.2 Literature review

Existing literature suggest that there are different factors that affect life satisfaction of elderly people in general. These determinants of life satisfaction can be broken down in four groups: demographic factors, socio-economic factors, health related factors and social factors (table 2.1).

| Demographic | Socio-economic | Health related | Social |
|-------------|-------------------|--------------------|--------------------|
| Age | Education | Health status | (grand-)Children |
| Gender | Employment status | Functional ability | Informal care |
| Ethnicity | Marital status | Health care use | Social involvement |
| | | Chronic illnesses | Social integration |
| | | Mental health | |

Table 2.1 Overview determinants of life satisfaction

2.2.1 Age

The relation between age and life satisfaction is extensively observed in many studies. However, there is still no certain conclusion about the effect of age on life satisfaction among elderly. On one hand, there are researchers that argue that the relationship between age and life satisfaction is not consistent (Myers & Deiner, 1995). On the other hand, the amount of studies supporting the existence of a relation between age and life satisfaction are increasing. Dolan et al. (2008) found a U-shaped relationship between age and life satisfaction which reflects the ages at which the life satisfaction is the lowest. In a study conducted by Gwozdz & Sousa-Poza (2009) the same U-shaped relation was found but they noted a very sharp decline in life satisfaction after age 65.

However, the previous findings were based on cross-sectional data. Gwozdz & Sousa-Poza (2009) noted that the U-shape relationship that is found between age and life satisfaction in many studies may be a result of a methodological problem, namely the result on unobserved individual heterogeneity, which refers to differences between individuals that is not taken into account. The use of longitudinal data is needed to study the dynamics of life satisfaction in relation with age.

Studies using longitudinal data had conflicted with the previous (cross-sectional) findings. In the study by Mroczek & Spiro (2005) using longitudinal data, they looked at the effect of age on the life satisfaction of a group American men over 22 years. They found that their life satisfaction increases over the years with a peak at age 65 years followed with a decline afterwards. In another study about the life satisfaction of English men, they found an inverse U-shaped relationship for age and life satisfaction (Steptoe et al., 2012). In a study both cross-sectional and longitudinal data have been used to estimate the relationship between age and life satisfaction for elderly Russians whereby they found conflicting results. Despite the conflicting results there are some indications that even after controlling for cohort effects, life satisfaction is U-shaped through the life- course (Blanchflower & Oswald, 2008).

H1: Age is both positively as negatively associated with life satisfaction.

2.2.2 Gender

In many studies, it is found that the relation between gender and life satisfaction is not significant as such, but has an effect on the other determinants of life satisfaction. In a study by Sheung-Tak & Chan (2006) they found that having a social network has more effect on the life satisfaction of women than for men. Meggiolaro and Ongaro (2013) found in their study about life satisfaction among elderly in Italy that being educated is positively associated with life satisfaction of men. In the case of women, having functional limitations were negatively associated with life satisfaction. Further, a study found that the life satisfaction of men is more associated with social support where for women the age played an important role in the life satisfaction (Wang et al., 2002).

H2: Gender has an interrelated association with other determinants of life satisfaction.

2.2.3 Education

The effect of education on the life satisfaction of elderly people is debatable. In the studies conducted by Kudo et al. (2007) and Cid et al. (2007) they found that education has no clear effect on the life satisfaction. However, Pinquart and Sørensen (2000) concluded in their survey of 286 empirical studies on the subjective well-being of older people that education has a small positive effect on the well-being. In other studies, the other extreme is shown, namely being low educated is associated with higher levels of life satisfaction (Fernandez & Kulik, 1981).

H3: Being educated is associated with higher levels of life satisfaction.

2.2.4 Employment status

With regards to the employment status, many specialists and policy makers emphasize the importance of employment for the life satisfaction among elderly. However, the empirical findings on the effect of employment on life satisfaction differ a lot. On one hand, many studies found a positive relationship between productive activities, such as full-time job or volunteering, and the well-being of the elderly (Morrow-Howell et al., 2003). On the other hand, also the opposite is founded in other studies (Wallace, 2008).

H4: Being employed is positively associated with life satisfaction.

2.2.5 Marital status

The findings with respect to the marital status differ across the various studies. Research shows that individuals that are married or living with a partner in general have a higher life satisfaction than single individuals. However, the single status can be filled in in different ways which results in different effects on the life satisfaction. For example, in the study conducted by Gaymu & Springer (2010) it is found that being divorced compared to being widowed had a negative effect on the life satisfaction, whereas never being married had a positive effect on the life satisfaction.

H5: Being married and/or living with a partner is positively associated with life satisfaction.

2.2.6 Health status

In many studies, the relationship between health status and life satisfaction among elderly people is examined. In the studies conducted by Borg et al. (2006;2008) it is found that subjective measures of health, such as self-reported health, have a significant effect on the life satisfaction compared to objective measures like health care use. This finding is especially important in the case of disability in terms of functional limitations (Borg et al., 2006; Borg et al., 2008; Bowling & Farquar, 1996).

H6: Having a bad health status is associated with lower levels of life satisfaction.

2.2.7 Disability

Osberg et al. (1987) find that life satisfaction of disabled elderly people is strictly associated with functional ability. In the study conducted by Mollaogula et al. (2010) they found that mobility disability significantly affects the life satisfaction. In the study conducted by Blace (2011) is found that the elderly who were functional able to perform tasks were more satisfied with their lives compared to those who were not functional able anymore. Dunkle and Kivett (1994) found that being physically disabled decreased the life satisfaction. Lee and Lee (2013) found that having functional limitations were associated with a lower health status which results in lower levels of life satisfaction.

H7: Being functional disabled is associated with lower levels of life satisfaction.

2.2.8 (Grand-) Children

An important social factor of the life satisfaction of elderly people is having (grand-) children (Buber & Engelhardt, 2008; Gaymu & Springer, 2010). Before considering the various empirical findings, it is important to note that these findings differ across countries, because of the differences in values, culture and traditions regarding the role of (grand-) children in the elderlies' life satisfaction (Polverini & Lamura, 2005).

In reviewing the effects of the role of (grand-) children it is also important to distinguish between (grand-) children living in the same household and living separately. Chyi & Mao (2011) conducted a study in a non-western setting, on Chinese elderly, and found that living with grandchildren has a positive effect on life satisfaction in comparison to living without grandchildren. A similar conclusion was reached in a study on the life satisfaction of Taiwanese elderly females living with family (Nanthamongkolchai et al., 2009).

For the elderly living alone, the frequency of contact with the (grand-) children is important. In a study among Italian elderly, it was found that living or having frequent contact with children is positively associated with the life satisfaction compared to those who did not live or have frequent contact with the children (Meggiolaro & Ongaro, 2013). Furthermore, Gaymu & Springer (2010) found a positive relationship between the frequency of contacts with children and the life satisfaction for elderly women living in southern Europe. For the women living in other European countries the same was not found (Gaymu & Springer 2010). The same results were found by Buber & Engelhardt (2008) in a study on the effect of the frequency of contact on the mental health and therefore on the life satisfaction based

on the assumption of having a good mental health is associated with higher levels of life satisfaction. Sener et al. (2008) found in their survey on the impact of the interaction with (grand-) children with elderly, that quality rather than the quantity of the contact have a positive effect on the life satisfaction of elderly.

Further, Pollman-Schult (2014) focuses in his article on the relationship between having children and the life satisfaction of (elderly) parents. In this article, it is found that having children does not have to mean that it will increase life satisfaction. Also in case of (elderly) parents whose child (-ren) is (are) often older or not even living at home anymore, it is not found that having children increases life satisfaction. However, researchers found that daughters are more likely to provide care for the aged parents compared to sons. This relationship between daughters and elderly parents is positively associated with the life satisfaction of elderly parents (Brubaker & Brubaker, 1992).

H8a: Having frequent contact with the (grand-) children has a positive association with the life satisfaction.

H8b: Living with the (grand-) children has a positive association with the life satisfaction.

H8c: Having daughters is positively associated with life satisfaction.

2.2.9 Informal care

Finally, social support in terms of informal care is an important determinant of the life satisfaction of elderly. Informal care can be defined as the care provided by the social network who do not get paid or receive some forms of in kind benefits. Informal care has always been an important part of the overall care that is provided to the sick and disabled people. However, the extent of informal care is increasing significantly with the increasing life expectancy and therefore the increasing part of disabled elderly people (Van den Berg et al., 2007).

Previous research has shown that disabled people see informal care as the primary significant source of support in their lives (Van Houtven and Norton, 2004). However, studies focusing on the significant effect of informal care received by the disabled elderly people and its effect on life satisfaction of the elderly remains limited. This is despite the fact that the number of informal caregivers is increasing, therefore the burden on family and friends also. Based on the findings of Polverini & Lamura (2005), the expectation is that if there is an effect of receiving informal care on the life satisfaction, this will differ across the different European countries due to context differences.

H9: Receiving informal care is positively associated with life satisfaction and differ across European countries.

2.2.10 Filial obligation norms

As discussed, the association between social support and the life satisfaction of elderly differ across countries, because of the differences in norms towards family responsibility. Family responsibility or filial obligation norms reflect the *“generalized expectation that children should support their elderly parents at times of need”*. Besides this, filial obligation also concerns *“duties and obligations that define the social roles of adult children with respect to their ageing parent”* (Gans & Silverstein 2006).

Daatland & Herlofson (2003) explore the attitudes to family responsibility norms between parents and children in their study among five countries: England, Germany, Spain, Israel and Norway. They found that in general the people support the idea of filial obligation. However, this support is neither universal nor unconditional. In Spain, filial obligation seems to be the highest, followed by Israel. England, Germany and Norway had lower levels of filial obligation. The differences between the countries were explained by how ‘family-centered’ the countries are and by gender. Spain and Israel are considered as more family-centered countries compared to England, Germany and Norway, because in these countries there are minimal public alternatives to family care (Herlofson et al. 2011). Concerning the gender differences, it is found that men in Norway and England supported the idea of filial obligation more compared to women. In Germany, Spain and Israel however, there were small or no gender differences (Daatland & Herlofson 2003).

In another study by Mureşan & Hărăguş (2015), the norms of filial obligation in Central and Eastern Europe and the actual support given to elderly are studied. Their findings suggest that filial obligations are more supported in Eastern European countries than in Western European countries. However, they also showed that actual support given to elderly is not more prevalent in Central Eastern Europe than in Western European countries even if filial obligations norms are more strongly in these countries. Further, they also found that children who did not live with the concerning elderly supported the filial obligations more (Mureşan & Hărăguş 2015).

H10: The support for filial obligation norms is positively associated with social support, and therefore with the life satisfaction of elderly, in South and Eastern European countries compared to North and Western European countries.

2.4 Conceptual model

In the literature review, different relations of life satisfaction with its determinants have been described (table 2.2). The conceptual model includes the outcome variable *life satisfaction* since the effects of various determinants on the life satisfaction will be determined. Further, it includes the exposure variable *disability* which indicates that people can be exposed to a disability which could have an effect on the life satisfaction. Because of the chosen definition of disability, functional limitations as a consequence of getting older, in this study, the expectation is that there will be no association between with having (grand-) children and disability.

Also, different confounders (green) and intermediate variables (red) are included. An intermediate variable is a variable through which the exposure variable may have an effect on the outcome (The Broker, 2017). A confounder is a variable that may have an effect on both the exposure and outcome variable. This effect can lead to incorrect conclusions about the relationship between disability and life satisfaction, which can be dealt with by statistical control in the analysis (NVTG, 2017).

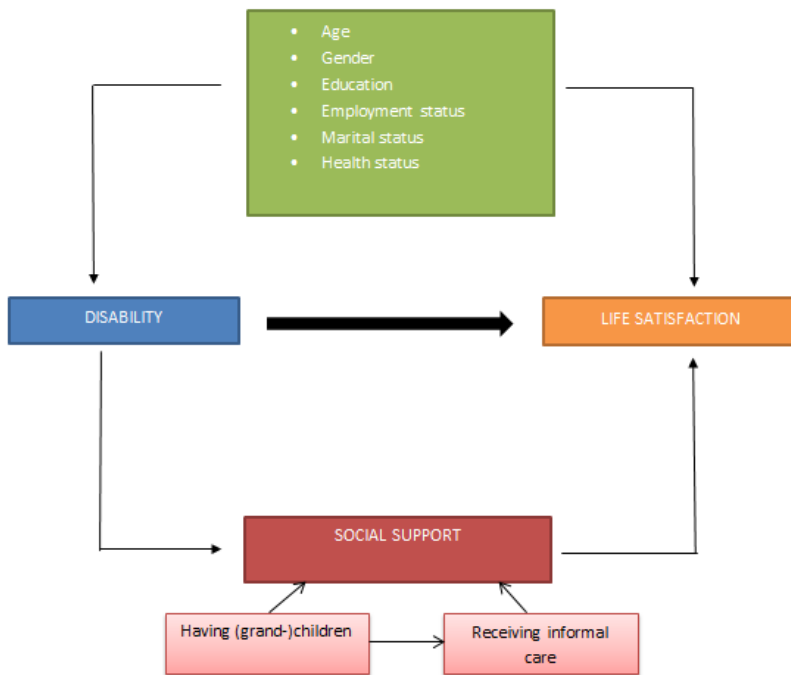


Table 2.2 Conceptual model

In this research, disability may be a consequence that more care is needed which may be provided by informal care which may have an effect on life satisfaction. Further, social support consists of *having (grand-) children and receiving informal care*. Having (grand-) children could have an association on receiving informal care by the elderly. However, the expectation is also that having frequent contact with the (grand-) children could lead to higher life satisfaction. Therefore, having (grand-) children is expected to be associated as such and with receiving informal care.

2.5 Hypotheses

Based on the literature review and the conceptual model, a set of hypotheses has been formulated that will be used as a guideline for the methodological analysis (table 2.3). The hypotheses can be divided into five groups of determinants that are associated with life satisfaction among the elderly in Europe:

| Group | Hypothesis |
|------------------------------------|---|
| A. Demographic factors | |
| | <i>H1: Age is both positively and negatively associated with life satisfaction.</i> |
| | <i>H2: Gender has an interrelated association with other determinants of life satisfaction.</i> |
| B. Socio- economic factors | |
| | <i>H3: Being educated is associated with higher levels of life satisfaction.</i> |
| | <i>H4: Being employed is positively associated with life satisfaction.</i> |
| | <i>H5: Being married and/or living with a partner is positively associated with life satisfaction.</i> |
| C. Health related factors | |
| | <i>H6: Having a bad health status is associated with lower levels of life satisfaction.</i> |
| | <i>H7: Being functionally disabled is associated with lower levels of life satisfaction.</i> |
| D. Social factors | |
| | <i>H8b: Living with (grand-) children has a positive association with the life satisfaction.</i> |
| | <i>H8a: Having frequent contact with (grand-) children has a positive association with the life satisfaction.</i> |
| | <i>H8c: Having daughters is associated with higher levels of life satisfaction</i> |
| | <i>H9: Receiving informal care is positively associated with life satisfaction.</i> |
| E. Country specific factors | |
| | <i>H10: The support for obligation norms is positively associated with social support, and therefore with the life satisfaction of elderly, in Eastern European countries compared to Western European countries.</i> |

Table 2.3 Overview hypotheses

Chapter 3. Research methods

This chapter elaborates on the methodology of this research. The aim of this study is to determine the effect of social support on life satisfaction of elderly people in different European countries. First the data that is used for this research will be explained. Further, the sample and the operationalization of the different variables is defined. Next, the used model in this research will be explained. Finally, the descriptive statistics of the sample is described.

3.1 Data

The overview of hypotheses presented at the end of chapter 2 will be tested using panel data from the Survey of Health, Ageing and Retirement in Europe (SHARE). SHARE presents micro data on health, socio-economic status and social and family networks of individuals from 20 European countries and Israel (Börsch-Supan and Jürges, 2015). The European countries are Austria, Denmark, Sweden, Austria, Slovenia, Poland, Hungary, Czech Republic, Estonia, Ireland, the Netherlands, Belgium, Luxembourg, Germany, France, Portugal, Spain, Italy and Greece.

SHARE has collected approximately 293.000 interviews over five waves. Four of the five waves concern collecting panel data on current living circumstances which allow for comparisons over time. The four panel waves are collected respectively in 2004/2005, 2006/2007, 2010/2011 and 2013. The remaining wave concerned collecting retrospective data on life stories which is named SHARELIFE which is collected in 2008/2009 (Börsch-Supan and Jürges, 2015).

3.2 Sample

In order to examine these hypothesis, four of the five waves of the SHARE data are used namely, wave 1, wave 2, wave 4 and wave 5. Wave 3 (SHARELIFE) will be excluded because this concerns retrospective data on life stories which is not the focus of this study (SHARE, 2017). The other four waves concern panel data on current living circumstances that include the main variables of interest of this study.

Further, the target population of this study are the elderly. The variable on elderly will be operationalized by using individuals aged 50 years and older during the interviews in the four waves, instead of 65 years and older. If the selection of elderly aged 65 years and older had been used, the number of observations would be too small in order to do the different analyses.

The sample also concerns individuals whose age, gender, education level, employment status, marital status and health status is known. Further, this sample also concerns individuals that have children and individuals that do not have children. The individuals that have children additional information (age, gender, living place and contact moments) about the children is taken into account. Finally, the same sample contains both individuals that receive informal care and that do not receive informal care both within and outside the household.

Furthermore, this sample contains individuals from different countries in different parts of Europe (Malter and Börsch-Supan, 2013; 2014; 2015). In table 3.1 has been described which countries in which wave have been included and to which part of Europe the country belongs in this research:

| Country | Wave 1 (2004) | Wave 2 (2006) | Wave 4 (2010) | Wave 5 (2012) | South and Eastern Europe | North and Western Europe |
|--------------------|------------------|------------------|------------------|------------------|--------------------------------|--------------------------------|
| Austria | X | X | X | X | | X |
| Germany | X | X | X | X | | X |
| Sweden | X | X | X | X | | X |
| The Netherlands | X | X | X | X | | X |
| Spain | X | X | X | X | X | |
| Italy | X | X | X | X | X | |
| France | X | X | X | X | | X |
| Denmark | X | X | X | X | | X |
| Greece | X | X | | | X | |
| Switzerland | X | X | X | X | | X |
| Belgium | X | X | X | X | | X |
| Israel | X | X | | X | X | |
| Czech. Republic | | X | X | X | X | |
| Poland | | X | X | | X | |
| Ireland | | X | | | | X |
| Luxembourg | | | | X | | X |
| Hungary | | | X | | X | |
| Portugal | | | X | | X | |
| Slovenia | | | X | X | X | |
| Estonia | | | X | X | X | |

Table 3.1 Categorization of countries

The choice has been made to include all countries, despite the fact that not all countries are included in two or more waves. The rationale behind this choice is to maximize the number of observations in this study.

Finally, the obtained dataset contains in total 67.328 individuals and 195.272 observations. The dataset is unbalanced: only 45,71% individuals responded to all four waves (Appendix Table A). In this study, the choice is to work with an unbalanced panel in order to work with a large group of different individuals which is in favor of the variation in the data.

3.3 Operationalizing the variables

3.3.1 Outcome variable

This study focuses on changes in life satisfaction in times that microeconomic conditions change. The outcome variable in this study is **life satisfaction** which is measured using the *CASP-12*. The *CASP-12* is a shorter version of the *CASP-19*, which is an instrument to measure the quality of life (QoL) in older ages.

The *CASP* is based on a sociological conceptualization of QoL that is based on the 'Theory of Human Need' from the sociology and has four dimensions: control, autonomy, self-realization and pleasure (Borrat-Besson, Ryser and Goncales 2015). The dimension control is defined as 'the perception of being able to shape one's own life, to have control over one's environment through one's own behaviours' (Rotter & Mulry, 1965). Autonomy refers to the independence of a person in making choices about it owns life. The dimension of self-realization describes the satisfaction of a person with oneself. Finally, pleasure refers to the feeling he/she gets of doing activities that he/she enjoys.

After defining and generating these different dimensions, the *CASP-12* is generating by summing up the dimensions. As a result, the *CASP-12* is given in this sample on a scale with a minimum of 2 and a maximum of 48. The higher the *CASP-12* value, the higher the quality of life, the higher the life satisfaction.

3.3.2 Exposure variable

The exposure variable **disability** is defined as functional limitations that is measured using self-reports where the question asked whether they have limitations with activities of daily living (adl). Disability is measured as a dummy variable: having no limitations with adl (=0) or having one or more limitations with adl (=1).

3.3.3 Control variables

The most important focus of this study is social support and its association with life satisfaction of elderly people. Having children or grandchildren is one of these social factors. **Having children** is measured as a dummy variable: having children or having no children. Besides measuring only whether an individual has children, additional information about the children is included as continuous variables namely: **the number of daughters**, **the number of children aged 18 years and older** and **the number of children living at home**. Also measured is whether there *is regular contact with at least one child*.

Receiving informal care is the other variable that captures the social factor. Informal care is defined by both *receiving informal care within and outside the household*. Receiving informal care is measured by two variables and as a dummy variable: receiving informal care within/outside the household (=1) or receiving no informal care within/outside the household (=0).

Further, the econometric models include socio-demographic and health-related information about **(1) age**, **(2) gender** (0=female 1=male), **(3) education** (having no education, basic education, secondary education or tertiary education), **(4) employment status** (being retired, employed or unemployed), **(5) marital status** (never married, married, divorced or

widowed) and **(6) health status** (having no chronic diseases or having more than 1 chronic diseases). Also, a **polynomial of age (age²)** is included, because a non-linear relationship between age and life satisfaction is expected.

3.4 Methods

3.4.1. Empirical model

This study explores the relationship between receiving social support and life satisfaction during a period of nine years (2004-2013) for elderly from different European countries. Descriptive research and econometric models for panel data are the basis for this research. The descriptive statistics is given which describe the basic properties of the data in this research and provide simple summaries about the sample.

Panel data combines the characteristics of time-series and cross-sectional data into a multidimensional dataset (Greene, 2011). Panel data characterizes it by its multidimensional characteristic, which allows to include numerous observations for various individuals over a long period of time (Wooldridge 2014:38).

The general equation of panel data is as follows:

$$Y_{it} = \beta_1 X_{it} + \beta_2 X_{it} + \dots + \beta_K X_{Kit} + \alpha_i + u_{it} \quad i = 1, 2, \dots, I; t = 1, 2, \dots, T \quad (1)$$

The Y_{it} is the dependent variable (i = entity and t = time) and X_{it} represents one independent variable with β_1 being its coefficient which indicates the change of Y_{it} if X_{it} changes. Further, α_i is the unknown intercept, also known as the individual effect of the individual heterogeneity. The last term, u_{it} , is the time-varying idiosyncratic error which represents the factors that change over time and across individuals (Wooldridge 2014:490-496).

3.4.2 Fixed Effects model

The fixed effects model (FE) is a regression analysis model that focuses on the relationship between the dependent and the independent variables of different individuals over a period of time (Greene, 2011). Each individual has its own individual characteristics which results in fundamental differences between the different individuals. Some of these fundamental differences are not likely to be reflected by the diverse independent variables that are included in the analysis. These differences are accounted for in the fixed effects model through a constant term that captures these unobserved time-invariant characteristics, namely the α_i term (Greene, 2011). As a result, the estimated coefficients of the fixed effects model should not be biased because of omitted time-invariant characteristics.

If the simple panel data model is extended into a fixed effects model to include fifteen independent variables that will be used for the analysis in this research, the equation will be as follow:

$$Y_{LS,it} = \beta_{DIS} X_{DIS,it} + \beta_{HC} X_{HC,it} + \beta_{ICwithin} X_{ICwithin,it} + \beta_{ICoutside} X_{ICoutside,it} + \dots + \beta_{15} X_{15,it} + \alpha_i + u_{it} \quad (2)$$

The dependent variable is life satisfaction (CASP 12) for individuals i ($i = 1, 2, \dots, 67.410$) that are interviewed in year t ($t = 2004, \dots, 2013$).

In this study the main explanatory variables of interest are disability ($X_{DIS,it}$), having children ($X_{HC,it}$), receiving informal care within the household ($X_{ICwithin,it}$) and receiving informal care outside the household ($X_{ICoutside,it}$). Therefore, the main parameters of interest are β_{dis} ,

$\beta_{\text{havingchildren}}$, β_{Cwithin} and β_{Coutside} , which indicates the change of Y_{it} if X_{it} changes. The other independent variables (10) are age, gender, education, employment status, marital status, health status, having grandchildren, gender of the children, the number of children aged 18 years and older, the number of children living at home and having regularly contact with at least one child.

3.5 Descriptive statistics

In table 3.1 the descriptive statistics of this study sample are presented:

| | Mean or % | Std. deviation | Minimum | Maximum |
|---|-----------|----------------|---------|---------|
| CASP-12 | 37.29951 | 6.381759 | 2 | 48 |
| Disability | | | | |
| <i>Having no limitations with adl</i> | 88.44% | | | |
| <i>Having limitations with adl</i> | 11.56% | | | |
| Age | 65.22023 | 10.468 | 50 | 104 |
| Gender | | | | |
| <i>Female</i> | 55.81% | | | |
| <i>Male</i> | 44.19% | | | |
| Education | | | | |
| <i>No education</i> | 4.55% | | | |
| <i>Education_low</i> | 38.77% | | | |
| <i>Education_middle</i> | 36.00% | | | |
| <i>Education_high</i> | 20.68% | | | |
| Employment status | | | | |
| <i>Retired</i> | 55.41% | | | |
| <i>Employed</i> | 27.54% | | | |
| <i>Unemployed</i> | 17.05% | | | |
| Marital status | | | | |
| <i>Never married</i> | 5.40% | | | |
| <i>Married</i> | 71.63% | | | |
| <i>Divorced</i> | 7.95% | | | |
| <i>Widowed</i> | 15.02% | | | |
| Health status | | | | |
| <i>Have no chronic diseases</i> | 33.45% | | | |
| <i>Have more than 1 chronic disease</i> | 66.55% | | | |
| Having children | | | | |
| <i>Yes</i> | 89.94% | | | |
| <i>No</i> | 10.06% | | | |
| Having grandchildren | | | | |
| <i>Yes</i> | 71.46% | | | |
| <i>No</i> | 28.54% | | | |
| Daughters | | | | |
| <i>0</i> | 33.30% | | | |
| <i>=>1</i> | 66.70% | | | |
| Number of the children aged 18 | | | | |

| | | | | |
|--|-----|--------|--|--|
| years and older | | | | |
| | 0 | 14.83% | | |
| | =>1 | 85.17% | | |
| Number of children living at home | | | | |
| | 0 | 68.92 | | |
| | =>1 | 31.08% | | |
| Having frequent contact with at least one child | | | | |
| | Yes | 81.46% | | |
| | No | 18.54% | | |
| Received informal care within the HH | | | | |
| | Yes | 6.49% | | |
| | No | 93.51% | | |
| Received informal care outside the HH | | | | |
| | Yes | 14.57% | | |
| | No | 85.43% | | |

Table 3.1 Descriptive statistics

The mean of the life satisfaction in this sample is 37.29951 on a scale with a maximum of 48. Surprisingly the smallest part of this (11.56%) has no limitations with adl. Further, most of the respondents in this sample have children (89.94%) and grandchildren (71.46%). Large number of individuals in this sample have at least one daughter (66.70%), at least one child aged 18 years and older (85.17%) and regularly have contact with at least one child (81.46%). Moreover, a small part of this sample received informal care both within (6.49%) and outside (14.57%) the household.

The average age in this sample is 65 years. Further, 55.8% of the respondents in this sample are female. Furthermore, a small amount of the respondent has no education, where 38.77% of the respondents have basic education, 36.00% have finished secondary education and 20.68% have completed tertiary education. Further, the largest part of this sample is married (71.63%). Since the dataset contains largely elderly more than the half is retired (55.41%) and 66.55% of the elderly has more than 1 chronic disease.

Chapter 4. Results

This chapter contains the results of the analysis done. The results of the fixed effects models will be presented and interpreted.

4.1 Fixed Effects

The fixed effect model is used to determine relations between life satisfaction and its determinants as described in paragraph 3.3. The main results of the estimated fixed effects models are summed in Table 4.1. The results of the full model incl. number of observations and additional models are included into the Appendix.

| CASP | Coefficients | P-value | 95% Confidence Interval | |
|---|--------------|---------|-------------------------|------------|
| Age | 0.379 | 0.000* | 0.226906 | 0.5310791 |
| Age ² | -0.003 | 0.000* | -0.0038731 | -0.0016369 |
| <i>Education (ref. cat: no education)</i> | | | | |
| Basic education | 1.976 | 0.000* | 1.347313 | 2.60519 |
| Secondary education | 3.554 | 0.000* | 2.918044 | 4.189313 |
| Tertiary education | 4.126 | 0.000* | 3.472968 | 4.779582 |
| <i>Employment status (ref. cat: retired)</i> | | | | |
| Employed | 1.167 | 0.000* | 0.8485882 | 1.485183 |
| Unemployed | -0.618 | 0.000* | -0.9277025 | -0.3089631 |
| <i>Marital status (ref. cat: never married)</i> | | | | |
| Married | 1.311 | 0.000* | 0.7630918 | 1.859746 |
| Divorced | -0.088 | 0.799 | 0.5855888 | 0.7608571 |
| Widowed | 0.186 | 0.594 | 0.4985097 | 0.8711868 |
| <i>Health status (ref. cat.: having no chronic diseases)</i> | | | | |
| Having 1 or more chronic diseases | -2.533 | 0.000* | -2.757274 | -2.308179 |
| <i>Disability (ref. cat.: no limitations with adl)</i> | | | | |
| Having one or more limitations with adl | -3.537 | 0.000* | -3.941038 | -3.20543 |
| <i>Social support</i> | | | | |
| <i>Having children (ref. cat.: having no children)</i> | | | | |
| Daughters | 0.178 | 0.005** | 0.0532934 | 0.3032557 |
| The number of children aged 18 plus | 0.035 | 0.501 | -0.0666927 | 0.1364742 |
| The number of children living at home | -0.955 | 0.000* | -1.104669 | -0.8051881 |
| Having frequent contact with at least one child | 1.393 | 0.000* | 0.9567428 | 1.829624 |
| <i>Having grandchildren (ref. cat.: having no grandchildren)</i> | | | | |
| Receiving no informal care within the household (ref. cat.: receiving informal care within the household) | 1.658 | 0.000* | 1.196875 | 2.119403 |

| | | | | |
|--|--------|--------|----------|----------|
| Receiving no informal care outside the household (<i>ref. cat.: receiving informal care outside the household</i>) | 1.396 | 0.000* | 1.071237 | 1.721251 |
| Constant | 19.781 | 0.000* | 14.61987 | 24.94218 |
| *Significant at a 1% significance level **Significant at a 5% significance level | | | | |

Table 4.1 Full model results on life satisfaction of elderly in European countries

First, both the variables **age** and **age2** are significant at a 1% significance level. This indicates that the effect of age is non-linear. If a scatter is plotted with the effect of age against the fitted value, the life satisfaction from 50 until approximately 65 years increases. After the age of 65 years the life satisfaction decreases. This is in line with the hypothesis about age, namely that age is both positively and negatively associated with the life satisfaction.

Further, the hypotheses on socio- economic factors has been defined as **being educated, being employed and being married and/or living with a partner** is positively associated with life satisfaction. These hypotheses correspond with the results of the analysis. Having a basic, secondary or tertiary education increases the life satisfaction with 1.998, 3.554 and 4.126 points respectively compared to having no education, ceteris paribus. Being employed increases the life satisfaction with 1.167 points compared to being retired, ceteris paribus. Being unemployed decreases the life satisfaction with 0.618 points compared to being retired, ceteris paribus. The effects of employment status are statistically significant at a 1% significance level. Also, the effect of being married is significant at a 1% significance level and increases the life satisfaction with 1.311 points compared to being never married, ceteris paribus.

Next, having a bad **health status** is associated with lower levels of life satisfaction. The effect of the variable health status is statistically significant at a 1% significance level. Having one or more chronic diseases decreases the life satisfaction with 2.533 points compared to having no chronic diseases, ceteris paribus.

Apart from health status, also the variable **disability** is statistically significant at a 1% significance level. The hypothesis is that being functional disabled is associated with lower levels of life satisfaction. The effect of disability can be interpreted as having one or more limitations with the adl decreases the life satisfaction with 3.573 points compared to having no limitations with adl, ceteris paribus.

Further, the effect of social factors on life satisfaction has been analyzed. First, the variables **having children and having grandchildren** are statistically significant at a 1% significant level. Having grand-/ children decreases the life satisfaction with 1.027 and 0.863 points respectively compared to having no grand-/ children, ceteris paribus. Next, if an individual has children, having a **daughter** increases the life satisfaction with 0.178 points compared to having a son. This effect is statically significant at a 5% significance level. This is in line with the hypothesis that having daughters is associated with higher levels of life satisfaction. One of the hypotheses is that **living with children** has a positive association with life satisfaction. According to the results of the analysis and given the fact of having children and having daughters, having a child living at home decreases the life satisfaction with 0.955 points compared to having no children living at home. This effect is statistically significant at a 1%

significance level. Another hypothesis is **that having frequent contact** with the child is associated with higher levels of life satisfaction. Having frequent contact with a child has a significant effect on the life satisfaction at a 1% significance level. Given the fact of having children, having frequent contact with at least one child increases the life satisfaction with 1.393 points compared to having no frequent contact with a child.

Moreover, the effect of **receiving informal care** on the life satisfaction has been determined. The hypothesis is that receiving informal care is associated with higher levels of life satisfaction. However, based on the results of the analysis, receiving no informal care within or outside the household increases the life satisfaction with 1.658 and 1.396 points respectively compared to receiving informal care within and outside the household, *ceteris paribus*. These effects are statistically significant at a 1% significance level.

Finally, the last hypothesis saying that the support for filial obligations norms is positively associated with social support and therefore with life satisfaction of elderly in South and Eastern Europe compared to North and Western Europe. Considering the social support variables in this research, analysis shows the following (Table 4.2):

| CASP | South and Eastern Europe | | North and Western Europe | |
|---|--------------------------|---------|--------------------------|----------|
| | Coefficients | P-value | Coefficients | P-value |
| Having children (<i>ref. cat.: having no children</i>) | -1.088 | 0.200 | -0.281 | 0.768 |
| Daughters | -0.196 | 0.245 | 0.192 | 0.391 |
| The number of children aged 18 plus | 0.181 | 0.234 | 0.160 | 0.374 |
| The number of children living at home | -0.616 | 0.001** | -0.603 | 0.022 |
| Having frequently contact with at least one child | 1.152 | 0.015** | 0.072 | 0.923 |
| Having grandchildren (<i>ref. cat.: having no grandchildren</i>) | -0.721 | 0.041** | -0.952 | 0.030** |
| Receiving no informal care within the household (<i>ref. cat.: receiving informal care within the household</i>) | 1.097 | 0.061** | 0.431 | 0.603 |
| Receiving no informal care outside the household (<i>ref. cat.: receiving informal care outside the household</i>) | 1.671 | 0.000* | 1.070 | 0.069*** |
| Constant | 12.244 | 0.080 | 8.665 | 0.333 |
| *Significant at a 1% significance level **Significant at a 5% significance level ***Significant at a 10% significance level | | | | |

Table 4.2 Social support results on life satisfaction of elderly in Eastern and Western European countries

There are a few differences in significant effects between South and Eastern Europe and North and Western Europe based on the table above. First, having children living at home in South and Eastern European countries is statistically significant at a 5% significance level.

This means having a child living at home decreases the life satisfaction with 0.616 points of elderly in South and Eastern European countries compared to having no children living at home. Secondly, having frequent contact with at least one child in South and Eastern Europe increases the life satisfaction with 1.152 points compared to having no frequent contact. This effect is statistically significant at a 5% significance level.

Further, having grandchildren in both South and Eastern European countries and North and Western European countries decreases the life satisfaction with 0.721 and 0.952 points respectively compared to having no grandchildren, *ceteris paribus*. This effect is statistically significant at a 5% significance level. Receiving no informal care within the household in South and Eastern European countries increases the life satisfaction with 1.097 points compared to receiving informal care within the household, *ceteris paribus*. This effect is statistically significant at a 5% significance level. Finally, receiving no informal care outside the household in both South and Eastern Europe and North and Western Europe is statistically significant at respectively a 1% and 10% significance level. Receiving no informal care in South and Eastern Europe increases the life satisfaction with 1.671 points and receiving no informal care in North and Western Europe increases the life satisfaction with 1.070 points both compared to receiving informal care, *ceteris paribus*.

To test whether differences in the coefficients of the social support differ across the South and Eastern European countries and North and Western European countries, a Wald chi-square test has been performed. The test will show whether one or more coefficients do not significantly differ across groups. The results of the Wald chi-square test are presented in the table below (Table 4.3):

| Coefficient of | P-value |
|---|-----------|
| <i>Having children</i> | 0.0180** |
| <i>Daughters</i> | 0.6175 |
| <i>Having children aged 18 plus</i> | 0.0610*** |
| <i>Having children living at home</i> | 0.1547 |
| <i>Having frequently contact with at least one child</i> | 0.0002* |
| <i>Having grandchildren</i> | 0.2767 |
| <i>Receiving informal care within the household</i> | 0.0145** |
| <i>Receiving informal care outside the household</i> | 0.0409** |
| *Significant at a 1% significance level **Significant at a 5% significance level ***Significant at a 10% significance level | |

Table 4.3 Results Wald chi- square test

Based on the coefficients of having children, having children aged 18 plus, having frequent contact with at least one child, receiving informal care both within and outside the household, the conclusion can be drawn that one or more of the coefficients significantly differ across the analysis on South and Eastern, and North and Western European countries.

Discussion

This chapter consists two parts: the conclusion and the discussion. In the conclusion, the research question will be answered. A critical reflection on this study will be included in the discussion.

5.1 Conclusion

The aim of this research has been to examine the effect of social support, in terms of having children and receiving informal care, on the life satisfaction of elderly from different European countries. The corresponding research question in this research is as follows:

'What is the effect of social support on the life satisfaction of elderly people in European countries?'

The definition of social support in this research has been twofold, namely having (grand-) children and receiving informal care. Having children or grandchildren as such is not associated with higher levels of life satisfaction. This seems strange at first sight, because a lot of people will say that becoming or being a parent is positively associated with life satisfaction. However, being a parent means that you have to take care of the child which brings the needed worries and responsibilities with it and result in less time to spend on leisure which could explain the negative association of having children on life satisfaction.

Further, having a daughter is associated with higher level of life satisfaction. This is due to the fact that daughters often provide more care compared to sons. Next, the results show that living with a child is negatively associated with life satisfaction. On one hand, the children live at home because they are still young (younger than 18 years old) and need to take care of by their parents. This care is combined with the responsibilities, the duties and the problems that the parents, elderly, have to deal with. This could lead to a lot of stress which could have an effect on the health status of the elderly, but could also lead to less leisure. Both show to be negatively associated with life satisfaction.

On the other hand, adult children live at home because of the elderly parents that need care. Normally, you would say that elderly would like if their own child takes care of them. However, the results show that this is not the case. This could be explained by the fact that the elderly see themselves as a burden to their children which results in a negative association with the life satisfaction of the elderly.

If a child is not able to come by often because of studies or work, having frequent contact can be considered as a 'replacement', namely that having frequent contact with the elderly means that they are not forgotten by the child. This is in line with the results, what showed that having frequent contact with a child is positively associated with life satisfaction. Further, having a daughter is associated with higher level of life satisfaction compared to having a son. This is due to the fact that daughters are often more caring compared to sons.

Moreover, receiving informal care both within and outside the household is not associated with higher levels of life satisfaction. This is in contrast to the hypothesis in this research. Receiving informal care could be associated with lower levels of life satisfaction, because of the dependency. The fact that informal care is needed, does not mean that the elderly want

informal care. Elderly could consider receiving informal care as a dependency on other people and consider themselves as a burden to the informal caregiver.

Further, in South and Eastern Europe the number of children living at home and having grandchildren are negatively associated with life satisfaction, where having frequent contact with a child and receiving no informal care both within and outside the household are positively associated with life satisfaction. In North and Western Europe having grandchildren is negatively associated with life satisfaction. Receiving no informal care is in North and Western European countries positively associated with life satisfaction. Ending, the filial obligations are more supported in South and Eastern European countries than in North and Western European countries.

Concluding, in this research the effect of social support on the life satisfaction among elderly people in European countries is twofold: having a daughter and having frequent contact with a child is associated with higher levels of life satisfaction. On the other hand, living with a child and receiving informal care both within and outside the household is associated with lower levels of life satisfaction. The answer on the title of this thesis is that social support is partial the answer to a high life satisfaction among elderly in European countries.

5.2 Discussion

The target population in this research is the elderly people in European countries. The SHARE data that is used for this research is representative since it follows population that is 50 years and older over time, from a broad range of European countries, which makes the SHARE data multidisciplinary (SHARE, 2017). The used SHARE data concerns both panel and international aspects (SHARE, 2017).

Different advantages of panel data have led to surveys like the SHARE survey: a general survey about different topics that have been formulated in English. In order to increase the comparability of the data that has been collected across different European countries, the SHARE survey has been translated into national languages (Lee 2010). Further, the fact that the same individuals have been followed, increased the efficiency compared to cross-sectional surveys that are repeated (Hsiao, 2007). Another advantage of panel data models is that the conclusions drawn based on the statistical results can be easily generalized to the target population and across the different European countries. Finally, an advantage of panel data models, like the fixed effect model that is used in this study, is the correction for time-invariant unobservable effects (Greene, 2011).

However, the SHARE data used in this research concerns an unbalanced panel. The main reason for this disadvantage is likely attrition (Woolridge, 2014:491). This is due to the decrease of individuals since the target group of SHARE concerned elderly people aged 50 years and older. Besides, not the same survey questions have been asked through all waves, e.g. wave 3 (SHARELIFE) which concerns retrospective data on life stories.

Moreover, it is possible that the exogeneity assumption, and therefore also the zero-conditional mean assumption, does not hold in this research. Despite the fact that fixed effects model reduce the omitted variable bias, possible endogeneity problems, like reverse causality, could exist. The exogeneity assumptions assumes that the error, u_{it} , should be

zero, which means that it should not be correlated with the independent variables in any time period (t) of the individual (i) (Woolridge 2014:491). Since the strict exogeneity assumption has not been fully met, in this study there are no causal effects, but only associations.

Further, the presence of omitted variable bias is possible because of misspecification of the model. First, in this study, the variable informal care seems to be driven by health, which is defined in this study by health status and disability. Disability is defined as having limitations with activities of daily living (adl) versus having no limitations with adl and health status is defined by having one or more chronic diseases versus having no chronic diseases. However, besides limitations with adl and having chronic diseases, health could concern a lot of other aspects, like having a depression, having diabetes, having migraine, mobility, what is not included in this study. The operationalization of health could have a direct association with the life satisfaction, but also an association through receiving informal care both within and outside the household with the life satisfaction is possible. This limitation could be reduced by operationalizing the variable health status differently.

Another misspecification of the model could be the non-inclusion of being socially active or providing help to others could affect the life satisfaction of elderly positively. The feeling that the elderly have a meaning and that they help another instead of that they are being helped, could increase the life satisfaction. Further, receiving other forms of care, like home care provided by a home care bureau could have an association with the life satisfaction. Moreover, having experienced a traumatic event, like a car accident, losing a beloved relative or being abused could affect the health status and thus the life satisfaction. These variables have not been included in this study, because of the absence of this specific data in the used dataset.

5.3 Recommendations

Some recommendations for future research will be given. The first recommendation is to divide the different countries that are present in the data. This is not done in this research due to lack of time. By making distinction between countries, the similarities and differences between those countries can provide a set of new insights. The second remark is to operationalize variable health status differently. Further, a recommendation is to include additional variables, besides being socially active, receiving home care or experiencing a traumatic event, such as culture to include attitudes towards ageing, social support and life satisfaction of the elderly. The variable culture could be included into a quantitative research by using categories that define different type of culture, e.g. independent culture and interdependent culture.

Despite the critical points pointed out above, this research has its own added value. First of all, this research can be added to the limited set of scientific research about the association between social support and life satisfaction of elderly in European countries. Further, the theoretical framework of this research contains a lot of findings that are based on non-European population, e.g. the Chinese and the American population. This analysis and the results are based on data obtained from 20 European countries. The conclusions drawn offer a lot of new insights based on European data which is very interesting for scientific researchers to pick up and investigate. For example, the conclusion is drawn that receiving

no informal care is associated with higher levels of life satisfaction. What is the underlying thought here? Is this due to elderly who do not want to be dependent on somebody? Or is it because the elderly do not want their spouses, children, friends, etc. to have the burden of taking care of them? Additional qualitative analysis would be suitable to investigate these questions. Another insight is to include social activity of the elderly to examine whether the life satisfaction increases if an elderly is socially active.

The results of this research could be interesting for the Ministry of Health and Welfare. The main conclusion of this research is that receiving no informal care is associated with higher life satisfaction. In combination with the increased life expectancy of both women and men, this shows that people have to live longer independently at home. Policymakers could learn from this finding by moving their focus on informal care towards e.g. developing programs or tools to enable elderly to live longer independently at home.

References

- Alexandrova, A. (2005). Subjective well-being and Kahneman's 'objective happiness'. *In: Springer Journal of Happiness Studies (2005) 6:301-324.*
- Baltes, M.M. & Smith, J. (2003). New Frontiers in the Future of Aging: From Successful Aging of the Young Old to the Dilemma of the Fourth Age. *In: Gerontology, 49, 123–135.*
- Barange, C. 2008. 'SHARE, the Survey of Health, Ageing, and Retirement in Europe goes longitudinal.'
- Berg, van den, B., D. Fiebig, J. Hall. (2007). The impact of provided informal care on self-reported well-being. Departments of Health Economics & Health Technology Assessment, Instituted of Health Sciences, VU University, Amsterdam, The Netherlands. Version: 11 May 2007.
- Blace, N.P. (2011). Functionl Ability, Participation in Activities and Life Satisfsction of the Older People. *In: Asian Social Science. Vol. 8, No 3: March 2012.*
- Blanchflower, D., Oswald, A. (2008). Is well-being U-shaped over the life cycle? *Social Science & Medicine, 66(8), 1733-1749.*
- Borg, C., Fagerström, C., Balducc, C., Burholt, V., Ferring, D., Weber, G., Wenger, C., Holst, G., Hallberg, I. (2008). Life Satisfaction in 6 European Countries: The Relationship to Health, Self-Esteem, and Social and Financial Resources among People (Aged 65-89) with Reduced Functional Capacity. *Geriatric Nursing, 29(1), 48-57.*
- Borg, C., Hallberg, I., Blomqvist, K. (2006). Life satisfaction among older people (65+) with reduced self-care capacity: the relationship to social, health and financial aspects. *Journal of Clinical Nursing, 15(5), 607-618.*
- Borrat-Besson, C., Ryser, V.-A., & Gonçalves, J. (2015). An evaluation of the CASP-12 scale used in the Survey of Ageing and Retirement in Europe (SHARE) to measure Quality of Life among people aged 50+. *FORS Working Paper Series, paper 2015-4.* Lausanne: FORS.
- Börsch-Supan, A. and Jürges, H. (Eds.). (2005). The Survey of Health, Ageing and Retirement in Europe – Methodology. Mannheim: MEA.
- Bowling, A. and M. Farquar (1996). Outcome of anxiety and depression at two and a half years after baseline interview: associations with changes in psychiatric morbidity among three samples of elderly people leaving at home. *In: International journal of geriatric psychiatry. Vol. 11: 119-129 (1996).*
- Brown, J., A. Bowling and T. Flynn. 2004. Models of quality of life: a taxonomy, overview and systematic review of the literature. European Forum on Population Ageing Research.

Brubaker, T. H., & Brubaker, E. (1992). Family care of the elderly in the United States: An issue of gender differences? In J. I. Kosberg (Ed.), *Family care of the elderly: Social and cultural changes* (pp. 210-231). Newbury Park, CA: Sage.

Buber, I., Engelhardt, H. (2008). Children's impact on the mental health of their older Mothers and fathers: findings from the Survey of Health, Ageing and retirement in Europe. *In: European Journal of Ageing, 5, 31-45.*

BURDIS, 2004. *Disability in old age*. The Finnish Centre for Interdisciplinary Gerontology. University of Jyväskylä Finland.

Chyi, H. And S. Mao (2012). The Determinants of Happiness of China's Elderly Population. *In: Journal of Happiness Studies 13(1), 167-185.*

Cid, A., Ferrés, D., Rossi, M. (2007). Testing Happiness Hypothesis among the Elderly. *Documentos de Trabajo 1207*. Departamento de Economía. Facultad de Ciencias Sociales. Montevideo.

Clarke, P.J., Marshall, V.W., Ryff, C.D. & Rosenthal, C.J. (2000). Well-being in Canadian Seniors: Findings from the Canadian Study of Health and Aging. *In: Canadian Journal of Aging, 19, 139-159.*

Conceição P. and R. Bandura (2008). Measuring subjective wellbeing: A summary review of the literature. *United Nations Development Programme (UNDP) Development Studies, Working Paper.*

Daatland, S.O. & Herlofson, K. (2003). Family responsibility norms in European Countries: Contrasts and similarities. *Retraite et Société, 38, 16-47.*

De Groot, L. et al. 2004. 'Lifestyle, Nutritional Status, Health, and Mortality in Elderly People Across Europe: A Review of the Longitudinal Results of the SENECA Stud.' *Journal of Gerontology 59 (12):1277-1284.*

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.*

Dunkle & Kivett 1994

<https://books.google.nl/books?id=UxPRwgrph8cC&pg=PA59&lpg=PA59&dq=functional+limitations+and+life+satisfaction+elderly&source=bl&ots=npjoO0cld9&sig=Tkxabn14EYNa7GTQY6XDBICGvHQ&hl=nl&sa=X&sqi=2&ved=0ahUKEwiXq7GK5-DMAhVBC8AKHaLsBKkQ6AEIRzAF#v=onepage&q=functional%20limitations%20and%20life%20satisfaction%20elderly&f=false>

European Commission. 2014. Population ageing in Europe: Facts, implications and policies. EUROSTAT: http://ec.europa.eu/eurostat/statistics-explained/index.php/Population_structure_and_ageing

Fernandez, R., Kulik, J. (1981). A multilevel model of life satisfaction: effects of individual characteristics and neighborhood composition. *American Sociological Review*, 46(6), 840-850.

Gans, D., Silverstein, M., (2006). "Norms of filial responsibility for aging parents across time and generations". *Journal of Marriage and Family* 68(4): 961-976.

Gaymu, J., Springer, S. (2010). Living conditions and life satisfaction of older Europeans living alone: a gender and cross-country analysis. *Ageing and Society*, 30(7), 1153-1175.

Greene, W. H. (2011). *Econometric Analysis* (7th edition ed.). Prentice Hall.

Gwozdz, W., Sousa-Poza, A. (2009). Ageing, Health and Life Satisfaction of the Oldest Old: An Analysis for Germany. *IZA, Discussion Paper 4053*.

Hsiao, C. (2007). Panel data analysis—Advantages and challenges. *Test*, 16, 1–22.

Houtvan, van, C. and E.C. Norton. Informal care and health care use of older adults. In: Elsevier. Doi:10.1016/j.jhealeco.2004.04.008

Herlofson, K., Hagestad, G., Slagsvold, B., Sorensen, A. M. (2011). Intergenerational family responsibility and solidarity in Europe. *Multilinks deliverable 4.2 in Norwegian Social Research (NOVA)*. April 2011.

Kinsella, K.G. 1992. 'Changes in life expectancy 1900–1990.' *Am J Clin Nutr*. 55:1196S–1202S.

Kudo, H., Izumo, Y., Kodama, H., Watanabe, M., Hatakeyama, R., Fukuoka, Y., Kudo, Hid., Yaegashi, Y., Sasaki, H. (2007). Life satisfaction in older people. *Geriatrics and Gerontology International*, 7, 15–20.

Lee, J. 2010. 'Data sets on pensions and health: Data collection and sharing for policy design.' *Int Soc Secur Rev*. 63 (3-4): 197–222.

Lee, E-K. O. & J. Lee (2013) Education, Functional Limitations, and Life Satisfaction Among Older Adults in South Korea. *In: Educational Gerontology*, 39:7, 514-526.

Malter, F. and Börsch-Supan, A. (2013). *SHARE Compliance Profiles – Wave 4*. Munich: MEA, Max Planck Institute for Social Law and Social Policy.

Malter, F. and Börsch-Supan, A. (2014). *SHARE Compliance Profiles – Wave 5*. Munich: MEA, Max Planck Institute for Social Law and Social Policy.

Malter, F. and Börsch-Supan, A. (Eds.) (2015). *SHARE Wave 5: Innovations & Methodology*. Munich: MEA, Max Planck Institute for Social Law and Social Policy.

- Malter, F. and Börsch-Supan, A.(Eds.)(2013). SHARE Wave 4: Innovations & Methodology. Munich: MEA, Max Planck Institute for Social Law and Social Policy.
- Mathers, C. D., G.A., Stevens, T. Boerma, R.A. White, M.I. Tobias. (2014). Causes of international increases in older age life expectancy. *The Lancet*, 2015; Vol 385: 540-48.
- Meggiolaro, S., Ongaro, F. (2013). Life satisfaction among the elderly in Italy in a gender approach. *Department of Statistical Sciences. University of Padua, Working Paper Series*, 6.
- Mollaoglu, M., F. O. Tuncay and T. K. Fertelli (2011). Mobility disability and life satisfaction in elderly people. *In: Archives of Gerontology and Geriatrics 51 (2010)* e115–e119.
- Morrow-Howell, N., Hinterlong, J., Rozario, P., Tang, F. (2003). Effects of volunteering on the well-being of older adults. *Journal of Gerontology: Social Sciences*, 58B, S173–S180.
- Mroczek, D., Spiro, A. (2005). Change in life satisfaction during adulthood: findings from the veteran’s affairs normative aging study. *Journal of Personality and Social Psychology*, 88(1), 189-202.
- Mureşan, C. & P.T. Hărăguş (2015). Norms of Filial Obligation and Actual Support to Parents in Central and Eastern Europe. *Babeş-Bolyai University, Faculty of Sociology and Social Work*, 128, bd.21 December 1989.
- Myers, D., Diener, E. (1995). Who is happy? *Psychological Science*, 6, 10-19.
- NVTG, 2017. <https://www.ntvg.nl/artikelen/dossiers/methodologie-van-onderzoek>
- Nanthamongkolchai, S., Tuntichaivanit, Ch., Munsawaengsub, Ch., Charupoonphol, Ph. (2009). Factors Influencing Life Happiness among Elderly Female in Rayong Province, Thailand. *Journal of the Medical Association of Thailand*, 92(7), S8-S12.
- Osberg, J. S., G. E. McGinnis, G. DeJong and M. L. Seward. Life satisfaction and Quality of Life Among Elderly Adults. *In: Journal of Gerontology 1987. Vol. 42, No. 2, 228-230.*
- Pinquart, M., Sørensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: a meta-analysis. *Psychology and Aging*, 15(2), 187-224.
- Pollman-Schult, M. (2014). Parenthood and Life Satisfaction: Why Don’t Children Make People Happy? *In: Journal of Marriage and Family. Volume 76, Issue 2. April 2014, pages 319–336.*
- Polverini, F., Lamura, G. (2005). Italy: quality of life in old age. *In: Growing older in Europe. Walker, A. (ed.). Open University Press, Maidenhead, England, 55-82.*
- Rotter, J. B., & R. C. Mulry (1965). Internal versus external control of reinforcement and decision time. *In: Journal of Personality and Social Psychology*, 2(4), 598-604.

Sener, A., H. Oztop, N. Doğan, S. Guven (2008) Family, Close relatives, friends: life satisfaction among older people. *In: Educational Gerontology. Oct2008, Vol. 34 Issue 10, p890-906.*

SHARE, 2017. <http://www.share-project.org/>

Sheung-Tak, Ch., Chan, A. (2006). Relationship with Others and Life Satisfaction in Later Life: Do Gender and Widowhood Make a Difference? *The Journals of Gerontology: Series B, 61(1)*, 46-53.

Stephoe, A., Demakakos, P., De Oliveira, C. (2012). The Psychological Well-Being, Health and Functioning of Older People in England. *ELSA wave 6 report.*

The Broker, 2017. <http://www.thebrokeronline.eu/Articles/Stalling-growth-and-development/Intermediate-variables-explained>

Veenhoven, R. (1996). *The study of life satisfaction*. Chapter 1. In: Saris, W., Veenhoven, R., Scherpenzeel, A., Bunting B. (eds). A comparative study of satisfaction with life in Europe. Eötvös University Press, 11-48.

Veenhoven, R. (1999). Quality-of-Life in Individualistic Society. In: *Social Indicators Research*, 48, 157–186.

Walker, A. (2005). A European Perspective on Quality of Life in Old Age. In. *European Journal of Ageing*, 2, 2–12.

Wallace, T. (2008). Life satisfaction in individuals age sixty-five years of age and older. Dissertation. Ph.D., Oklahoma State University. UMI Dissertations Publishing.

Wang, C., Iwaya, T., Kumano, H., Suzukamo, Y., Tobimatsu, Y., Fukudo, S. (2002). Relationship of health status and social support to the life satisfaction of older adults. *Tohoku Journal of Experimental Medicine*, 198(3), 141-149.

Wooldridge, J.M. 2015. *Introductory Econometrics: A Modern Approach*. Cengage Learning; 6th edition.

Appendix

Table A. Response patterns

| Frequency | % | Pattern |
|------------------|---------------|----------------|
| 27.320 | 40.58 | 11.11 |
| 21.479 | 31.90 | ...11 |
| 8.241 | 12.24 |1 |
| 7.333 | 10.89 | .1.11 |
| 961 | 1.43 | 1..11 |
| 806 | 1.20 | 11..1 |
| 479 | 0.71 | 11.1.1 |
| 321 | 0.48 | ...1. |
| 244 | 0.36 | .1..1 |
| 144 | 0.21 | Other patterns |
| 67.328 | 100.00 | XX.XX |

Table B. Full model results on life satisfaction (CASP) in European countries

| CASP | Coefficients | P-value | 95% Confidence Interval | | #Observation |
|---|--------------|---------|-------------------------|------------|--------------|
| Age | 0.3789926 | 0.000* | 0.226906 | 0.5310791 | N=52.203 |
| Age ² | -0.002755 | 0.000* | -0.0038731 | -0.0016369 | |
| <i>Education (ref. cat: no education)</i> | | | | | |
| Basic education | 1.976251 | 0.000* | 1.347313 | 2.60519 | |
| Secondary education | 3.553679 | 0.000* | 2.918044 | 4.189313 | |
| Tertiary education | 4.126275 | 0.000* | 3.472968 | 4.779582 | |
| <i>Employment status (ref. cat: retired)</i> | | | | | |
| Employed | 1.166885 | 0.000* | 0.8485882 | 1.485183 | |
| Unemployed | -0.6183328 | 0.000* | -0.9277025 | -0.3089631 | |
| <i>Marital status (ref. cat: never married)</i> | | | | | |
| Married | 1.311419 | 0.000* | 0.7630918 | 1.859746 | |
| Divorced | -0.0876341 | 0.799 | 0.5855888 | 0.7608571 | |
| Widowed | 0.1863385 | 0.594 | 0.4985097 | 0.8711868 | |
| <i>Health status (ref. cat.: having no chronic diseases)</i> | | | | | |
| Having 1 or more chronic diseases | -2.532726 | 0.000* | -2.757274 | -2.308179 | |
| <i>Disability (ref. cat.: no limitations with adl)</i> | | | | | |
| Having one or more limitations with adl | -3.5373234 | 0.000* | -3.941038 | -3.20543 | |
| <i>Social support</i> | | | | | |
| <i>Having children (ref. cat.: having no children)</i> | -1.026813 | 0.000* | -1.59637 | -0.457256 | |
| Daughters | 0.1782745 | 0.005** | 0.0532934 | 0.3032557 | |
| The number of children aged 18 plus | 0.0348907 | 0.501 | -0.0666927 | 0.1364742 | |
| The number of children living at home | -0.9549286 | 0.000* | -1.104669 | -0.8051881 | |
| Having frequent contact with at least one child | 1.393183 | 0.000* | 0.9567428 | 1.829624 | |
| <i>Having grandchildren (ref. cat.: having no grandchildren)</i> | -0.862996 | 0.000* | -1.11453 | -0.0611462 | |
| Receiving no informal care within the household (ref. cat.: receiving informal care within the household) | 1.658139 | 0.000* | 1.196875 | 2.119403 | |

| | | | | | |
|--|----------|--------|----------|----------|--|
| Receiving no informal care outside the household (<i>ref. cat.: receiving informal care outside the household</i>) | 1.396244 | 0.000* | 1.071237 | 1.721251 | |
| Constant | 19.78103 | 0.000* | 14.61987 | 24.94218 | |
| *Significant at a 1% significance level **Significant at a 5% significance level | | | | | |

Table C. Full model results on life satisfaction (CASP) in Eastern and Western Europe

| | South and Eastern Europe | | North and Western Europe | | |
|--|--------------------------|---------|--------------------------|----------|-----------------------------------|
| CASP | Coefficients | P-value | Coefficients | P-value | # Observation |
| Age | 0.630888 | 0.002** | 0.7790446 | 0.003** | South and Eastern EU N= 17.890 |
| Age ² | -0.0047963 | 0.001** | -0.0054344 | 0.006** | |
| <i>Education (ref. cat: no education)</i> | | | | | |
| Basic education | 0.7541753 | 0.178 | 0.9284709 | 0.464 | |
| Secondary education | 1.380712 | 0.019 | 2.076321 | 0.100 | |
| Tertiary education | 2.762063 | 0.000* | 1.741179 | 0.176 | |
| <i>Employment status (ref. cat: retired)</i> | | | | | |
| Employed | 1.309172 | 0.003** | 1.406561 | 0.017 | |
| Unemployed | -0.6338167 | 0.097 | -0.97671 | 0.075 | |
| <i>Marital status (ref. cat: never married)</i> | | | | | |
| Married | 0.7678502 | 0.415 | 2.451788 | 0.006*** | |
| Divorced | -0.5069297 | 0.648 | 0.789992 | 0.360 | |
| Widowed | 0.2779148 | 0.792 | 1.121393 | 0.367 | |
| <i>Health status (ref. cat.: having no chronic diseases)</i> | | | | | |
| Having 1 or more chronic diseases | -2.228 | 0.000* | -2.425249 | 0.000* | |
| <i>Disability (ref. cat.: no limitations with adl)</i> | | | | | |
| Having one or more limitations with adl | -3.851193 | 0.000* | -3.577809 | 0.000* | |
| <i>Social support</i> | | | | | |
| <i>Having children (ref. cat.: having no children)</i> | | | | | |
| Daughters | -0.1963676 | 0.245 | 0.1916183 | 0.391 | |
| The number of children aged 18 plus | 0.1809711 | 0.234 | 0.1600048 | 0.374 | |
| The number of children living at home | -0.6160646 | 0.001** | -0.602941 | 0.022 | |
| Having frequent contact with at least one child | 1.1515308 | 0.015 | 0.0720409 | 0.923 | |
| <i>Having grandchildren (ref. cat.: having no grandchildren)</i> | | | | | |
| Receiving no informal care within the | 1.09745 | 0.061 | 0.4312843 | 0.603 | |

South and Eastern EU
N= 17.890

North and Western EU
N= 13.048

| | | | | | |
|--|----------|--------|----------|-------|--|
| household (<i>ref. cat.: receiving informal care within the household</i>) | | | | | |
| Receiving no informal care outside the household (<i>ref. cat.: receiving informal care outside the household</i>) | 1.671446 | 0.000* | 1.069783 | 0.069 | |
| Constant | 12.24444 | 0.080 | 8.665236 | 0.333 | |
| *Significant at a 1% significance level **Significant at a 5% significance level *** Significant at a 10% significance level | | | | | |